

PERCEIVED QUALITY OF LIFE OF CLEAR CREEK TRAIL USERS IN
BLOOMINGTON, INDIANA

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Abstract

Multi-use trails can contribute to mobility and access, reliability, social equity, the environment and ultimately to quality of life in a community (Shafer, Lee, & Turner, 2000). A study has found that community trails facilitate physical activities and frequent trail use is significantly related to an activity-friendly neighborhood. Furthermore, physical activities benefits are an indirect to trail users, enhancing quality of life and psychological well-being (Librett et al., 2006).

The goal of this study is to investigate to what extent demographic characteristics and present user patterns affect the quality of life (QOL) of trail users in Bloomington, Indiana. The participants (n=134) in this study were intercepted on the three trail entrances- Tapp Road, That Road and Church Lane during September and October 2009. Participants were asked to complete two questionnaires- Clear Creek Trail User Survey (Eppley Institute, 2007) and World Health Organization Quality of life brief version (WHOQOL-BREF) (Bonomi & Patrick, 1997). Trail users' demographic characteristics and time duration spend on the trail were main independent variables in this study. The data were analyzed by using Pearson r test, ANOVA and independent t-test.

There was no correlation found between time duration users spend on the trail and their

quality of life. However, gender and house income correlated with the users' overall quality of life.

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Chapter I

INTRODUCTION

Over the last two decades, individuals, communities, and governments have put an increasing emphasis on the overall concept of quality of life (Diener & Suh, 1997; Lloyd & Auld, 2002; Ventegodt, Merrick, & Andersen, 2003). In addition, quality of life has commanded a growing attention in a variety of academic and professional fields, including social policy, health and disease, housing, planning and development, and leisure (Lloyd & Little, 2005). Many recent studies have used leisure as an access point to understanding quality of life (Lloyd & Auld, 2002). This study focused on trail use from a leisure approach. In trail studies, most participants are walkers, joggers, bicyclist and skaters, who utilize a trail for recreational and leisure purposes (Lindsey, Wilson, Rubchinskaya, Yang, & Han, 2007; Lindsey & Nguyen, 2004). One previous study indicates that park-based leisure can contribute to physical and psychological health as well as provide social, economic, and environmental benefits (Bedimo-Rung, Mowen, & Cohen, 2005). Some research has demonstrated the health benefits of connecting with nature in a park setting (Parks Victoria, 2008). The aim of this study was to investigate the perceived quality of life among Clear Creek Trail users in Bloomington, Indiana. In addition, this study compares

the quality of life among demographic characteristics within Clear Creek Trail users, providing knowledge about trail users' perceived quality of life according to their age, gender, race, household income, education, and usage patterns.

Statement of the Problem

The researcher will seek demographic evidence that links trail use to perceived quality of life as well as examine the impact of trail use patterns on users' quality of life. One study has shown evidence that demographic and socioeconomic characteristics of users influence their level and types of trail use (Linsey, Maraj, & Kuan, 2001). In addition, Gobster (2005) indicates that interaction among user characteristics strongly predicts high activity levels on the trail. Since some knowledge about users' demographic characteristics and trail user behavior has been provided by previous studies, a primary concern of this study was to investigate the relationships between trail users' demographic characteristics and quality of life.

Based on the literature, the length of time spent on a trail is a major variable for examining trail users' quality of life; in addition, time is always an issue when it comes to how people spend their leisure hours. Henderson and Bialeschki (2005) found that setting aside time for physical activity might be easier if recreational spaces were more convenient. Additionally, in Gobster's (2005) study, he points out that people who used a trail for less than an hour were more likely to be health-oriented than those who spent more than 5 hours on a trail. The target

participants of this study were current trail users considered physically active.

Specifically, this study was an attempt to answer the following questions:

1. Are there significant differences among trail users' quality of life in terms of their demographics?
2. Does the length of time spent on a trail per visit have an impact on the users' perceived quality of life?
3. Do trail users have a better quality of life in general?

Purpose of the Study

People place value on trails because they provide areas for recreation, allow opportunities to gain fitness and health benefits, present alternative transportation routes, support conservation of habitats and biodiversity, improve economic development, and offer visual and psychological amenities (Lindsey & Nguyen, 2004). However, studies indicate that the demographics of trail users are different for every trail (Gobster, 1995; Furuseth & Altman, 1991). The results of this study provide a useful reference resource to trail managers and individuals seeking health benefits on outdoor trails. Additionally, it offers the agencies of public parks and recreation a more holistic picture for comprehending the empirical results of trail use. With this knowledge, an agency interested in improving quality of life within a community will see the value of building trails as an effective intervention.

Need for the Study

Some researchers have proven that trails make a difference in community quality of life by showing their influence on health, nature, land use, and resident pride (Shafer, Lee, & Turner, 2000). In addition, one case study shows that trail users value and identify with specific recreation settings (Moore & Grafee, 1994). Furthermore, Librett, Yore, and Schimid (2006) have shown that building multi-use trails in a community can facilitate physical activity. People can easily use trails for recreation, transportation, and exercise. q

Quality of life is the ultimate goal for most people. However, few studies have investigated the effects of trail use on overall quality of life. This research attempts to associate trail users and their perceived quality of life. The researcher also examines the relationship between trail use and the four domains of quality of life. Moreover, this study provides evidence to support the positive relationship between using trails and quality of life for both recreation and public health fields.

Delimitations

The scope of the study is delimited by two factors:

1. Participants were selected on the Clear Creek Trail in Bloomington, Indiana, during September and October of 2009.

2. Subjects answered questions on the Clear Creek Trail User Survey (Eppley Institute, 2007) and WHOQOL-BREF(Bonomi & Patrick, 1997).

Limitations

This study is limited by three factors:

1. Participants were intercepted on the trail and do not represent the entire population of trail users.
2. There are other trails in Bloomington, Indiana; this study only considers the users of the Clear Creek Trail.
3. Due to the limitation of recruiting participants in this study, the researcher could make no generalizations about the whole population.

Hypotheses

H1: There are no demographical (e.g. age, race, gender, household, education level) differences among users of Clear Creek Trail in the city of Bloomington, Indiana, based on quality of life.

H2: There is no relationship between the time people spend on Clear Creek Trail per visit and the physical capacity domain of quality of life.

H3: There is no relationship between the time people spend on Clear Creek Trail per visit and the psychological domain of quality of life.

H4: There is no relationship between the time people spend on Clear Creek Trail per visit and the social relationships domain of quality of life.

H5: There is no relationship between the time people spend on Clear Creek Trail per visit and the environment domain of quality of life.

Definition of Terms

The following terms are defined to clarify their use in the study:

Greenway. 1. A linear open space established along a natural corridor, such as a riverfront right-of-way converted to recreational use, a canal, a scenic road, or other route. 2. Any natural or landscape course for pedestrian or bicycle passage. 3. An open-space connector linking parks, nature reserves, culture features, or historic sites with each other and with populated areas. 4. Locally, certain strip or linear parks designed as a parkway or greenbelt (Little, 1990 p. 3)

Trail. Trails are defined as paths of travel for recreation or transportation within a park, natural environment, or designated corridor that are not classified as a highway or street (Moore & Shafer, 2001).

Quality of Life. In this research, the definition of quality of life is based on a description provided by the World Health Organization. The WHO quality of life group defines it as an individual's perceptions of his or her position in life in the context of a culture and value system

and in relation to goals, expectation, standards, and concerns (Skevington, 2002).

Life Satisfaction. Life satisfaction refers to a cognitive, judgmental process (Diener, Emmons, Larsen, & Griffin, 1985).

Subjective Well-being. In the context of this research, subjective well-being focuses on an individual's own judgment instead of criteria developed by researchers (Diener et al., 1985)

Human Ecosystem. A human ecosystem is defined as a coherent system of biophysical and social factors (e.g. individual, family, community, social institutions, social order, culture, built environment, and natural environment) capable of adaption and sustainability over time (Machlis, Force, & Burch, 1997; Shafer, Lee, & Turner, 2000).

Trail User. The operational definition of trail users in this study indicates a human being who utilizes a trail for recreation, transportation, or any other purpose.

Chapter II

REVIEW OF RELATED LITERATURE

Many studies have indicated a positive relationship between recreation participation and quality of life (Brown & Frankel, 1993; Lloyd & Auld, 2002). However, little research directly focuses on the relationship between trail use and quality of life. The literature that does address the relationship between using trails and quality of life will be included in this review. The relevant literature is presented according to the following topics: (a) theoretical background, (b) quality of life, (c) relationship between quality of life and leisure, (d) potential benefits from trails, (e) report summaries from Clear Creek Trail. A summary follows the review.

Theoretical Framework

The quality of life concept involves three major sciences: Economics, Medicine, and Social Sciences (Cummins, 2005). The recreation field has been treated as a component of social sciences; therefore, a social science point of view will be considered under theoretical background. Historically, quality of life often refers to a “good” life (Ventegodt, Merrick, & Andersen, 2003). The Greek philosopher Aristotle suggested that the measure of happiness and a good life was derived from virtuous activities of the soul (Goodale & Godbey, 1988). There are three major philosophical approaches for evaluating quality of life (Diener & Suh, 1997). The first approach considers a religious or philosophical foundation. For example, helping other is a

major tenet of a good life in many religions. The second approach to defining the good life is based on the satisfaction of preference. This idea assumes that people will surround themselves with things that enhance their quality of life. The third approach is rooted in the experience of individuals. In this approach, factors such as feelings of pleasure, joy and life satisfaction determine quality of life.

Life Satisfaction and Subjective Well-being

In this study, the third approach will be used to define individuals' perceived quality of life. To a certain extent, quality of life is associated with the subjective concepts of well-being and life satisfaction. Life satisfaction refers to a cognitive, judgmental process (Diener, Emmons, Larsen, & Griffin, 1985). They indicate that judgments of satisfaction depend on one individual comparing personal circumstances with a normative, appropriate standard. Here, it is important to specify that each individual's judgment of perceived quality of life will depend on his or her own subjective standards and that everyone's standards are different. The concept of subjective well-being focuses on the individual's own judgment instead of criteria developed by researchers (Diener et al., 1985). Therefore, it is necessary to ask people for an overall evaluation of their lives. Moreover, subjective well-being research emphasizes individuals' subjective life experiences (Diener & Suh, 1997). The assumption is that well-being can be defined by people's conscious experiences, including joyful feelings and cognitive satisfactions (Diener & Suh,

1997). This study is guided by the assumption that perceived quality of life can be evaluated through recalling individual life experience.

The construct of quality of life focuses on four disciplines that: (a) are multidimensional and influenced by personal and environmental factors and interactions, (b) have the same components for all people, (c) have both subjective and objective components, and (d) are enhanced by self-determination, resources, purpose in life, and a sense of belonging (Cummins, 2005).

Quality of Life

Definition of the Quality of Life and its Measurement

Lloyd & Little (2005) note that quality of life (QOL) is not a universally accepted scientific or philosophical concept. Rather, it is a concept that can be interpreted from various theoretical perspectives. The World Health Organization's (WHO) explanation of the term is both encompassing and explicit. The WHO quality of life group defines QOL as an individual's perceptions of his or her position in life in the context of the culture and value system in which he or she lives and in relation to his or her goals, expectation, standards, and concerns (Skevington, 2002). The WHO's definition focuses on the criteria an individual uses in assessing his or her own quality of life (Breek, Hamming, De Vries, Aquarius, & van Berge Henegouwen, 2001). Furthermore, the WHO definition suggests that researchers investigating QOL should

emphasize on the individual and his or her experiences in life (Lloyd & Little, 2005).

Quality of life can be measured objectively and subjectively (Baker & Palmer, 2006; Lloyd & Little, 2005). Some studies indicate that these two approaches provide diverse views of a person's quality of life (Baker & Palmer, 2006; Lloyd & Auld, 2002). Factors that can be assessed objectively include observable facets of social functions or place-centered conditions. For example, Lloyd and Little (2005) measured QOL using a metric that combines an individual's overall standard of living as indicated by the gross domestic product of his or her country; his or her per capita income, square feet of housing space, number of toilets, telephones, automobiles, television sets; and epidemiological data.

In contrast, subjective QOL factors include an individual's degree of satisfaction with his or her activities and life in general or other person-centered experiences (Baker & Palmer, 2006). In research that focuses on subjective factors, an important metric is how an individual describes his or her health. Moreover, in several studies, quality of life has been closely linked with an individual's perceived level of satisfaction or dissatisfaction with life (Diener et al., 1985) and sense of well-being (Diener & Suh, 1997). The main advantage of subjective QOL measures is that they directly access an individual's experiences in daily life. In this study, quality of life will focus on the subjective perspective (Diener & Suh, 1997), measuring by self evaluation based on one's culture, society, and experience.

The instrument of this study will be the WHOQOL-BREF United States Version (Bonomi & Patrick, 1997). The WHOQOL-BREF comes from the WHOQOL-100, which proved too long for the practical purposes of this study. The WHOQOL-100 is a 100-item, self-administered instrument including six domains: Physical, Psychological, Spiritual, Environmental, Independence, and Social (Bonomi & Patrick, 1997). In addition, a unique aspect of the WHOQOL-100 is that it addresses both positive and negative aspects of life. Some studies have shown that the WHOQOL-BREF correlates highly with the WHOQOL-100 (Harper, 1998). Moreover, the WHOQOL-BREF provides an adequate alternative to the WHOQOL-100 in terms of the needs of the researcher and respondents. The WHOQOL-BREF United States Version was used in this study due to its simplicity.

Quality of Life from a Human Ecosystem Perspective

The purpose of this study is to investigate trail users' perceived quality of life, which involves interaction between humans and the environment. Based on this notion, some researchers align their studies from a human ecosystem perspective (Shafer, Lee, & Turner, 2000). A human ecosystem is composed of a coherent, interconnected system of biophysical and social factors such as individual, family, community, social institutions, social order, culture, built environment, and natural environment (Shafer, et al., 2000). Such researchers also consider that the human ecosystem is a dynamic and reciprocal process in terms of the relationship

between individuals and environments. Shafer et al. (2000) identify characteristics related to the quality of life needed to help sustain a community by reviewing relevant literature on topics such as diversity of housing, an end to sprawl, convenient access to mass transit, the widespread use of local products, the provision of a variety of opportunities for face-to-face encounters, sound economic bases, resident-led processes, fairness and equity, promotion of a sense of place, the creation of new businesses that provide services or products that protect or restore the environment, and an expanded and strengthened constituency.

Shafer et al. (2000) propose a conceptual model (Fig. 2.1) of factors that contribute to community quality of life from a human ecological perspective. This model illustrates the interaction between community and environmental and economic qualities. The community circle illustrates that members of a community acquire social support by participating and interacting with other members of the community. The physical environment of the community should support conviviality and provide a healthy, livable place. In addition, the members of the community should be treated fairly and have equal economic opportunity. Trails can be considered an environmental factor as well as a social factor in a community, and the human ecological model can be applied in terms of the interaction between trail and trail users in this study.

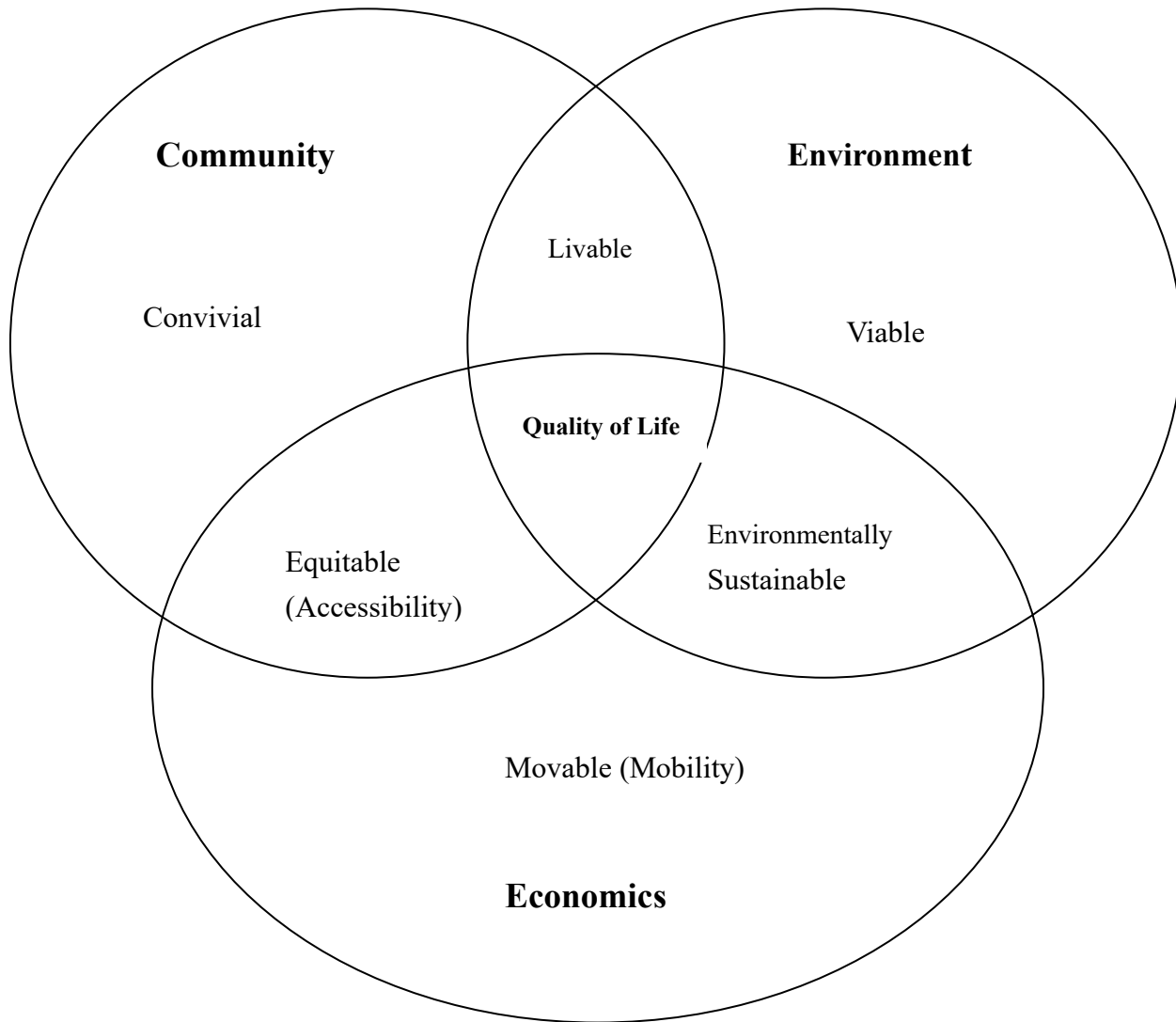


Fig. 2.1. A conceptual model of factors that contribute to community quality of life from a human ecological perspective (Shafer et al., 2000)

Relationship Between Quality of Life and Leisure

A number of studies have documented the positive relationship between participation in leisure or recreation activities and quality of life (Lloyd & Auld, 2002). Researchers have identified many positive benefits of leisure participation, such as relaxation, self-improvement, greater family functioning, and increased cultural awareness (Baker & Palmer, 2006). However,

other studies have reached different conclusions about the importance of leisure to quality of life (Baker & Palmer, 2006). Allen (1991), for example, found a negative relationship between recreation participation and quality of life. Some researchers have shown that participation in recreation activities has very little effect on quality of life (Baker & Palmer, 2006). Yet, Russell (1990) has found that frequent recreational activities have a positive influence on the quality of life of the elderly population. This study is based on a rationale that asserts a positive relationship between recreation and quality of life.

Furthermore, several studies have been conducted to examine leisure's contribution to health (Coleman & Eso-Ahola, 1993). This contribution focused on coping with stressful life events and considered two factors: (a) companionships, friendships, and perceived social support associated with leisure participation and (b) leisure-generated self-determination dispositions. Self-determination disposition is both a cause and an effect of leisure; in other words, leisure requires self-determination and results in self-determination. In addition, people may be self-determined through leisure, thereby produce a buffering effect when facing life crises (Coleman & Eso-Ahola, 1993). Furthermore, Coleman and Eso-Ahola (1993) concluded that leisure participation provides a sense of competence and control; meanwhile, companionship contributes to a sense of social support, enabling people to handle stressful events more effectively (Coleman & Eso-Ahola, 1993).

Leisure is a broad concept involving different, multidimensional factors for every individual. However, this study tries to specify trail use using a variety of perspectives. Many studies have tried to associate recreational activities with quality of life (Shafer et al., 2000). Multi-use trails can contribute to mobility and access, reliability, social equity, the environment, and ultimately to quality of life in a community (Shafer, Lee, & Turner, 2000). Similarly, Lindsey et al. (2001) conclude two goals of a greenway system: a) to link neighborhoods with other neighborhoods and public facilities and b) to develop the economy and communities. Since quality of life includes multidimensional criteria, some researchers tackle it from an economic point of view. One study conducted in Lincoln, Nebraska, showed evidence that building trails is cost-beneficial from a public health perspective (Wang et al., 2005). They pointed out that every \$1 invested in trails for physical activity led to \$2.94 in direct medical benefit. In addition, such research indicates that construction and maintenance costs per use are relatively low. Moreover, current studies suggest that building bike/pedestrian trails might be a favorable resource for communities facing various budget situations (Wang et al., 2004). Some studies indicate that appropriate landscaping can decrease stress—often a motivation to crime—by raising the psychologically restorative benefits of a setting (Gobster & Westphal, 2004; Kuo & Sullivan, 2001).

Trail Use Studies

Several studies have investigated the characteristics of trail users over the past few decades (Lindsey, Maraji, & Kuan, 2001; Neff, Ainsworth, Weeler, Krumwiede, & Trepal, 2000; Mowen, Graefe, & Williams, 1998; Furuseth & Altman, 1991). These trail use and user studies have been in fields such as urban planning (Lindsey, Man, Payton, & Dickson, 2004; Lindsey, Wilson, Yang, & Alexa, 2008), public health (Brownson et al., 2000; Evenson, Herring, & Huston, 2005; Wang et al., 2005), and recreation (Gobster, 1995, 2005). Most of these studies show the positive results of trails as an intervention (Brownson et al., 2000; Librett, Yore, & Schmid, 2006), transport (Lindsey, 1999; Lindsey, Maraj, & Kuan, 2001; Lindsey et al., 2008), or amenities (Kaczynski, Potwarka, & Saelens, 2008).

The result of such research indicates that different socio-demographic characteristics, visitor patterns, and visitor attitudes can be explained by activity type (Mowen, Graefe, & Williams, 1998). Furthermore, research has shown that the majority of trail users in Indianapolis and North Carolina are well-educated and employed, with a relatively stable income (Lindsey, 1999; Furuseth & Altman, 1991). Lindsey et al. (2001) show that demographic and socioeconomic characteristics of users influence levels and types of trail use. Several studies have considered specific characteristics (Lindsey, 1999; Moore & Shafer, 2001; Shafer et al., 2000): in terms of gender, men are more likely than women to be highly active users (Gobster, 2005). In terms of race and ethnicity, Gobster (2005) found that Anglos, African Americans, and

Southeastern Asians used the trails more regularly than other groups. Generally speaking, urban trail users are most likely young to middle-aged, white, affluent, and well-educated males who live in households without dependent children (Furuseth & Altman, 1991; Gobster, 1995).

Furthermore, some researchers have discovered that interaction among user characteristics, such as younger users, the absence of dog(s), cool temperatures, morning hours, and small groups can strongly predict high activity level on trails (Gobster, 2005). In addition, Lindsey et al. (2001) point out that demographic and socioeconomic characteristics of nearby users affect levels and types of trail use and that minorities and the poor are less likely to use outdoor recreational facilities such as trails.

Moore and Graefe (1994) found a positive relationship between frequency of use and both age and importance of the activity; they found a negative relationship between frequency of use and miles from users' homes to the trails. In addition, one study examines the motivations and attitudes of users of a multi-use suburban trail (Lee, Scott, & Moore, 2002). They found that the intensity of involvement and activity types were valuable predictors in terms of why people used the trails. Apparently, relevant demographic characteristics vary in different areas.

Influential Trail Use Variables

Safety

Safety issues are a major concern among trail users (Gobster & Westphal, 2004; Gordon,

Zizzi, & Pauline, 2004). Gordon et al. (2004) assessed the use of a community trail among new and habitual exercisers in Morgantown, West Virginia, and concluded that unsafe conditions were the primary concerns for new users. Moreover, Gobster et al. (2004) point out that people focused on two different aspects of safety during the Chicago River project: physical safety and personal safety. Physical safety involves concern about children falling into water; personal safety indicates the concern that trails will become a place for drinking or drug use or as a habitat for the homeless.

Design

Another study lists the positive association between trail characteristics and trail use. For example, levels of trail use are higher where views are more open, where trail viewsheds are greener than contiguous neighborhoods, and where land use in viewsheds is more diverse. On the contrary, trails without paved surfaces and with railroad crossing tended to have lower use (Gobster, 1995; Lindsey, et al., 2008). In addition, being in contact with the beauty of nature is the number one reason people preferred greenways (Gobster, 1995); offering a strategy for greenway designers to consider.

Management

A primary problem of trail use was poor maintenance of the surface (Gobster, 1995). Leung and Marion (1996) examined the effects of managerial actions, finding that managers can

influence or control all use-related factors. Managers should have knowledge of the impact of environmental factors on trails. For example, muddiness can be limited by not using wet organic soils or flat terrain (Marion & Leung, 2001).

Aesthetics

Gobster et al.'s research (2004) concluded that people prefer wildland scenery and wish for rural and urban landscapes to be more natural. Additionally, participants favored aesthetics over other dimensions in this study, especially cleanliness, which people mentioned most frequently.

Other Factors

In addition to the factors above, some studies addressed weather variables and neighborhood urban form variables such as population density, commercial use, parking area, street block length (Lindsey et al., 2008). Moreover, some variables, such as average slope and trail intersections, might have a positive effect on trail use (Lindsey et al., 2008).

Environmental Psychology

From an environmental psychological perspective, place attachment might offer an explanation of facility use in the community (Moore & Graefe, 1994). Place attachment can be described as a bonding with physical environmental settings (Moore & Graefe, 1994; Vorkinn & Riese, 2001). More specifically, according to Pronshansky et al. (1983), humans can develop a

cognitive structure representing memories, ideas, feelings, attitudes, values, preferences, meanings, and conceptions of behavior and experience related to a physical environment through interaction with that physical environment. Furthermore, the result of Moore and Graefe's (1994) study demonstrated that there are at least two dimensions of place attachment: a place dependence, which reflects the importance of the place in facilitating a user's activities, and a place identity, which reflects an individual's valuing of a setting for symbolic and emotional reasons. In other words, the concept of place attachment might be a psychological variable that influences trail use. Moore and Graefe (1994) examined a model of predictor variables based on annual visits, place dependence, and place identity on three trails in Iowa, Florida and California. Figure 2.2 shows that age, number of miles from home to trail, importance of activities, and month of year had a significant effect on frequency of use. Furthermore, place identity depends on the setting of the activity, which is also a function of frequency of use and distance between the site and the user's home. As illustrated in Figure 2.2, the importance of an activity apparently plays a significant role, due to the contribution of both place identity and place dependence. Researchers also suggest that more effective place identity could require longer periods of time to emerge (Moore & Graefe, 1994). In sum, the study supports the result that trail users develop feelings of value for and identification with recreation settings (Moore & Graefe, 1994). In other words, personal identification with recreational facilities could be a factor influencing the level

of use. Based on these findings, environmental psychology is a possible factor in use of community trails.

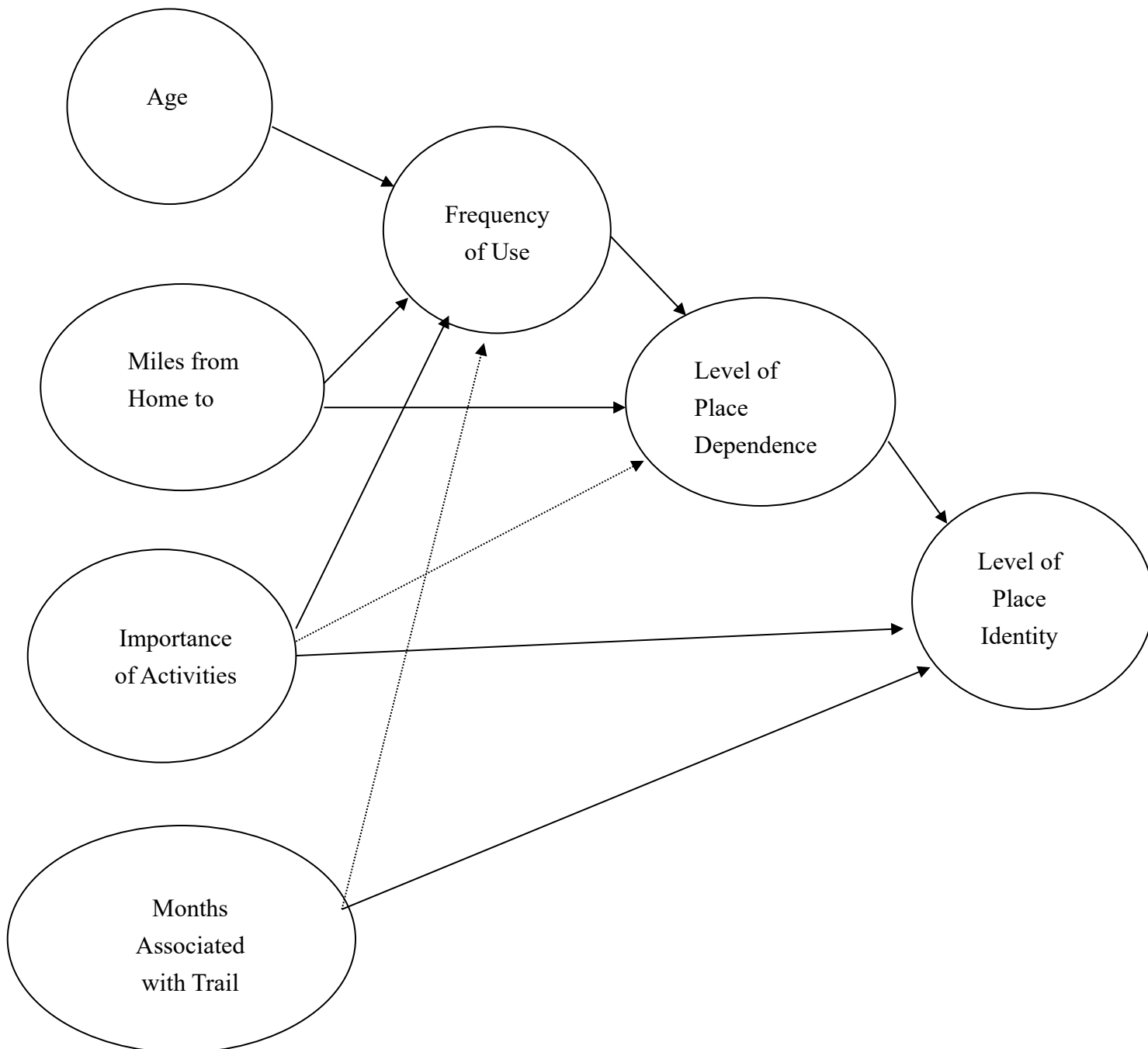


Fig. 2.2. Predictor variables on annual visit, place dependence, and place identity (Moore & Graefe, 1994). (Solid lines indicate relationship at the .05 level on all three trails. Dashed lines indicate relationship at the .05 level only on two trails.)

Potential Benefits from Trails

This section will focus specifically on the benefits of trail use discovered among the literature. First of all, park-based leisure can contribute to one's physical and psychological health, as well as provide social, economic, and environmental benefits (Bedimo-Rung et al., 2005). Evidence shows that residents living around greenways in Oakland, California perceive the health/fitness and preservation benefits of open space (Shafer et al., 2000). In addition, community trails support social interaction and present opportunities for friendship and social encounters (Moore & Shafer 2001; Shafer et al., 2000). In addition to the social benefits of trail use, several studies investigated the impact of physical activities on trails (Librett et al., 2006; Evenson et al., 2004; Neff et al., 2000). One study found that community trails facilitate physical activity and frequent trail use is significantly related to an activity-friendly neighborhood. Furthermore, physical activities benefit trail users indirectly, enhancing quality of life and psychological well-being (Librett et al., 2006).

Trails Contribute to Physical Activities

People engage in various recreational activities on trails, such as walking, jogging, running, and biking (Mowen et al., 1998; Reed, Ainsworth, Wilson, Mixon, & Cook, 2004). In recent years, research has acknowledged that parks and recreational facilities have the potential to promote childhood physical activity and reduce childhood obesity (Potwarka, Kaczynski, & Flack, 2008). In particular, one study showed that whether a park had a paved trail or unpaved

trail had a significant relationship with physical activities and park use (Kaczynski, Portwarka, & Saelens, 2008). This research found that paved trails were multi-functional facilities for activities such as brisk walking, running, and cycling. Unpaved trail users were most likely runners and walkers who preferred softer surfaces. Troped et al. (2001) indicate a strong association between trails and physical activities in a community in Arlington, Massachusetts. Some research has provided evidence showing that sidewalks and bicycle paths increase the overall number of walking/cycling trips (Saelens, Sallis, & Frank, 2003).

Taking a public health perspective, some studies focus on trails as interventions promoting physical activity in communities (Brownson et al., 2000; Evenson et al., 2005; Merom, Bauman, Vita, & Close, 2003). Research in China found that owning a motorized vehicle is related to weight gain and the prevalence of obesity (Bell, Ge, & Popkin, 2002). Consequently, more facilities for nonmotorized transport (e.g. walking or cycling trails) may lead to significant public health improvement by encouraging moderate-intensity activities (Saelens, Sallis, & Frank, 2003). More specifically, one study indicated that walking trails might have be beneficial in promoting physical activities among the people at highest risk for inactivity, in particular women and lower socioeconomic groups (Brownson et al., 2000). Kaczynski and Henderson (2007) reviewed 50 articles related to recreation and park settings; 40% of the articles showed a positive relationship between parks or recreation and physical activity variables. In particular, 14

articles specifically indicated that trails have a positive or mixed association with physical activities when examining the associations between types of park and recreation settings and physical activity. Consequently, some scholars have investigated the association between environment and physical activity (Kaczynski & Henderson, 2007); furthermore, several studies have shown empirical evidence suggesting that environmental factors affect physical activity levels (Brownson et al., 2000; Evenson et al., 2005; Reynolds et al., 2007; Saelens et al., 2003).

One qualitative study indicates that parents recognize that local community amenities such as playgrounds, bike tracks, and sporting facilities encourage children's physical activity (Hesketh, Waters, Green, Salmon, & Williams, 2005). Furthermore, another study used a 133-item questionnaire to assess self-reported leisure-time physical activity and perceptions of neighborhood characteristics; the result of this study showed that the presence of trails meant people were significantly more likely to engage in physical activities (Huston, Evenson, Bors, & Gizlice, 2003). Another study underlines the significantly positive role of trails by measuring the distances to the closest trail and by investigating the perceived presence of combined trails and bike lanes in a neighborhood. In addition, several studies have concluded that adding trails and bike lanes increases the likelihood of cycling (Gordon et al., 2004; Merom et al., 2003; Vernez-Moudon et al., 2005).

Contact with Nature

Another benefit of outdoor trail use is contact with nature, which can have a tremendous influence on people. Deakin University and Parks Victoria (2008) have conducted research regarding how nature can provide people with a better life in a park context. Furthermore, evidence has shown that “green nature” can reduce crime, boost psychological wellbeing, reduce stress, foster immunity, enhance productivity, promote healing in psychiatric and medical patients, and is most likely essential for human development and long-term health and wellbeing (Deakin University, 2008). The authors list the contributions of parks in terms of their health components: a) physically, parks provide settings and infrastructures for varying levels of formal and informal sports and recreation for all skill levels, such as picnicking, walking, running, cycling, and ball games; b) mentally, parks make nature available for restoration from mental fatigue; c) spiritually, parks preserve a natural environment for contemplation, reflection, and inspiration; d) socially, parks provide places for people to improve social networks and personal relationships within couples and families; and e) environmentally, parks preserve ecosystems and biodiversity, maintaining an atmosphere of clean air and water (Deakin University, 2008).

The authors found numerous articles to confirm that being in and viewing nature, observing plants and gardens or gardening, and observing and encountering animals all have health benefits for people. These activities have favorable emotional and psychological effects that are both immediate and long-term. Much of this contact is accessible through park or

park-related facilities (Deakin University, 2008). Moreover, the Australian Institute Health and Welfare (1998) summarize seven dimensions of overall health benefit outcomes of contact with nature: (a) biological and mental wellbeing, (b) social and community wellbeing, (c) economic wellbeing, (d) environmental wellbeing, (e) life satisfaction, (f) spiritual or existential wellbeing, and (g) other characteristics valued by humans.

Report Summaries on the Clear Creek Trail by the Eppley Institute

The Eppley Institute (2007) led several studies on the Clear Creek Trail in Bloomington, Indiana. A user survey conducted in October 2007 showed that trail users prefer to visit in early mornings or evenings. Trail use varied due to weather and seasons; there was an increase of use in warmer weather. Major activities included walking, running, cycling and rollerblading. Finally, this report indicated that Clear Creek trail tends to increase user participation in physical activities. Most of the users were residents living 5-10 minutes away from the trail.

Conceptual Model of this Study

The conceptual model shown in Figure 2.3 illustrates the basic logical foundation of this study. Trail use is affected by a user's demographic characteristics, use patterns, safety issues, design, and management. Trail use corresponds to a user's physical capacity, psychological condition, social relationships, and environment. These proposed relationships are presented in Figure 2.3, which forms the basis for the rationale of this study.

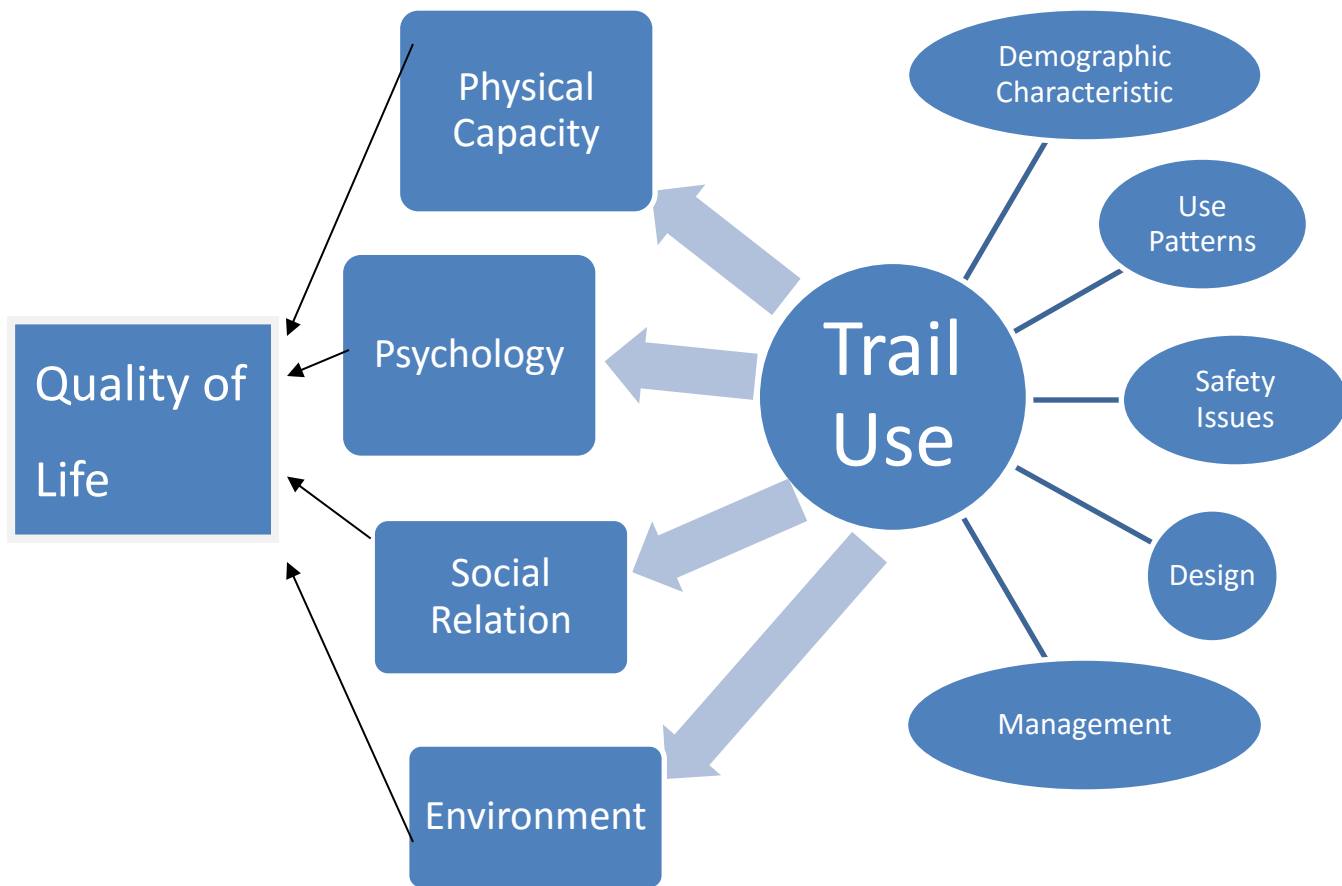


Fig. 2.3. Conceptual model for the study

Summary

This literature review has provided a background on the theory and models that inform this study, especially regarding the background and definition of quality of life. However, quality of life is a complex and multifaceted concept, so the examination of this idea requires a variety of approaches and perspectives. While some studies have investigated the outcomes of trail use, little research has been done on the potential linkages between participation in trail use and

quality of life in general. The result of this research will be useful information for leisure service providers whose purposes are to reach better management and design of service quality.

Chapter III

METHODOLOGY

The goal of this study was to investigate to what extent demographic characteristics and present user patterns affect the quality of life (QOL) of trail users in Bloomington, Indiana. The following discussion covers: (a) arrangements for conducting the study, (b) selection of subjects, (c) instrumentation, (d) procedure for collecting data, (e) analysis of data, and (f) summary.

Arrangements for Conducting the Study

This study was conducted on Clear Creek Trail in Bloomington, Indiana, after receipt of a human subject approval from the Committee for the Protection of Human Subjects at Indiana University. Two instruments were used in this study: the World Health Organization's Quality of Life Brief—United States Version (Appendix A) developed by Bonomi and Patrick (1997) and the Clear Creek Trail User Survey (Appendix B) developed by the Eppley Institute (2007). The purpose, objective, and instruments of this study were explained in the above content.

Selection of Participants

Participants were users of the Clear Creek Trail in Bloomington, Indiana. Based on previous Clear Creek Trail data obtained via infrared trail monitors (Eppley Institute, 2007), three heavily trafficked daily shifts were chosen for the study. These shifts were 8:00 a.m. to 11:30 a.m., 11:30 a.m. to 4:30 p.m., and 4:30 p.m. to 7:30 p.m. A total of seven potential shifts,

five weekday shifts and two weekend shifts, were selected for each calendar week randomly. The time and day of each randomly selected shift was paired with a randomly selected location (Tapped Road, That Road, or Church Lane). Interviewers were assigned to the three parking areas at trail entrances and exits (Tapped Road, That Road, and Church Lane) along the Clear Creek Trail.

Participants were selected at the trail entrances conveniently. Each group of people counted as one trail user; the interviewer approached them and asked one of them to fill out a questionnaire. If the person had already participated in this survey, the interviewer asked the next person until the n^{th} person who had not yet participated in this study. If the selected person refused to participate, the next person was approached until a user was willing to participate. The time period for this research was September and October of 2009.

Instrumentation

Participants completed two questionnaires. One questionnaire was a well-developed instrument of the World Health Organization, and the other was developed by the Eppley Institute for a survey of Clear Creek Trail use.

WHOQOL-BREF

The questionnaire in this study relied on the World Health Organization Quality of Life, Brief Version (WHOQOL-BREF). The WHOQOL-BREF is a short form of the World Health

Organization Quality of Life Assessment (WHOQOL-100). Some studies have shown a high correlation between the WHOQOL-BREF and the WHOQOL-100 (Harper, 1998). This questionnaire has been widely adopted in several languages and cultures (Saxena, Carlson, Billington, & Orley, 2001). The internal consistency of the WHOQOL-100 questionnaire has been tested and accepted among domains explained by an alpha coefficient exceeding .08. The validity of the WHOQOL-100 has been measured by correlating two instruments with similar constructs, the short-form 36-item (SF-36) and the SQLP, or Subjective Quality of Life Profile (Bonomi & Patrick, 1997). The WHOQOL-BREF is comprised of 26 items. Twenty-four items include four quality of life domains: physical capacity, psychological, social relationship, and environment. Each domain has several facets within it. Table 3.1 explains the facets of each domain. Two additional items measure general health and overall quality of life. Each item is scored from one to five, with higher scores representing a better quality of life. Table 3.2 lists each detail question on the WHOQOL- BREF questionnaire.

Table 3.1.

WHOQOL-BREF Domains

Domain	Facets Incorporated within Domains
1. Physical capacity	Activities of daily living Dependence on medicinal substances and medical aids Energy and fatigue Mobility Pain and discomfort Sleep and rest Work capacity
2. Psychological	Body image and appearance Negative feelings Positive feelings Self-esteem Spirituality/ Religion/Personal beliefs Thinking, learning, memory, and concentration
3. Social relationship	Personal relationships Social support Sexual activity
4. Environment	Financial resources Freedom, physical safety, and security Health and social care: accessibility and quality Home environment Opportunities for acquiring new information and skills Participation in and opportunities for recreation/leisure activities Physical environment (pollution/noise/traffic/climate) Transport

Table 3.2.

Items of the WHOQOL-BREF United States Version

Domain	Item Content
Overall	1. How would you rate your quality of life? 2. How satisfied are you with your health?
D1. Physical capacity	3. To what extent do you feel physical pain prevents you from doing what you need to do? 4. Do you have enough energy for everyday life? 5. How satisfied are you with your sleep? 6. How well are you able to get around? 7. How satisfied are you with your ability to perform your daily living activities? 8. How much do you need and medical treatment to function in your daily life? 9. How satisfied are you with your capacity for work?
D2. Psychological	10. How much do you enjoy life? 11. How well are you able to concentrate? 12. How satisfied are you with yourself? 13. Are you able to accept your bodily appearance? 14. How often do you have negative feelings, such as blue mood, despair, anxiety, depression? 15. To what extent do you feel your life to be meaningful?
D3. Social relations	16. How satisfied are you with your personal relationships? 17. How satisfied are you with the support you get from your friends? 18. How satisfied are you with your sex life?
D4 Environment	19. How safe do you feel in your daily life? 20. How satisfied are you with the conditions of your living place? 21. Have you enough money to meet your needs?

22. How satisfied are you with your access to health service?
23. How available to you is the information that you need in your day-to-day life?
24. To what extent do you have the opportunity for leisure activities?
25. How healthy is your physical environment?
26. How satisfied are you with your transport?

Clear Creek Trail User Survey

This survey instrument was developed by the Eppley Institute, an outreach institute of Indiana University for parks and public lands, when conducting a trail user survey in the spring of 2007. The Clear Creek Trail User Survey includes 32 multiple choice and open-ended questions. There are four sections: (a) present use, (b) physical activities indicator, (c) trail satisfaction, and (d) demographics. In order to enhance the correlation between trail use and a user's quality of life, one extra question was added to the present user section: "Do you usually use other trails except Clear Creek Trail?"

Procedures for Collecting Data

Two interviewers were trained how to select people from Clear Creek Trail during their shifts and how to ask the questions on the questionnaires. The interviewer was asked to wear visible identification (picture or name) and to offer an explanation of the project. Participants who were willing to join the study wrote down survey responses to a total of 59 questions.

Participants could refuse to answer any questions which caused discomfort, such as question 21, which addresses the participant's satisfaction with her or her sex life.

The researcher collected the completed questionnaires. Each item was coded for data analysis. The coding process followed the WHOQOL-BREF, United States Version, instruction by Bonomi and Patrick (1997). After finishing each question in the questionnaire, the researcher computed domain scores according to the equation in the WHOQOL user manual (Table 3.3).

Table 3.3

Equation for Computing Domain Scores

	Equation for computing domain scores
Domain 1	$Q3 + Q4 + Q10 + Q15 + Q16 + Q17 + Q18$
Domain 2	$Q5 + Q6 + Q7 + Q11 + Q19 + Q26$
Domain 3	$Q20 + Q21 + Q22$
Domain 4	$Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25$

Analysis of data

This research addressed five hypotheses:

1. There is no relationship between demographic (e.g. age, race, gender, household, and education level) characteristics and overall quality of life among the users of the Clear Creek Trail in the city of Bloomington, Indiana.

2. There is no relationship between the time people spend on Clear Creek Trail per visit and the physical capacity domain of quality of life.

3. There is no relationship between the time people spend on Clear Creek Trail per visit and the psychological domain of quality of life.

4. There is no relationship between the time people spend on Clear Creek Trail per visit and the social relationships domain of quality of life.

5. There is no relationship between the time people spend on Clear Creek Trail per visit and the environment domain of quality of life.

Effective data in the completed questionnaire was entered and analyzed using Statistical Package for the Social Sciences (SPSS). To examine these hypotheses, descriptive statistics techniques were calculated using WHOQOL-BREF data. These statistics included means, standard deviations, minima, maxima, medians, and modes. In order to test the first hypothesis, Pearson product-moment correlation coefficient analysis was conducted to investigate the significant difference among the demographic characteristics and quality of life of the trail users.

In order to examine the second, third, fourth, and fifth hypotheses, Pearson product-moment correlation coefficient analysis was used. The amount of time that people spend on the trail per visit (Clear Creek Trail Survey) and the scores obtained in the physical capacity domain (WHOQOL-BREF) were the two variables for hypothesis 2. Following the same method, the amount of time that people spend on the trail per visit (Clear Creek Trail Survey) and the scores obtained in the psychological domain (WHOQOL-BREF) were the two variables for

hypothesis 3. The amount of time that people spend on the trail per visit (Clear Creek Trail Survey) and the scores obtained in the social relationship domain (WHOQOL-BREF) were the two variables for hypothesis 4. The amount of time that people spend on the trail per visit (Clear Creek Trail Survey) and the scores obtained in the environmental domain (WHOQOL-BREF) were the two variables for hypothesis 5.

Pilot Study

The pilot study tested the adequacy of the instrument for this research and provided an estimate for a valid sample size. The instruments were the Clear Creek Trail User Survey 2009 (Appendix A) and the Quality of Life questionnaire (Appendix B). This pilot study was conducted on Clear Creek Trail in September of 2009 in Bloomington, Indiana. A total of 30 participants were intercepted by interviewers at the entrances to Clear Creek Trail: Tapp Road, That Road, and Church Lane. All 30 participants finished the first part, the Clear Creek Trail User Survey, and 28 participants finished both questionnaires. Most respondents completed the surveys in approximately 10 minutes each. There were a few unclear questions and typos in the questionnaire. In order to examine the hypotheses thoroughly, the predicted sample size for this study by G-Power Version 3 was 115 participants (Faul, 2008).

Summary

The procedures for conducting the study were presented in this chapter. First, participants were chosen from among users of Clear Creek Trail in Bloomington, Indiana. Participants were asked questions according to the WHOQOL-BREF, United States Version, and the Clear Creek Trail User Survey. The data were analyzed using quantitative methods. This study was an attempt to utilize a hybrid instrument combining the WHOQOL- BREF and the Clear Creek Trail Survey to evaluate the perception of trail users' quality of life. The result of this study provides information for those who intend to build or use trails to affect quality of life in a community.

Chapter IV RESULTS

The purpose of this study was threefold: (a) to provide a useful resource to trail managers and individuals seeking health benefits of outdoor trail use, (b) to give agencies of public parks and recreation a more holistic picture for comprehending the empirical results of trail use, and (c) to examine the quality of life in a community in terms of building neighborhood trails.

The following descriptive and inferential statistics are presented in this chapter: (a) demographic profiles of respondents, (b) Clear Creek Trail Use Survey results, (c) descriptive statistics of the Quality of Life—Brief Version results, (d) hypotheses testing, and (e) a summary of results.

Demographic Profile of Respondents

The number of respondents who completed the first instrument in this study—the Clear Creek Trail User Survey—was 134; 47 were male (35.3%), 85 were female (63.9%), and one was unspecified. Approximately two-thirds (75.9%) of the sample was aged 26-65. A high percentage of the Clear Creek Trail users were Caucasian (93.2%), with a low percentage of other races, including Asian (2.3%), Hispanic (3.0%), and other (1.5%). The level of education was high, with 70.7% of respondents having at least a Bachelor's degree. Similar proportions existed among respondents with annual household incomes between \$20,000 and \$79,999, while 24.1% of respondents reported annual household incomes of \$80,000 and above (See Table 4.1).

Table 4.1.

Demographic Profiles of Respondents

Characteristics	N	Percent
GENDER		
Male	47	35.3
Female	85	63.9
Total	132	100%
AGE		
18-25 years	15	11.3
26-45 years	47	35.3
46-65 years	54	40.6
65 years or older	16	12.0
Total	132	100%
RACE		
Caucasian	124	93.2
Asian	3	2.3
Hispanic	4	3.0
Others	2	1.5
Total	133	100%
EDUCATION		
High school	14	10.5
Some college	23	17.3
4 year degree	48	36.1
Graduate degree or more	46	34.6
Total	131	100%
INCOME		
Under \$20,000	21	15.8
\$20,000-\$39,999	24	18.0
\$40,000-\$59,999	25	18.8
\$60,000-\$79,999	17	12.8
\$80,000 and over	32	24.1
Prefer not to answer	14	10.5
Total	133	100%

Except in the profile of respondents, crosstab testing among demographic characteristics was operated by applying Chi-Square for this study. Gender, age, household income, and education levels were tested in pairs. There is a significant relationship between age and household income ($\chi^2=37.47$, $p < .00$) in the Chi-Square test (See Table 4.2).

Table 4.2.

Cross-Tab Report of Demographics

	Age	Gender	Household Income	Education Level
Age	—	$\chi^2=1.83$ P= .61	$\chi^2=37.49$ P= .00	$\chi^2=15.54$ P= .21
Gender	$\chi^2=1.83$ P= .61	—	$\chi^2=7.38$ P= .12	$\chi^2=7.38$ P= .12
Household Income	$\chi^2=37.49$ P= .00	$\chi^2=7.38$ P= .12	—	$\chi^2=19.00$ P= .27
Education Level	$\chi^2=15.54$ P= .21	$\chi^2=7.38$ P= .12	$\chi^2=19.00$ P= .27	—

Clear Creek Trail Survey Results

In this section, the following results are presented: (a) present use, (b) physical activities indicator, and (c) trail satisfaction.

Present Use

As shown in Table 4.3, the peak times for respondents were between 5:01 p.m. and 6:00 p.m. (27.6%); the next highest using times were between 11:01 a.m. and 12:00 p.m. (17.2%) and

between 6:01 p.m. and 7:00 p.m. (17.9%). Most respondents noted that they visited Clear Creek Trail more than once in a week, and 49 respondents reported consistent use patterns. The highest use rate from respondents was Wednesday (42.9%), but frequency of use varied little between weekdays and weekends. The majority of respondents were walkers (61.2%), followed by runners (26.1%), bikers (10.4%), and rollerbladers (2.2%).

Table 4.3.

Present Use of Clear Creek Trail

Use Behavior	N	Percent
Using time		
10:01 a.m.-11:00 a.m.	10	7.5
11:01 a.m.-12:00 p.m.	23	17.2
12:01 p.m.-1:00 p.m.	12	9.0
2:01 p.m.-3:00 p.m.	2	1.5
3:01 p.m.-4:00 p.m.	7	5.2
4:01 p.m.-5:00 p.m.	16	11.9
5:01 p.m.-6:00 p.m.	37	27.6
6:01 p.m.-7:00 p.m.	24	17.9
7:01 p.m.-8:00 p.m.	3	2.2
Total	134	100.0
Day of week		
Monday	51	38.3
Tuesday	54	40.3
Wednesday	57	42.9
Thursday	49	36.8
Friday	47	35.3
Saturday	44	33.1
Sunday	42	31.6
No consistent patterns	49	36.8

Activities			
Walk		82	61.2
Run		35	26.1
Bike		14	10.4
Rollerblade		3	2.2
Total		134	100

In terms of transportation, 85.1% of respondents drove to the trail, while 14.9% walked, biked, or ran to the trail (Table 4.4). For 95 respondents (70.9%), travel time to the trail was less than ten minutes (Table 4.4). Moreover, 13 respondents (9.7%) were influenced by trail proximity when purchasing a home; on the other hand, 102 respondents (76.1%) reported that proximity to the trail did not influence their decision to purchase a home. Nineteen (14.2%) respondents reported that the trail was not near their homes. Most respondents found out about Clear Creek Trail by word of mouth (38.8%) or passing by (30.6%). According to respondents, more than half (50.7%) had companionship on the trail, and 35.8% of respondents used the trail alone. Figure 4.1 illustrates the Clear Creek Trail map, with the three parking lots at points #1, #6, and #9. As Table 4.4 indicates, 65.4% of respondents entered the trail at point #1 (Tapp Road), and 66.7% of respondents exited the trail at the same point.

Fig. 4.1. Map of Clear Creek Trail

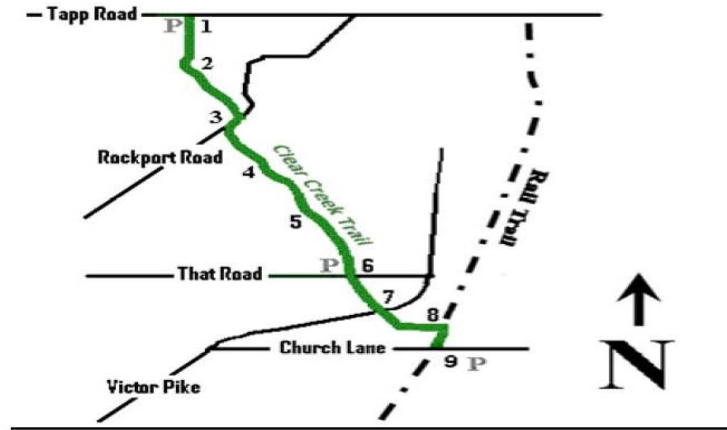


Table 4.4.

Transportation and Travel Time

Characteristic	N	Percent
Transportation		
Drive	116	86.6
Walk	11	8.2
Bike	5	3.7
Other	2	1.5
Total	134	100.0
Travel time to the trail		
0-5 minutes	58	43.3
6-10 minutes	37	27.6
11-15 minutes	23	17.2
16-20 minutes	7	5.2
21-25 minutes	3	2.2
26-30 minutes	2	1.5
Over 30 minutes	4	3.0
Total	134	100

Physical Activity Indicator

This section contains questions regarding the trail users' physical activities while on the Clear Creek Trail. Most of the respondents (88.1%) did not walk the trail multiple times. Almost half the respondents (47.8%) would have participated in the activities even if the trail were not there; the other respondents (52.2%) would not participate as often or would not participate in trail activities at all. The majority of respondents (87.3%) reported that their primary reason for using the trail was exercise. In terms of frequency of use, respondents varied from 1 to 30 times in the last month (Table 4.5). Among respondents, 65.6% spent 31-60 minutes on the trail per visit (Table 4.6). In order to gain a better understanding of the duration of trail users' visits in a month, Table 4.7 shows the calculation of the total usage over the course of a month. Almost half of the users (53.7%) spend around 500 minutes on Clear Creek Trail in a month.

Table 4.5.

Use Frequency

Times Using Clear Creek Trail in the Past Month	Frequency	Percent
1-5 times	49	36.6
6-10 times	29	21.6
11-15 times	25	18.7
16-20 times	18	13.4
21-25 times	7	5.2
26-30 times	6	4.5
Total	134	100

Table 4.6.

Time Duration on the Clear Creek Trail Per Visit

Time Duration	Frequency	Percent
within 30 minutes	21	15.7
31-60 minutes	88	65.6
61-90 minutes	18	13.5
over 90 minutes	7	5.2
Total	134	100

Table 4.7.

Monthly Use of the Clear Creek Trail

Monthly use	N	Percent
20-250 minutes	44	32.8
251-500 minutes	28	20.9
501-750 minutes	26	19.4
751-1000 minutes	15	11.2
1001-1250 minutes	3	2.3
1251-1500 minutes	10	7.4
Over 1500 minutes	8	6

Trail Satisfaction

One hundred respondents (74.6%) reported that they would use the trail more often if they could. Most of them (n=54) indicated that a lack of time prevented them from using the trail more often. Around 90 respondents (93.3%) did not feel consider the trail is congested. A scale question about overall satisfaction about the Clear Creek trail was also included. The scale ranged from 1 to 7, 1 being very unsatisfied and 7 being very satisfied. The majority (n= 126, 94%) felt satisfied with the Clear Creek Trail, with a rating of 6 or 7 on the satisfaction scale.

Only one respondent did not consider the Clear Creek Trail safe.

World Health Organization Quality of Life Brief Results

The second section was a questionnaire regarding individual quality of life. The respondents evaluated their life over the last four weeks. All questions were measured on 5-point Likert scales where higher scores represented better quality of life. For some of these questions, such as “How would you rate your quality of life?”, 1 indicated “very poor” and 5 measured “very good.” Furthermore, for questions such as, “How much do you enjoy your life?”, 1 indicated “not at all” and 5 measured “an extreme amount.” Other questions, however, were measured in reverse order. For example, for “How much do you need any medical treatment to function in your daily life?”, 1 indicated “an extreme amount” and 5 indicated “not at all.” Furthermore, for questions such as, “How well are you able to concentrate?”, 1 indicated “not at all ” and 5 indicated “extremely.” For some satisfaction questions, such as “How satisfied are you with your sleep?”, 1 indicated being very dissatisfied and 5 indicated being very satisfied.

The total valid data for the first section of the questionnaire—the Clear Creek Trail Survey—was 134; however, only 115 people completed the second section (the World Health Organization Quality of Life). Table 4.8 reports the mean and standard deviation of the 26 questions from the Quality of Life questionnaire. The result shows that standard deviation ranges between .62 to 1.12. In addition, Table 4.9 illustrates the mean scores of each domain which are

ranged from 3.97 to 4.25 among the total respondents in this study.

Table 4.8.

Mean and Standard Deviation of Quality of Life

Domain	Item Content	M	SD	
Overall	1. How would you rate your quality of life?	4.32	.63	
	2. How satisfied are you with your health?	3.97	.82	
D1. Physical capacity	3. To what extent do you feel physical pain prevents you from doing what you need to do?	4.38	.81	
	4. Do you have enough energy for everyday life?	4.08	.69	
	5. How satisfied are you with your sleep?	3.70	.95	
	6. How well are you able to get around?	4.62	.63	
	7. How satisfied are you with your ability to perform your daily living activities?	4.28	.66	
	8. How much do you need and medical treatment to function in your daily life?	4.50	.82	
	9. How satisfied are you with your capacity for work?	4.22	.75	
	D2. Psychological	10. How much do you enjoy life?	4.26	.65
		11. How well are you able to concentrate?	3.89	.62
12. How satisfied are you with yourself?		4.14	.59	
13. Are you able to accept your bodily appearance?		3.86	.69	
14. How often do you have negative feelings, such as blue mood, despair, anxiety, depression?		3.85	.61	
D3. Social relations	15. To what extent do you feel your life to be meaningful?	4.28	.70	
	16. How satisfied are you with your personal relationships?	4.11	.87	

	17. How satisfied are you with the support you get from your friends?	4.16	.74
	18. How satisfied are you with your sex life?	3.74	1.12
D4 Environment	19. How safe do you feel in your daily life?	4.16	.59
	20. How satisfied are you with the conditions of your living place?	4.20	.73
	21. Have you enough money to meet your needs?	3.84	.80
	22. How satisfied are you with your access to health service?	4.01	.70
	23. How available to you is the information that you need in your day-to-day life?	4.30	.68
	24. To what extent do you have the opportunity for leisure activities?	3.78	.78
	25. How healthy is your physical environment?	3.98	.60
	26. How satisfied are you with your transport?	4.33	.70

Note. Domain scores were computed by the following equations for raw scores domains: Physical capacity: $Q3+6-Q4+Q10+Q15+Q16+Q17+Q18$, Psychological: $Q5+Q6+Q7+Q11+Q19+Q26$, Social relations: $Q20+Q21+Q22$, and Environment: $Q8+Q9+Q12+Q13+Q14+Q23+Q24+Q25$.

Table 4.9.

Domain Scores

Domains	N	Minimum	Maximum	Mean	SD
Physical Capacity	115	2.86	5	4.25	.47
Psychological	115	2.67	5	4.05	.47
Social Relations	114	1.00	5	3.97	.83
Environment	115	2.88	5	4.08	.49

Hypotheses Testing

The results of testing the following hypotheses are showed in this section.

H1: There is no demographic (e.g. age, race, gender, household, and education level) difference among the users of Clear Creek Trail in Bloomington, Indiana in their quality of life.

H2: There is no relationship between the time people spend on Clear Creek Trail per visit and the physical capacity domain of quality of life.

H3: There is no relationship between the time people spend on Clear Creek Trail per visit and the psychological domain of quality of life.

H4: There is no relationship between the time people spend on Clear Creek Trail per visit and the social relationships domain of quality of life.

H5: There is no relationship between the time people spend on Clear Creek Trail per visit and the environment domain of quality of life.

H1 sought significant differences among demographic characteristics of respondents regarding quality of life. The differences were tested according to users' gender, age, income, and education level; however, racial characteristics were eliminated due to the high percentage (93.2%) of the Caucasian respondents. Therefore, H1 investigated the interaction between respondents' age, income, education level, overall quality of life, general health, and the four domains (physical capacity, psychology, social relation and environment). The indicator of

respondents' overall quality of life was according to WHOQOL-BREF question number one (Q1): "How would you rate your quality of life?" In addition, general health was based on question number two (Q2): "How satisfied are you with your health?"

Table 4.10 summarizes interactions by detecting differences among variables. According to a two-tailed independent *t-test*, there was a significant difference between male (M=4.13, SD=.74) and female (M=4.41, SD=.55) overall quality of life; $t(112)=-2.25, p=.026, p < .05$. In terms of general health, there were no significant differences between male (M=3.97, SD=.75) and female (M=3.96, SD=.86) overall quality of life; $t(112)=.08, p=.93$. In addition, there were no significant differences between males and females in terms of physical capacity $t(112)=.32$, psychology $t(112)=.53$, social relation $t(112)=.79$, or environment $t(112)=.38$ at $p < .05$ level.

The one-way ANOVA was used to test the differences among the four age groups in this study: 18-25 years old, 26-45 years old, 46-65 years old, and over 65 years old. No difference was found among these age groups in overall quality of life, $F(3,110)=1.26, p=.29$, or general health, $F(3,110)=.57, p=.64$, at the $p < .05$ level. Moreover, there were no differences found in the four domains of quality of life: physical capacity $F(3,110)=1.48, p=.23$; psychology, $F(3,110)=1.14, p=.34$; social relation, $F(3,108)=.73, p=.54$; and environment $F(3,109)=1.15, p=.33$ at $p < .05$ level.

A one-way ANOVA was utilized to analyze the trail users' quality of life by household

income. There were no differences found in their overall quality of life, $F(4,100)=2.24$, $p=.70$, or general health, $F(4,100)=.53$, $p=.72$ at the $p < .05$ level. By testing the four domains of the quality of life, a significant difference was found in physical capacity domain, $F(4,100)=1.29$, $p=.01$. However, there were no differences found in psychology, $F(4,100)=.35$, $p=.84$; social relation, $F(4,99)=.30$, $p=.88$; or environment $F(4,99)=1.72$, $p=.15$ at the $p < .05$ level.

A one-way ANOVA was used for investigating the difference of quality of life among respondents' educational levels. The results showed no significant differences among education level variables in their overall quality of life at the $p < .05$ level, $F(4,108)=1.50$, $p=.21$; or general health $F(4,108)=.60$, $p=.67$. In terms of the four domains of quality of life, significant differences were found in psychological domain, $F(4,108)=3.29$, $p=.01$, and environmental domain, $F(4,107)=2.47$, $p=.05$. However, no significant differences were found in the physical capacity domain, $F(4,108)=1.29$, $p=.28$, or social relation domain, $F(4,106)=1.83$, $p=.13$ at the $p < .05$ level.

H2, H3, H4, and H5 were tested by Pearson's r test to examine the correlations between the time respondents spent on the Clear Creek Trail per visit and their score in the physical capacity, psychological, and environmental domains. There was a significant correlation between the time respondents spent on the Clear Creek Trail per visit and their social relation.

Table 4.10.

Summary results for independent variables by demographics

Dependent Variables	Gender	Age	Income	Education Level	n
Overall QoL	t=0.63*	F=1.26	F=2.24	F=1.50	115
General Health	t=0.35	F=0.57	F=0.53	F=0.60	115
Physical Capacity	t=0.24	F=1.48	F=3.45*	F=1.29	115
Psychology	t=0.00	F=1.14	F=0.35	F=3.28*	115
Social Relation	t=3.51	F=0.73	F=0.30	F=1.83	113
Environment	t=0.07	F=1.15	F=1.72	F=2.47*	114

**Significant difference is at the .05 level.*

There was no correlation between the time respondents spent on the trail and the score they obtained in the physical capacity domain ($r=0.05$, $n=115$, $p=0.57$), the psychological domain ($r=-0.10$, $n=115$, $p=0.28$), or the environment domain ($r=0.05$, $n=115$, $p=0.60$). For social relation, a negative relationship was tested ($r=-0.18$, $n=114$, $p=.05$, as shown in Table 4.11).

Table 4.11.

Correlation between Time Respondents Spend on Clear Creek Trail Per Visit and Four Domains of Quality of Life

Domains	r	p
Physical Capacity	0.05	0.57
Psychological	-0.10	0.28
Social Relationships	-0.18	0.05*
Environment	0.05	0.60

Correlation is significant at the .05 level (two-tailed test).

Reliability Testing

The data acquired in this study indicated the reliability of the WHOQOL-BREF for a specific population of trail users in Bloomington. Cronbach's Alpha values for all 26 questions was 0.89, and for the four domain scores ranged from 0.73 to 0.82, demonstrating acceptable internal consistency.

Summary of Results

The total number of respondents was 134, with 115 respondents completing both sections of the questionnaire in the study. Out of 134 respondents, 35.3% were male and 63.9% female. The majority of respondents were Caucasians between the ages of 46 and 65 with a four-year degree and a household income above \$80,000. Results from the Clear Creek Trail Users Survey showed that most users preferred to use the trail on Wednesday in the evening (5pm-6pm), and most of them engaged in walking on the trail. Most respondents reported using Clear Creek Trail 1 to 5 times in the past month for 31-60 minutes per visit.

According to the results of the Quality of Life questionnaire, the total number of respondents was 115, with a mean score for overall quality of life of 4.32 and a mean score 3.97 for general health. Furthermore, the mean score in the physical capacity domain was 4.25, the psychological domain was 4.05, the social relationships domain was 3.97, and the environment domain was 4.08 (See Table 4.7).

There was a correlation between gender and trail users' overall quality of life. There was also a correlation between household income and trail users' quality of life. However, no correlation was found between trail users' age and overall quality of life. Nor was there a correlation between education level and overall quality of life. There were no significant differences on the trail users' overall quality of life in terms of age, gender, household income, or education level.

Pearson's r test was used to examine the correlation between time spent on the trail and each of the four domains of quality of life. There was a negative correlation between time duration per visit on the trail and users' social relation. No correlations appeared between the time users spend on the trail per visit and the physical capacity, psychological, and environment domains.

In sum, the results of testing all the hypotheses implied that gender and household income have a positive correlation with overall quality of life. However, there were no significant differences between males and females or across household income groups. Furthermore, there were no correlations between the time users spent on the Clear Creek Trail per visit and the physical capacity, psychological, or environment domains in this study.

Chapter V

SUMMARY, FINDINGS, CONCLUSIONS, IMPLEMENTATIONS

AND RECOMMENDATIONS

In this chapter, the research will be summarized and discussed, including findings, conclusions, implications, and recommendations for future studies.

Summary

Previous, relevant trail studies have focused on the analysis of user behavior and trail design. The purposes of this research were a) to examine the effect of trail use on people's quality of life using a specific trail in Bloomington, Indiana, b) to investigate the differences of perceived quality of life between males and females from a wide range of age groups, education levels, and household income brackets, and c) to explore the relationship between the length of time a user spent on the trail and his or her physical capacity, psychological state, social relations, and environment.

Total respondents numbered 134 people who were currently using Clear Creek Trail in Bloomington during the period of data collection, from September to October of 2009. The questionnaire in this study included two sections: a) the Clear Creek Trail User Survey and b) the World Health Organization Quality of Life Brief Version (WHOQOL-BREF). Among the 134 respondents in this study, 115 respondents completed both sections of the questionnaire.

According to the primary research questions, the data were analyzed by t-test, ANOVA, and Pearson's *r* Correlation.

Findings

The analysis of the data revealed the following findings:

1. There were significant correlations between the demographic characteristics and the quality of life of the trail users. Positive correlations were found between trail users' quality of life and gender as well as household income. Female trail users who had higher household income tended to report a higher perceived quality of life. No significant correlations were found between trail users' age and education level and their overall quality of life.
2. There were no significant differences between the length of time users spent on the trail and their overall quality of life. Furthermore, no significant differences were found between length of use and the physical capacity, psychology, or environment domains. However, there is a negative relationship between length of time users spent on the trail and their social relation.
3. The users of the Clear Creek Trail were primarily Caucasian females between the ages of 26 and 45 with an above-average household income. In addition, people tended to use the trails for walking in the early evening.
4. Suggestions from Clear Creek Trail users indicated that more lighting, drinking fountains, and lavatories should be established along the trail.

Discussion of Findings

Considering that several studies have indicated the positive impacts of trails for multiple purposes, such as intervention in a community (Brownson et al., 2000; Librett, Yore, & Schmid, 2006), alternative transportation options for residents (Lindsey, 1999; Lindsey, Maraj, & Kuan, 2001; Lindsey et al., 2008), and comfortable amenities (Kaczynski, Potwarka, & Saelens, 2008), this research associates trail use with quality of life. The researcher hypothesized the existence of a significant difference based on time duration on the trail. In addition, the researcher hypothesized that users' quality of life would differentiate among demographic characteristic of trail users. Moreover, the researcher attempted to elaborate on the relationship between each of the four domains of quality of life and time duration on the trail.

The results indicated a negative relationship between the length of time people spend on the trail and their social relations. This correlation implied that the more time people spend on the trail, the less satisfied they will feel with their quality of life. These results could be explained by the result that more than half of respondents (50.7%) bring company on the trail, while 35.8% respondents use the trail by themselves.

The results showed that no significant differences between length of use and the physical capacity, psychology, or environment domains. Four possible causes may explain these findings.

First, in the conceptual model demonstrated in chapter 2(Figure 3), time duration was a

factor in the use patterns category and trail use contributed to the user's quality of life. Other factors can affect trail users' quality of life: their motivation for using trails, their diet, their culture. The correlation between time duration and quality of life may need to be developed in a multi-dimension model. Furthermore, there is plenty of information from the Clear Creek Trail User Survey questionnaire. The researcher of the present study focused on the time duration on the trail rather than other variables contributing to the quality of life.

Second, from an operational perspective, the major instrumentation of this study was the WHOQOL-BREF, which has been widely used in the medical field to evaluate patients' quality of life. Most of the subjects of the research were either currently ill or had been diagnosed with or recovered from diseases. The results of the study may have changed if it had employed a more sensitive instrument or interviewed relatively healthy people. However, this is still an appropriate instrument for measuring quality of life due to its reliability and strong internal correlations among the domains.

Third, statistically speaking, the scale for examining the differences between demographic characteristics was quite small. Therefore, the Cohen's *d* values, which ranged from .20 to .80, imply that a bigger sample size is needed to show the differences in the hypothesized statement.

Lastly, the insignificant results could be due to the nature of the participants. Each

participant of this study was a trail user; in particular, over 50 respondents (40%) used the trail at least 10 times in the past month. These regular users might have a healthier lifestyle or a higher quality of life than those who do not use trails routinely in daily life. A causal relationship cannot be proved in this study, which excludes the possibility of other external factors; this limitation might affect the outcome of the research. However, according to the literature included with the WHOQOL-BREF as an instrument, the respondents' average score of overall quality of life (M=4.32) was higher than Thai college students (Li, Kay, & Nokkaew, 2008) and elderly Swiss people (Stienbuchel, Lischetzke, Gurny, & Eid, 2006). In addition, the trail users seem to have higher scores in all four domains than elderly people in Taiwan (Laing, Chang, Yeh, Shy, Chen, & Lin, 2009) and people with sickle cell disease (Asnani, Lipps, & Reid, 2009). Nevertheless, further statistical analysis will be needed to prove this statement.

In the review of the literature, demographic characteristics of users varied according to area. Interestingly, descriptive statistical results of the users in Bloomington, Indiana, partially confirm the conclusion of Furtruseth and Altman (1991) and Gobster's (1995) studies, which indicated that trail users are most likely white, young to middle-aged, wealthy, and well-educated. In addition, the results of this study show that there is no correlation between general quality of life and either the age or education level of trail users. The reason that the hypothesized relationship was not supported could be that only one question inquires about the respondent's

score of general quality of life. Although it demonstrates a significant relationship between the variables of gender and household income, the Pearson's coefficient ($r=.23$ and $r=.19$) showed that the relationship between time duration and these two demographic characteristics is weak. Therefore, the proportion of the specific question might not correlate to all demographic variables.

This study was an attempt to emphasize the independent variable of use duration on a trail. The result has proven insignificant in terms of the relationship between user's quality of life and use duration. Possible reasons have been discussed above from different perspectives. In sum, several possible reasons and perspectives could lead to results inconsistent with previous research. First, the conceptual model should be modified according to a more sophisticated consideration of all the factors of quality of life among trail users. Second, the measurement of an individual's quality of life should be improved by incorporating in-depth methods such as interviews. Third, more respondents are needed in order to show significant differences among users. These factors should be considered and eliminated in future studies.

Overall, the study provided positive evidence to connect trail use and quality of life (Shafer, Lee, & Turner, 2000). More specifically, the results indicated that trail use contributes to a community's quality of life through increased health and fitness, the provision of natural areas, accessible recreation, land use patterns, pride in the community, and community identity. Even

though the results did not support the hypothesized statement, this study explored a different perspective on current trail users. The results indicate that spending more time on the trails does not necessarily improve quality of life. Given this outcome, using trails for recreational or fitness purposes becomes an alternative for people unable to spend too much time in an outdoor environment.

Limitations

Some modification must be done in terms of data collection procedures. According to a previous report by the Eppley Institute (2007), 6:30 a.m. to 9:30 a.m. is one of the peak times for using Clear Creek Trail. However, considering safety issues and an insufficient lighting system for early morning, the researcher was unable to begin interviewing trail users until 8:00 a.m. Interviewing representative respondents before 8:00 a.m. may have resulted in a different outcome.

From an instrumentation perspective, two questionnaires were included in the study: the Clear Creek Trail User Survey and the WHOQOL-BREF. Respondents had to complete a total of seven pages in the questionnaires, which contained both multiple choice and open-ended questions. However, not every respondent (115 out of 134) completed both sections of the questionnaires. This finding indicates that the longer it takes respondents to fill out a questionnaire, the lower the return rate will be.

In terms of the method, the researcher used a survey for a quantitative research method. Although it is easy to code the data, the quantitative method has disadvantages, such as low return rate and responses that may not correspond to actual behavior (Proctor, 2009). In this study, participants were asked to respond to fixed-item surveys. The findings of the study could have been more diverse if an elicitation study, such as in-depth interviews, had been used.

Implications

The findings of this study may be implemented in either a professional practice situation or a research setting.

1. An individual's quality of life does not improve significantly according to time duration on the trail. In other words, the effect does not vary with the total time on the trail. This finding implies that using trails is another way for people to connect with the natural environment. Trails are attractive due to the characteristics of convenience and time efficiency.

2. An overall service satisfaction survey for Clear Creek Trail has been done in this study to provide the local government agency with information on who uses the trail and how they use it. This is a preliminary survey for Clear Creek Trail users; therefore, this survey can be extended to other similar trail systems.

3. Updating data from October 2007 for the Department of Parks & Recreation, City of Bloomington, was a primary purpose of this study. Understanding users is important because

users provide valuable insight by sharing their experiences.

4. The results show that female trail users seem to perceive a higher quality of life than male users. A marketing strategy or promotion could be crafted according to this target group for the trails in the community. In addition, this information could be beneficial for the planning of future trails in urban projects.

5. The respondents' suggestions to add more lavatories, drinking facilities, and a lighting system provides local government agencies with specific, practical recommendations.

Recommendations for Future Study

Quality of life is a multi-faceted and comprehensive concept. Additionally, quantifying individuals' quality of life was the process to test the hypotheses in this study. Therefore, several external factors may have influenced the results of the study, such as motivation for using the trail, personal experiences, or individuals' perceptions of quality of life. In future investigations, these factors should be taken into consideration. Due to the subjectivity of perceived quality of life, a comparative study would be an ideal research design. For example, the future researcher could compare the quality of life of trail users with non-users, conducting research on multiple trails or in different areas. In addition, the present study would have been more objective if a larger and more diverse sample had been considered. The subjects of this study represent a relatively homogenous demographic group, and the same study could be replicated with a large

cross-section of the general population.

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Appendix A

CLEAR CREEK TRAIL USER SURVEY 2009

DATE _____ SURVEY # _____

Clear Creek Trail User and Quality of Life Survey 2009

The Recreation, Park, & Tourism Studies Department at Indiana University, the City of Bloomington Parks & Recreation Department, and the Eppley Institute are inviting you to participate in a research study regarding your quality of life through using the local trails system.

The purpose of this study is to better understand trail users and their quality of life.

If you agree to participate in this study it will take approximately 10 minutes to complete this questionnaire. Your participation in this study is completely voluntary; you can stop at any time for any reason. All collected data will be kept confidential, secure and will be used only the person conducting this survey. No identification will be requested in this study.

If you feel you have not been treated according to the descriptions in this statement, you may contact the Office for the Human Subjects Committee, Indiana University, Carmichael Center 203, 530 E Kirkwood Ave., Bloomington. IN 47408, 812-855-3067 at iub_hsc@indiana.edu.

Reference # 0905000351. Thank you very much.

Clear Creek Trail Survey- Summer 2009

Present Use

1. Day of Month

1	12	23
2	13	24
3	14	25
4	15	26
5	16	27
6	17	28
7	18	29
8	19	30
9	20	31
10	21	
11	22	

2. Month

January	July
February	August
March	September
April	October
May	November
June	December

3. Time of Day

6:00 am-7:00 am	2:01pm- 3:00pm
7:01 am-8:00 am	3:01pm- 4:00pm
8:01 am- 9:00 am	4:01pm-5:00pm
9:01 am- 10:00am	5:01pm-6:00pm
10:01 am-11:00am	6:01pm-7:00pm
11:01am- 12:00pm	7:01pm- 8:00pm
12:01 pm-1:00 pm	8:01pm- 9:00pm
1:01pm- 2:00pm	9:01pm- 10:00pm

4. Location

Tapp Road _____ That Road _____
 Church Lane _____

5. What activity are you participating in on the trail today? (if not evident from observation)

Walk _____ Run _____
 Bike _____ Rollerblade _____
 Other (please specify) _____

6. How do you normally get to the trail?

Drive _____ Walk _____ Bike _____
 Other (please specify) _____

7. Approximately how many minutes does it take

to get to the trail from home? (using the method indicated in the previous question)

- 0-5 _____ 21-25 _____
- 6-10 _____ 26-30 _____
- 11-15 _____ Over 30 _____
- 16-20 _____

8. Did the trail location/proximity influence your decision when purchasing your home?

Yes _____ No _____
It is not near my home _____

9. How did you find out about trail?

- Word of mouth _____ Radio _____
- Newspaper _____ Flyers _____
- Parks & Recreation Program _____ Passing by _____
- Guide _____ Others _____

10. What time of a day do you prefer to use the trail?

Early morning (5 a.m-9 a.m) _____	Late afternoon (3:01 p.m- 6 p.m) _____
Mid-morning (9:01 a.m- 12 p.m) _____	Evening (6:01pm- 9 p.m.) _____
Early afternoon (12:01 p.m- 3 p.m) _____	Others (Please specify) _____

11. What day(s) of the week do you typically use the trail? (check all that apply)

- Monday _____ Friday _____
- Tuesday _____ Saturday _____
- Wednesday _____ Sunday _____
- Thursday _____ No consistent pattern _____

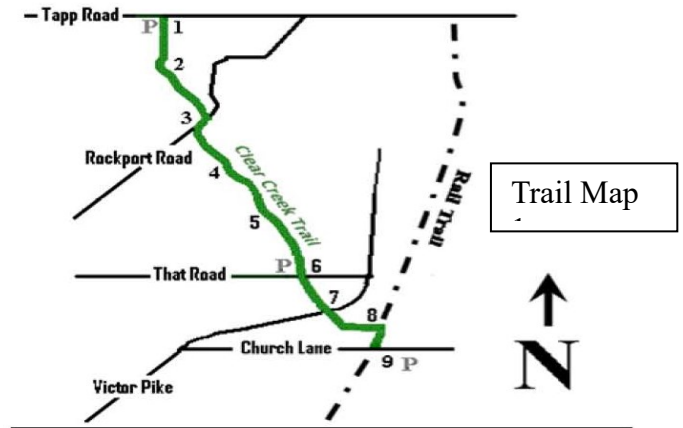
12. Do you usually use other trails other than Clear Creek Trail?

Yes _____ No _____

13. How many people typically use the trail with you?

- 0 _____ 1 _____ 2 _____
- 3 _____ 4 _____ 5 _____

Other, please specify _____



For Questions 14-16 Refer to Trail Map 1

14. Where do you usually enter the trail?

Map Number	1	2	3	4	5	6	7	8	9

15. Where do you usually turn around on the trail?

Map Number	1	2	3	4	5	6	7	8	9

16. Where do you usually exit the trail?

Map Number	1	2	3	4	5	6	7	8	9

17. Do you usually cover the trail multiple times?

Yes _____ No _____
If yes, how many times _____

18. How often would you participate in this activity if the trail were not there?

I would participate the same amount _____
I would participate not as often _____
I would not participate at all _____
If would participate, where? _____

19. Did you participate in this activity at all before the trail was here?

Yes _____ No _____

20. What is your primary reason for using the trail?

- Recreation _____
- Exercise _____
- Transportation _____
- Enjoy the outdoors _____
- Spend time with friend/family _____
- Other (please specify) _____

21. Approximately how many times have you used the trail in the past month?

Record time in times _____

22. How much time do you usually spend on the trail per visit?

Record time in hours _____

Record time in minutes _____

23a. If you could, would you use the trail more often?

Yes _____ No _____

23b. If yes to 23a, what MOST prevent you from using the trail more often?

- Not enough time _____
- Concern for personal safety _____
- Difficult to get to _____
- Poor health _____
- Weather _____
- Other (please specify) _____

Trail Satisfaction

24a. Do you feel like the trail is congested?

Yes _____ No _____

24b. If yes to 24a, what makes the trail feel too crowded or congested to you?

Number of encounter with groups _____

Number of encounters with people _____

Encounters with types of users _____

Too many people together in a group _____

Fast bicyclists _____

Dog owners who let their dogs roam on a long leash _____

Other (please specify) _____

25. On a scale from 1-7, 1 being very unsatisfied and 7 being very satisfied, how would you rate your level of satisfaction with the trail?

Numerical Rating	1	2	3	4	5	6	7

26. What do you think are the biggest problems with this trail?(check all that apply)

Dogs _____ Bikes _____

Walkers _____ Rollerbladers _____

Runners _____ Too crowded _____

Large groups of people _____

Discourteous users _____

Trails not long enough _____

Trail not wide enough _____

Road crossings _____

Safety in parking lots _____

Vandalism _____

Personal safety _____

Need more trails in Bloomington _____

Nothing _____

Others, please explain _____

27. Do you consider the trail safe?

Yes _____ No _____

Why or why not?

Demographic

28. Age

18-25 _____ 26-45 _____ 46-65 _____ over 65 _____

29. Race

Caucasian _____ Asian _____ African American _____
Native American _____ Hispanic _____ Others _____

30.

Gender Male _____ Female _____

31. Household income for 2008

<20,000 _____ 20,000-39,999 _____ 40,000-59,999 _____
60,000-79,999 _____ 80,000+ _____ Prefer not to answer _____

32. Education Level

High school _____ 4-years degree _____
Some college _____ 2-year degree _____
Graduate degree or more _____ Prefer not to answer _____

Appendix B

THE WORLD HEALTH ORGANIZATION

QUALITY OF LIFE (WHOQOL- BREF)

The World Health Organization Quality of Life (WHOQOL)-BREF

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WHOQOL-BREF

The following questions ask how you feel about your quality of life, health, or other areas of your life. I will read out each question to you, along with the response options. Please choose the answer that appears most appropriate. If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life in the last four weeks.

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about how much you have experienced certain things in the last four weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last four weeks.

20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	5	4	3	2	1

Do you have any comments about the assessment?

[The following table should be completed after the interview is finished]

	Equations for computing domain scores	Raw score	Transformed scores*	
			4-20	0-100
27.	Domain 1	$Q3 + Q4 + Q10 + Q15 + Q16 + Q17 + Q18$	a. =	b: c:
28.	Domain 2	$Q5 + Q6 + Q7 + Q11 + Q19 + Q26$	a. =	b: c:
29.	Domain 3	$Q20 + Q21 + Q22$	a. =	b: c:
30.	Domain 4	$Q8 + Q9 + Q12 + Q13 + Q14 + Q23 + Q24 + Q25$	a. =	b: c:

Appendix C

IRB APPROVAL LETTER



INDIANA UNIVERSITY
OFFICE OF RESEARCH ADMINISTRATION

To: Ya-Ling Chen
Recreation, Parks and Tourism Studies

From: IUB Human Subjects Office
Office of Research Administration – Indiana University

Date: June 8, 2009

RE: EXEMPTION GRANTED – Category 2
Protocol Title: Perceived Quality of Life of Clear Creek Trail Users in Bloomington, Indiana
Protocol #:0905000351
Sponsor:Eppley Institute for Parks and Public Lands, Indiana University

Your study named above was accepted on June 8, 2009 as meeting the criteria of exempt research as described in the Federal regulations at 45 CFR 46.101(b), paragraph 2. This approval does not replace any departmental or other approvals that may be required.

As the principal investigator (or faculty sponsor in the case of a student protocol) of this study, you assume the following responsibilities:

- **Changes to Study:** Any proposed changes to the research study must be reported to the IRB prior to implementation. This may be done via an e-mail or memo sent to the IRB office. Only after approval has been granted by the IRB can these changes be implemented.

Completion: Although a continuing review is not required for an exempt study, you are required to notify the IRB when this project is completed. In some cases, you will receive a request for current project status from our office. If we are unsuccessful in our attempts to confirm the status of the project, we will consider the project closed. It is your responsibility to inform us of any changes to your contact information to ensure our records are kept current.

Per federal regulations, there is no requirement for the use of an informed consent document or study information sheet for exempt research, although one may be used if it is felt to be appropriate for the research being conducted. As such, the IUB IRB will no longer stamp study information sheets / informed consent documents for exempt research. Please note, however, that if a study information sheet and/or informed consent document is to be used, you may use unstamped accepted versions. Please note that your study has been accepted with the use of a study information sheet / informed consent document.

You should retain a copy of this letter and any associated approved study documents in your records. Please refer to the project title and number in future correspondence with our office. Please contact our office at (812) 855-3067 or by e-mail at iub_hsc@indiana.edu if you have questions or need further assistance.

Thank you.

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