WALKABILITY, SOCIAL INTERACTION, AND NEIGHBORHOOD DESIGN

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WALKABILITY, SOCIAL INTERACTION, AND NEIGHBORHOOD DESIGN

By

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WALKABILITY, SOCIAL INTERACTION, AND NEIGHBORHOOD DESIGN

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Typically suburban neighborhoods within the United States are often not pedestrian friendly especially when it comes to destination walking. Since the 1980s New Urbanists have been working on developing neighborhoods that not only allow people to walk for leisure but also allow the residents to walk to nearby shopping and public spaces. These increases in opportunities for walking can enhance people’s lives through improved health, reduction in financial outputs for fuels, enhancement of the physical environment through reductions in carbon monoxide, and the potential for increased social capital through accidental and intentional social opportunities. This paper discusses neighborhood design as it relates to walkability and social interaction.

The topics covered are the study purpose and research methods, literature review of New Urbanism and the concept of walkability, physical determinism theory and correlation as they relate to walkability studies, and the results of the research study. The section on New Urbanism and walkability gives a brief description of the history of sustainable neighborhood development that incorporate such ideas as presented through Clarence Perry’s
Neighborhood Unit design through the current movement of New Urbanism.

The physical determinism section covers theories related to neighborhood design, specifically the continuum of theories that deal with the environment having no effect on human behavior to the possibilistic and probabilistic approaches to physical determinism. The final sections focus on the results of the residential survey and the physical audit of the two neighborhoods included in the case study.
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Chapter 1 - Introduction

Walking and walkability are terms that are increasing in prevalence in both the planning and health fields. However, these terms do not have the same meaning; walking is different from walkability in that walking refers to a form of physical activity while walkability is used to describe the physical environment in which walking takes place. The portion of the built environment often referred to when studying walkability is the space that is created by the streets, streetscapes, and buildings present in a neighborhood. A walkability audit is a tool for the assessment of the built environment to determine how it accommodates walking either by all of its residents or a specific target group such as the elderly.

There are a number of reasons for studying walkability, but the two most prominent issues center around maintaining or increasing human health (leisure walking) and sustainability (utilitarian walking). While the distinction between leisure and utilitarian walking may be easy to define, it has been noted that defining walkability is not as simple. Forsyth & Southworth (2008, 28) state that “Researchers are now grappling with the concept of ‘walkability’ – what it is, how to measure it and what might it mean for the design of cities”. One reason for the difficulty in defining walkability is that the concept of walkable environments within the urban design profession has not been the prevalent
force behind design decisions rather cities and their neighborhoods have been tailored to meet the demands of the automobile and it has been this way since the automobile began taking center stage during the first half of the 1900s. There have been nearly 75 years of planning for motorized transportation (Brown, Morris, & Taylor, 2009) with little to no thought about the pedestrian environment (Southworth, 2005).

This paper will have two main components. The first part will establish an understanding of what walkability is, how it is measured, and how social interaction is influenced by neighborhood design and walkability. The second part is a case study which seeks to compare the amount of walking and social interaction between two types of residential neighborhoods; a Traditional Neighborhood Development (which is based on New Urbanism principles) and a conventional suburban neighborhood. The addition of social interaction in a thesis on urban design and walkability is intentional as a couple of referenced articles (i.e., “Designing the Walkable City” by Michael Southworth (2005); “Pedestrian Environments and Sense of Community” by Hollie Lund (2009)) indicate that social capital (which social interaction is a component of) may be strongly affected by walkability.
Chapter 2 - Purpose of Study and Research Methods

Purpose of Study

New Urbanism focuses on three levels of development; regional, neighborhood, and street. At the street level New Urbanism may go by the name Traditional Neighborhood Development, Neo-traditional Development, or Transit-oriented Development; it is the neighborhood level that is the focus of this research. This thesis compares a New Urbanist community (which will be referred to as a Traditional Neighborhood Development) and a conventional suburban neighborhood to determine if the amount of walking and social interaction by the residents increases when the design of the neighborhood is based on New Urbanism principles.

Traditional Neighborhood Developments are based on New Urbanism principles which encourage the use of undulating and/or straight streets that maximize pedestrian connectivity, are a mix of compatible uses, and work to incorporate elements such as street furniture and architectural details (front porches on houses) that encourage human interaction. Conventional suburban neighborhoods, which have been the predominant type of residential development since the end of World War II, are often referred to as cookie-cutter developments due to the repetitive exterior designs of the homes which typically feature a prominent drive-way and garage. These neighborhoods are typically
for single family homes and may have curvilinear streets and cul-de-sacs which are often not pedestrian friendly. Figure 2.1 depicts how the street layout may differ between a New Urbanist and a suburban neighborhood.

Figure 2.1: New Urbanist vs. Suburban street system

A referenced published article by Michael Southworth (1997) focused on examining the similarities and differences between a New Urbanist
neighborhood (referred to in the article as a Neotraditional community) and a historical neighborhood. The apparent reasoning behind such a comparison is that New Urbanist neighborhoods are based on the historical neighborhood concept that it would be appropriate to compare “like” designs to determine degree of emulation. This study will vary from that type of comparison and will examine the differences and similarities between a New Urbanist (which will be referred to as a Traditional Neighborhood Development) neighborhood and a conventional suburban neighborhood of approximately the same age. This comparison was chosen for two reasons 1) while a Traditional Neighborhood Development (TND) and a historical neighborhood may be similar in design they are not similar in age which can have an important impact on the historical neighborhood in terms of evolution (physical and social), and 2) this is not a study to see how well a TND emulates a historical neighborhood but rather this is a study to see how two types of neighborhoods vary in terms of social interaction and walkability.

While this thesis seeks to answer questions about comparability between specific variables (design, social interaction, and walking) it does not intend to establish casualty. The following are the questions being addressed in this thesis:
• Does the amount of social interaction differ between a Traditional Neighborhood Development (a residential development based on New Urbanism design principles) and a conventional suburban neighborhood?

• Do residents walk more often when the neighborhood design is based on New Urbanism principles?

• What is the relationship between social interaction, walkability and urban design?

Case Study Background

Two neighborhoods were chosen for this study; Village Gardens and Wilderness Hills which are located along the southeastern and southwestern edges of Lincoln Nebraska. Village Gardens is considered a Traditional Neighborhood Development which began construction in 2006. This development is located on the site of a former nursery and is bordered by three main arterial streets, 56th street to the west, Pine Lake to north, and 70th street to the east. In addition to housing, Village Gardens has several specialty shops and a hotel that have been constructed and are now open for business; these are located in the northwestern corner of the development. There is a second
commercial center planned which will be located in the southeastern corner of this development (See Appendices A and B, pages 55 – 56).

Presently, the homes in Village Gardens consist of single-family homes and townhomes. The promotional website does indicate that apartments will be built however these will be restricted to the area designated as the Village Center. The mix of housing is intended as a way of integrating a mix of incomes and lifestyles as well as being able to accommodate the changing needs of different life stages (http://www.vglincoln.com/the_plan.htm). Interestingly, this particular development actually has a mission statement which is the following:

In developing Village Gardens, our mission is to create a community that reflects the traditional values and characteristics of classic Lincoln neighborhoods. In addition, Village Gardens will be a place:

- Where individuals and families of diverse ages and income levels may live safely and comfortably.
- Where community and personal relationships are valued and promoted.
- Where many daily living needs and pleasures are just a short walk away.
• Which is welcoming, with a unique, distinct, and pleasing identity.

• Which respects the natural environment and values beautification.

• Where the needs of people precede the needs of vehicle traffic.

• Which welcomes people to spend their lives; from singles living, to family life, to retirement.

• Where people want to live now and for generations to come.

(http://www.vglincoln.com/The_Plan/MissionStatement.htm)

The second neighborhood used in this study is Wilderness Hills, a conventional suburban neighborhood, which is located along the southwestern edge of Lincoln Nebraska. Construction in this development began in 2007 with the original phase nearly built-out and with subsequent development phases in the construction phase. This development has occurred on former cropland and is bordered by two main arterial streets, Pine Lake to the north and 27th street to the west. Commercial development has occurred in the northwest corner of Wilderness Hills. Presently there is a big box retailer, a bank, and several constructed but unoccupied shops (see Appendices C and D, pages 57-58).
The majority of homes built in this area are single-family homes and there are a few town homes present but the several of the town homes remain unsold. Several of the lots in the second phase of development that had been designated for town homes have since been converted to allow for the construction of patio homes (these are homes that do not have to meet the minimum square footage requirements established for the single family homes within the development). According to a website by one of the lenders for Wilderness Hills the development is pitched as an area that “… will include an elementary school, parks, trails, and upscale shopping (http://lincolnfed.com/wilderness.htm)”.

Research Methods

Four types of research methods were used to gather information for this thesis; literature review, surveys, a walkability audit, and field observations of the two neighborhoods. For data on social interaction a written survey was mailed to households in the Village Gardens and the Wilderness Hills neighborhoods. The survey was divided into three sections which included questions regarding interaction with neighbors, frequency of walking in the neighborhood, neighborhood satisfaction, and demographics. Participants are not identified in the results, however, in order to know which neighborhood the survey came from an identifier number was used on each survey; SE1 meant the
survey came from Village Gardens and SW3 meant the survey came for Wilderness Hills.

To obtain information on the walkability of each neighborhood a walkability audit was completed for several streets in each of the two neighborhoods as well as photographs were taken of the areas. The walkability audit instrument was provided by Dr. Yunwoo Nam and was used to create an inventory of items as they related to sidewalk availability, location of house from street, handicap accessibility from the street, and presence or absence of people. This audit focused on elements and conditions that were readily observable which have the potential to influence a person’s decision to walk. The following is a list of the conditions and elements that the walkability audit focused on:

- Surface conditions of the paved walking surface
- Path obstructions that would interfere with the ability to walk on the paved surface referenced above
- Segment features that may add to or detract from a person’s desire to walk such as bus stops, street trees, street lights, and on-street parking
- Presence of litter, graffiti, or deterioration present in the observed area (condition of surroundings)
- The type of litter and disorder that may be present
• Whether people were visible and/or active in the observed area
• What, if any, crossing aids exist for aiding in the crossing of streets in the observed area
• The types of buildings and land uses that were observable
• The walking/cycling environment of the street segment which includes observing whether there were neighborhood watch signs, if there are bicycle lanes present, density of street trees, visibility of items such as trash cans or benches, and the depth of the building setbacks from the sidewalk
• Rating the overall attractiveness of the street segment which ranged from not attractive to very attractive

The features and conditions mentioned above work together to create an environment that a person may or may not find attractive to walk in and more importantly these can create an environment that a person would not feel safe in which in turn may deter a person from being outside.
Chapter 3 – Literature Review of New Urbanism and Walking

Information on the relationship between walkability, social interaction, and neighborhood design remains relatively sparse. The majority of the articles published on walkability and neighborhood design have been since 2005 as determined through an online search of the articles accessible through the University of Nebraska’s libraries. However, based on an observation of the available literature in recent years from the planning field and health related fields the trend appears to be bringing pedestrian planning out of the shadows of transportation (automobile) planning.

One specific trend in pedestrian friendly environments are those developments created by or inspired by the New Urbanist movement. These communities may be referred to as New Urbanism, Neo-traditional developments or Traditional Neighborhood Developments; these terms are often used interchangeably to describe urban design that is mixed-use, compact, and pedestrian friendly. While the New Urbanist movement began in the 1980s the concept of developing neighborhoods that are pedestrian-friendly and socially-oriented is not new.

In 1929, Clarence Arthur Perry introduced his plans for the Neighborhood Unit.
The features of the Neighborhood Unit had at its core public space that included schools, churches, and open space for recreation. The distance each resident had to travel to reach the core or perimeter commercial space was important and was to be no longer then a quarter-mile walk. The types of streets used within the
development were also regulated so that the main arterial streets were along the perimeter which allowed for residents to walk with less fear of traffic (Lawhon, 2009, 112).

Similarly, New Urbanism beliefs hold that communities should be walkable and there should be available a variety of destinations to which a resident can walk to. Since the 1980s New Urbanism has been working to change the perception of pedestrian planning through the implementation of physical elements and design that allow walking to be an acceptable form of transportation. This thesis will focus on walkability, social interaction, and neighborhood design as they relate to and influence each other.

Urban Design and Walkability

Urban design within the United States has not remained stagnant. During the early 1900s cities and their neighborhoods were designed as tightly built, mixed-use environments that facilitated walking due to the lack of transportation options. As the automobile became more prevalent and the need to segregate land uses increased, the cities began to spread out through the designing and building of neighborhoods that would cater to the demands of the automobile especially as the rate of ownership (automobile) rapidly increased. It was not until the 1980s when regentrification of urban centers and the development of
New Urbanist communities began that concern for walkable communities would begin making a resurgence.

How does design influence decisions to walk? Studies have shown that the presence or absence of macro and micro-scale features can affect the design of the neighborhood which in turn can affect the desire for physical activities by the residents (Alfonzo et al., 2008; Rodriguez et al, 2006). Macro-scale features include block length and number of intersections while the micro-scale features include street amenities, sidewalks, and conditions of the buildings in the neighborhood (Alfonzo et al, 2008). Together the macro-scale and micro-scale features can affect how the residents perceive the environment (safety, pleasantness, accessibility etc). In addition to the macro and micro features previously mentioned, New Urbanist communities seek to include in their design the following:

- A street system that uses a grid or undulating design to maximize connectivity
- A mix of compatible land uses that includes housing, retail, and public facilities
- Single family homes set close to the street, with front porches, and garages set to the rear
- Pedestrian amenities and public open spaces (Rohe, 2009, 225-226)
In addition to the design features listed above the presence of front porches is a common feature of New Urbanist communities. While New Urbanism, particularly at the neighborhood and street level, works to incorporate many of the design features that are thought to increase the desire for walking; within the literature on New Urbanism there is not a consensus that design alone affects walkability rather there is agreement that New Urbanism has created a lively debate about what makes a neighborhood/community sustainable, livable, and pedestrian-friendly (Morrow-Jones et al, 2004).

Additional criticism of New Urbanism focuses on whether the planners of these developments have actually created an environment that lives up to their claims of decreasing car-dependence, increasing pedestrian friendliness, and increasing the sense of community. Several studies have questioned whether new urbanism “...is too concerned with appearances...while ignoring social concerns...” (Southworth, 1997, 28). The claim for decreasing car dependency seems to have some merit (Rohe, 2009), however, the claims increasing socializing and sense of community seem to be harder to prove (du Toit et al., 2007; Hanna, 2009; Lawhon, 2009; Marrow-Jones et. al., 2004; Rohe, 2009; Southworth, 1997). To be fair, there are indications within the literature on New Urbanism that studies regarding the increase in sense of community are relatively few (Hanna, 2009; Hirt, 2009; Rohe, 2009; Wood et al, 2010) especially
when it comes to the study of the influence of the physical environment on creating sense of community (Lund, 2009).

**Measuring for Walkability**

Measuring walkability is done either through the assessment of the physical environment (objectively) and/or through the gathering of personal perceptions (subjectively) of a specific location. The predominate method of gathering information for determining degree of walkability is done through the auditing of the physical environment which commonly includes features such as “building height, block length, and street and sidewalk width (Ewing, 2009, 65)”. These types of audits may also include observations regarding availability of street furniture, landscaping, physical condition of buildings, and cleanliness of area.

A second method of measuring for walkability is done through the gathering of perceptual information. This type of measurement examines a range of perceptual qualities held by the residents or users of the physical environment. The importance of completing a perceptual survey is that the researcher is able to gather information that is not readily available through the auditing of stationary objects. This allows the researcher to understand how perceptions affect the experience of walking and to gain an understanding of the
relationship between perceptions and the physical environment (Ewing, 2009; Wood et al, 2010).

Reid Ewing and Susan Handy (2009, 71) have described five qualities that have particular importance when researching environmental perceptions; imageability, enclosure, human scale, transparency, and complexity. The quality of imageability refers to those features which help create an image of a particular place. This is highly personalized as individuals internalize perceptions differently; however, the social-cultural environment in which a person lives can create perceptual similarities when viewing an environment. Enclosure refers to the space created by the physical environment. Buildings, streets and sidewalks, and greenery such as trees can all provide definition of space. Ewing and Handy (2009) found that human scale was much more difficult to define than the previously two mentioned (imageability and enclosure) qualities. In part this is due to the differing opinions about what creates “human scale”. Eventually Ewing and Handy (2009, 77) list one of the definitions of human scale as:

The size or proportion of a building element or space relative to the structural or functional dimensions of the human body. Used generally to refer to the building elements that are smaller in scale, more proportional to the human body, rather than monumental (or larger scale). (City of Davis, undated)

The quality of transparency is the ability of the outdoor environment to project life within the indoor environment. It is a perceptual quality that allows a
person to imagine what activities are taking place outside the direct line of sight. For instance, “courtyards, signs and buildings convey specifics uses (schools and churches) add to transparency (Ewing and Handy, 2009, 78)”.

Complexity is another quality that adds to the perception of the physical environment. This quality relates to the variation found within the environment and the ability of a person to internalize the information. Too little information creates boredom and too much creates information overload. Complexity is created by variations in the development pattern through varied setbacks, building orientations, and constructed buildings. Street furniture, signage, and the presence of and the activity of people all help to create complexity (Ewing and Handy, 2009).

In the book “Inclusive Urban Design: Streets for Life” by E. Burton and L. Mitchell there are six components discussed that promote walkability in a community. These components build on and expand the qualities mentioned by Ewing and Handy and they (components) are a mix of the physical as well as the perceptual. The following is a list of the components:

- **Familiarity** – refers to the extent that streets are understandable and recognizable.

- **Legibility** – refers to the ability of streets to help persons understand where they are at and which way they need to go.
• Safety – refers to the extent to which streets enable people to use, enjoy, and move around without fear of tripping or falling, being run-over or attacked. Safe streets have buildings facing onto them, separate bicycle lanes and wide, well-lit, plain, smooth surfaces.

• Comfort – refers to the extent to which streets enable people to visit places of their choice. Comfortable streets are calm, welcoming and pedestrian friendly.

• Accessibility – refers to the extent that streets enable a person to reach, enter, use and walk around places they need or wish to visit.

• Distinctiveness – refers to streets that give a clear image of where the person is, what are the streets uses and where they lead.

(Overlapping similarities with imageability and complexity.)

In addition to the physical elements and perceptual qualities that affect the walkability of an area there are lesser discussed, but no less important, qualities that could be considered when studying walkability. Those qualities are the destination distance – how far does a person need to travel before they reach their intended destination; visit-ability – is the intended destination accessible by persons with varying physical abilities to enter the building; and weather – is the weather conducive to walking – year round, a portion of the year, or rarely.
As indicated by the above listed categories for researching walkability it becomes clear that an in depth study on walkability cannot be accomplished through only using observable physical characteristics. A study of environmental perception is as important in determining walkability as a “windshield observation” since a researcher cannot determine how a person feels about the environment they are in which is the ultimate indicator of whether a neighborhood is walkable or not.

**Linking Social Capital to Design and Walkability**

Kevin Leyden (2003, 1546) defines social capital as “…the social networks and interactions that inspire trust and reciprocity among citizens” and proposes that mixed-used, pedestrian oriented neighborhoods support the development of social capital.

A particular type of mixed-used, pedestrian oriented neighborhood receiving increasing attention are those created by New Urbanists which are based on the physical and social concepts of the earlier pre-zoned neighborhoods. One of the claims made by proponents of New Urbanism is this type of urban design (mixed-use, compact, and pedestrian friendly) increases the sense of community through implementation of certain design features which are intended to facilitate walking. Walkability, in turn, enhances the
development of social capital (or sense of community) as it allows for intentional or accidental socialization opportunities to occur.

The design characteristics of New Urbanist communities, that are believed to enhance the physical and social environment include “...higher densities, a diversity of housing types, a concentrated core of retail and employment, a pedestrian-oriented environment, dedicated public and open spaces, and connected street networks (Lund, 2002, 301)”. It is assumed that through the proper implementation of these design characteristics that social capital can be improved but there is no agreement in the published literature that this actually does increase social capital as studies determining the link between the physical environment and social capital in a New Urbanist community are relatively understudied.

An important point that is made in regards to social interaction and the design of a neighborhood may have less to do with the physical features and more to do with an assumption that socially oriented people may choose the type of neighborhood that fits their needs rather than neighborhoods instilling the need for social interaction of the people that live there (Leyden, 2003; du Toit, 2007). At present time it is difficult to say with certainty that design creates social capital.
What this implies is that further research is needed to 1) understand what physical characteristics are prevalent throughout walkable neighborhoods, 2) to make the link between social capital and walkability and 3) to see if people actually choose a neighborhood because it fits their lifestyle or if a neighborhood can create a lifestyle.
Chapter 4 – Physical Determinism Theory and Behavior

Occasionally within the literature on New Urbanism, walking, and social interaction there is mention of issues that researchers should be aware of when gathering and analyzing data. These issues, if not acknowledged or addressed, have the potential to impact how data can be interpreted.

Determinism versus Correlation

While this thesis is a comparison study there are studies that seek to establish if there is a positive association between the physical environment (such as a New Urbanist community) and the frequency of a behavior (such as walking and/or social interaction). This type of study may be classified as a correlational study and may be the least controversial type of study within the neighborhood design and behavior realm. Correlational studies seek out information regarding the presence or absence of specific physical features and how often a behavior occurs in an environment to see if there is an association (positive or negative) present between the selected features and behavior.

Another type of study regarding neighborhood design and behavior centers on physical determinism and may be significantly more controversial than a correlational study. Physical determinism is the theory that the physical environment is responsible for the behaviors that occur within a given culture
within a specific geographical location. Studies based on physical determinism may also look at the presence or absence of certain physical features but instead of showing how often a behavior occurs the study is trying to prove that a behavior occurs because of the environment. This is a very important distinction between correlational and determinism studies and should be considered when conducting research on walkability, social interaction, and design as it is much harder to prove that a behavior occurs because of the environment.

Stating that there are two types of studies, correlational or deterministic, is not to imply that researching neighborhood design and behavior is as clear as black and white. To the contrary, as cited in Larry Lawhon’s article titled “The Neighborhood Unit: Physical Design or Physical Determinism” the environmental influences on behavior can be viewed as “…a continuum from a (1) free will approach (no environmental effects), to a (2) possiblistic approach (environment provides possibilities for behavior, provided the person makes a choice to participate), to a (3) probabilistic approach (dealing with probabilities that a particular reaction will occur), to a (4) deterministic approach (a desired behavior is determined by the design environment) (Lawhon, 2009, 124).”

The importance of recognizing the difference between determinism and correlation can be summed up as follows: If a person who does not like to walk is placed into a highly walkable neighborhood in which people already living
there walk on a regular basis and then the non-walker begins walking; the research question becomes did the person start walking because the physical environment was enough to encourage this person to do so OR did the person start walking because that is what is socially expected within this environment?

**Behavioral and Cultural Impacts on Research Design**

There are two aspects of human behavior that can influence the outcome of studying the link between the environment and behavior – self selection and preferences – these can have a dramatic impact if not considered when researching cause-and-effect. As noted by Handy, Cao, and Mokhtarian (2006, 55) “…researchers are now debating the role of “self-selection” in explaining the observed correlations.”

Self-selection is the ability of a person to select a specific location to live because it meets his/her needs. For example, a person may choose to live in a New Urbanist community because the physical environment is designed in a manner that allows a person to walk with greater freedom than in a conventional neighborhood.

Preferences are another aspect that can influence data when examining causality or correlations. It should be noted that preferences and self-selection are not the same concept. Preferences are a reflection of likes and dislikes and do
not necessarily reflect the neighborhood in which the person lives. For example, a person may prefer to live in a central city location but due to costs or unavailability of appropriate housing the person ends up living in a less preferred neighborhood. Together preferences and self-selection can alter perceptions of a particular environment; for example, if a person can only afford housing in a deteriorated neighborhood (self-selection) and the person likes to walk (preference) but based on the condition of the area they may view the neighborhood as unsafe to walk in (perception).

In addition to self-selection and preferences, Thomas Sander (2002, 216) in his article titled “Social Capital and New Urbanism: Leading a Civic Horse to Water?” mentions that there are four central issues when researching the link between social capital and neighborhood design. The issues are “(1) the influence of the outside world, (2) the projects’ infancy, (3) selection bias, and (4) the Hawthorne effect.” These are valid issues particularly when choosing to study New Urbanist communities which is a relatively new type of development (within the last 25 years) and these issues have the potential to lead to research that may be unintentionally biased.

The first issue of “influence of outside world” means that New Urbanist communities are not self-contained and the residents may rely on the greater community to supply jobs and goods. Sander also noted that some of the
residents of Seaside Florida created back porches to increase their sense of privacy (Sanders, 2002).

The second issue of “the projects’ infancy” means that many of these communities are early in their development and as such it is unknown if the original intent of these developments will stay intact as the community changes and residents come and go.

The third issue of selection bias is especially important. This issue is much like the self-selection issue mentioned by Handy et al (2006) but this term is aimed at the ability of the development to attract (primarily through marketing) a certain person/personality.

The fourth issue is that of the Hawthorne effect. This assumption is basically being aware that “...in the early years of a New Urbanist community, it is hard to separate out genuine New Urbanist results from residents either wanting to make the experience succeed or feeling as though they are taking a powerful civic pill (Sanders, 2002, 218)”. 
Chapter 5 – Neighborhood Walking and Social Interaction Results

As stated in Chapter 2, the case study for this research has been accomplished using two distinct neighborhoods within Lincoln Nebraska – Village Gardens and Wilderness Hills. The neighborhoods vary in their design; Village Gardens has undulating streets, with garages that are set to the rear of the house which require alley access, the majority of the homes have front porches, and there is a variation in the depth of the right-of-ways which allows the sidewalk to take on a undulating characteristic even when the street is straight (see Appendix E on page 59). Wilderness Hills is built using the grid system; streets are straight, there is a uniform depth to the space between the street and the front of the house (see Appendix F on page 60) and garages are a prominent feature of the front of the homes.

This research was undertaken to determine if neighborhoods that differ in physical features also differ in the amount of walking and social interaction that occurs. Two surveys were used to gather information regarding the walkability and social interaction of two distinct neighborhoods. One survey gathered information from the residents and the other survey gathered information about the built environment of each neighborhood.

Neighborhood Demographics
Sixty-three surveys were mailed out to households in the Village Gardens (N=20) and the Wilderness Hills (N=43) neighborhoods and of those 44.4% (n=28) were returned. The demographic results indicated three areas where the differences are noticeable; average age, number of children in household, and range in household incomes. The average age of the respondents in Village Gardens is slightly higher at 54.6 years versus 44.1 years of age in Wilderness Hills and of the surveys returned, no children were indicated as living in the responding Village Gardens households while Wilderness Hills respondents indicated that 16 children were residing in the neighborhood.

Two of the demographic characteristics were the same for both neighborhoods. The educational background of the respondents was very similar in that approximately 60% had a college degree, and the remaining 40% were split between either having some college work or having post-graduate work. The other demographic characteristic that was similar was the household income which showed approximately 40% of the responding households as having incomes at or above $125,000. Note that while the percent of households with an income of $125,000 or higher was similar there was a difference in the range of incomes.

The difference in range of household incomes, while not markedly different between the two neighborhoods, is worth noting when it is compared
to the median house value for each neighborhood. Based on the 2010 actual value assigned on the Lancaster County Assessor website (http://orion.lancaster.ne.gov/appraisal/publicaccess/) the median value of homes selected to receive surveys in the Village Gardens area was $328,500 and the median value in Wilderness Hills area was $272,100. The neighborhood that showed the highest median value – Village Gardens – also showed a wider range in household incomes with one household reporting an annual income in the $20,000 - $45,000 range (see Table 5.1). There is no data currently available for this study that would explain this difference.

| Table 5.1 |
| Demographics |
| | Village Gardens | Wilderness Hills |
| | n = 10 | n = 18 |
| Percent that own or rent home | | |
| Own | 10 | 100.0% | 18 | 100.0% |
| Rent | 0 | 0.0% | 0 | 0.0% |
| Respondents average age | 54.6 | 44.1 |
| Gender of respondent | | |
| Male | 2 | 20.0% | 10 | 55.6% |
| Female | 8 | 80.0% | 8 | 44.4% |
| Respondents educational background | | |
| Some college work | 2 | 20.0% | 3 | 16.7% |
| College degree | 6 | 60.0% | 11 | 61.1% |
| Post-graduate work | 2 | 20.0% | 4 | 22.2% |
| Annual household income: | | |
| $20,000-$45,000 | 1 | 10.0% | 0 | 0.0% |
| $45,000-$65,000 | 1 | 10.0% | 1 | 5.6% |
| $65,000-$90,000 | 1 | 10.0% | 1 | 5.6% |
| $90,000-$125,000 | 1 | 10.0% | 2 | 11.1% |
| $125,000 plus | 4 | 40.0% | 8 | 44.4% |
| Prefer not to say | 2 | 20.0% | 4 | 22.2% |
| Sum of household occupants* | 19 | 100.0% | 55 | |
| Adults (18 years and older) | 19 | 100.0% | 39 | 70.9% |
| Children (17 years and younger) | 0 | | 16 | 29.1% |
*Respondents were asked to identify the number of persons living in their household and the age group of the occupants.

**External Housing Characteristics**

New Urbanism often incorporates front porches on the housing units within the development as well as encourages the use of rear-loading garages that are accessed through an adjoining alley. Within Village Gardens 80% of the respondents’ homes have front porches with 70% of the homes having rear loading garages. Of those, 80% of the respondents reported either using their front porch seldom (40%) or frequently (40%) for social activities such as socializing with neighbors or family. In addition to questions about the presence and use of a front porch, there was also a question regarding how often the respondent seen others in the neighborhood sitting on their front porches or steps and a majority (80%) of the respondents reported frequently seeing people out on their front porches/steps.

![Image of houses](image1.jpg)

**Figure 5.1:** Village Gardens, Spring 2011. Example of front porches and alley ways found within development.
The Wilderness Hills surveys show that 61% of the respondents’ homes have front porches with all of the homes having front loading garages. Of those respondents that indicated their house had a front porch 40% seldom used this space for social activities. Nearly the same percentage of all respondents (44.4%) reported seldom seeing anyone sitting on their front porch or steps.

**Nearby Business Center Characteristics**

Both of the neighborhoods in this study have a business district in the northwest corner of each development. The Wilderness Hills business center appears to be strictly for commercial use (no residential mixed-in) and it currently has only two occupants with the majority of the buildings unoccupied as observed during October 2010. The Village Gardens business center is intended as a mixed-use center with both residential and commercial units and according to the Village Gardens website this is where the residential rentals units will be located. Of those structures that were built as of October 2010 they appeared to be only partially occupied as observed in a photographing session of the area.

Each business center is oriented toward the attached neighborhood differently. Within the Wilderness Hills area there is a distinct “anchor” business which is a big box retailer (Kohl’s) and it faces away from the neighborhood. The
view from the Wilderness Hills residential area is the back of the store (Figure 5.2).

![Image of Wilderness Hills]

*Figure 5.2: Wilderness Hills, Fall 2010. View from the residential area of the big box retailer in the business center.*

The current businesses in the Village Gardens area are designed so that the buildings do not have a “back” to them. With the exception of the hotel that is located on the southern edge of the business center, the buildings have been designed so that the available business spaces wrap around the building (Figure 5.3). Even the hotel which has limited its access to the western side of the building does not present a plain back side to the residential area. The hotel has been designed so that there are windows looking out onto the neighborhood from all sides (Figure 5.4).
Figure 5.3: Village Gardens, Fall 2010. View of the commercial building from the residential area.

Figure 5.4: Village Gardens, Fall 2010. The back side of the hotel in Village Gardens development.

In addition to the businesses already present in each neighborhood there are hints of what may be to come. Wilderness Hills currently has a vacant set of
buildings that are clearly intended for additional businesses. This space has a
distinct appearance from the big box retail store that sits in close proximity. The
buildings are divided by a road down the center with limited parking in front
and pedestrian amenities, such as benches and awnings, have been incorporated
(Figure 5.5).

![Image](image_url)

**Figure 5.5: Wilderness Hills, Fall 2010. Vacant commercial space.**

Village Gardens also gives hints of the types of businesses that may be
coming to the area but it is done in a much more obvious manner even though
several of the lots are still open space. It appears that the development has given
much thought as to the type of business it wants to attract and where those
businesses are intended to be built as evident through the placement of signs on
the lots (see Figure 5.6). The business center will also incorporate residential
units which will have an alley as the separator between the units and the
businesses/parking lots. In Figure 5.7 the residential units will be located along
the east side of the alley and the businesses will be to the west of the alley.

![Figure 5.6: Village Gardens, Spring 2011. Signs indicate intended land use.](image)

![Figure 5.7: Village Gardens, Spring 2010. Residential lots are on the right and commercial is on the left of the alley.](image)
Neighborhood Satisfaction and Social Interaction

The administered residential survey sought to determine how satisfied the residents were with their neighborhood and the amount of social interaction and walking that took place. The survey was divided into three sections with questions that focused on neighborhood interaction, neighborhood satisfaction, and demographics. The neighborhood interaction section asked questions about placement of garage and driveway usage, presence of front porch and usage, amount of acquaintances / friends in the neighborhood, amount of and frequency of social interaction with other residents, and how often and where does walking take place. The section on neighborhood satisfaction asked questions regarding satisfaction with the neighborhood crime rate, public transporation accessibility, relationship(s) with other residents, traffic noise and speed, and as the neighborhood as a good place to live / raise children. The final section asked questions regarding age, gender, educational background, annual household income and number of adults and children in the surveyed household.

The neighborhood satisfaction survey results showed that the neighborhoods were comparable in how people viewed the neighborhoods as far as access to public transportation (approximately 60-70% were neither satisfied or dissatisfied), as a easy and pleasant environment to walk in (approximately 70% were strongly satisfied), and as a good place to live (approximately 80% felt
strongly satisfied). There were notable differences in several other categories of neighborhood satisfaction. The Village Garden respondents felt greater satisfaction with the number of friends and acquaintances they had within the neighborhood and they also scored higher in safety from threat of crime. The Wilderness Hills respondents (63.6%) were generally more favorable towards their neighborhood as a good place raise children then were the Village Gardens respondents (50.0%). See table 5.2 on page 41 and table 5.3 on page 42 for the range of responses from Village Gardens and Wilderness Hills.

The results of the social interaction and walking sections of the residential survey revealed similarities and differences between the two neighborhoods. The questions regarding social interaction revealed that the respondents from both neighborhoods knew about the same number of neighbors and that they interacted on a frequent basis. The questions regarding walking revealed that the respondents in Village Gardens walked more often than those respondents from Wilderness Hills; 50.0% of Village Gardens respondents walked daily while no one in Wilderness Hills walked on a daily basis rather 61.1% of the Wilderness Hills respondents walked on average once or twice a week.

The respondents were also asked to indicate where they walked to; the options were 1) to a neighbor’s house, 2) to a neighborhood park or open space, 3) to a nearby business, 4) don’t walk in the neighborhood, or 5) other. The
answers were similar for both neighborhoods. Several people indicated that they walked around the neighborhood while very few walked to a neighbor’s house or to a neighborhood park. One respondent from each neighborhood indicated that they don’t walk in the neighborhood but rather down the main arterial street that flanks their neighborhood. One respondent from the Village Gardens neighborhood wrote that they walk to the community garden or to the nearby business while no one from the Wilderness Hills neighborhood walked to a nearby business.

The differences in social interaction and walking between the two neighborhoods cannot be explained by the length residency as the neighborhoods are comparable in average length of residency; 31.9 months for Village Gardens and 25.7 months for Wilderness Hills.
<table>
<thead>
<tr>
<th>Neighborhood Satisfaction</th>
<th>Village Gardens</th>
<th>Wilderness Hills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=10</td>
<td>n=18</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td><strong>Number of friends in neighborhood</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly dissatisfied</td>
<td>0 0.0%</td>
<td>1 5.6%</td>
</tr>
<tr>
<td>Somewhat dissatisfied</td>
<td>2 20.0%</td>
<td>1 5.6%</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied</td>
<td>0 0.0%</td>
<td>5 27.8%</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>2 20.0%</td>
<td>3 16.7%</td>
</tr>
<tr>
<td>Strongly satisfied</td>
<td>6 60.0%</td>
<td>8 44.4%</td>
</tr>
<tr>
<td><strong>Number of acquaintances in neighborhood</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly dissatisfied</td>
<td>0 0.0%</td>
<td>1 3.0%</td>
</tr>
<tr>
<td>Somewhat dissatisfied</td>
<td>0 0.0%</td>
<td>3 16.7%</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied</td>
<td>1 10.0%</td>
<td>4 22.2%</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>2 20.0%</td>
<td>2 11.1%</td>
</tr>
<tr>
<td>Strongly satisfied</td>
<td>7 70.0%</td>
<td>8 44.4%</td>
</tr>
<tr>
<td><strong>Ease and pleasantness of walking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly dissatisfied</td>
<td>0 0.0%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Somewhat dissatisfied</td>
<td>0 0.0%</td>
<td>1 5.6%</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied</td>
<td>0 0.0%</td>
<td>3 16.7%</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>3 30.0%</td>
<td>2 11.1%</td>
</tr>
<tr>
<td>Strongly satisfied</td>
<td>7 70.0%</td>
<td>12 66.7%</td>
</tr>
<tr>
<td><strong>Safety from threat of crime</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly dissatisfied</td>
<td>0 0.0%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Somewhat dissatisfied</td>
<td>0 0.0%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied</td>
<td>0 0.0%</td>
<td>1 5.6%</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>2 20.0%</td>
<td>6 33.3%</td>
</tr>
<tr>
<td>Strongly satisfied</td>
<td>8 80.0%</td>
<td>11 61.1%</td>
</tr>
<tr>
<td><strong>Amount and speed of traffic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly dissatisfied</td>
<td>0 0.0%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Somewhat dissatisfied</td>
<td>1 10.0%</td>
<td>3 16.7%</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied</td>
<td>2 20.0%</td>
<td>4 22.2%</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>4 40.0%</td>
<td>4 22.2%</td>
</tr>
<tr>
<td>Strongly satisfied</td>
<td>3 30.0%</td>
<td>7 38.9%</td>
</tr>
<tr>
<td><strong>Noise from traffic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly dissatisfied</td>
<td>0 0.0%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Somewhat dissatisfied</td>
<td>0 0.0%</td>
<td>2 11.1%</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied</td>
<td>1 10.0%</td>
<td>1 5.6%</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>3 30.0%</td>
<td>6 33.3%</td>
</tr>
<tr>
<td>Strongly satisfied</td>
<td>6 60.0%</td>
<td>9 50.0%</td>
</tr>
<tr>
<td><strong>Good place to raise children</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly dissatisfied</td>
<td>0 0.0%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Somewhat dissatisfied</td>
<td>0 0.0%</td>
<td>0 0.0%</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied</td>
<td>3 30.0%</td>
<td>1 5.6%</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>2 20.0%</td>
<td>4 22.2%</td>
</tr>
<tr>
<td>Strongly satisfied</td>
<td>5 50.0%</td>
<td>13 72.2%</td>
</tr>
</tbody>
</table>
### Table 5.3

**Social Interaction and Walking Survey Results**

<table>
<thead>
<tr>
<th>Social Interaction and Walking</th>
<th>Village Gardens</th>
<th>Wilderness Hills</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=10</td>
<td>n=18</td>
</tr>
<tr>
<td>Average length at current residence (in months)</td>
<td>31.9</td>
<td>25.7</td>
</tr>
<tr>
<td>Number of people known in neighborhood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 0 0.0% 0 0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 0 0.0% 1 5.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-6 1 10.0% 2 11.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-9 1 10.0% 2 11.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10+ 8 80.0% 13 72.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of socializing with people in neighborhood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never 0 0.0% 0 0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seldom 3 30.0% 7 38.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequently 6 60.0% 10 55.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily 1 10.0% 1 5.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of people socialized with on regular basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 0 0.0% 3 16.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3 1 10.0% 5 27.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-6 3 30.0% 7 38.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-9 1 10.0% 2 11.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10+ 5 50.0% 0 0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left unanswered 0.0% 1 5.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In a typical week how many days do you walk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 0 0.0% 2 11.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 1 10.0% 11 61.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-4 3 30.0% 3 16.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-6 1 10.0% 2 11.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 5 50.0% 0 0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of people seen walking in neighborhood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never 0 0.0% 0 0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seldom 1 10.0% 1 5.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequently 1 10.0% 7 38.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily 8 80.0% 10 55.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often do you stop to talk with people as you walk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never 0 0.0% 1 5.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seldom 1 10.0% 4 22.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequently 6 60.0% 12 66.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily 3 30.0% 0 0.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left unanswered 0.0% 1 5.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Walkability Audit Findings

A separate audit was conducted to inventory the physical features that were present or absent in each of the neighborhoods surveyed for social interaction and walking. The purpose of this audit was to assess the walkability of each neighborhood.

Sidewalk conditions in Village Gardens and Wilderness Hills, where they exist, were in excellent condition as was expected since each neighborhood is relatively new. Sidewalks were not continuous throughout the Village Gardens neighborhood as several sections of sidewalk were interrupted due to vacant lots (figure 5.8). A major difference in sidewalks between the two neighborhoods is the access to ramps for the handicap. In Wilderness Hills the sidewalk ramps were at the south end of each block and the driveways could also be used as an alternative ramp. In Village Gardens the ramps were spread throughout the sections of sidewalks and driveways were not accessible from the front so they could not be used as alternative ramps.

The lack of handicap accessibility is most noticeable in the townhouse development of Village Gardens where there are no ramps directly in front of the townhouses. The nearest ramps are located on vacant lots without sidewalks
connecting those (ramps) to the existing sidewalks in front of the townhouses.

Figure 5.8: Village Gardens, Fall 2010. Missing sidewalks and ramps are located on the empty lots with no sidewalks attached to them.

The second major difference in sidewalks between the two neighborhoods is the distance of the building setbacks from the sidewalks. Wilderness Hills maintained a uniform distance of approximately 20 feet between the front of the house and the sidewalk. Village Gardens varied in their setbacks. Some setbacks were approximately five feet while other building frontages meet the sidewalk as shown in Figure 5.9.

Another difference between the two neighborhoods concerns the placement of the sidewalk from the street. Wilderness Hills maintained a uniform right-of-way depth while the depth varied within the Village Gardens development as shown in Figure 5.10 and Figure 5.11.
Figure 5.9: Village Gardens. Variation in setbacks from house to sidewalk. On the left side the house meets the sidewalk. On the right side the house is setback from sidewalk.

Figure 5.10: Village Gardens. Variation in right-of-way depth between sidewalk and street.
Figure 5.11: Wilderness Hills. Setbacks and right-of-ways are of uniform depth.

A question within the residential survey asked about the type of surface the respondent typically walked on in the neighborhood. The majority of the Village Gardens respondents answered that they walk on either the sidewalk or the street. Two of the respondents indicated that the street was chosen as an option due to the lack of sidewalks and this lack of sidewalk connectivity was confirmed through the walkability audit.

Within the Wilderness Hills neighborhood survey area the sidewalks were nearly complete; the exception was on the last lots at the north end of the surveyed blocks. These lots were vacant and the sidewalk did not extend onto the them. Of the respondents from the Wilderness Hills neighborhood the majority indicated that they walked on the sidewalks and not the streets or trails.
Chapter 6 – Discussion and Conclusion

Discussion of Results

The purpose of this paper has been to study two types of neighborhoods; a Traditional Neighborhood Development (also known as a New Urbanist development) and a conventional suburban neighborhood development to answer questions about walking and social interaction. Specifically the study sought to answer questions regarding 1) the amount of social interaction that occurs in two different types of neighborhoods, 2) whether walking by the residents occurs more frequently when the neighborhood design is based on New Urbanism principles, and 3) if a relationship between social interaction, walking, and urban design can be detected. The neighborhoods chosen were located in Lincoln Nebraska and were comparable in age of development and housing prices.

The survey responses for this paper revealed that there is a not a difference in the amount of social interaction among residents even when the neighborhood design differs. However, it does need to be noted that while the survey indicated that the respondents from both neighborhoods were comparable in knowing the same number of people and the amount of socializing that occurred; the respondents from the Traditional Neighborhood
Development were generally more satisfied with the number of the
acquaintances and friends they had within the neighborhood.

Two other points revealed by the survey were that the respondents in the
conventional neighborhood ranked it higher as a good place to raise children
(72.2%) than the TND (50%) however at the same time the respondents in the
TND were generally more satisfied (80%) with their safety from threat of
crime then those in the conventional neighborhood (61.1%). It could be
speculated that a higher satisfaction rate with the safety from crime in the TND
could be due to having a higher satisfaction rate with their social relationships.
As far as the difference in viewing the neighborhoods as a good place to raise
children it may be attributed to the residents of the TND being older and as the
survey revealed there are no children in the households in the TND that
responded to the survey.

In addition to having greater satisfaction with social relationships this
research showed a definite increase in the amount of walking that occurs in the
TND over the conventional suburban neighborhood. Of the respondents, 80% of
the TND respondents walked seven days a week while 61% of the conventional
neighborhood respondents walked one to two days a week. The survey also
revealed that the residents within the TND (80%) seen a greater frequency of
people walking daily in the neighborhood then the conventional neighborhood
(55.6%). This does confirm what is revealed in other published articles about walking and TNDs (Rohe, 2009). While this research does show that walking occurs with greater frequency within a Traditional Neighborhood Development it does not show if the design of the neighborhood has influenced the decision to walk or if the respondents are inclined to walk more than the residents in the conventional suburban neighborhood.

The physical audit of the two neighborhoods has revealed differences in the connectivity of the existing sidewalks. The sidewalk connection within the Wilderness Hills neighborhood was more complete and there was greater handicapped accessibility from the street as driveways could be used to reach the sidewalks. At the same time the resident survey showed a higher amount of walking in Village Gardens while having a lower amount of sidewalk connectivity. This does raise the question of the importance of the existence of sidewalks in residential neighborhoods.

Both of the neighborhoods in this study have a business center connected to them. Retail is a primary business category of both centers but there are important differences. The Wilderness Hills business center has several completed but empty buildings and does have the appearance that it is set up for predominately retail use with limited room for other types of business. This type of business restriction may limit the number of residents from the adjoining
neighborhood who would walk to it. Village Gardens does have retail as a predominant business use but as indicated by the signs posted in the undeveloped areas of the business center there is the potential to create businesses that may encourage residents of this neighborhood to walk to them. A few of the empty lots are designated as areas that could be restaurants and one is marked for a specialty grocery store. Village Gardens has even been designed so that the distinction between residential and business uses is not as clear as in a conventional suburban neighborhood. This is done by incorporating housing units into the business center through the use of apartments above some of the stores and by having an alley instead of a street separate some of the residential units from the businesses and parking. This area of Village Gardens is more reflective of what Jane Jacobs liked about the inner city urban life – a mix of uses that includes residential. By mixing residential and businesses Jacobs coined the term “eyes on the street” which to her helped create a sense of security and was a factor in creating a sense of community. 

If the presence or absence of sidewalks cannot explain the difference in the amount of walking that occurs than other factors such as the social aspects of the neighborhood should be examined with greater detail. This study does indicate that social factors such as satisfaction of neighbor relationships, and safety from threat of crime may help explain why walking occurs more often in different
types of neighborhoods. As noted in an article written by Alfonzo et al. (2008, 31) “It is unlikely that the built environment affects decisions to walk…rather…the built environment may support decisions to walk through the accumulation of several discrete features that together create a particular character or quality (safety, pleasantness, etc.).”

**Limitations of Current Research**

There were two major limitations to this study. The first limitation is that Traditional Neighborhood Developments are not common in the city of Lincoln or within the state of Nebraska. Lincoln has one neighborhood that claims to be based on New Urbanism principles and that is Village Gardens. There is a second neighborhood development in Lincoln that appears to be using New Urbanism principles in its design but it stops short of claiming that it is a New Urbanist community. This development is on the north end of the Lincoln city limits and is named Fallbrook. In addition to Village Gardens in Lincoln to this author’s knowledge the only other development in Nebraska based explicitly on New Urbanist principles is in the planning stage in Omaha Nebraska.

The second major limitation is the small sample size of the study areas. The limited number of residents to survey has left the question of establishing a relationship between walkability, social interaction, and neighborhood design
undetermined. What is needed is a larger sample size and a more in-depth survey of the residents’ neighborhood preferences and lifestyles choices (such as physical activity levels, desire for social interaction, and desirability of the physical elements of the neighborhood) which could help in determining if there is a link between walking, social interaction, and neighborhood design.

While the limitations of sample size did not allow for the establishing of statistical significance between variables and the neighborhoods it did not impact the other sections of the thesis. The majority of the learning that occurred through this writing was in the research methods which include the accumulation and review of the existing published literature, the creation and use of a mailed survey, the use of a walkability audit tool, and the use of photographs to enhance the written sections of the neighborhood research results.

Conclusion

The past twenty years have seen only a handful of federal policies designed to help communities increase walking and biking opportunities within the United States. The Intermodal Surface Transportation Efficiency Act (ISTEA), the Transportation Equity Act for the 21st Century (TEA-21) and the Safe, Accountable, Flexible Transportation Equity Act: A Legacy for Users
(SAFETEA-LU) (Handy and McCann, 2011) are all policies designed to enhance alternate transportation design. These policies however do not require communities to develop walkable surfaces rather they are funding sources which communities can use to help create walkable surfaces.

There are also no policies at the federal or state levels of government that require planners and developers to create compact, mixed-use, pedestrian neighborhoods nor are there policies that require the redevelopment of inner city areas over expanding cities onto greenfields. Currently the primary sources of support for New Urbanist communities are planners and developers that are willing to push for a form of neighborhood development that has not been common for several decades.

In addition to the limited federal policies on walking and biking there is also the issue of the public’s response to compact, mixed-use developments. Information on public opinion towards compact development is not as readily available as the literature that expresses planners’ opinions of this type of development. If a development is to succeed especially when the design does not fit the norm of a sprawling subdivision then planners need to understand who is most attracted to these types of developments, why are they attracted to them, and who is actually living in these developments.
With a lack of policies that mandate compact, mixed-use, pedestrian friendly neighborhoods there are two tools that are especially important for planners – education and marketing. With fuel prices rising now may be an especially important time for planners to educate the public about New Urbanism principles and how these principles, if implemented, can positively impact a person’s life particularly in health and financial matters. The second tool, marketing, is important in helping to sell the concept of New Urbanism to people who may be interested in these types of developments but may not know of their existence.

This does leave the question as to whether the incorporating of New Urbanism principles should be required by public policy or whether it should be left to the free market to determine its usage. Presently these principles should be left to the free market but through better education of the public these principles may be more readily accepted by the general public as a means of helping them achieve a healthy and a less car-dependent lifestyle.
Village Gardens Neighborhood. The circle indicates the area used for the resident and observation surveys. A substantial portion of the area outside the circle is currently undeveloped.*

*The above map was correct in 2010 when information about Village Gardens was being collected. A recheck of the website on April 15, 2011 reveals that the site plan has changed with the area in the southeast corner no longer in the Village Gardens plan. For a look at the new site plan visit: http://www.vglincoln.com/The_Plan/Location.htm
Appendix B

Village Gardens Neighborhood. Lancaster County - Lincoln, NE GIS Map
This is the most recent view available and does not show all of the existing homes. http://ags.lincoln.ne.gov/ncs/gisviewer/
Appendix C

Wilderness Hills Neighborhood. Lancaster County - Lincoln, NE GIS Map. This is the current land use map retrieved from the Lincoln/Lancaster County GIS viewer. [http://ags.lincoln.ne.gov/ncs/gisviewer/](http://ags.lincoln.ne.gov/ncs/gisviewer/)
Wilderness Hills Neighborhood. Lancaster County - Lincoln, NE GIS Map
This is the most recent view available and does not show all of the existing homes. http://ags.lincoln.ne.gov/ncs/gisviewer/
Appendix E

**Village Gardens Neighborhood.** Lancaster County - Lincoln, NE GIS Map
This is an aerial view of the sidewalks within Village Gardens. Notice the sidewalks vary in distance to the homes as well as distance to the street as shown towards the top of this view. [http://ags.lincoln.ne.gov/ncs/gisviewer/](http://ags.lincoln.ne.gov/ncs/gisviewer/)
Wilderness Hills Neighborhood. Lancaster County - Lincoln, NE GIS Map
This is an aerial view of the sidewalks in Wilderness Hills. Notice they are of uniform distance to the street as well as to the house.
http://ags.lincoln.ne.gov/ncs/gisviewer/
References


