Buying New Urbanism:

A Study of New Urban Characteristics that Residents Most Value

by

Dave C. Waugh

An Applied Research Project
(Political Science 5397)
Submitted to the Department of Political Science
Texas State University-San Marcos
In Partial Fulfillment for the Requirements for the Degree of
Masters of Public Administration

Spring 2004

Faculty Approval:

_____
Dr. Patricia M. Shields

_____
Dr. William H. DeSoto

ABSTRACT

This study is an exploration of the essential characteristics of New Urban communities and how its residents may value these characteristics. Specifically, the purpose of this research is to identify through the literature the essential physical characteristics of greenfield New Urban communities. Secondly, it explores which of these characteristics are most valued by New Urban residents and how these values may differ from those of the residents of a comparative Conventional Suburban Development in the same market area.

To fulfill the research purposes, a review of the literature was undertaken which ultimately evolved into a survey instrument that was developed from the conceptual framework (working hypotheses). This survey was administered to a sample of residents from a New Urban and a Conventional Suburban Development in Kyle, Texas. An independent samples t-test analysis of the survey data revealed that New Urban residents value several characteristics at significantly greater levels than the residents of the Conventional Suburban Development. These included: higher densities, mixed land use, and traditional architectural elements. Transportation choice, particularly neighborhood walkability, had no significant difference between the development types but instead demonstrated strong support among the residents of both neighborhoods. At the same time the residents were generally neutral towards mixing of housing types and neighborhood resident diversity.

The results of this study suggest a strong interest of both New Urban and Conventional Suburban Development residents towards many of the essential characteristics of New Urbanism. This has important implications for both state and local government regulators of land development and for developers themselves as they plan future communities. The study also found that New Urban developers might have to focus their efforts to reduce potential buyer skepticism about the potential benefits of higher densities, mixing of housing types, and resident diversity.

TABLE OF CONTENTS

TABLES & FIGURES

APPENDICES

CHAPTER I: INTRODUCTION

A Growing Concern

Rising numbers of government officials and the public recognize that development patterns are increasingly unsustainable. One major concern has been termed "urban sprawl" which is characterized by low-density development. This development is typically segregated by land uses and is reliant almost to exclusivity on the automobile for transportation (Jeffers, 2003, p. 1-3).

Urban sprawl has been linked to numerous negative outcomes. Sprawling development unnecessarily consumes prime agricultural land and open space (McElhenny, 2003). For example, in the span of five years between 1992 and 1997 over six million acres of farmland was lost to development (American Farmland Trust, 2002, p. 1). An additional concern comes from the medical community, which has recently become highly vocal in its concern about sprawl related health troubles. These include health problems due to reduced opportunities for physical activity.[1]

Low-density development (sprawl) is predominantly served by automobile transportation, which has been linked to green house gas production (including nitrogen oxides and carbon dioxide) and global warming (Gurin, 2003, pp. 12-16). In the United States it is estimated that 20 percent of our carbon dioxide production is from automobiles and light trucks.[2] The over reliance on the automobile exposes residents to the under acknowledged health threat of traffic accidents,

[1] See for example: Goldberg, 2004; Ewing, *et al*., 2003, p. 47; Jackson, 2003, pp. 1382-1384.
[2] See Sierra Club website "Global Warming & Energy" available at: http://www.sierraclub.org/globalwarming/overview/culprits.asp

which caused 42,815 deaths in the U.S. in 2003 (Durbin, 2004).[3] Furthermore, the questionable availability of cheap petroleum to power these automobiles is widely seen as an approaching crisis (Francis, 2004; Yergin, 2004).

New Urbanism as a Response

One response to urban sprawl has been the formation of a community design paradigm called New Urbanism. New Urban communities contain a number of essential characteristics. Unfortunately, many of these design characteristics are illegal under most current development codes and zoning schemes. Public officials and urban planners will have to reform development codes and zoning to facilitate the development of New Urban communities.

A Description of New Urbanism

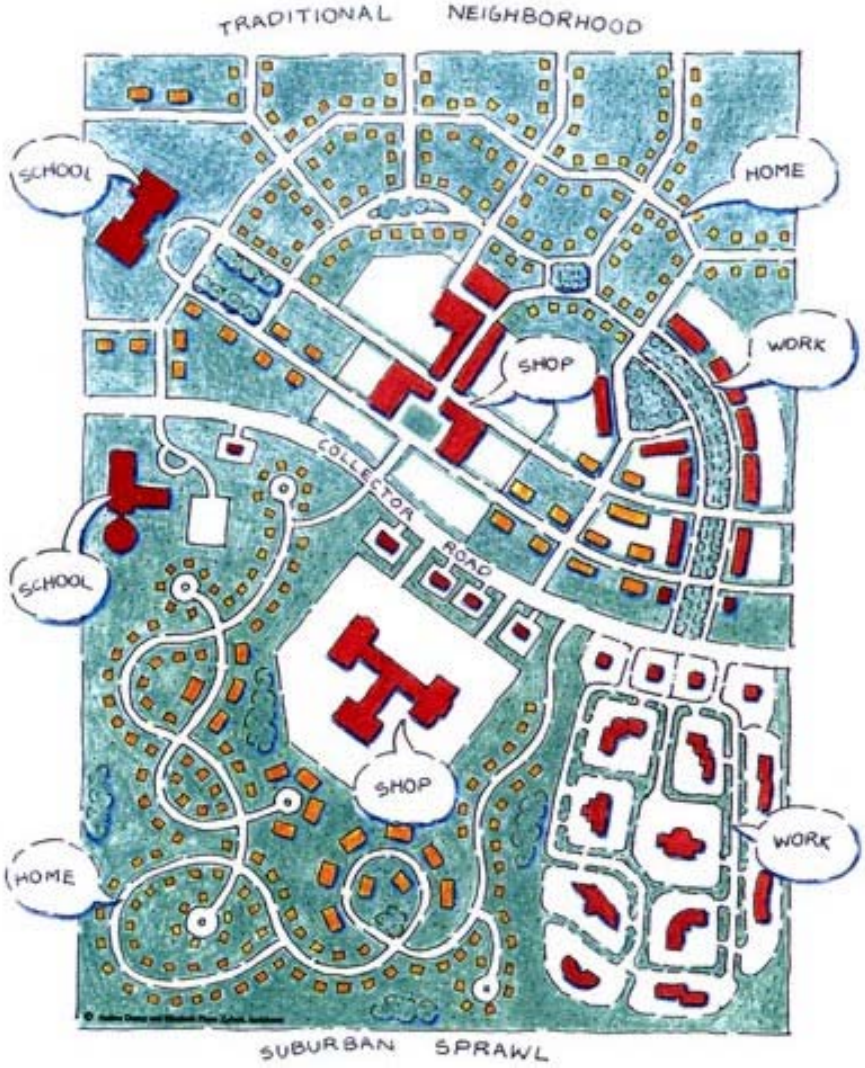
A community developed utilizing the design characteristics of New Urbanism has a unique "look and feel" to it. Current development patterns have a number of negative consequences including the over reliance on the automobile for transportation. Consequently conventional development patterns are increasingly viewed as unsustainable.[4] New Urban design offers alternatives to conventional development patterns, which can synergistically produce a positive impact on the community.

A New Urban community offers choices of transportation modes, including walking and public transit. Typically this is achieved through higher density construction, mixing of land uses, and a return to a traditional grid pattern of street layouts. Figure 1.1 shows a comparison of a traditional street pattern and the cul-de-sac pattern of conventional "sprawl" development.

[3] See also: The World Health Organization at: http://www.who.int/violence_injury_prevention/unintentional_injuries/world_report/en/

[4] Beyond this rising numbers of people recognize the negative effects on both the general environment and ultimately declining personal health are an end result of our current "conventional" development typology.

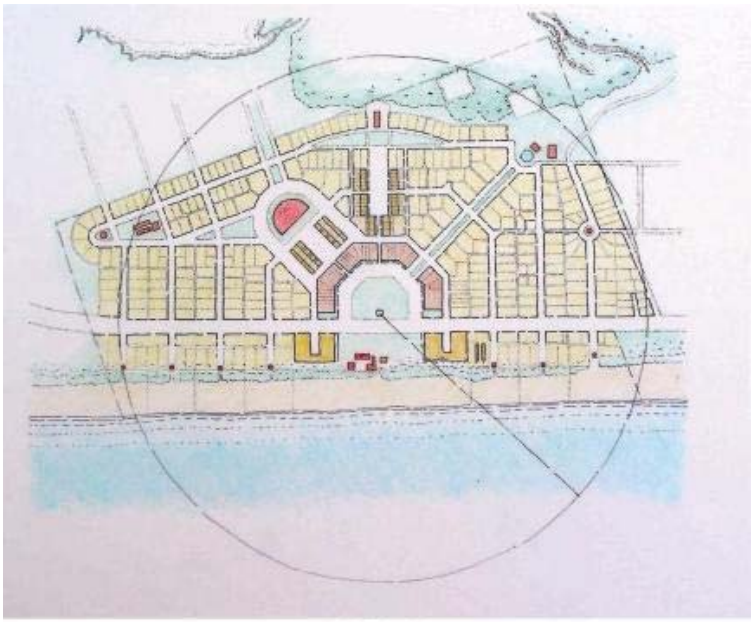
FIGURE 0.1.1 Traditional versus Conventional "Sprawl" Pattern Development [5]



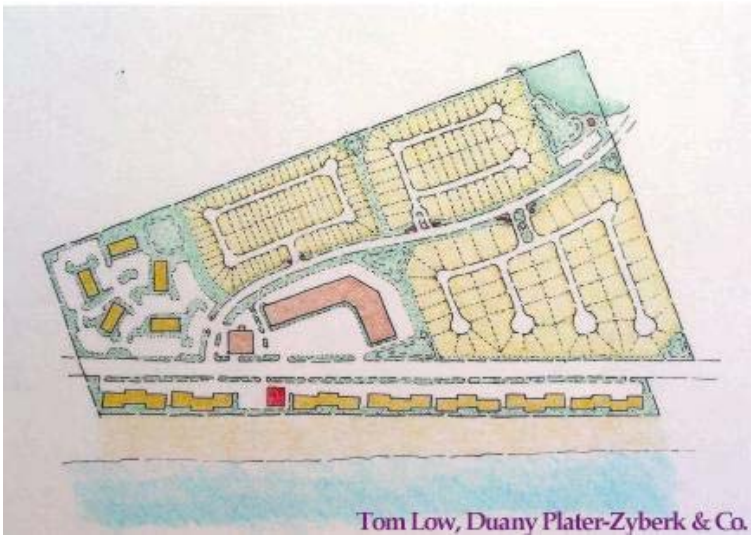
It is important to observe that this pattern of layout facilitates transportation choice by permitting a variety of routes and short walking trips to assorted destinations. Figure 1.2 depicts the New Urban development of Seaside, Florida in its current form on the top and how it would appear if it had been developed in conventional form with cul-de-sacs and segregated into single use pods.

[5] Image used with the permission of Andres Duany of Duany Plater-Zyberk and Co. The image is available at: http://www.dpz.com/research.htm.

FIGURE 1.2 Seaside, Florida - New Urban top, as Conventional bottom [6]



SEASIDE

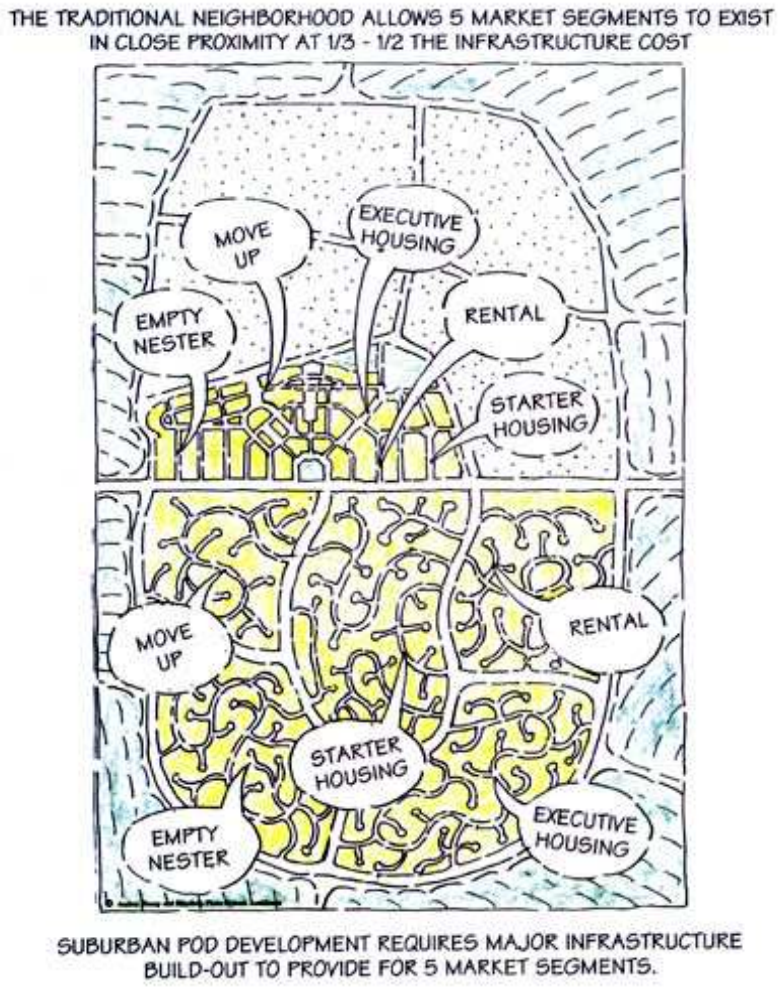


Another distinct aspect of New Urban communities important to visualize such a community is their mixing of residence types. The mixing of housing types is done to facilitate a wide economic and age dispersion of their residents. Offering a variety of housing options allows for neighborhoods to be compatible with persons throughout their life cycle. Figure 1.3 shows

[6] Image used with the permission of Tom Low of Duany Plater-Zyberk and Co.

how conventional development is frequently focused on specific market segments. Thus, conventional development forces residents to relocate out of one neighborhood to another, as their life situation changes. It can also influence the affordability of housing.

FIGURE 1.3 New Urban Community versus Conventional Market Segment Orientation [7]



It is important to note in this diagram that the New Urban layout not only facilitates the mixing of housing types but also is constructed at much higher densities. This pattern leads to a reduced strain on overall land consumption and the ability to lessen infrastructure costs.

[7] Image used with the permission of Andres Duany of Duany Plater-Zyberk and Co. The image is available at: http://www.dpz.com/research.htm.

Research Purpose

The purpose of this **exploratory research** is twofold. First, it will identify through the literature the essential characteristics of suburban greenfield[8] New Urban communities. New Urbanism is a relatively new design format that only began significant use in developments in the early 1980s. Because it is such a new design format, very few studies have been done on the attitudes and values of New Urban residents. Thus this study fills a gap by being one of the first to examine the attitudes of New Urban residents versus those of a conventional suburban development.

While New Urban communities offer a wide variety of characteristics, it is intended in this paper to reduce these down to the absolute essentials. Without these essential characteristics, a community would be hard pressed to claim development under New Urban principles. Second, the research will explore which of these characteristics are most valued by the New Urban residents of *Plum Creek*[9] and compare how these values may differ from those of the residents of the conventional suburban development of *Steeplechase*[10]. Both of these developments are located in the same market area.

Chapter Summaries

To achieve each of the two research purposes, the rest of this study is divided into five additional chapters. These chapters consist of Chapter II, which reviews and examines the literature on the physical characteristics of New Urban communities. Through this literature a conceptual framework of working hypotheses is developed. Chapter III, the setting chapter, introduces the reader to *Plum Creek*, a New Urban community and *Steeplechase*, a conventional

[8] Greenfield refers to land that has not previously been developed with a significant level of structures or urban form.
[9] Plum Creek is a New Urban development that is located in the central Texas city of Kyle.
[10] Steeplechase is a conventional suburban development located in the central Texas city of Kyle.

suburban development. These communities are studied in this research to examine how their residents value the essential characteristics of New Urbanism. Chapter IV operationalizes the conceptual framework from Chapter II and explains how survey research will be used to test each of the working hypotheses. Chapter V, the results chapter, presents the outcome of the survey and its analysis to assess each of the working hypotheses. Finally, Chapter VI makes recommendations based on the results both for possible state and local government response and for future scholarly research.

CHAPTER II: LITERATURE REVIEW

Chapter Purpose

This chapter reviews and examines the literature on the physical characteristics of New Urban communities. Specific attention is paid to those characteristics applicable to suburban greenfield development. The key purpose of this chapter is to develop the working hypotheses that distinguish differences between New Urban and conventional suburban developments. These working hypotheses are subsequently tested in later chapters.

New Urbanism

"In the US, the movement known as the New Urbanism or 'neotraditional planning' has emerged as an important alternative to prevailing patterns of low-density, auto-dependent land development" (Ellis, 2002, p. 261). This development pattern is commonly referred to as sprawl. Peter Calthorpe (1994, p. xi) argues that an important contribution of New Urbanism is the application of urban principles to the suburb while coping with the suburban economic and social imperatives. New Urbanism covers the full range of human development patterns from rural to urban core. "New Urbanism is applicable at all scales, from high-density Manhattan neighborhoods to hamlets in the countryside" (Ellis, 2002, p. 267).

New Urbanism currently represents a small portion of the development spectrum. Rob Steuteville, editor and publisher of the *New Urban News*, estimates that New Urbanism currently represents "3-5 percent of the market nationwide, with great variation regionally." Steuteville tracks New Urban developments nationally and has documented a total of 369 projects of at least

15 acres that have broken ground since the advent of New Urbanism. Table 2.1 provides national totals with a break down by year since 1996 and includes percent yearly increases.[11]

Table 2.1 National Totals of New Urban Developments

Year	Cumulative # of NU Developments *	Increase over previous year
1996	50	
1997	64	28.0 %
1998	97	51.5%
1999	124	27.8 %
2000	155	25.0 %
2001	213	37.4 %
2002	272	27.6 %
2003	369	35.6 %

Note: * Includes only developments of 15 or more acres in size.

New Urbanism may be implemented through various frameworks. These frameworks include, but are not limited to, Planned Unit Developments and form based zoning. Transect planning (a type of form based zoning) attempts to create immersive environments that preserve the location of each segment on the rural to urban continuum (Duany & Talen, 2002, p.1). Duany and Talen present the Transect as an alternative to use-based Euclidean Zoning [12] (2002, p. 7).

While infill development aimed at inner city areas is desirable, 95 percent of current building occurs in the suburbs (Ellis, 2002, p. 280). In these developments, New Urbanism strives to establish a "sense of community" that has been overlooked in conventional suburban development. Randall Crane (1996, p. 1) explains that New Urbanism attempts to get residents out of their cars to mix up land uses that typically would have been separated. This chapter

[11] Information from Rob Steuteville was provided by e-mail correspondence on April 6, 2004.
[12] Euclidean Zoning refers to use based zoning (typically single use) and is named after the 1926 Supreme Court case of Village of Euclid, Ohio v. Ambler Realty. This decision upheld the authority of governments to enforce zoning regulations.

focuses on the literature that discusses the "sub-urban" portion of the rural to urban development range.[13]

A Response to Sprawl

"Since World War II, the U.S. has excelled chiefly at creating a pattern of development known as suburban sprawl" (Bess, 2003, p. 2). This development is typically segregated by land uses and is reliant almost to exclusivity on the automobile for transportation (Jeffers, 2003, p. 1-3). Many believe, however, that "if a region is not growing statistically – in population or wealth – it should not be growing geographically" (Duany *et al*., 2000, p. 184). Andres Duany and Emily Talen (2002, p. 2) describe sprawl as unsustainable urban form that continues for an assortment of reasons: A preference in the United States for low-density housing, racism and white flight, lending practices and federal subsidies, construction practices, systems of government, and the planning regulatory framework of Euclidean based zoning. Duany and Talen (2002, p. 6) further add the observation of Fishman in the introduction of *The American Planning Tradition: Culture and Policy* that the fundamental problem with sprawl is its imposition of destructive simplicity on a complex system with disastrous results. They further promote an alternative: The diversity that is advocated by Jane Jacobs in her 1961 book *The Death and Life of Great American Cities* (Duany & Talen, 2002, p. 6).

Elizabeth Moule (2000, p. 105) argues that sprawl has a variety of effects on residents, which are particularly negative toward women, children, the elderly, as much as the poor and handicapped, and that the suburbs are optimized for the affluent, single adult. She explains that because sprawl does not offer a fine-grained mix of civic, institutional, and commercial development within walking distance, accessibility is limited. The lack of a fine-grained mix

[13] Information contained in this paper was gleaned from a variety of sources particularly those from academic papers published in scholarly journals. Much of the information is also obtained from the works of experts in the field.

results in the average person taking 12 automobile trips in the course of a day (Calthorpe, 1993, p. 20; Moule 2000, p. 105). New Urbanism responds to these problems brought on by sprawl.

Challenges to New Urbanism

New Urbanism has significant obstacles to overcome prior to gaining widespread application and acceptance as a development format. It can present a high risk to developers. Mixed-use developments can be complicated to implement; development costs can escalate; there is a difficulty in standardizing products; and it places high demands on management skills and design expertise (Lee & Ahn, 2003, p. 9). However, Cliff Ellis (2002, p. 271) estimates the demand for development in a New Urban form as between 25 and 40 percent of the total market. He claims that needs are not being met by conventional suburban development for this portion of the market. At the same time, developer's ability to respond to this need is "constrained by obstructive zoning codes, 'not-in-my-back-yard', (NIMBY) opposition, developer unfamiliarity, …[and] conservative financial institutions."

Philip Bess (2003, p. 4) emphasizes that New Urbanism runs up against zoning laws (segregated uses) and street design regulations that maximize efficiency for automobiles. These laws typically make New Urban communities illegal to build. He asserts that market forces alone will not be enough to allow New Urban communities to expand. For example, many building codes force larger than necessary new homes and lot sizes (Langdon, 1994, p. 154). Obstacles such as these must be overcome in order to implement New Urban development.

History of the Movement

Jill Grant (2002, p. 1) explains that beginning in the early 20th century zoning became entrenched as a way to separate incompatible land uses, but, by the end of that century, New Urbanists began to reverse this trend. New Urbanism emerged in the 1980s as an alternative to

conventional suburban development (Tu & Eppli, 1999, p. 1). As an architectural and design movement, New Urbanism was conceived of as a solution to the problems associated with sprawling development patterns (Katz, 1994, p. ix).

New Urbanism gained wide spread attention in 1981 with the development of Seaside, Florida, which was designed by Duany and Plater-Zyberk (Sander, 2002, p. 2). In 1993, the *Congress for the New Urbanism* (CNU) held their first annual convention.[14] This nonprofit organization promotes New Urbanism.[15] The Congress ratified a charter with guiding principles in 1996.[16] The founding members of the CNU were Peter Calthorpe, Andres Duany, Elizabeth Plater-Zyberk, Elizabeth Moule, Stefanos Polyzoides, Daniel Solomon, and Peter Katz (Sander, 2002, p. 2). Cliff Ellis (2002, p.262) describes New Urbanism as not being a monolithic movement but one whose principles can be achieved in many different ways. New Urbanism is the blend of neotraditional town planning (also referred to as Traditional Neighborhood Development - TND) championed from the east coast by Andres Duany and pedestrian pockets (now called Transit Oriented Development - TOD) promoted on the west coast by Peter Calthorpe.[17] Michael Southworth (1997, p. 1) explains that Traditional Neighborhood Development looks to classic small towns for inspiration and aims to be walkable with a clear civic structure, mixed uses and housing types, and harmonious design. He argues that Transit Oriented Development has a slightly different focus, more interested in walkability and access than on historical architectural styles. Both of these forms fit inside the definition of New Urbanism.

[14] The Congress for the New Urbanism refers to their annual conventions as a "congress".
[15] The Congress for the New Urbanism's web site notes that after being founded in 1993 it has grown to over 2300 members in 20 countries. It lists CNU's mission as advocacy of "the reconfiguration of sprawling suburbs into communities of real neighborhoods and diverse districts, the conservation of natural environments, and the preservation of our built legacy."
[16] The Congress for the New Urbanism charter was published in 1998.
[17] See for example: Crane, 1996, p. 1; Langdon, 1994, pp. 119-121; Tiesdell, 2002, p. 355.

Steven Tiesdell (2002, p. 356) asserts that both camps of New Urbanists have "sought a paradigm shift in residential design away from 'exclusivity and privacy' (through low-density development, segregation and isolation of different land uses, resulting in car-dependent and car-dominant environments) towards 'sociability and community' (through higher-density development, traditional urban forms, an emphasis on the pedestrian experience, and the integration of different land uses)". He further argues that much of the theory behind the movement has its roots in Clarence Perry's concept of the neighborhood unit and Leon Krier's concept of a mixed function urban quarter (2002, p. 359). Vincent Scully (1994, p. 226) suggests that New Urbanism "is in large part a revival of the Classical and vernacular planning tradition as it existed before International-Style Modernism perverted its methods and objectives".[18]

Significant Elements

New Urbanist developments have distinct characteristics that apply the principles laid out in the *Charter of the New Urbanism*. These characteristics include: housing for a diverse population, mixed uses, walkable streets, positive public spaces, integrated civic and commercial centers, transit orientation, and accessible open space (Calthorpe, 1994, p. xv). Phillip Langdon continues and argues that the main elements needed for effective communities are "generously connected streets and sidewalks," neighborhoods with a mix of housing "sizes, prices, and types," and neighborhoods laid out in such a way that residents can walk in a few minutes to "parks, stores, services, and other amenities of daily life" (1994, p. 236).

Key aspects of New Urban communities include mixed housing types, greater density, and traffic calming strategies; these aspects contrast with the conventional suburban form of strictly single-family homes, larger lots, and requisite use of the automobile (Brown & Cropper,

[18] References to Jane Jacobs and her observations on city life are found repetitively in the literature on New Urbanism (Langdon, 1994, p. 23; Lund, 2003, p. 2).

2001, p. 402). Hollie Lund (2003, p. 1) maintains the defining characteristics of New Urban communities are that they have compact walkable neighborhoods, a clearly defined center with public space, interconnected streets, diverse activities and housing types, prominently located civic spaces, and conveniently located public spaces. Michael Southworth (1997, p. 1) characterizes New Urban communities as those with "somewhat higher densities, mixed uses, provision of public transit, accommodation of the pedestrian and bicyclist, and a more interconnected pattern of streets."

All of these observations concerning underlying characteristics of New Urban communities describe increased density, a mix of uses and housing types, traditional neighborhood layout, transportation options, and frequently, traditional architectural elements in its buildings.

Increased Density

Jane Jacobs (1961, p. 205) cautions her readers that high density is frequently and incorrectly confused with overcrowding. Her writings focus on cities as opposed to the suburbs, but she speaks highly of Boston's North End with densities of 275 dwelling units per acre (du/acre) and cautions that on an urban scale, vitality falls off at less than 100 du/acre. For comparison, Jacobs provides the density of Greenwich Village as 125-200 du/acre.

New Urban suburban densities are not expected to be as high as in the urban areas of cities, however, they are higher than those found in conventional suburban developments. The intention here is to facilitate transportation options, including walking and transit, which require building densities to be raised. Duany and Talen (2002, p. 1) further maintain that a compact development pattern contributes to a more sustainable urban form. To facilitate transit, Calthorpe

explains that density should be at least 7 du/acre.[19] One of the first and most famous suburban New Urban communities, *The Kentlands* in Gaithersburg, Maryland, has a net density of 7.44 du/acre (Lee & Ahn, 2003, p. 4). Higher densities require a mix of multi-family and single-family housing types.

The opposite planning track from these New Urban increased densities is a requirement for larger lot sizes. Langdon (1994, p. 200) argues that many times the intent of large lot requirements is to implement "fiscal zoning" in which tax benefits for the community take the priority. Thus larger lots are expected to minimize the presence of lower income families and households with children.

Higher densities with a resultant compact development form are a significant characteristic of New Urban communities.[20] The requirement for higher densities is closely tied to facilitating transportation choice. Therefore one would expect that:

WH1: New Urban residents are more likely to value a compact urban form than would residents of a conventional suburban development.

A Mixture of Uses & Building Types

Mixing of uses and building types occurs at different conceptual levels in New Urban communities. Jill Grant (2002, pp. 2-3) concisely explains these different conceptual levels. One level affords an increased intensity of land uses in which a mix of types of the same use is found within the same area. An example of this level is a residential use that could have multi and single-family types of housing. This mixing allows for life cycle housing in which households of various compositions can live within the same neighborhood breaking the monoculture of neighborhoods dominated by one age group or family type. Such mixed housing types affords a

[19] This contrasts sharply with conventional suburban development patterns that frequently have ¼ acre or larger housing lots.

greater social mix along economic scales. The next conceptual level works to increase diversity of compatible uses and includes integrating previously segregated uses.[21] In this situation, mixing of uses occurs in close proximity or even through multiple uses within the same structure.

The intermixing of various uses in the same area and, at times, within the same structure is a distinct characteristic of New Urban communities. This mixing of uses is a notable departure from the typical single use zones established under Euclidean zoning. Duany and Plater-Zyberk (1994, p. xvii) maintain the importance of a neighborhood having a mix of activities including residential (live), work, shopping, school, church, and recreation.[22] A small example of this mixing is the desirability that every New Urban neighborhood have a small corner store (Duany, *et al*. 2000, p. 187). Bressi (1994, p. xxv) maintains that New Urbanism requires that neighborhoods include a diversity of people and activities. Moreover Marc Weiss (2000, p. 91) asserts that a neighborhood will only form a cohesive unit when adults and children can walk to shopping, services, schools, parks, recreation, jobs, and businesses. Thomas Comitta (2000, p. 113) addresses the requirement for mixed uses by recommending that under New Urbanism, parks need to be distributed in each neighborhood. In addition, they provide open space and conservation areas that define and connect different neighborhoods.

The community benefits from this mix for a variety of reasons. One of these benefits is the flexibility to change uses over time. "New Urbanist design allows ahead of time for a succession of different uses as buildings age" (Ellis, 2002, p. 278). Jill Grant (2002, p. 1) maintains that the intent behind mixing of uses is to increase economic vitality, social equity, and environmental quality. She further points out that mixed use is economically desirable,

---

[20] See for example: Shibley, 1998, p. 1; Southworth, 1997, p. 1; Tiesdell, 2002, p. 359, 361, 369; Tu & Eppli, 1999, p. 2.

[21] An example would be allowing a small retail store to be collocated along side of housing. Euclidian Zoning would previously have prohibited this arrangement by segregating housing and commercial to separate areas.

supporting sustainable development by allowing for the maximized use of infrastructure throughout the day.

Jacobs (1961, p. 83) observes that although most planners and architects are men, their projects produce plans that exclude men and form matriarchal societies with residential areas isolated from the rest of life. Philip Langdon (1994, p. 25) maintains that keeping children isolated in purely residential areas and away from stores, offices, and workplaces is done to keep them safer. Unfortunately, this practice can impede their education, maturity, and independence. Moule (2000, p. 105) also concludes that single use development is negative for women, children, elderly, and the disadvantaged. She adds that a fine-grained mix of uses provides the greatest accessibility. Jacobs (1961, p. 171) goes on to argue that downtowns are not declining because they are anachronisms or because of the automobile. Instead, she holds that "they are being witlessly murdered because of the separation of leisure and work uses".

Peter Calthorpe (1994, p. xv) claims that a major effort of the New Urbanism movement is to mix and reintegrate land uses. This separation is an end product of failed Modernist principles.[23] Therefore one would expect that:

WH2: New Urban residents are more likely to value the mixing of land uses than would residents of a conventional suburban development.

WH2a: New Urban residents are more likely to value the mixing of land uses within the neighborhood than would residents of a conventional suburban development.

WH2b: New Urban residents are more likely to value the mixing of land uses within close proximity of the neighborhood than would residents of a conventional suburban development.

---

[22] See also: Plater-Zyberk, 2000, p. 80

Besides such mixed uses, New Urbanism advocates the intermixing of different types of buildings with the same use in close proximity to each other.[24] Mixing of building types usually implies the reintegration of residential use. This reintegration of residential types produces more interesting and lively neighborhoods (Langdon, 1994, p. 166). The use of ancillary units (also called granny flats), which provide the option of a second dwelling unit on the property of the main dwelling, is encouraged to provide increased affordability and diversity (Calthorpe, 1993, p. 83). The mixing of residential housing types should encourage a larger range of incomes and variety of household structures within the neighborhood (Brown & Cropper, 2001, p. 402; Tiesdell, 2002, p. 360). Langdon (1994, p. 141) maintains that mixing of housing types, with the resulting wider range of resident's incomes, can be achieved through market forces to a limited extent. However, achieving an economic mix on a large scale requires government intervention.

Grant (2002, p. 2) explains that smaller post baby boom households receive greater housing options through mixing of types. She adds that housing near commercial and civic buildings serves to reduce elderly and children's reliance on persons with automobiles to provide transportation. Hence, this mixed layout reduces automobile use for everyone as housing locates near shopping, work, and recreation (play) locations.

Philip Langdon (1994, pp. 63-74) argues that much of the reasoning behind the extreme separation of types is the influence of market executives and their adherence to "market segmentation." This segmentation is intended to divide the market into specific customer categories to ease marketing. The end result are single use / single type pods targeted by dwelling type, kind of occupant, and price level and a resultant breakdown of community. In a

[23] These principles included those of Le Corbusier and Frank Lloyd Wright of segregating land use, of focusing on the automobile, and the privileging of private over public. These characteristics include those outlined by architect Tony Garnier of isolating uses, segregating industry, and freeing buildings from the street.

conventional form of development when a resident no longer fits within the segment that composes the neighborhood they live in, they feel compelled to relocate. This is exactly what New Urbanism works to prevent. New Urbanist designers generally prefer a considerable range of housing types in any given neighborhood.[25] Therefore one would expect that:

WH3: New Urban residents are more likely to value the mixing of housing types within the neighborhood than would residents of a conventional suburban development.

One significant goal of New Urbanism is to encourage a "sense of community" through the form of its built environment (Brown & Cropper 2001, p. 402). Talen (1999, p.1) argues that while New Urban communities do provide for more neighborhood interaction, it is arguable if this leads to a "sense of community". She recommends (p. 8) that advocates of New Urbanism "tone down social aspirations and declare that they are simply meeting human requirements of physical design rather than creating certain behaviors".[26]

An essential characteristic of New Urban communities is their intermixing of uses and residential types.[27] Thus, a New Urban neighborhood should accommodate a range of household types and land uses (Bressi, 1994, p. xxx; Lund, 2003, p. 1).

Neighborhood Layout

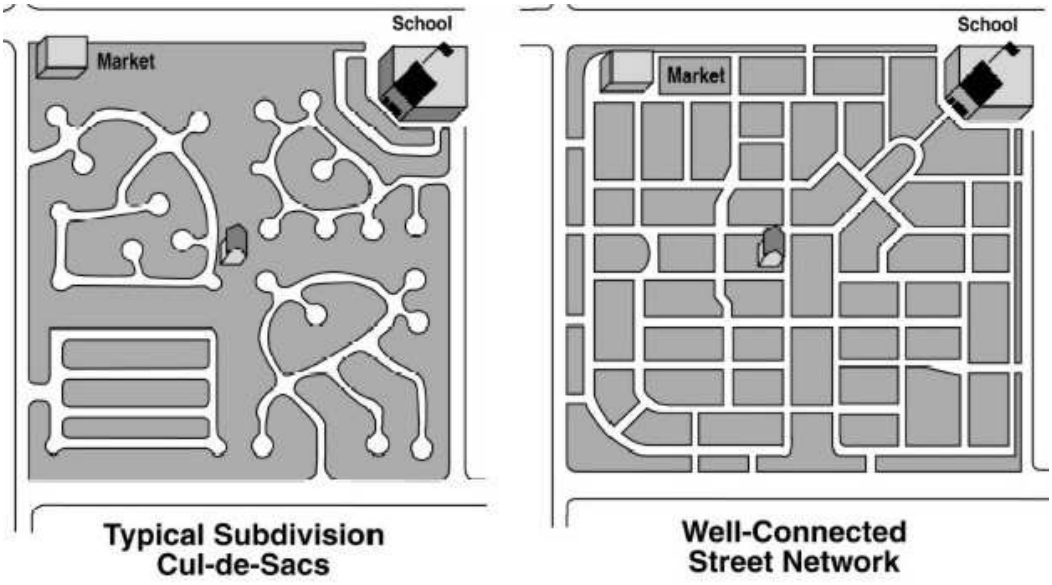
The physical layout of the community itself is a distinctive part of New Urban neighborhoods and harkens back to its traditional roots. Philip Bess (2003, p. 4) asserts that a key goal is the reduction of travel by automobile. Figure 2.1 is a diagram comparing a traditional grid

---

[24] This most commonly refers to mixing different housing types such as apartments, townhouses, or single-family detached housing in the same area.
[25] With one caveat, similar types of housing should face each other on a street. The rule being: "like faces like" (Langdon, 1994, pp. 139-140).
[26] The literature diverges on this topic with authors not reaching agreement. Much of this divergence appears based on how one defines a "sense of community."
[27] See for example: Brown & Cropper, 2001, p. 402; Lee & Ahn, 2003, p. 3; Duany *et al.*, 2000, p. 208; Southworth, 1997, p. 1.

street layout found in New Urban communities to that of one with cul-de-sacs more typical of conventional development patterns (Stakeholder Design Team, 2000, p. 15).

FIGURE 2.1 Cul-de-Sac versus Traditional Grid Street Layout [28]



Duany and Plater-Zyberk (1994, p. xvii) describe New Urban neighborhoods as having a defined center with an optimal size of approximately ¼ mile radius with a mix of dwellings, work locations, civic buildings, and parks.[29] The selection of a ¼ mile radius is based on an estimated 5-minute walking time.[30] Organization around a well-defined public space is intended to help build a sense of community (Langdon, 1994, p. 100; Tiesdell, 2003, p. 368). Southworth (1993, p. 8) concurs by arguing that as public places such as streets and parks have "eroded as a primary organizing element of urban form" there has been a corresponding "diminished sense of public life and identity".

There is agreement that prominent sites should be reserved for civic buildings and places (Bess, 2003, p. 4; Duany, 2000, p. 161). Moreover, Peter Calthorpe (1993, p. 23) refers to streets,

[28] Image used with the permission of Michael Ronkin: Oregon Department of Transportation and Oregon Department of Land Conservation and Development.

parks, plazas, and commercial centers as "the commons" and argues that they need to be brought back into the center of communities and reintegrated into community life.[31] It is important that these parks and green space also be distributed within the neighborhoods (Comitta, 2000, p. 119).

Jane Jacobs (1961, pp. 35-36) highlights the importance of allowing for "eyes on the street" which is accomplished through streets animated with people throughout the day/night and, significantly, buildings close to and with windows facing the street. Calthorpe (1993, p. 84) defines this closeness to the street as a 10-15' setback for residential and no setback for other areas. Daniel Solomon (2000, p. 126) explains that the typical minimum setback standard is best supplanted with a build-to line under New Urbanism. Garages should be recessed or preferably shifted to the rear of lots and accessed by alleyways (Calthorpe, 1993, p. 84). He adds that this pattern will create safer more active streets that neighbors can watch over. Building closer to the streets with facades forming a steady line strengthens the public area of the street (Langdon, 1994, p. 102). Moule and Polyzoides (1994, p. xxiii) suggest that the use of alleys absorb parking and service loads that allow for a greater pedestrian orientation on the main streets. They add (1994, p. xxii) that the streets should be laid out with minimum corner radii, two-way traffic, landscaped medians, and on-street parking.

Elementary schools should be within walking distance (Bess, 2003, p. 4). Duany argues that this school "walking distance" is defined as one that can be reached within 15 minutes (Duany, *et al*., 2000, p. 191). Jonathan Barnett (2000, p. 74), on the other hand, holds that the ideal size for a neighborhood would be based on a 5-minute walking radius from the school. This

[29] For more examples see: Calthorpe, 1994, p. xi; Langdon, 1994, p. 126; Sander, 2002, p. 2.
[30] See for example: Bess, 2003, p. 4; Crane, 1996, p. 2; Duany, *et al*., 2000, p. 198; Plater-Zyberk, 2000, p. 81.
[31] Calthorpe is not necessarily intending these to be located in the physical center but instead that they occupy a cognitive center in a person's mind.

ideal has its conceptual roots in Clarence Perry's New York City Regional Plan for neighborhood based elementary schools.[32]

Street connectivity with surrounding areas is strongly advocated (Duany, *et al*., 2000, p. 192). Stefanos Polyzoides (2000, p. 127) clarifies that individual developments should be seamlessly connected to their surroundings. Langdon (1994, p. 123) explains that the traditional roots of New Urbanism focuses heavily on facilitating connections. These connections include: streets to a network, residents to shops and services, individuals to each other, connecting diverse relationships, and connecting citizens to civic ideals and public responsibilities. Put bluntly and simply, New Urbanist communities are "not gated" (Sander, 2002, p. 2).

The neighborhood layout of New Urban communities is a further refinement of the requirements for mixing of uses and building types. It also is closely tied in to facilitating transportation choice.

Transportation Issues

Transportation under New Urbanism is viewed more widely than the exclusive focus on roads and automobiles. In fact, streets in a New Urban neighborhood take on less of a transportation focus but, instead, gain importance as a public space (Lee & Ahn, 2003, p. 3). In 1961, Jane Jacobs had observed that streets were considered a bad environment for humans (p. 20). She then counters that argument by noting that streets and sidewalks are the main public places of a community and, therefore, its most vital organs (p. 29).

Based on the grid and general neighborhood layout discussed earlier, the community should facilitate travel without the use of an automobile (Bressi, 1994, p. xxv). New Urbanism favors a grid street layout over one dominated by the loops and cul-de-sacs of a conventional

[32] These differences of a 15-minute diameter or a 5-minute radius are relatively insignificant.

suburban development. New Urban neighborhoods generally have longer streets but with short blocks and more intersections (Lee & Ahn, 2003, p. 7; Langdon, 1994, p. 131). This layout makes for a fine network of interconnected streets (Duany & Plater-Zyberk, 1994, p. xvii). The intention is to facilitate pedestrian trips by shortening them and to increase community legibility (Crane, 1996, p. 2). Plater-Zyberk (2000, p. 81) notes that New Urban street networks offer more interconnected streets, which better defuse traffic and offer multiple pedestrian routes. Moule and Polyzoides (1994, p. xxii) explain that streets should all be planned for their use by pedestrians and automobiles, not one or the other exclusively.

The hierarchical street layouts typically used today funnel more and more traffic into fewer and fewer large arterial routes instead of the multiple routes found in the traditional grid layouts. In an interview, Patrick Pinnell of Yale University School of Architecture described the problem with this type of system is that when a disruption occurs, such as a traffic accident, the single route is shut down and a "traffic heart attack" occurs (Langdon, 1994, p. 35). The use of a grid is beneficial in reducing congestion and providing direct routing by avoiding this heavy reliance on arterials (Kulash, 1994, p. 83). Langdon explains that traffic engineers fail to appreciate traditional grids because they work with excessively narrow objectives of maximizing road capacity. He argues (1994, p. 49) that the engineers are not interested in aesthetics or social consequences and have not balanced the needs of motorists with other roadway users.

Another key factor that distinguishes traditional (and New Urban) communities is pedestrian viability (Duany, *et al*., 2000, p. 208). New Urban street designs coupled with land uses provide key advantages for pedestrians and bicyclists over conventional alternatives (Ellis, 2002, p. 264). This consideration for pedestrians and bicycles has the potential to reduce the dependence on automobiles (Kulash, 1994, p. 83). A household that owns one less car can free

up approximately $5000 annually that no longer goes toward owning an automobile. This savings could translate into an additional $50,000 at 10% interest for a home mortgage (Duany & Plater-Zyberk, 1994, p. xix). Langdon (1994, p. 10) figured that in 1991, the average cost of owning and operating an automobile ran 43.6 cents per mile or $4360 per year if your drove 10,000 miles.

Jane Jacobs (1961, p. 35) points out that sidewalks need consistent use to contribute to "eyes on the street" and the general perception of community safety. She then concludes (p. 55-56) that sidewalks perform the vital function of building social capital (a key ingredient of a "sense of community") through bringing together people who do not "know each other in a private social fashion and who may not care to know each other at that level."

Streets should be narrow to increase safety, and they should be interconnected.[33] Roadway travel lanes in neighborhoods should be no wider than 10 feet (Duany, *et al*., 2000, p. 204). Southworth (1993, p. 8) concludes that, "designers must seriously re-examine the wasteful over engineered street standards that mandate the construction of costly and badly scaled streets in most communities." New Urban neighborhoods also typically use various forms of traffic calming methods to tame the automobile. At the same time, the conventional suburban developments that New Urbanism seeks to replace require the use of an automobile (Brown & Cropper, 2001, p. 402). In order to encourage pedestrian use in New Urban neighborhoods, streets should have minimum corner radii, landscaped medians where appropriate, utilize two-way traffic, and allow for on street parking (Moule & Polyzoides, 1994, p. xxi). All of these measures are aimed at reducing automobile speeds and encouraging pedestrian use.

[33] See for example: Sander, 2002, p. 2; Tu & Eppli, 1999, p. 2; Weiss, 1994, p. 91.

Hollie Lund (2003, p. 8) maintains that the pedestrian friendly streetscapes of New Urban communities, when coupled with the close location of parks and retail, increase pedestrian travel and neighbor interaction. She concludes that those people who walk in the neighborhood are more likely to interact and form relationships with neighbors. Thus New Urban communities provide for increased social interaction. Interestingly, she found that positive perceptions about the walking environment, even if someone did not walk, were positively linked with neighboring behaviors.

The goal of reducing automobile reliance in New Urban communities is closely tied to the requirement of increased neighborhood densities. William Lieberman (1994, p. 103) advises that public transit is only feasible at certain minimum densities. These residential densities are 18 du/acre within ½ mile for rail or bus, 12 du/acre within ¼ mile for bus, and a lowest viable density for bus being 5-7 du/acre. Office areas require a minimum FAR (floor area ratio) of .35-.50 for bus and 1.00 for rail.

New Urban neighborhoods still face significant problems in overcoming resident's heavy reliance on automobiles (Brown & Cropper, 2001, p. 414). For example, highways and arterials should skirt rather than split neighborhoods. Unfortunately, public works directors frequently prioritize traffic volume over neighborhood viability (Duany, *et al*., 2000, p. 194; Duany & Plater-Zyberk, 1994, p. xix). Susan Handy (2001, p. 3) agues that New Urbanism has the potential to reduce the need to travel by car, but that this potential may not change resident's behavior. Dependence on the automobile may be reduced, but the actual use may not be. She does note the New Urbanism contribution to a change in transportation planning. Before the advent of New Urbanism, the goal was to make it easier to drive, while now it is shifting to making it easier not to have to drive.

According to Sander (2002, p. 2), New Urbanist communities are not automobile centric and instead offer alternatives to travel by car. These alternatives include walking, bicycling, and the use of public transit (Crane, 1996, p. 3; Shibley, 1998, p. 1). Tiesdell (2002, pp. 359-360) sums up the transportation characteristics of New Urban neighborhoods as being walkable by supporting and providing safety for the pedestrian and having an interconnected network of streets. The neighborhood should reduce car dependence and increase options for transit usage. Therefore one would expect that:

WH4: New Urban residents are more likely to value transportation choices than would residents of a conventional suburban development.

WH4a: New Urban residents are more likely to value a walkable neighborhood than would residents of a conventional suburban development.

WH4b: New Urban residents are more likely to value public transportation connections to the neighborhood than would residents of a conventional suburban development.

Architecture

Architecture has a significant impact on the community. The design of New Urban communities is not intended to be deterministic of human behavior. However, at least from an east coast Traditional Neighborhood Development, perspective, there is a conviction that certain designs will encourage certain behaviors (Brown & Cropper, 2001, p. 403). Even Calthorpe (1993, p. 24) agrees that architecture should play a role in signaling a building's place in the community, specifically that civic buildings should stand out and residential or secondary buildings should not.[34] The conventional emphasis on convenience, comfortable interiors, and back yard private space has been at the expense of a vigorous neighborhood life (Langdon, 1994, p. 152).

[34] Calthorpe's advocacy is typically more directed towards walkability and access than on historical architectural styles.

In New Urban communities, building facades should be varied and entrances should face the street (Calthorpe, 1993, p. 85). Ray Gindroz (2000, p. 136) further adds that facades should be in scale with the width of the street, have large windows facing the street, and that buildings themselves should face each other across the street. The front of the homes should include porches, balconies, stoops, and bay windows to encourage sociability (Duany, *et al*., 2000, p. 205; Calthorpe, 1993, p. 85). Langdon (1994, p. 156) defines a usable front porch as being 6-8' deep and 10-12' wide.

Residential garages should have reduced visual impact and optimally are located on a rear alley. Garages should be set back at least 5' from the front façade if they are located towards the front of the lot. The goal in doing this is to increase the human scale and pedestrian orientation of the main street (Calthorpe, 1993, p. 86; Langdon, 1994, p. 159). This layout harkens back to traditional building style when the garage was typically a small building relegated to the rear of the lot and designed for only one automobile (Langdon, p. 149). Langdon (1994, p. 155) quotes Andres Duany, "No architect is skillful enough to make human life project itself on the façade of a house when sixty percent of it is given over to garage doors".

Under New Urbanism, buildings should not be treated as objects isolated from the environment. Instead, it is important that buildings respond to the surrounding fabric of surrounding buildings and spaces and to the local traditions (Bressi, 1994, p. xxx). Mark Schimmenti (2000, p. 169) explains one of the principles of New Urbanism is that buildings need to "provide their inhabitants with a clear sense of location, weather, and time. Buildings of different types or uses can be made compatible and located near one another if attention is paid mass, height, and architectural styles/shape (Langdon, 1994, p. 167; Lennertz, 2000, p. 109).

Stefanos Polyzoides (2000. p. 127) argues that New Urban developments and buildings link seamlessly to their surroundings. He explains that this attachment occurs by linking architecture to a place within a regional framework as opposed to its place in time. Design choices should link to the existing place.

Traditional architectural elements such as front porches, reduced visual impact of garages, and houses located closer to the street are very significant visual characteristics that differentiate New Urbanism from conventional suburban development. This architecture is very apparent in viewing images of New Urban communities.[35] Therefore one would expect that:

WH5: New Urban residents are more likely to value traditional architectural elements than would residents of a conventional suburban development.

Diversity

As has been established in the review of the physical characteristics of New Urban communities, the diversity among persons in the neighborhood is an intended consequence of the physical form of New Urban communities.[36] Bressi (1994, p. xxv) maintains that New Urbanism requires that neighborhoods should be diverse of both people, and activities. Calthorpe (1993, p. 64) explains that these residents are diverse in both economic standing and age. He attributes this diversity to a wide variety of persons being encouraged to live within a New Urban community based on its physical design. Along with several other issues, social diversity has been "brought to the fore" in the New Urban movement (Tiesdell, 2002, p. 356).[37] Diversity is a recurring element of the essential characteristics of New Urbanism.

[35] See for example: Langdon, 1994, p. 138, 139, 159, 168; Ellis, 2002, p. 265, 276, 280; Katz 1994, p. xxxvii, 2, 13-17, 24-25, 28-46, 51, 173.
[36] This diversity is directed not only towards residents but also to visitors and workers within the neighborhood.
[37] Tiesdell also includes issues of environmental diversity, affordability, sustainability, walkability, and transit systems.

Therefore one would expect that:

WH6: New Urban residents are more likely to value diversity among neighborhood residents than would residents of a conventional suburban development.

Previous Research

In her paper on New Urbanism and travel behavior, Susan Handy notes research challenges presented in the study of New Urbanist communities (2001, p.1). She points out the concern of researchers of the impact of self-selection that might skew neighborhood studies. On the topic of transportation, she notes that a person who desires to walk more may select a New Urban community. This self-selection would draw into question the conclusion that the physical characteristics of the community were the causal factors of more walking. Handy counters this argument by pointing out that New Urbanist communities may provide changed opportunities so this in itself should be looked at as a form of causality (p. 2). Thomas Sander (2002, p. 3) also expresses a concern for selection bias and adds concern for the Hawthorn effect and the relative infancy of New Urban projects.

As a relatively new phenomenon, the literature of New Urbanism is undeveloped with little empirical research covering its communities. However, several studies are significant. Barbra Brown and Vivian Cropper (2001, p. 407) evaluated psychological and social goals in research that involved a survey of residents in a New Urban and a comparable conventional subdivision. Their research question was not directed specifically at understanding the physical characteristics of these development types. It is important, however, for this review in its use of a survey method. Initially, Brown and Cropper attempted a telephone survey but achieved a very low response rate. A switch was then made to mailed questionnaires with a $10 incentive for each completed questionnaire. This change resulted in a response rate of 65 and 67 percent

(Brown & Cropper, 2001, p. 407). Survey response rate was also low (21 percent) in a working draft reviewed by Sander (2002, p.6) of a study of Harbor Town near Memphis, Tennessee.

Hollie Lund (2003, p. 3) researched pedestrian travel and neighbor interaction in New Urban communities. Lund used a four-stage mail out mail back survey to the entire population. She achieved a 34 percent response rate and found that respondents whose households contained children were more likely to return the questionnaire. Lund (2003, p. 8) drew several conclusions from her study. She found that pedestrian friendly streetscapes and locating amenities such as parks and retail along these routes increased pedestrian travel and neighbor interaction. Lund also concluded that people who walk in the neighborhood were more likely to interact and form relationships with their neighbors. Personal variables, however, play an important role. Ultimately, she concluded that there is a potential to increase social life in communities through the implementation of New Urban characteristics.

Charles Tu and Mark Eppli in their 1999 study of the Kentlands (p. 3), Maryland used a hedonic pricing technique[38] to research whether persons are willing to pay a premium for homes in a New Urban community, in this case the Kentlands. Their conclusion (p. 6) was the first empirical evidence that New Urban housing was desirable and valuable from a market perspective. This premium was separate from housing quality.

Of particular note was Lund's recommendation that further research is needed into why persons move into New Urban communities (2003, p. 8). This recommendation reinforces the one made by Michael Southworth (1997, p. 6) that resident surveys would be particularly informative if comparisons are made between New Urban and conventional suburbs that are located in the same market area.

[38] Hedonic pricing technique describes a model in which a product is viewed as a group of variables that combine to produce the total price of the product. The value of the individual variables is estimated using multiple regression.

Robert Shibley recommended in 1998 (p. 6) that New Urbanism needs continual exploration and that it needs to develop an explicit philosophical base. He offers pragmatism as a theory home for New Urbanism (p. 7). This theme of pragmatism is echoed in Emily Talen's (2002, p. 293) description of the use of the Transect planning system to implement New Urbanism. She describes it as being a new approach to planning urban environments that is a "pragmatic, alternative system of zoning".

Summary of Conceptual Framework

Having examined in some detail the characteristics of New Urban communities, a set of working hypotheses (conceptual framework) has been developed to explore which of these characteristics the residents value. The working hypotheses summarized in Table 2.1 propose that the essential characteristics of New Urban communities are desired and valued by its residents. It is expected that New Urban residents would differ from residents of conventional suburban developments along the following dimensions:

WH1: New Urban residents are more likely to value a compact urban form than would residents of a conventional suburban development.

New Urban developments are built to higher **density** levels than those that would be found in a conventional suburban development. A key element of New Urban communities is their higher densities (Brown & Cropper, 2001, p. 402; Southworth, 1997, p. 1). The primary reason for this higher density is to facilitate transportation choice and a mix of land uses.

WH2: New Urban residents are more likely to value the mixing of land uses than would residents of a conventional suburban development.

WH2a: New Urban residents are more likely to value the mixing of land uses within the neighborhood than would residents of a conventional suburban development.

WH2b: New Urban residents are more likely to value the mixing of land uses within close proximity of the neighborhood than would residents of a conventional suburban development.

Mixed land uses are another essential characteristic of New Urban communities. Hollie Lund maintains that New Urban communities feature a clearly defined center with public space, diverse activities and housing types, prominently located civic spaces, and conveniently located public spaces (2003, p. 1). This mix of uses includes integrating previously segregated uses in close proximity or even through multiple uses within the same structure (Grant, 2002, pp. 2-3). This mixing of uses is intended to allow for a variety of transportation options among residents.

WH3: New Urban residents are more likely to value the mixing of housing types within the neighborhood than would residents of a conventional suburban development.

To allow for a variety of residents in age and economic standing a **mixing of housing types** is encouraged. This mixing of residential types produces more interesting and lively neighborhoods (Langdon, 1994, p. 166). This format means that within the same neighborhood you can potentially find detached single-family homes, townhouses, accessory dwelling units, and other housing types. The intent of mixing types of residential housing is to increase the range of incomes and variety of household structures within the neighborhood (Brown & Cropper, 2001, p. 402)

WH4: New Urban residents are more likely to value transportation choices than would residents of a conventional suburban development.

WH4a: New Urban residents are more likely to value a walkable neighborhood than would residents of a conventional suburban development.

WH4b: New Urban residents are more likely to value public transportation connections to the neighborhood than would residents of a conventional suburban development.

Because New Urban developments are built to higher density levels with a mix of land uses, a variety of **transportation options** exist beyond the exclusive reliance on the automobile. These options range from increased walkability of the neighborhood to the provision of public transportation. Moule and Polyzoides explain that streets should all be planned for their use by

pedestrians and automobiles, not one or the other exclusively (1994, p. xxii). A key factor that distinguishes traditional (and New Urban) communities is pedestrian viability (Duany, *et al*., 2000, p. 208). New Urban street designs coupled with land uses provide key advantages for pedestrians and bicyclists over conventional alternatives (Ellis, 2002, p. 264).

According to Sander, New Urbanist communities are not automobile centric and instead offer alternatives to travel by car (2002, p. 2). These alternatives include walking, bicycling, and the use of public transit (Crane, 1996, p. 3; Shibley, 1998, p. 1). Tiesdell sums up the transportation characteristics of New Urban neighborhoods as being walkable by supporting and providing safety for the pedestrian and having an interconnected network of streets. The neighborhood should reduce car dependence and increase options for transit usage (2002, pp. 359-360).

WH5: New Urban residents are more likely to value traditional architectural elements than would residents of a conventional suburban development.

Finally, **traditional architectural elements** are found in a majority of New Urban developments. These elements come in a variety of forms including design characteristics such as usable front porches to encourage neighbor interaction. The front of the homes should include porches, balconies, stoops, and bay windows to encourage sociability (Duany, *et al*., 2000, p. 205; Calthorpe, 1993, p. 85). They can also include elements like the placement of buildings with reduced setbacks and garages or parking lots moved to the rear of lots. Buildings of different types or uses can be made compatible and located near one another if attention is paid mass, height, and architectural styles/shape (Langdon, 1994, p. 167; Lennertz, 2000, p. 109).

WH6: New Urban residents are more likely to value diversity among neighborhood residents than would residents of a conventional suburban development.

Diversity among neighborhood residents is the first characteristic that was developed. Bressi maintains that New Urbanism requires that neighborhoods should be diverse of both people and activities (1994, p. xxv). Because of the physical design of New Urban developments a wide range of residents based on economic standing and age are encouraged to live within the community (Calthorpe, 1993, p. 64). Table 2.1 identifies the literature associated with each working hypothesis.

TABLE 2.2 Conceptual Framework Link to the Literature

Conceptual Framework Link to Literature	
Working Hypotheses	**Literature**
(**WH1**) New Urban residents are more likely to value a compact urban form than would residents of a conventional suburban development.	Brown & Cropper (2001) Duany & Plater-Zyberk (2000) Duany & Talen (2002) Southworth (1997)
(**WH2**) New Urban residents are more likely to value the mixing of land uses than would residents of a conventional suburban development.	Calthorpe (1994) Grant (2002) Langdon (1994) Lund (2003) Moule (2000) Plater-Zyberk (2000)
(**WH2a**) New Urban residents are more likely to value the mixing of land uses within the neighborhood than would residents of a conventional suburban development.	Calthorpe (1994) Lund (2003) Moule (2000) Plater-Zyberk (2000)
(**WH2b**) New Urban residents are more likely to value the mixing of land uses within close proximity of the neighborhood than would residents of a conventional suburban development.	Grant (2002) Langdon (1994) Lund (2003)
(**WH3**) New Urban residents are more likely to value the mixing of housing types within the neighborhood than would residents of a conventional suburban development.	Brown & Cropper (2001) Calthorpe (1993) Langdon (1994) Lund (2003)
(**WH4**) New Urban residents are more likely to value transportation choices than would residents of a conventional suburban development.	Bressi (1994) Crane (1996) Moule & Polyzoides (1994) Sander (2002) Shibley (1998)
(**WH4a**) New Urban residents are more likely to value a walkable neighborhood than would residents of a conventional suburban development.	Duany, *et al*. (2000) Ellis (2002) Moule & Polyzoides (1994) Tiesdell (2002)
(**WH4b**) New Urban residents are more likely to value public transportation connections to the neighborhood than would residents of a conventional suburban development.	Crane (1996) Lieberman (1994) Sander (2002) Shibley (1998)
(**WH5**) New Urban residents are more likely to value traditional architectural elements than would residents of a conventional suburban development.	Duany, *et al*. (2000) Bressi (1994) Langdon (1994) Lennertz (2000) Shibley (1998)
(**WH6**) New Urban residents are more likely to value diversity among neighborhood residents than would residents of a conventional suburban development.	Bressi (1994) Calthorpe (1993) Calthorpe (1994) Tiesdell (2002)

Chapter Summary

This examination of the literature related to New Urbanism identifies the essential characteristics of New Urban developments. The readings make it clear both what these characteristics are and why they are included in New Urbanism. Put another way, it is clear what New Urbanism is selling and why they are selling this development format. The essential physical characteristics of New Urbanist communities are: higher densities, mixed use and types, transportation choices, and traditional architectural elements. These combine to encourage the characteristic of a diverse population. Other elements of New Urban communities, such as having a grid pattern layout of streets are used to achieve the essential characteristics.

Nevertheless, the literature does not indicate an understanding of which of the characteristics influence a resident's decision to select a New Urbanist community for their residence. These essential characteristics of New Urban communities are linked in the conceptual framework to working hypotheses concerning what one would expect residents in New Urbanist community to find attractive. In short, we know what New Urbanism is selling, but there is an absence of information as to what motivates New Urban residents to "buy."

Moreover, it is also clear that market forces alone will not move New Urbanism forward. There will have to be active government involvement to change the legal framework in which development occurs.

The next chapter reviews the setting in which this research will take place. Because the conceptual framework builds working hypotheses that expect that New Urban residents will value specific community characteristics more than the residents of a conventional development, it is appropriate to compare representative neighborhoods. For this study *Plum Creek*, a New Urban development, and *Steeplechase*, a conventional suburban development, will be examined. Both of these developments are

located in the same market area of Kyle, Texas. The next chapter will provide an overview of these two developments.

CHAPTER III: SETTING

Chapter Purpose

The previous chapter developed from the literature a set of working hypotheses. These working hypotheses expect that certain characteristics will be more highly valued by residents of New Urban developments than those of conventional suburban developments. This study tests these working hypotheses by conducting a survey of residents of a New Urban and a conventional suburban development in the same market area. For this study, the New Urban development of *Plum Creek* and the conventional suburban development of *Steeplechase* are studied. Both of these communities are located in the central Texas community of Kyle. The purpose of this chapter is to introduce the reader to these two communities.

City of Kyle, Texas

Kyle is located 20 miles south of Austin, Texas and along the Austin-San Antonio corridor.[39] It is part of the Austin-San Marcos Metropolitan Statistical Area (MSA) as defined by the U.S. Census Bureau. According to the U.S. Housing and Urban Development's State of the Cities Data System, Kyle's population was 2,225 in 1990 and had grown to 5,314 by 2000, which represents an increase of over 138 percent. The ethnic breakdown in 2000 of this population was 52.3% Hispanic (All races), 37.9% White (Non-Hispanic), 8.0% Black (Non-Hispanic), and 1.8% Other (Non-Hispanic). The median household income in 1999 was $47,534 for Kyle compared to $48,950 for the entire Austin-San Marcos MSA.[40]

In 2000, there were 1,560 total housing units in Kyle. Of these, 81.6% were owner occupied, 18.4% renter occupied, and 4.4% were vacant. The median household owner's home value was $93,168, while for renters the median household gross rent of $575. Of the household owner's home value, 21.2%

[39] More information is available at: http://www.cityofkyle.com/history.html
[40] Available from: http://socds.huduser.org/scripts/odbic.exe/quicklink/screen2.htm?statestring=48

fell in the *Value in the Lowest National 20%*, 77.8% in the *Value in the Middle National 60%*, and 1.0% in the *Value in the Highest National 20%*.[41]

Plum Creek Development

Plum Creek[42] is located in the central Texas city of Kyle. The development is located on the west side of Interstate Highway 35 on Farm to Market 150. According to Peter French, project manager for the developer Benchmark Development, *Plum Creek* is being developed on 2200 acres of land[43]. The development is being built on land owned by the Negley family who decided in the early 1990s to pursue development. Initial target price for homes in the first phase of development was set at between $88,000 and $300,000[44]. Plum Creek is a Planned Unit Development (PUD) that is authorized under its own Kyle city ordinance.

Currently *Plum Creek* has single-family detached homes and townhouses. Plans call for future apartment buildings to be added to this mix. Accessory dwelling units are authorized within the development.[45] Most of the development to this point has been residential in nature. However, a daycare center is located near the center of Phase I; numerous pocket parks are scattered throughout the neighborhood; and a commercial/office component has been built near the main entrance. Land has been donated to the Hays County Independent School District near the center of Phase I close to land set aside for a future church. Future plans also call for a town center with commercial or mixed-use component in Phase II. In Phase II, land for a performing arts center was donated to the school district as well. Construction has been completed on this facility, and it is now in operation by the school district.

[41] Data from U.S. Housing and Urban Development's State of the Cities Data System using 1999 dollars.
[42] See also: http://www.plumcreektx.com/
[43] Interviewed March 11 and April 18, 2003.
[44] A considerably wider range of price points than would be found in a conventional development geared towards single market segments.
[45] These are also referred to as ancillary units or granny flats.

Figure 3.1 is an image showing the first phase of *Plum Creek*. The street pattern is of a modified grid pattern without the use of cul-de-sacs. Parks and green space including a golf course are prominently displayed. Phase I, which is nearing build out is located to the left of the golf course[46].

FIGURE 3.1 *Plum Creek* Development [47]

Large-scale production homebuilders have primarily built *Plum Creek's* homes. These builders include *Milburn Homes*, *Legacy Homes*, *DR Horton*, and *Pulte Homes*.[48] The first homes were sold in *Plum Creek* in 1999. Phase I is still under construction but nearing completion. Lot sizes vary from 25' wide for townhouses and up to a maximum of 60' wide. Currently most lots are platted in the 35' to 45' range. There were 758 viable addresses that composed the population frame for *Plum Creek*.[49] For these

[46] Phase II will be located to the right of the golf course in this image.
[47] Adapted from image by *Bosse, Compton, & Turner* for *Benchmark Development, Inc*. Used with permission of Peter French of *Benchmark Development, Inc.*
[48] For further see: *Milburn Homes* - http://www.milburnhomes.com/, *Legacy Homes* - http://www.legacy-homes.com/, *DR Horton* - http://www.drhorton.com/corp/, and *Pulte Homes* - http://www.pulte.com/,
[49] Addresses were considered to be viable if they had a home built on it, which was owned by an individual person as opposed to a builder, financial institution, or government agency.

homes the mean 2003 accessed value was $147,984 with a median of $144,330 and a mode of $120,930.[50] Of these there was a high 2003, assessed value of $291,460 and a low of $91,570.

Looney Rick Kiss, Inc, out of Tennessee provided the architectural design standards for the development. These design standards provide for a traditional style of home. A typical street view with these traditionally styled homes is provided in Figure 3.2.

FIGURE 3.2 View of traditionally styled homes along a *Plum Creek* Street

From this picture, the smaller lot sizes with houses located closer to the street can been seen. Also, evident in this picture is that garages for automobile storage have been removed from the front of the house and placed along a rear alley. During early development and where it was required by geography, some homes had front accessed garages, but even these were shifted to the rear of the lots as shown in Figure 3.3.

[50] One unexplained low assessed value of $68,230 was excluded when calculating this data.

FIGURE 3.3 *Plum Creek* home with atypical front access garage

Visible in this picture is a New Urban preference for allowing pedestrian access directly to the home rather than the conventional access of a walkway off of the driveway. Another New Urban characteristics found in *Plum Creek* is narrower-streets[51] with sidewalks and traffic calming measures such as roundabouts. Note in this picture that the sidewalk is separated from the curb with an ample planting strip.

Plum Creek has a wide variety of uses beyond residential within the development. These include numerous pocket parks, a golf course, running trails, a pool with community center, and a day care center. On the other hand, it is significant to note the absence of any form of public transit service to this development.[52]

The marketing material for *Plum Creek* refers to the development as being a traditional neighborhood development (TND) although is does not use the specific words "New Urbanism".

[51] Streets in *Plum Creek* are built as narrow as 27 feet with alleys down to 20 feet.
[52] A minor additional note is that the mixing of uses in *Plum Creek* is accomplished at a relatively course grain for the development overall. Within the development itself large sections are dedicated to one use or another, mostly residential.

Steeplechase Development

Steeplechase[53] is also located in the central Texas city of Kyle so it is in the same market area as *Plum Creek*. It is located on the east side of Interstate Highway 35 on County Road 157. For this study, *Steeplechase* refers to the combined neighborhoods of both the original *Steeplechase* and the newer *Park at Steeplechase* being built across the street from the original. *Steeplechase* is a conventional suburban development built under the standard development code of Kyle.[54] According to the developer, no variances from this code were authorized for the development.

Steeplechase was developed by *Granite Development*, which is owned by Kip Kronenburg.[55] The original builders were *Mainstreet Homes*, *Doyle Wilson Homebuilder, Inc.*, and Clyde Copus. *Ryland Homes* later replaced *Doyle Wilson* and Clyde Copus.[56] The first three are builders prominent in the local Austin-San Marcos metropolitan area. *Ryland Homes*, on the other hand, is a national homebuilder. According to Kronenburg, the first portion of *Steeplechase* broke ground in 1995 and achieved build out in 1998. It was built quite rapidly with 270 homes completed within the first year and completion of 660 homes in three years. The development covers approximately 225 acres and the typical lot size is 60' x 120'. There were 575 viable addresses for the original portion of *Steeplechase* that went towards building the population frame for *Steeplechase*.

KB Homes is the builder of *The Park at Steeplechase* being erected across the street from the original development.[57] The land it is built on was developed by a limited partnership and then turned over to *KB Homes*. There were 47 viable addresses from *The Park at Steeplechase* that went towards

---

[53] See also: http://www.steepleweb.com/Content/home.asp and http://www.kbhome.com/community/CommunityMgrPageDetail.asp?commid=00868044&sid=716200584

[54] This contrasts with *Plum Creek* that required its own development ordinance under a Planned Unit Development so that it could be built with New Urban characteristics.

[55] Interviewed by telephone February 24 and 27, 2004.

[56] For further see: *Mainstreet Homes* - http://www.mainstreethomes.com/, *Doyle Wilson Homebuilder* - http://www.fastcompany.com/magazine/04/doyle.html, *Ryland Homes* - http://www.ryland.com/, and *Clyde Copus* - http://www.bizjournals.com/austin/stories/2003/03/17/daily37.html?t=printable.

[57] For further see: *KB Homes* - http://www.kbhome.com/community/CommunityMgrPageDetail.asp?commid=00868044&sid=716200584.

building the population frame for the overall *Steeplechase*. This section is substantially still under construction.

In the overhead view of the development presented in Figure 3.4, one can see that *Steeplechase* does have a number of cul-de-sacs although it also has a modified grid in some areas reminiscent of the traditional grid street layout found in New Urban communities.

FIGURE 3.4 Overhead Picture of *Steeplechase* Development [58]

A total of 622 addresses were determined to be viable and composed the population frame for *Steeplechase* for this study.[59] For these homes the mean 2003, accessed value was $120,112 with a

[58] Adapted from overhead photo produced in December 2001 for *Bosse, Compton, & Turner* for *Benchmark Development, Inc*. Used with permission of Peter French of *Benchmark Development, Inc*.

[59] Addresses were considered to be viable if they had a home built on it, which was owned by an individual person as opposed to a builder, financial institution, or government agency.

median of $116,620 and a mode of $112,460.[60] Of these, the high value was $186,160 and a low of $70,970.[61] Table 3.1 provides a comparison of assessed values of homes in *Plum Creek* and *Steeplechase*.

Table 3.1 Year 2003 Assessed Values of *Plum Creek* & *Steeplechase* Homes

	Plum Creek	***Steeplechase***
Mean	$147,984	$120,112
Median	$144,330	$116,620
Mode	$120,930	$112,460
High Value	$291,460	$186,160
Low Value	$91,570	$70,970
# of Dwelling Units **	759	623

** Current as of 2003 Hays County Appraisal District Records

Figure 3.5 and 3.6 show typical street scenes from *Steeplechase*. Note the garages accessed from the front of the houses and the large set back from the street that has become common in conventional suburban developments. The view also shows that the sidewalk abuts the curb and is not separated by a planting strip. The streets in *Steeplechase* range from 26 feet up to 36 feet wide.

FIGURE 3.5 Typical street scene from *Steeplechase* with two story homes

[60] One unexplained low assessed value of $57,460 was excluded when calculating these figures.
[61] The Hays County Appraisal District provided assessed value and addresses.

FIGURE 3.6 Typical street scene from *Steeplechase* with single story homes

Steeplechase was developed using the standard development code of Kyle and would be considered a Conventional Suburban Development. The neighborhoods themselves are entirely residential with no other uses such as parks or planned recreational space. The development is entirely served by the automobile without any form of public transit connections. An elementary school is however located across the street from *Steeplechase*.

Selection of Comparative Neighborhoods

The choice of specific neighborhoods for this exploratory research was based on several considerations. First *Plum Creek* was selected based on it being a community designed following the essential characteristics of New Urbanism. Following this, the selection of a comparative conventional suburban neighborhood was required. Priorities to select this second neighborhood included location in the same market area, comparable number of dwelling units, and roughly similar middle-income housing. During an interview with Kyle City Manager, Tom Mattis, he recommended that *Steeplechase* be selected as the comparison community.[62] This recommendation was based on a best fit of a similar neighborhood to *Plum Creek* but one constructed under a conventional design format.

[62] Interviewed December 18, 2003.

Chapter Summary

This chapter described the two developments that are compared in this study. *Plum Creek* has many New Urban characteristics. *Plum Creek* meets or will meet all of the essential characteristics of New Urbanism discussed in Chapter II, except that *Plum Creek* is not served by public transit and it is unlikely to be in the foreseeable future.

Steeplechase provides the comparison Conventional Suburban Development for this study. The individual characteristics of these two development subdivisions are important in that they are expected to be representative of their respective development formats. The next chapter discusses in detail the deliberate process used to design the survey instrument and sampling technique. Chapter IV will also show how this survey is used to test the working hypotheses developed in Chapter II.

CHAPTER IV: METHODOLOGY

Chapter Purpose

This chapter provides the heart of this research study by operationalizing the conceptual framework that was developed in Chapter II. It explains how the six working hypotheses are tested in the setting of two communities located in Kyle, Texas.

Research Technique

The research method selected for this study is **survey research**. Surveys are well suited to address questions about large populations using sample data (Babbie, 2001, p. 268).

The survey questionnaire contained questions that were developed from the working hypotheses. The survey instrument was designed to operationalize the working hypotheses. A series of questionnaire items was developed for each New Urban characteristic (density, mixed use, mixed type, transportation, architectural, and diversity). The questions were designed for a Likert response scale. The items are analyzed separately and combined to create a scale for each New Urban characteristic. The details of the operationalization are highlighted in Tables 4.1 through 4.5. Each dependent variable and composite scale was associated with a single working hypothesis. The working hypotheses were then in turn tested using the means of their composite scales that were separated according to the independent variable of neighborhood dichotomy.

Table 4.1, which continues through to Table 4.5, operationalizes the conceptual framework by linking each working hypothesis and its associated dependent variable with specific groups of questions on the survey instrument. Empirical evidence was determined to support the respective working hypothesis when the mean score for the dependent variable's composite scale is found to be significantly

greater in the New Urban neighborhood, *Plum Creek*, over that of the conventional suburban neighborhood, *Steeplechase*.[63]

Variables

Because this study is interested in comparing the attitudes of New Urban versus Conventional Suburban Development resident attitudes about essential characteristics of New Urbanism, the characteristics (density, mixed use, mixed type, transportation, and diversity) are the dependent variables. The independent variable is the neighborhood dichotomy, which will be either New Urban for *Plum Creek* or Conventional for *Steeplechase*. Dependent variables[64] are individually linked to a specific working hypothesis.

Scale Construction

The dependent variables are represented by a composite scale calculated by finding the mean value of the coded responses for each group of questions. A composite is used because there is "no clear unambiguous single indicator" for each of the dependent variables (Babbie, 2001, p. 149). Babbie argues that using several data items gives us a more comprehensive and accurate indication (2001, p. 149). A composite scale was calculated for each dependent variable of each case. This scale was constructed by finding the mean of the responses for each group of questions linked to that variable.[65] These questions used a *Likert* scale of standardized response categories that were coded according to the method described in Table 4.6. This coding system was designed to produce an ordinal measure of values between one (1) and five (5). A value of five was considered most supportive of the given New Urban characteristic.

[63] The mean scores can fall on a range from 1 through 5 with the larger value being considered more supportive of New Urban characteristics.
[64] These variables are named: Density, Mixed Use, Mixed Use Neighborhood, Mixed Use Proximity, Mixed Type, Transportation Choice, Walkable, Transit, Architectural, and Diversity.
[65] An advantage of this method was that a mean could be calculated even if not all questions had been answered on the individual survey. As long as some questions were answered within a group a mean was determined and composite scale calculated.

TABLE 4.1 Operationalization of Conceptual Framework

Operationalization of Conceptual Framework		
Working Hypotheses # 1		
Independent Variable	Dependent Variables	Hypothesis Direction
	Survey Questions (Likert Scale)	
	Composite Scale	
(WH1) New Urban residents are more likely to value a compact urban form than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Density*	**Hypothesis Direction**
New Urban	3. I prefer a more compact neighborhood with smaller lot sizes.	+
	4. A smaller house lot size is acceptable if a park or other public space is located close to the home.	+
Conventional	5. Neighborhoods should not be spread out too much (very low density).	+
	Composite Density Scale	+

Note: + Indicates New Urban greater than Conventional

TABLE 4.2 Operationalization of Conceptual Framework (Continued)

Operationalization of Conceptual Framework		
Working Hypotheses # 2		
Independent Variable	Dependent Variables Survey Questions (Likert Scale) Composite Scale	Hypothesis Direction
(WH2) New Urban residents are more likely to value the mixing of land uses than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Mixed Use*	**Hypothesis Direction**
New Urban	Questions 6-12 (See Below)	+
Conventional	**Composite Mixed Use Scale**	+
(WH2a) New Urban residents are more likely to value the mixing of land uses <u>within the neighborhood</u> than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Mixed Use Neighborhood*	**Hypothesis Direction**
New Urban	6. A place where adults could meet such as a small restaurant would be nice to have located <u>inside</u> our neighborhood. 7. Mixing uses in the same building, such as having offices or housing located <u>over</u> a retail store, near other residential areas is acceptable 8. Places to work and places to live can exist side by side.	+ + +
Conventional	9. A neighborhood should have parks and other public places where people can meet. 10. I would like a dry cleaner, small store, or day care center <u>inside</u> my neighborhood.	+ +
	Composite Mixed Use Neighborhood Scale	+
(WH2b) New Urban residents are more likely to value the mixing of land uses <u>within close proximity of the neighborhood</u> than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Mixed Use Proximity*	**Hypothesis Direction**
New Urban	11. I would like a variety of uses such as retail or office space to be located <u>close</u> to our neighborhood. 12. I would prefer that our neighborhood have land uses other than just more housing subdivisions around it.	+ +
Conventional	**Composite Mixed Use Proximity Scale**	+

Note: + Indicates New Urban greater than Conventional

Table 4.3 Operationalization of Conceptual Framework (Continued)

Operationalization of Conceptual Framework		
Working Hypotheses # 3		
Independent Variable	Dependent Variables Survey Questions (Likert Scale) Composite Scale	Hypothesis Direction
(WH3) New Urban residents are more likely to value the mixing of housing types within the neighborhood than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Mixed Type*	**Hypothesis Direction**
New Urban	13. I like a neighborhood that offers a range of residence types such as condos or single family.	+
	14. Condos, townhouses, and single-family homes should be located away from each other. **	+
Conventional	15. A variety of housing types make a better neighborhood.	+
	Composite Mixed Type Scale	+

Notes: ** Reversal Item
+ Indicates New Urban greater than Conventional

TABLE 4.4 Operationalization of Conceptual Framework (Continued)

Operationalization of Conceptual Framework		
Working Hypotheses # 4		
Independent Variable	Dependent Variables Survey Questions (Likert Scale) Composite Scale	Hypothesis Direction
(WH4) New Urban residents are more likely to value transportation choices than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Transportation Choice*	**Hypothesis Direction**
New Urban	16. I prefer a neighborhood that you don't always have to take an automobile to get to every destination. 17. I would like a choice of options in addition to the automobile for transportation.	+ +
Conventional	**Composite Transportation Choice Scale**	+
(WH4a) New Urban residents are more likely to value a walkable neighborhood than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Walkable*	**Hypothesis Direction**
New Urban	18. I like to be able to walk to a destination (ex. school, store) in our neighborhood. 20. It is important that neighborhood children be able to walk to school.	+ +
Conventional	**Composite Walkable Scale**	+
(WH4b) New Urban residents are more likely to value public transportation connections to the neighborhood than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Transit*	**Hypothesis Direction**
New Urban	21. Access to public transportation would be good for our neighborhood. 22. A light rail connection to our neighborhood would be beneficial.	+ +
Conventional	23. I would support bus service to our neighborhood. **Composite Transit Scale**	+ +

Note: + Indicates New Urban greater than Conventional

TABLE 4.5 Operationalization of Conceptual Framework (Continued)

Operationalization of Conceptual Framework		
Working Hypotheses # 5-6		
Independent Variable	Dependent Variables Survey Questions (Likert Scale) Composite Scale	Hypothesis Direction
(WH5) New Urban residents are more likely to value traditional architectural elements than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Architectural*	**Hypothesis Direction**
New Urban	24. It is important to have consistency of <u>architectural style</u> controlled within the neighborhood. 25. I prefer traditional style homes such as those with a usable front porch.	+ +
Conventional	**Composite Architectural Scale**	+
(WH6) New Urban residents are more likely to value diversity among neighborhood residents than would residents of a conventional suburban development.		
Independent Variable *Neighborhood Dichotomy*	**Dependent Variables** *Diversity*	**Hypothesis Direction**
New Urban	1. I prefer a neighborhood where young, middle aged and the elderly have housing options in the neighborhood. 2. I prefer a neighborhood composed of residents with very similar incomes. **	+ +
Conventional	**Composite Diversity Scale**	+

Notes: ** Reversal Item
+ Indicates New Urban greater than Conventional

Response Coding

Each response on the completed questionnaires was coded as per Table 4.6. Several questions as noted were reversal items, which were scored in the reverse.

TABLE 4.6 Response Coding

Response	Code	Reversal Code
Strongly Agree	5	1
Agree	4	2
Neutral (Neither Agree nor Disagree)	3	3
Disagree	2	4
Strongly Disagree	1	5
Missing	Record thrown out	Record thrown out

The question response coding was designed in such a way as to produce a range with a score of five (5) being interpreted as most supportive of New Urban characteristics while a score of one (1) would be the least supportive.

Survey Weaknesses

Survey research does have some weaknesses. Generally, surveys are considered strong on reliability but weak on validity (Babbie 2001, p. 269). To reduce this concern over validity, a careful review of the literature was undertaken. Then, from this review, questionnaire items were developed to test the working hypotheses. The employment of several research methods would be a more comprehensive approach to this study (Babbie 2001, p. 269; Yin 2003, p. 97). However, based on the time constraints for this project, other techniques were not applied. This study's emphasis is on breadth over depth. It is hoped that this exploratory research will lay the groundwork for additional research in the future.

Survey Instrument

A copy of the survey instrument is attached as Appendix A. This instrument was pre-tested by having ten home owning co-workers complete the questionnaire. Minor rewording of some questions was made in response to the pre-test.

The survey was conducted using the mail out mail back method. The questionnaire was mailed with a cover letter and postage paid return envelope. After the initial mailing, a duplicate questionnaire was sent to the same sample two weeks later. The second mailing included a cover letter thanking those who had previously responded "and encouraging those who have not to do so" (Babbie 2001, p. 256).

Another concern presented by surveys is achieving an acceptable response rate (Babbie 2001, p. 256). A low response rate can lead to concern about response bias. The second (follow-up) mailing of the survey to the same sample was intended to encourage a higher response rate.

Sampling Method

A systematic sampling method was used to send survey questionnaires to roughly 1/4 of the households (residential addresses) within the population frame. The population frame contained all of the individually owned dwelling units within a New Urban development (*Plum Creek*) in Kyle, Texas and all of the individually owned dwelling units within a representative conventional suburban development (*Steeplechase*) in the same market area.[66] This population was identified through Hays County property tax records. The survey entailed the mailing of questionnaires to 421 addresses.[67] Homeowners/neighborhood associations[68] were requested to notify their residents through their newsletters of the pending survey to encourage a higher

[66] Dwellings that were not owned by individuals such as those owned by builders, banks, or mortgage companies were excluded.
[67] At least 200 addresses were required for each subdivision in order to qualify for bulk mailing.

response rate. The presidents of both neighborhoods associations honored this request and provided a write up of the study in their respective February newsletters. The unit of analysis of this study was the individual dwelling unit and the unit of observation was the adult household member that completed the mailed questionnaire.

Statistical Methods

Several statistical methods were utilized to analyze data collected from the survey. Frequency distributions were used to compare responses to questionnaire items. Descriptive statistics were used to determine the mean of the coded responses associated with each question linked to the dependent variables for each case. Then the means of the composite scales of each of the dependent variables were determined for each of the two independent variables (neighborhood dichotomy). Finally, inferential statistics in the form of t-tests were performed. "The t-test assesses whether the means of two groups are *statistically* different from each other. This analysis is appropriate whenever you want to compare the means of two groups" (Trochim, 2002). The t-tests were used to test each of the working hypotheses.

Chapter Summary

In summary, a survey that was developed from the conceptual framework was administered to a sample of residents of two developments. These developments included one designed with New Urban characteristics and the second being a conventional suburban development. The next chapter will present the results of this study. The results of the survey are described through descriptive statistics. Following this description each working hypothesis was tested using inferential statistics of the t-test.

---

[68] Plum Creek has a homeowners association in which membership is mandatory. Steeplechase has a neighborhood association to which membership is voluntary.

CHAPTER V: RESULTS

Chapter Purpose

The previous chapter outlined the methodology that was used in this study. This chapter presents and analyzes the responses received to the survey instrument. The findings are used to assess support for each of the working hypotheses that were developed from the conceptual framework of Chapter II. The statistical analysis, which consisted of both descriptive and inferential statistics, produced a variety of results in the tests of the working hypotheses.

Description of Returned Surveys

Of the 421 surveys that were mailed, 158 were returned by a March 5th cutoff date.[69] This resulted in an overall response rate of 37.5%. Interestingly, the response rate for *Plum Creek*, the New Urban community, was substantially higher at 45.8% compared to a response rate of 29.2% for *Steeplechase*. While this response rate is favorable when compared to other residential surveys including those found in the literature review, it is lower than a preferred 50% minimum. Because of the low response rate it is possible that a response bias may influence the data (Babbie 2001, p. 256). The frequency tables for responses to individual survey questions are found in Appendix B.

WH1: Compact Urban Form

WH-1 related to the characteristic of increased development densities, which is an essential characteristic of New Urban communities. It is hypothesized that the mean of the composite scale for the *Density* variable will be significantly higher in the New Urban development than that of the conventional suburban development. The scores are based on a

possible range of one (1) through five (5) with five being the most supportive of the specified New Urban characteristic. The breakout of survey responses for questions related to the *Density* variable may be found in Appendix C.

Although both *Plum Creek* and *Steeplechase* respondents prefer less dense neighborhoods, there was a significant difference in their degree of preference (See Table 5.1). *Steeplechase*, the conventional community, was less likely to agree with statements that advocated smaller lots or less spread out neighborhoods. Like *Steeplechase* residents, *Plum Creek* respondents did not agree with a preference for small lots. However, unlike *Steeplechase* residents they were positive (M = 3.14) about small lots if parks were located nearby. This difference was most dramatic in that Plum Creek residents were more than twice as likely to agree that small lots were acceptable if there was a park nearby (44.3% versus 18.6%).

Overall, the residents of *Plum Creek* responded more positively (M = 2.72, SD = .78) than did the residents of *Steeplechase* (M = 2.10, SD = .78). This difference was highly significant, $t(156) = 4.83$, $p < .001$, two tailed. These results are tempered by the fact that although the New Urban residents of *Plum Creek* responded significantly more positively than those of the conventional suburban development of *Steeplechase*, both means were below neutral (3) and shifted towards being less supportive of *Density*. Table 5.1 provides mean response and percentages of respondents who both agreed and strongly agreed with each questions statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-1.

[69] 212 surveys were mailed to *Plum Creek* addresses and 209 were mailed to *Steeplechase* addresses.

Table 5.1 Density Variable

Density (WH-1)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
3	**Prefer smaller lots**	97	2.20	11.5	61	1.56	0	
4	**Smaller lots OK w/ parks**	97	3.14	44.3	59	2.24	18.6	
5	**Neighborhoods not spread out**	97	2.97	18.6	60	2.47	16.6	
Overall Density Scale		97	2.72		61	2.10		4.831**

** $p < .001$

WH2: Mixing of Land Uses

Working hypotheses 2, 2a, and 2b focused on the characteristic of mixed land uses. These working hypotheses, which are examined separately, predict that the mean of the composite scale for the *Mixed Use*, *Mixed Use Neighborhood*, and *Mixed Use Proximity* dependent variables will be significantly higher in the New Urban development than those found in the conventional suburban development. The scores are based on a possible range of one (1) through five (5). A score of five is considered to be the most supportive of the specified New Urban characteristic, three neutral, and one the least supportive. The breakout of survey responses for questions related to the mixed land use variables may be found in Appendix C.

Support for mixed use was found in both *Plum Creek* and *Steeplechase* residents. However, there was a significant difference in the level of support when the two neighborhoods were compared to each other.

WH-2 dealt with residents overall valuing of the mixing of land uses. A closer look at the responses to individual questions is found in the discussions of the two sub-hypotheses. Overall analysis found that residents of *Plum Creek* responded more favorably (M = 3.92, SD = .64) than did the residents of *Steeplechase* (M = 3.42, SD = .82) to survey questions linked to the *Mixed*

Use dependent variable. This difference was highly significant, t (156) = 4.30, p < .001, two tailed. Table 5.2 provides mean response and percentages of respondents who both agreed and strongly agreed with the questions statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-2.

Table 5.2 Mixed Uses Variable

Mixed Use (WH-2)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
6	**Place to meet inside**	97	4.02	77.3	61	3.11	42.6	
7	**Mixed use same building**	97	3.28	53.6	60	2.93	41.6	
8	**Work and live side by side**	97	3.41	56.7	59	3.02	37.3	
9	**Neighborhood public places**	97	4.58	97.0	60	4.42	90.0	
10	**Store inside neighborhood**	97	3.87	71.1	60	2.98	35.0	
11	**Variety of uses close**	97	4.12	87.7	59	3.85	71.2	
12	**Other land uses around**	97	4.14	84.6	59	3.86	69.5	
Overall Mixed Use Scale		97	3.92		61	3.42		4.302**

** p < .001

WH-2a concentrated on the valuing of mixed use inside of the development itself. *Plum Creek* residents responded more favorably towards each question related to the mixing of land uses inside of the neighborhood than did the residents of *Steeplechase* (See Table 5.2). Over three quarters of the respondents from *Plum Creek* were favorable towards a place to meet inside of the neighborhood compared to less than 43% support found in the residents of *Steeplechase*. Almost 60% of *Plum Creek* residents were agreeable to having places to live and work being located side by side. At the same time less than 40% of *Steeplechase* residents were so inclined. Only in regards to neighborhood public places, did residents of both neighborhoods respond

overwhelmingly favorably (97% for *Plum Creek* and 90% for *Steeplechase*). *Plum Creek* residents tied their highest mean (M = 4.58) while *Steeplechase* residents recorded their highest mean (M = 4.42) in their preference for a neighborhood public space.

The difference between the neighborhoods was most dramatic when it came to support for a store within the neighborhood. Nearly three quarters of *Plum Creek* residents believed that this was agreeable while only just over a third of *Steeplechase* residents agreed.

Overall, the residents of *Plum Creek* responded more favorably (M = 3.83, SD = .71) than did the residents of *Steeplechase* (M = 3.26, SD = .89) to survey questions linked to the *Mixed Use Neighborhood* dependent variable. This difference was highly significant, t (156) = 4.46, p < .001, two tailed. Table 5.3 provides mean response and percentages of respondents who both agreed and strongly agreed with the question's statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-2a.

Table 5.3 Mixed Use Neighborhood Variable

Mixed Use Neighborhood (WH-2a)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
6	**Place to meet inside**	97	4.02	77.3	61	3.11	42.6	
7	**Mixed use same building**	97	3.28	53.6	60	2.93	41.6	
8	**Work and live side by side**	97	3.41	56.7	59	3.02	37.3	
9	**Neighborhood public places**	97	4.58	97.0	60	4.42	90.0	
10	**Store inside neighborhood**	97	3.87	71.1	60	2.98	35.0	
Overall Mixed Use Neighborhood Scale		97	3.83		61	3.26		4.465**

** p < .001

WH-2b then focused on an examination of mixed use as it related to land uses outside of but in close proximity to the development. Within their neighborhoods, residents responded

similarly towards questions as to their support for other uses besides more housing. Support was also similar towards a variety of uses such as retail or office space close to but outside of the neighborhood. However, the neighborhoods did differ when compared to each other. For both questions *Plum Creek's* residents were respectively 85% and almost 90% favorable compared to *Steeplechase's* residents support at approximately 70%.

Overall, the residents of *Plum Creek* responded more favorably (M = 4.13, SD = .69) than did the residents of *Steeplechase* (M = 3.87, SD = .86) to survey questions linked to the *Mixed Use Proximity* dependent variable. This difference was significant, t (155) = 2.14, p < .05, two tailed. Table 5.4 provides mean response and percentages of respondents who both agreed and strongly agreed with the question's statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-2a.

Table 5.4 Mixed Use Proximity Variable

Mixed Use Proximity (WH-2b)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
11	**Variety of uses close**	97	4.12	87.7	59	3.85	71.2	
12	**Other land uses around**	97	4.14	84.6	59	3.86	69.5	
Overall Mixed Use Proximity Scale		97	4.13		60	3.87		2.140*

* p < .05

Noteworthy in all of the results linked to the mixing of land uses was that the residents of both neighborhoods responded favorably, shifted towards agreeing (4) from neutral (3), for all dependent variables associated with this essential characteristic of New Urbanism.

WH3: Mixing of Housing Types

WH-3 related to the characteristic of the mixing of housing types, which is an essential characteristic of New Urban communities. This working hypothesis predicts that the mean of the composite scale for the *Mixed Type* dependent variable will be significantly higher in the New Urban development than that of the conventional suburban development. The scores are based on a possible range of one (1) through five (5) with five considered the most supportive of the specified New Urban characteristic. Question number 14 was a reversal item, which was coded in reverse. The breakout of survey responses for questions related to the *Mixed Type* variable may be found in Appendix C.

The neighborhoods responded similarly to questions in this dimension with some variation observed towards the acceptability of a range of residence types within the neighborhood. Here 43% of *Plum Creek* residents responded favorably compared to only 28% for *Steeplechase*.

For this dimension, overall the residents of *Plum Creek* responded more positively (M = 3.11, SD = .85) than did the residents of *Steeplechase* (M = 2.96, SD = .97) to survey questions linked to the *Mixed Type* dependent variable. However, this difference was not statistically significant.

Here it is important to note that both neighborhoods responded near neutral (3) to the characteristic of the mixing housing types. Table 5.5 provides mean response and percentages of respondents who both agreed and strongly agreed with the questions statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-3.

Table 5.5 Mixed Housing Type Variable

Mixed Type (WH-3)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
13	**Range of residence types**	97	3.23	43.3	60	3.02	28.3	
14	**Types located away from each other ****	97	2.81	43.3	58	2.71	43.1	
15	**Variety of types better**	96	3.28	46.9	59	3.17	40.6	
Overall Mixed Type Scale		97	3.11		60	2.96		1.008

Note: ** Reversal Item.

WH4: Transportation Choice

Working hypotheses 4, 4a, and 4b focused on the transportation characteristic, another essential characteristic of New Urban communities. These working hypotheses, which are examined separately, predict that the mean of the composite scale for the *Transportation Choice*, *Walkable*, and *Transit* dependent variables will be significantly higher in the New Urban development than those found in the conventional suburban development. The scores are based on a possible range of one (1) through five (5). Five is considered as being the most supportive of the specified New Urban characteristic, three neutral, and one the least supportive. The breakout of survey responses for questions related to the transportation variables may be found in Appendix C.

WH-4 dealt with residents overall valuing of transportation choice. More than half of respondents in both neighborhoods were likely to agree with statements advocating options to the automobile for transportation and not needing an automobile to get to all destinations. The largest difference here between neighborhoods was that two thirds of *Plum Creek* residents were agreeable with a preference not to need to drive a car to every destination compared to just above half of *Steeplechase* residents with a similar response.

Overall, the residents of *Plum Creek* responded more favorably (M = 3.74, SD = .87) than did the residents of *Steeplechase* (M = 3.44, SD = 1.04) to survey questions linked to the *Transportation Choice* dependent variable. However, this difference is not statistically significant. Table 5.6 provides mean response and percentages of respondents who both agreed and strongly agreed with the question's statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-4.

Table 5.6 Transportation Choice Variable

Transportation Choice (WH-4)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
16	**Prefer not need auto for every destination**	97	3.84	67.0	59	3.37	50.9	
17	**Options beyond the auto**	97	3.64	57.7	60	3.52	53.4	
Overall Transportation Choice Scale		97	3.74		60	3.44		1.920

WH-4a focused the transportation characteristic towards neighborhood walkability. This dimension provided interesting responses. While over 80% of *Plum Creek* residents favored being able to walk to a destination, fewer *Steeplechase* residents were so inclined (65%). Interestingly, when questioned about the importance of children being able to walk to school, slightly more *Steeplechase* (85%) residents favored this statement than those from *Plum Creek* (80%).[70]

In evaluating this dimension overall,l the residents of *Plum Creek* responded more favorably (M = 4.13, SD = .73) than did the residents of *Steeplechase* (M = 4.00, SD = .78) to survey questions on the *Walkable* dependent variable. This difference is not statistically significant. However, what is noteworthy here is that the residents of both neighborhoods

responded solidly favoring the importance of neighborhood walkability. Also important to this point is that the residents of these neighborhoods are not statistically different in this valuing of walkability. Table 5.7 provides mean response and percentages of respondents who both agreed and strongly agreed with the question's statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-4a.

Table 5.7 Walkable Variable

Walkable (WH-4a)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
18	**Walk to destination**	97	4.05	80.5	60	3.72	65.0	
20	**Children walk to school**	97	4.21	79.4	58	4.29	84.5	
Overall Walkable Scale		97	4.13		60	4.00		1.043

WH-4b focused on the last dimension of the transportation characteristic of public transportation. Generally, *Steeplechase* residents were more favorable towards public transportation than the residents of *Plum Creek* (See Table 5.8). Only in support of a light rail connection to the neighborhood did *Plum Creek* residents demonstrate a slightly higher level of support (48.5%) than *Steeplechase* residents (43.3%). The lowest support was found in *Plum Creek* resident's support of bus service for their neighborhood (38%). *Steeplechase's* residents registered the highest support (51%) of either neighborhood in their support of statements advocating public transit for their neighborhood.

Overall, the residents of *Plum Creek* responded less favorably (M = 3.18, SD = 1.15) than did the residents of *Steeplechase* (M = 3.28, SD = 1.17) to survey questions linked to the *Transit*

[70] This may be a reflection of *Steeplechase* having an operating elementary school across the street from the development where *Plum Creek* has land dedicated but no elementary school built yet.

dependent variable. However, this difference is not statistically significant. Table 5.8 provides mean response and percentages of respondents who both agreed and strongly agreed with the question's statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-4b.

Table 5.8 Transit Variable

Transit (WH-4b)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
21	**Access to public transit**	97	3.31	45.4	59	3.39	50.8	
22	**Light rail connection**	97	3.21	48.5	60	3.25	43.3	
23	**Bus service**	96	3.02	38.5	57	3.18	45.6	
Overall Transit Scale		97	3.18		60	3.27		-.480

The means associated with public transit variable have the largest standard deviations of all the dependent variables. The responses of the residents of both neighborhoods were shifted from three (neutral) towards supporting this characteristic of public transit, although this shift was quite small.

WH5: Traditional Architectural Elements

WH-5 related to the characteristic of traditional architectural elements, typically found in New Urban communities. This working hypothesis predicts that the mean of the composite scale for the *Architectural* dependent variable will be significantly higher in the New Urban development than that of the conventional suburban development. The scores are based on a possible range of one (1) through five (5) with five being the most supportive of the specified New Urban characteristic. The breakout of survey responses for questions related to the *Architectural* variable may be found in Appendix C.

The *Architectural* characteristic provided the most dramatic differences in responses between neighborhoods. In general, both *Plum Creek* and *Steeplechase* residents prefer traditional architectural elements and that consistency of style be controlled within the neighborhood (See Table 5.9). However, *Plum Creek*, the New Urban neighborhood, was dramatically more enthusiastic in their support for traditional style homes (almost 95% versus 62%). *Plum Creek* also tied its highest mean score for any question (M = 4.58) in support of traditional style homes. Moreover, *Plum Creek* residents demonstrated higher support for the control of architectural style within the neighborhood compared to that found among *Steeplechase* residents (almost 85% versus 50%).

Overall, the residents of *Plum Creek* responded more positively (M = 4.39, SD = .62) than did the residents of *Steeplechase* (M = 3.56, SD = .91). This difference was highly significant, $t(155) = 6.78$, $p < .001$, two tailed.

Similar to the results for the transportation variables, the responses of the residents from both neighborhoods were shifted away from three (neutral) and towards supporting this essential characteristic. *Plum Creek's* resident support was very strong with the highest mean composite scale for *Plum Creek's* residents for any of the characteristics (scale mean = 4.39). Table 5.9 provides mean responses and percentages of respondents who both agreed and strongly agreed with the question's statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-5.

Table 5.9 Architectural Variable

Architectural (WH-5)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
24	**Consistent architectural style**	97	4.20	84.5	57	3.30	49.1	
25	**Traditional style homes**	97	4.58	94.5	58	3.78	61.7	
Overall Architectural Scale		97	4.39		60	3.56		6.778**

** $p < .001$

WH6: Resident Diversity

WH-6 related to the characteristic of the diversity of residents within the development, which is an essential characteristic of New Urban communities.[71] This working hypothesis predicts that the mean of the composite scale for the *Diversity* dependent variable will be significantly higher in the New Urban development than that of the conventional suburban development. Again, the scales are based on a possible range of values of one (1) through five (5) with five considered the most supportive of the specified New Urban characteristic. The breakout of survey responses for questions related to the *Diversity* variable may be found in Appendix C.

Both neighborhoods responded strongly in favor of age diversity of residents (over 80% in agreement). However, there was less support for income diversity, which was worded in such a way as to be scored as a reversal item. Here *Plum Creek* had a mean of 2.37, which was lower than *Steeplechase's* mean of 2.51.

However, in the overall view the residents of *Plum Creek* responded more positively (M = 3.37, SD = .63) than did the residents of *Steeplechase* (M = 3.29, SD = .77) to survey questions linked to the *Diversity* dependent variable. However, this difference was not statistically

significant. Table 5.10 provides mean response and percentages of respondents who both agreed and strongly agreed with the question's statement. The table also provides the mean of the composite scale and the value obtained through the independent sample t-test for WH-6.

The response of the residents from both neighborhoods was shifted from three (neutral) towards supporting the characteristic of the neighborhood resident diversity. However, this shift was small.

Table 5.10 Diversity Variable

Diversity (WH-6)								
		New Urban			**Conventional**			
Question		N	Mean	% SA, A	N	Mean	% SA, A	t-test
1	**Age variety**	97	4.37	87.6	59	4.17	83.1	
2	**Similar incomes** **	97	2.37	57.8	61	2.51	50.8	
Overall Diversity Scale		97	3.37		61	3.29		.749

Note: ** Reversal Item.

Many of the responses to the survey questions related to neighborhood diversity may have been tempered by what appeared to be illogical responses to the survey questions in regards to this characteristic. It is important to remember that diversity in a New Urban development refers to the socio-economic standing and age of residents. While many residents responded favorably to age diversity most also strongly favored similar incomes. This response is illogical in that most people's income will typically change as they age, first increasing over time then decreasing at retirement.

[71] Diversity is focused towards the socio-economics and age of residents in its use regarding New Urban communities.

Overview

In examining all the results of the survey responses, several significant findings were produced. The residents of the New Urban development of *Plum Creek* responded significantly more favorably on the characteristics of higher densities, mixing of land uses, and of traditional architectural elements than did those of the residents of the conventional suburban development of *Steeplechase*.

The residents of both neighborhood dichotomies did, however, respond with low support overall for increased densities, with mean scores below neutral, which was scored as three (3). On the other hand, both neighborhood's residents responded with similar support towards transportation options. This support was most powerfully observed towards neighborhood walkability. Both neighborhoods' residents were generally neutral on the characteristic of mixed housing types and resident diversity.

Table 5.11 provides a comparison of the mean scores of dependent variables for each of the independent variables of neighborhood dichotomy. This table also lists the calculated t-test values and notes which ones are statistically significant.

The *Statistical Package for the Social Sciences* (SPSS) output table for group statistics is provided at the beginning of Appendix C. Graphs depicting the frequency of independent variable means and tables showing responses to survey questions for each independent variable are also located there. The table providing the independent samples test is located at the back of Appendix C.

Table 5.11 Comparisons of Mean Scores of Community Characteristics

	Density	Mixed Use	Mixed Use Neighborhood	Mixed Use Proximity	Mixed Type	Transportation Choice	Walkable	Transit	Architectural	Diversity
	WH-1	WH-2	WH-2a	WH-2b	WH-3	WH-4	WH-4a	WH-4b	WH-5	WH-6
New Urban (Plum Creek)	2.72	3.92	3.83	4.13	3.11	3.74	4.13	3.18	4.37	3.37
Conventional (Steeplechase)	2.10	3.42	3.26	3.87	2.96	3.44	4.00	3.28	3.56	3.29
t-test	4.83 **	4.30 **	4.46 **	2.14 *	1.01	1.92	1.04	-.48	6.78 **	.75

* $p < 0.05$ ** $p < 0.001$

Chapter Summary

This study's statistical analysis of the responses to the survey instrument found support for the working hypotheses associated with the *Density*, *Mixed Use*, *Mixed Use Neighborhood*, *Mixed Use Proximity*, and *Architectural* dependent variables. There was no statistically significant difference in the mean responses by neighborhood associated with the other dependent variables. The support that was found for the working hypotheses may be somewhat undermined by the low response rate (37.5%) that was received on the survey. However, it would appear that these relationships are still significant. The following chapter summarizes the findings of this study and suggests possible routes for future research. Chapter IV will also briefly discuss the impact of these findings on future state and local government policy.

CHAPTER VI: CONCLUSION

Chapter Purpose

The previous chapter presented and analyzed the responses received to the survey that was conducted for this study. This final chapter makes recommendations based on the results both for possible state and local government action and responses by the private sector as well. This chapter also makes recommendations for future scholarly research.

The recommendations are made based on both the literature review presented in Chapter II and the results of this study from Chapter V. This chapter is important because it ties this research to previous scholarly work and to current government policy debate.

Summary of Research

The purpose of this study included the identification through the literature of the essential physical characteristics of New Urban communities. The purpose was then to explore which of these characteristics are most valued by New Urban residents in *Plum Creek*[72] and compare how these values may differ from those of residents of the conventional suburban development of *Steeplechase*[73] in the same market area.

Compact Urban Form

This study did find support for WH-1, which examined the New Urban essential characteristic of increased development densities.

WH1: New Urban residents are more likely to value a compact urban form than would residents of a conventional suburban development.

[72] *Plum Creek* is a New Urban development that is located in the central Texas city of Kyle.
[73] *Steeplechase* is a Conventional Suburban Development located in the central Texas city of Kyle.

This support is tempered by the results that while the New Urban residents valued higher densities at significantly higher levels than those of the conventional suburban development, the support was still shifted towards less support of higher densities.

This finding is especially problematic towards New Urban development as higher densities are a key characteristic of these developments. Much of the response to this finding will necessitate increased educational efforts as to the benefits that are accrued from higher densities. These benefits include the facilitation of other essential New Urban characteristics such as transportation choice and mixed use.

Mixing of Land Uses

This study did find support for WH-2, WH-2a, and WH-2b, which examined the New Urban essential characteristic of mixing of land uses. Particularly strong support was found for the New Urban residents increased valuing of the overall mixing of land uses and the mixing of land uses within the neighborhood.

WH2: New Urban residents are more likely to value the mixing of land uses than would residents of a conventional suburban development.

WH2a: New Urban residents are more likely to value the mixing of land uses within the neighborhood than would residents of a conventional suburban development.

The New Urban residents also valued the mixing of land uses in close proximity of their neighborhood than did the residents of the conventional suburban development.

WH2b: New Urban residents are more likely to value the mixing of land uses within close proximity of the neighborhood than would residents of a conventional suburban development.

An important point to be gleaned from these results is that both neighborhood's residents responded favorably to the characteristic of mixing of land uses. The New Urban residents were

significantly more supportive, but this result does not change the fact that the conventional suburban developments' residents were also positively inclined towards mixing of land uses.

The separation of land uses is a fundamental concept behind much of our current development patterns that is driven by land use laws and zoning. This finding would appear to draw into question the overall wisdom and support for this concept.

Mixing of Housing Types

The valuing of the mixing of housing types was generally neutral for the residents of both neighborhood dichotomies. There was no support found for WH3.

WH3: New Urban residents are more likely to value the mixing of housing types within the neighborhood than would residents of a conventional suburban development.

While on the surface this neutrality could appear to be negative, this researcher believes that in this case "no news is good news". The mixing of housing types is an essential characteristic of New Urban communities and is closely tied to facilitating other essential characteristics. The traditional segregating of housing types is commonly assumed to have solid support among homebuyers. The neutrality on this issue reported in this study does not find indications of the favoring of segregating housing types.

This neutrality is good in that it indicates an easier starting point for implementing this New Urban characteristic. Both public officials and those in the private sector involved in land development should take note of the absence of a negative response towards the mixing of housing types.

Transportation Choices

There was no support found for New Urban residents valuing the transportation characteristic at significantly higher levels than those of the conventional suburban development.

However, what is important here is that overall both neighborhood's residents responded favorably towards the transportation characteristics.

WH4: New Urban residents are more likely to value transportation choices than would residents of a conventional suburban development.

Most significantly of the findings was the powerful valuing by the residents of both neighborhoods towards the characteristic of neighborhood walkability.

WH4a: New Urban residents are more likely to value a walkable neighborhood than would residents of a conventional suburban development.

This support for walkability is an important finding for developers regardless of the format of their developments. Residents strongly favor neighborhoods that are walkable. The tailoring of a development towards the exclusive use of the automobile does not appear to match the preference of residents. This finding is noteworthy because it is independent of the development format in which a person lives.

It was surprising to find that not only did New Urban residents not value public transit connections at significantly higher levels than those of the conventional suburban development but also that the numbers were actually reversed.

WH4b: New Urban residents are more likely to value public transportation connections to the neighborhood than would residents of a conventional suburban development.

However, this difference was not statistically significant. This finding is most likely affected by the fact that both study neighborhoods have no public transit connections and are located far enough away form urban areas that future transit connections are unlikely.

Traditional Architectural Elements

It is not surprising that there was strong support for the valuing of traditional architectural elements among New Urban residents. A major part of the marketing of *Plum Creek* goes towards publicizing the traditional architectural design of its homes and layout of its

neighborhood. Traditional architectural elements are also an important part of New Urbanism as defined by its east coast advocates such as Andres Duany.

WH5: New Urban residents are more likely to value traditional architectural elements than would residents of a conventional suburban development.

What is notable about the data from this study is that the conventional suburban developments' residents in *Steeplechase* also leaned favorably towards traditional architectural elements.

Diversity Among Neighborhood Residents

No support was found for WH-6 that predicted that New Urban residents would respond more favorably to resident diversity than those in a conventional suburban development.

WH6: New Urban residents are more likely to value diversity among neighborhood residents than would residents of a conventional suburban development.

Much of this response may have been tempered by what appeared to be illogical responses to the survey questions in regards to this characteristic. It is important to note that diversity in a New Urban development refers to the socio-economic standing and age of residents. While many residents responded favorably to age diversity, most also strongly favored similar incomes. This response is illogical in that most person's incomes will typically change as they age, first increasing over time then decreasing at retirement.

As with the characteristic of increased neighborhood density, this characteristic of resident diversity would appear to be an area of resident skepticism. This skepticism would indicate another area to focus educational efforts on if these attitudes are to be modified among potential homebuyers.

Mixed Findings

Overall, this study produced a mixed bag of findings. Table 6.1 provides a table summarizing the findings as they relate to the working hypotheses. Even the results related to essential characteristics whose associated working hypothesis were not supported do provide interesting and important lessons for persons employed on the public and private sides of development.

Table 6.1 Summary of Findings

Working Hypothesis			Sub-Working Hypothesis Support	Working Hypothesis Support
WH-1		New Urban residents are more likely to value a compact urban form than would residents of a conventional suburban development.		**Strong Support ****
WH-2		New Urban residents are more likely to value the mixing of land uses than would residents of a conventional suburban development.		**Strong Support**
	WH-2a	New Urban residents are more likely to value the mixing of land uses within the neighborhood than would residents of a conventional suburban development.	**Strong Support**	
	WH-2b	New Urban residents are more likely to value the mixing of land uses within close proximity of the neighborhood than would residents of a conventional suburban development.	**Support**	
WH-3		New Urban residents are more likely to value the mixing of housing types within the neighborhood than would residents of a conventional suburban development.		**Reject**
WH-4		New Urban residents are more likely to value transportation choices than would residents of a conventional suburban development.		**Reject**
	WH-4a	New Urban residents are more likely to value a walkable neighborhood than would residents of a conventional suburban development.	**Reject**	
	WH-4b	New Urban residents are more likely to value public transportation connections to the neighborhood than would residents of a conventional suburban development.	**Reject**	
WH-5		New Urban residents are more likely to value traditional architectural elements than would residents of a conventional suburban development.		**Strong Support**
WH-6		New Urban residents are more likely to value diversity among neighborhood residents than would residents of a conventional suburban development.		**Reject**

** Support is tempered by a mean shifted negatively from neutral.

State & Local Policy Implications

The implications of the results of this study are mixed but do produce significant recommendations for government land development policy. This exploratory study found that residents value the essential characteristics of New Urban communities that were developed in the literature review. This support was found for both the residents of a New Urban and a conventional suburban development. The New Urban community was more supportive of increased density (particularly so when smaller lots are coupled with neighborhood parks), the mixing of land uses (such as a place to meet or public places within the neighborhood), and traditional architectural elements. However, there was general support for the majority of New Urban characteristics within both development formats.

Of particular importance was the rejection of the working hypothesis of transportation choice including walkability and public transit. Not only was there no significant difference between the New Urban and conventional suburban development resident's values, but there was particularly strong support towards neighborhood walkability. State and local planners and specifically transportation engineers should take particular note of this finding.

This point is important enough that it bears repeating. This research found the residents of the New Urban community of *Plum Creek* do place greater value on several of the essential characteristics of New Urban communities. However, the residents of the conventional suburban development of *Steeplechase* also responded favorably towards several New Urban characteristics.

The New Urban movement is a response to the concern that our current built environment is increasingly unsustainable. The favorable valuing placed on New Urban essential characteristics by the residents in this study appears to support the expanded legalization of their use.

Development Industry Implications

In addition to the governmental implications of this study, there are also important points applicable to the development industry. The mixed results of this study's data have several messages about the directions that those involved with land development may wish to pursue. Clearly, the New Urban residents in this study placed significantly greater value on the characteristics of density, mixing of land uses, and traditional architectural elements than did the residents of a conventional suburban development. However, several even more powerful lessons are found in the examination of this study's data.

With two exceptions, the residents of both developments responded favorably to New Urban characteristics. The exceptions were density, which both community's' residents responded less favorably to, and the other was the mixing of housing types, to which they were both generally neutral. The valuing of New Urban characteristics was observed most powerfully in reference to neighborhood walkability (including the importance of alternatives to the automobile and designing for pedestrians). Both neighborhood formats strongly favored the mixing of land uses in close proximity to the neighborhood and the importance of neighborhood public places. Traditional style homes also found substantial support. Developers would be well advised to respond to these interests in the development of new communities.

On the other hand, and of particular note for New Urban developers are the apparent skepticism as to the potential benefits of higher densities and towards resident diversity. These concerns require a response. Part of the response may be one of educational efforts on the potential benefits to be gained from these characteristics. This education would include information such as Jane Jacobs's (1961, p. 205) points that high density is frequently incorrectly confused with overcrowding.

Future Research

This research project's purpose included identifying the essential physical characteristics of New Urban communities with a focus on suburban greenfield development. The second purpose was to explore how the residents of a New Urban and a conventional suburban development may value these characteristics differently. In one respect, the study was broad in scope, as it did not intend to focus deeply on any one characteristic. In another respect, the study focused exclusively on the suburban, middle class, fraction of the development spectrum in central Texas.

Future studies that survey additional portions of the development spectrum, particularly those in areas of greater urban intensity or with an emphasis on infill development, would be useful. Studies that incorporate more rental units including multifamily units in a New Urban setting or lower income developments such as those built under the federal HOPE VI program would provide additional insight. It would also be interesting to evaluate support for New Urbanism characteristics while controlling for socio-economic status.

Other studies may wish to examine this subject through alternative research methods, which would add to a comprehensive approach to this topic (Babbie 2001, p. 269; Yin 2003, p. 97). In the end, it is hoped that this exploratory research has laid the groundwork for future scholarly research.

REFERENCE LIST

American Farmland Trust, *Farming on the Edge: Sprawling Development Threatens America's Best Farmland*, 2002, Available from: http://www.farmlandinfo.org/documents/29393/Farming_on_the_Edge_2002.pdf

Babbie, Earl. *The Practice of Social Research*, 9th ed. (PSR) Wadsworth Publishing Company 2001.

Barnett, Jonathan. What's New About the New Urbanism? in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 73-78. McGraw-Hill: New York, 2000.

Bess, Philip. "Design matters," in *The Christian Century*, 120:8, April 19, 2003, ProQuest 326747721.

Bressi, Todd W. Planning the American Dream, in: P. Katz (Ed.) *The New Urbanism; Toward an Architecture of Community*. pp. xxv-xiii. McGraw-Hill: New York, 1994.

Brown, Barbra B. and Vivian L. Cropper, "New urban and standard suburban subdivisions: Evaluating psychological and social goals," in *Journal of the American Planning Association*, 64:4 pp. 402-420, Autumn 2001.

Calthorp, P. *The Next American Metropolis: Ecology, Community and the American Dream*, New York, Princeton Architectural Press, 1993.

Calthorp, P. The Region, in: P. Katz (Ed.) *The New Urbanism; Toward an Architecture of Community*. pp. xi-xvi. McGraw-Hill: New York, 1994.

Charter of the New Urbanism, Congress of the New Urbanism. Available from: http://www.cnu.org/cnu_reports/Charter.pdf

CNU History, Congress of the New Urbanism. Available from: http://www.cnu.org/aboutcnu/index.cfm?formAction=history&CFID=4295343&CFTOK

Comitta, Thomas J. Chapter Eighteen, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 113-119. McGraw-Hill: New York, 2000.

Crane, R. "Cars and Drivers in the New Suburbs: Linking Access to Travel in Neotraditional Planning," in *Journal of the American Planning Association*, 62:1, Winter 1996, ProQuest 93119461.

Dover, Victor. Chapter Twenty Three, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 147-154. McGraw-Hill: New York, 2000.

Duany, Andres. Chapter Twenty Five, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 161-168. McGraw-Hill: New York, 2000.

Duany, Andres and Elizabeth Plater-Zyberk. The Neighborhood, the District and the Corridor, in: P. Katz (Ed.) *The New Urbanism; Toward an Architecture of Community*. pp. xvii-xx. McGraw-Hill: New York, 1994.

Duany, A., E. Plater-Zyberk and J. Speck. *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. North Point Press: New York, 2000.

Duany, Andres and Emily Talen. "Transect planning," in *Journal of the American Planning Association*, 68:3, 2002, ProQuest 128776211.

Durbin, Dee-Ann. "Traffic Safety Focus of Global Campaign," Associated Press. April 5, 2004.

Ellis, Cliff. "The New Urbanism: Critiques and Rebuttals," in *Journal of Urban Design*, 7:3, 261-291, 2002.

Ewing, Reid, Tom Schmid, Richard Killingsworth, Amy Zlot, and Stephen Raudenbush. "Relationship Between Urban Urban Sprawl and Physical Activity, Obesity, and Morbidity," in *American Journal of Health Promotion*, 18:1, 47-57, Sep/Oct 2003.

Farr, Douglas. Chapter Twenty Two, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 141-146. McGraw-Hill: New York, 2000.

Francis, David R. *Has global oil production peaked?*, Christian Science Monitor, 96:44, p. 14, January 29, 2004, EBSCO 12067584.

Gindroz, Ray. Chapter Twenty One, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 133-140. McGraw-Hill: New York, 2000.

Goldberg, David. "The Transportation Bill Could Slim Us Down," Elm Street Writers Group: Michigan Land Use Institute, March 28, 2004. Available from: http://mlui.org/growthmanagement/fullarticle.asp?fileid=16677

Grant, J. "Mixing Use in Theory and Practice: Canadian Experience with Implementing a Planning Principle," in *Journal of the American Planning Association*, 68:1, 2002, ProQuest 105484621.

Gurin, David. *Understanding Sprawl: A Citizen's Guide*. The David Suzuki Foundation. Vancouver, BC, Canada, 2003. Available from: http://www.davidsuzuki.org/files/Climate/Ontario/Understanding_Sprawl.pdf

Handy, Susan. "New Urbanism and Travel Behavior," Congress for the New Urbanism: San Francisco, Available from: http://www.cnu.org/cnu_reports/travel.pdf

Jackson, Richard J. "The Impact of the Built Environment on Health," in *American Journal of Public Health*, 93:9, 1382-1384, September 2003.

Jacobs, Jane. *The Death and Life of Great American Cities*. Vintage Books: New York, 1961.

Jeffers, Rachael. *Development Sprawl in Texas*, Fall 2003, Applied Research Project – Master of Public Administration, Texas State University- San Marcos, Available from: http://uweb.txstate.edu/~ps07/JeffersARP.doc

Katz, Peter. *The New Urbanism: Toward an Architecture of Community*. McGraw-Hill: New York, 1994.

Kelbaugh, Douglas. Chapter Twenty Four, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 155-160. McGraw-Hill: New York, 2000.

Kulash, Walter. Chapter Twelve in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 83-88. McGraw-Hill: New York, 2000.

Langdon, Philip. *A Better Place to Live: Reshaping the American Suburb*. University of Massachusetts Press: Amherst, Massachusetts, 1994.

Lee, Chang Moo and Kun-Hyuck Ahn, "Is Kentlands better than Radburn? The American Garden City and the new urbanist paradigms," in *Journal of the American Planning Association*, 69:1, 2003, ProQuest 277435051.

Lennertz, Bill. Chapter Seventeen, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 109-112. McGraw-Hill: New York, 2000.

Lieberman, William. Chapter Fifteen, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 101-104. McGraw-Hill: New York, 2000.

Lund, Hollie. "Testing the claims of New Urbanism: Local Access, Pedestrian Travel, and Neighboring Behaviors," in *Journal of the American Planning Association*. 69:4, Autumn 2003, ProQuest 443904111.

McElhenny, John. "Mansionization' tied to loss of open spaces," in *The Boston Globe*. November 10, 2003.

Moule, Elizabeth. Chapter Sixteen, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 105-108. McGraw-Hill: New York, 2000.

Moule, Elizabeth and Stefanos Polyzoides. The Street, the Block and the Building. in: P. Katz (Ed.) *The New Urbanism; Toward an Architecture of Community*. pp. xxi-xxiv. McGraw-Hill: New York, 1994.

Plater-Zyberk, Elizabeth. Chapter Eleven, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 79-82. McGraw-Hill: New York, 2000.

Polyzoides, Stefanos. Chapter Twenty, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 127-132. McGraw-Hill: New York, 2000.

Sander, Thomas H "Social Capital and New Urbanism: Leading a Civic Horse to Water?," in *National Civic Review*, 91:3, Fall 2002, Academic Search Premier 8688405.

Schimmenti, Mark M. Chapter Twenty Six, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 169-171. McGraw-Hill: New York, 2000.

Scully, Vincent. The Architecture of Community. in: P. Katz (Ed.) *The New Urbanism; Toward an Architecture of Community*. pp. 221-230. McGraw-Hill: New York, 1994.

Shibley, Robert G. "The complete new urbanism and the partial practices of placemaking," *Utopian Studies*, 9:1, 1998, WilsonWeb 199800105008005.

Shields, Patricia M. "Pragmatism as Philosophy of Science: A tool for Public Administration," in *Research in Public Administration*, 4 pp. 199-230, 1998.

Sierra Club. *Global Warming & Energy*. Available from: http://www.sierraclub.org/globalwarming/overview/culprits.asp

Solomon, Daniel. Chapter Nineteen, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 123-126. McGraw-Hill: New York, 1999.

Southworth, Michael. "Walkable Suburbs: An Evaluation of Neotraditional Communities at the Urban Edge," in *Journal of the American Planning Association*. 63:1, 1997, ProQuest 10673067.

Southworth, Michael and Peter M. Owens. "The evolving metropolis: Studies of community, neighbourhood, and street form at the urban edge," in *Journal of the American Planning Association*. 59:3, Summer 1993, ProQuest 135157.

Stakeholder Design Team. *Neighborhood Street Design Guidelines: An Oregon Guide for Reducing Street Widths*, Neighborhood Streets Project Stakeholders, 2000. Available from: http://www.lcd.state.or.us/tgm/pub/pdfs/neigh_st.PDF.

Talen, Emily. "Help for Urban Planning: The Transect Strategy," in *Journal of Urban Design*, 7:3 pp. 293-312, 2002.

Talen, Emily. "Sense of Community and Neighborhood Form: An Assessment of the Social Doctrine of New Urbanism," in *Urban Studies*, 36:8, 1999, ProQuest 43685898.

Tiesdell, Steven. "The New Urbanism and English Residential Design: A Review," in *Journal of Urban Design*, 7:3 pp. 353-376, 2002.

Transportation Research Board-National Research Council. *Costs of Sprawl-2000*, TCRP Report 74, National Academy Press: Washington D.C., 2002. Available from: http://gulliver.trb.org/publications/tcrp/tcrp_rpt_74-a.pdf

Trochim, William M. *The Research Methods Knowledge Base*, 2nd ed. 2002. Available from: http://trochim.human.cornell.edu/kb/index.htm (version current as of August 06, 2003).

Tu, Charles C. and Mark J. Eppli. "Valuing new urbanism: The case of the Kentlands," in *Real Estate Economics*, 27:3, Fall 1999, ProQuest 45214810.

U.S. Housing and Urban Development State of the Cities Data System. Available from: http://socds.huduser.org/SOCDS_Home.htm

Weiss, Marc A. Chapter Thirteen, in: Leccese, Michael, and Kathleen McCormick (Ed) *Charter of the New Urbanism*. pp. 89-96. McGraw-Hill: New York, 2000.

Yergin, Daniel. *Imagining a $7-a-Gallon Future*, The New York Times, April 4, 2004.

Yin, Robert K. *Case Study Research: Design and Methods*, 3rd ed. Sage Publications: Thousand Oaks CA, 2003.

APPENDIX A

Beside each of the questions presented below, please indicate your preference with one of the following responses:
Strongly Agree (SA); **Agree** (A); **Neither** Agree nor Disagree (N); **Disagree** (D); **Strongly Disagree** (SD)

Questions	SA	A	N	D	SD
1. I prefer a neighborhood where young, middle aged and the elderly have housing options in the neighborhood.					
2. I prefer a neighborhood composed of residents with very similar incomes.					
3. I prefer a more compact neighborhood with smaller lot sizes.					
4. A smaller house lot size is acceptable if a park or other public space is located close to the home.					
5. Neighborhoods should not be spread out too much (very low density).					
6. A place where adults could meet such as a small restaurant would be nice to have located inside our neighborhood.					
7. Mixing uses in the same building, such as having offices or housing located over a retail store, near other residential areas is acceptable.					
8. Places to work and places to live can exist side by side.					
9. A neighborhood should have parks and other public places where people can meet.					
10. I would like a dry cleaner, small store, or day care center inside my neighborhood.					
11. I would like a variety of uses such as retail or office space to be located close to our neighborhood.					
12. I would prefer that our neighborhood have land uses other than just more housing subdivisions around it.					
13. I like a neighborhood that offers a range of residence types such as condos or single family.					
14. Condos, townhouses, and single-family homes should be located away from each other.					
15. A variety of housing types make a better neighborhood.					
16. I prefer a neighborhood that doesn't require an automobile to get to every destination.					
17. I would like a choice of options in addition to the automobile for transportation.					
18. I like to be able to walk to a destination (ex. school, store) in our neighborhood.					
19. I feel safe walking in our neighborhood.					
20. It is important that neighborhood children be able to walk to school.					
21. Access to public transportation would be good for our neighborhood.					
22. A light rail connection to our neighborhood would be beneficial.					
23. I would support bus service to our neighborhood.					
24. It is important to have consistency of architectural style controlled within the neighborhood.					
25. I prefer traditional style homes such as those with a usable front porch.					

Thank you, for taking the time to complete our neighborhood survey.

Please return the completed survey in the envelope provided.

APPENDIX B

Frequency Tables

Question 1. I prefer a neighborhood where young, middle aged and the elderly have housing options in the neighborhood.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 1 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	12	12.4	12.4	12.4
	4	37	38.1	38.1	50.5
	5	48	49.5	49.5	100.0
	Total	97	100.0	100.0	

Question 1 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.6	1.7	1.7
	2	2	3.3	3.4	5.1
	3	7	11.5	11.9	16.9
	4	25	41.0	42.4	59.3
	5	24	39.3	40.7	100.0
	Total	59	96.7	100.0	
Missing	System	2	3.3		
Total		61	100.0		

Question 1 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.6	.6	.6
	2	2	1.3	1.3	1.9
	3	19	12.0	12.2	14.1
	4	62	39.2	39.7	53.8
	5	72	45.6	46.2	100.0
	Total	156	98.7	100.0	
Missing	System	2	1.3		
Total		158	100.0		

Question 2. I prefer a neighborhood composed of residents with very similar incomes.

(Reversal Question)

Question 2 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	15.5	15.5	15.5
	2	41	42.3	42.3	57.7
	3	32	33.0	33.0	90.7
	4	8	8.2	8.2	99.0
	5	1	1.0	1.0	100.0
	Total	97	100.0	100.0	

KEY (Reversal)	
Survey Response	Code
SA	1
A	2
N	3
D	4
SD	5

Question 2 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	18.0	18.0	18.0
	2	20	32.8	32.8	50.8
	3	20	32.8	32.8	83.6
	4	8	13.1	13.1	96.7
	5	2	3.3	3.3	100.0
	Total	61	100.0	100.0	

Question 2 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	16.5	16.5	16.5
	2	61	38.6	38.6	55.1
	3	52	32.9	32.9	88.0
	4	16	10.1	10.1	98.1
	5	3	1.9	1.9	100.0
	Total	158	100.0	100.0	

Question 3. I prefer a more compact neighborhood with smaller lot sizes.

Question 3 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	25	25.8	26.0	26.0
	2	38	39.2	39.6	65.6
	3	22	22.7	22.9	88.5
	4	11	11.3	11.5	100.0
	Total	96	99.0	100.0	
Missing	System	1	1.0		
Total		97	100.0		

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 3 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	33	54.1	54.1	54.1
	2	22	36.1	36.1	90.2
	3	6	9.8	9.8	100.0
	Total	61	100.0	100.0	

Question 3 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	58	36.7	36.9	36.9
	2	60	38.0	38.2	75.2
	3	28	17.7	17.8	93.0
	4	11	7.0	7.0	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 4. A smaller house lot size is acceptable if a park or other public space is located close to the home.

Question 4 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6.2	6.2	6.2
	2	25	25.8	25.8	32.0
	3	23	23.7	23.7	55.7
	4	35	36.1	36.1	91.8
	5	8	8.2	8.2	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 4 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	32.8	33.9	33.9
	2	17	27.9	28.8	62.7
	3	11	18.0	18.6	81.4
	4	10	16.4	16.9	98.3
	5	1	1.6	1.7	100.0
	Total	59	96.7	100.0	
Missing	System	2	3.3		
Total		61	100.0		

Question 4 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	26	16.5	16.7	16.7
	2	42	26.6	26.9	43.6
	3	34	21.5	21.8	65.4
	4	45	28.5	28.8	94.2
	5	9	5.7	5.8	100.0
	Total	156	98.7	100.0	
Missing	System	2	1.3		
Total		158	100.0		

Question 5. Neighborhoods should not be spread out too much (very low density).

Question 5 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	6.2	6.2	6.2
	2	28	28.9	28.9	35.1
	3	45	46.4	46.4	81.4
	4	16	16.5	16.5	97.9
	5	2	2.1	2.1	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 5 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	21.3	21.7	21.7
	2	18	29.5	30.0	51.7
	3	19	31.1	31.7	83.3
	4	8	13.1	13.3	96.7
	5	2	3.3	3.3	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 5 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	12.0	12.1	12.1
	2	46	29.1	29.3	41.4
	3	64	40.5	40.8	82.2
	4	24	15.2	15.3	97.5
	5	4	2.5	2.5	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 6. A place where adults could meet such as a small restaurant would be nice to have located inside our neighborhood

Question 6 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.1	2.1	2.1
	2	8	8.2	8.2	10.3
	3	12	12.4	12.4	22.7
	4	39	40.2	40.2	62.9
	5	36	37.1	37.1	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 6 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	11.5	11.5	11.5
	2	18	29.5	29.5	41.0
	3	10	16.4	16.4	57.4
	4	13	21.3	21.3	78.7
	5	13	21.3	21.3	100.0
	Total	61	100.0	100.0	

Question 6 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	5.7	5.7	5.7
	2	26	16.5	16.5	22.2
	3	22	13.9	13.9	36.1
	4	52	32.9	32.9	69.0
	5	49	31.0	31.0	100.0
	Total	158	100.0	100.0	

Question 7. Mixing uses in the same building, such as having offices or housing located over a retail store, near other residential areas is acceptable.

Question 7 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	9.3	9.3	9.3
	2	23	23.7	23.7	33.0
	3	13	13.4	13.4	46.4
	4	36	37.1	37.1	83.5
	5	16	16.5	16.5	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 7 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	14.8	15.0	15.0
	2	16	26.2	26.7	41.7
	3	10	16.4	16.7	58.3
	4	20	32.8	33.3	91.7
	5	5	8.2	8.3	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 7 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	11.4	11.5	11.5
	2	39	24.7	24.8	36.3
	3	23	14.6	14.6	51.0
	4	56	35.4	35.7	86.6
	5	21	13.3	13.4	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 8. Places to work and places to live can exist side by side.

Question 8 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.1	2.1	2.1
	2	24	24.7	24.7	26.8
	3	16	16.5	16.5	43.3
	4	42	43.3	43.3	86.6
	5	13	13.4	13.4	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 8 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	5	8.2	8.5	8.5
	2	17	27.9	28.8	37.3
	3	15	24.6	25.4	62.7
	4	16	26.2	27.1	89.8
	5	6	9.8	10.2	100.0
	Total	59	96.7	100.0	
Missing	System	2	3.3		
Total		61	100.0		

Question 8 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	4.4	4.5	4.5
	2	41	25.9	26.3	30.8
	3	31	19.6	19.9	50.6
	4	58	36.7	37.2	87.8
	5	19	12.0	12.2	100.0
	Total	156	98.7	100.0	
Missing	System	2	1.3		
Total		158	100.0		

Question 9. A neighborhood should have parks and other public places where people can meet.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 9 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	1.0	1.0	1.0
	3	2	2.1	2.1	3.1
	4	34	35.1	35.1	38.1
	5	60	61.9	61.9	100.0
	Total	97	100.0	100.0	

Question 9 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.6	1.7	1.7
	3	5	8.2	8.3	10.0
	4	21	34.4	35.0	45.0
	5	33	54.1	55.0	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 9 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.6	.6	.6
	2	1	.6	.6	1.3
	3	7	4.4	4.5	5.7
	4	55	34.8	35.0	40.8
	5	93	58.9	59.2	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 10. I would like a dry cleaner, small store, or day care center <u>inside</u> my neighborhood.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 10 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	15	15.5	15.5	15.5
	3	13	13.4	13.4	28.9
	4	39	40.2	40.2	69.1
	5	30	30.9	30.9	100.0
	Total	97	100.0	100.0	

Question 10 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	9.8	10.0	10.0
	2	20	32.8	33.3	43.3
	3	13	21.3	21.7	65.0
	4	11	18.0	18.3	83.3
	5	10	16.4	16.7	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 10 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	3.8	3.8	3.8
	2	35	22.2	22.3	26.1
	3	26	16.5	16.6	42.7
	4	50	31.6	31.8	74.5
	5	40	25.3	25.5	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 11. I would like a variety of uses such as retail or office space to be located close to our neighborhood.

Question 11 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.0	1.0	1.0
	2	5	5.2	5.2	6.2
	3	6	6.2	6.2	12.4
	4	54	55.7	55.7	68.0
	5	31	32.0	32.0	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 11 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	3.3	3.4	3.4
	2	5	8.2	8.5	11.9
	3	10	16.4	16.9	28.8
	4	25	41.0	42.4	71.2
	5	17	27.9	28.8	100.0
	Total	59	96.7	100.0	
Missing	System	2	3.3		
Total		61	100.0		

Question 11 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	1.9	1.9	1.9
	2	10	6.3	6.4	8.3
	3	16	10.1	10.3	18.6
	4	79	50.0	50.6	69.2
	5	48	30.4	30.8	100.0
	Total	156	98.7	100.0	
Missing	System	2	1.3		
Total		158	100.0		

Question 12. I would prefer that our neighborhood have land uses other than just more housing subdivisions around it.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 12 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	6	6.2	6.2	6.2
	3	9	9.3	9.3	15.5
	4	47	48.5	48.5	63.9
	5	35	36.1	36.1	100.0
	Total	97	100.0	100.0	

Question 12 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	3.3	3.4	3.4
	2	5	8.2	8.5	11.9
	3	11	18.0	18.6	30.5
	4	22	36.1	37.3	67.8
	5	19	31.1	32.2	100.0
	Total	59	96.7	100.0	
Missing	System	2	3.3		
Total		61	100.0		

Question 12 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.3	1.3	1.3
	2	11	7.0	7.1	8.3
	3	20	12.7	12.8	21.2
	4	69	43.7	44.2	65.4
	5	54	34.2	34.6	100.0
	Total	156	98.7	100.0	
Missing	System	2	1.3		
Total		158	100.0		

Question 13. I like a neighborhood that offers a range of residence types such as condos or single family.

Question 13 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	2.1	2.1	2.1
	2	25	25.8	25.8	27.8
	3	28	28.9	28.9	56.7
	4	33	34.0	34.0	90.7
	5	9	9.3	9.3	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 13 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	9.8	10.0	10.0
	2	16	26.2	26.7	36.7
	3	15	24.6	25.0	61.7
	4	17	27.9	28.3	90.0
	5	6	9.8	10.0	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 13 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	5.1	5.1	5.1
	2	41	25.9	26.1	31.2
	3	43	27.2	27.4	58.6
	4	50	31.6	31.8	90.4
	5	15	9.5	9.6	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 14. Condos, townhouses, and single-family homes should be located away from each other.

(Reversal Question)

KEY (Reversal)	
Survey Response	Code
SA	1
A	2
N	3
D	4
SD	5

Question 14 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	9.3	9.3	9.3
	2	33	34.0	34.0	43.3
	3	26	26.8	26.8	70.1
	4	25	25.8	25.8	95.9
	5	4	4.1	4.1	100.0
	Total	97	100.0	100.0	

Question 14 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	11.5	12.1	12.1
	2	18	29.5	31.0	43.1
	3	20	32.8	34.5	77.6
	4	11	18.0	19.0	96.6
	5	2	3.3	3.4	100.0
	Total	58	95.1	100.0	
Missing	System	3	4.9		
Total		61	100.0		

Question 14 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	16	10.1	10.3	10.3
	2	51	32.3	32.9	43.2
	3	46	29.1	29.7	72.9
	4	36	22.8	23.2	96.1
	5	6	3.8	3.9	100.0
	Total	155	98.1	100.0	
Missing	System	3	1.9		
Total		158	100.0		

Question 15. A variety of housing types make a better neighborhood.

Question 15 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	3.1	3.1	3.1
	2	18	18.6	18.8	21.9
	3	30	30.9	31.3	53.1
	4	39	40.2	40.6	93.8
	5	6	6.2	6.3	100.0
	Total	96	99.0	100.0	
Missing	System	1	1.0		
Total		97	100.0		

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 15 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	9.8	10.2	10.2
	2	13	21.3	22.0	32.2
	3	16	26.2	27.1	59.3
	4	13	21.3	22.0	81.4
	5	11	18.0	18.6	100.0
	Total	59	96.7	100.0	
Missing	System	2	3.3		
Total		61	100.0		

Question 15 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	5.7	5.8	5.8
	2	31	19.6	20.0	25.8
	3	46	29.1	29.7	55.5
	4	52	32.9	33.5	89.0
	5	17	10.8	11.0	100.0
	Total	155	98.1	100.0	
Missing	System	3	1.9		
Total		158	100.0		

Question 16. I prefer a neighborhood that doesn't require an automobile to get to every destination.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 16 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	8	8.2	8.2	8.2
	3	24	24.7	24.7	33.0
	4	41	42.3	42.3	75.3
	5	24	24.7	24.7	100.0
	Total	97	100.0	100.0	

Question 16 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	4.9	5.1	5.1
	2	11	18.0	18.6	23.7
	3	15	24.6	25.4	49.2
	4	21	34.4	35.6	84.7
	5	9	14.8	15.3	100.0
	Total	59	96.7	100.0	
Missing	System	2	3.3		
Total		61	100.0		

Question 16 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	1.9	1.9	1.9
	2	19	12.0	12.2	14.1
	3	39	24.7	25.0	39.1
	4	62	39.2	39.7	78.8
	5	33	20.9	21.2	100.0
	Total	156	98.7	100.0	
Missing	System	2	1.3		
Total		158	100.0		

Question 17. I would like a choice of options in addition to the automobile for transportation.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 17 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	17	17.5	17.5	17.5
	3	24	24.7	24.7	42.3
	4	33	34.0	34.0	76.3
	5	23	23.7	23.7	100.0
	Total	97	100.0	100.0	

Question 17 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	6.6	6.7	6.7
	2	9	14.8	15.0	21.7
	3	15	24.6	25.0	46.7
	4	16	26.2	26.7	73.3
	5	16	26.2	26.7	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 17 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	2.5	2.5	2.5
	2	26	16.5	16.6	19.1
	3	39	24.7	24.8	43.9
	4	49	31.0	31.2	75.2
	5	39	24.7	24.8	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 18. I like to be able to walk to a destination (ex. school, store) in our neighborhood.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 18 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	7	7.2	7.2	7.2
	3	12	12.4	12.4	19.6
	4	47	48.5	48.5	68.0
	5	31	32.0	32.0	100.0
	Total	97	100.0	100.0	

Question 18 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	3.3	3.3	3.3
	2	8	13.1	13.3	16.7
	3	11	18.0	18.3	35.0
	4	23	37.7	38.3	73.3
	5	16	26.2	26.7	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 18 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.3	1.3	1.3
	2	15	9.5	9.6	10.8
	3	23	14.6	14.6	25.5
	4	70	44.3	44.6	70.1
	5	47	29.7	29.9	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 19. I feel safe walking in our neighborhood.

(Question not used in study)

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 19 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	1.0	1.0	1.0
	4	37	38.1	38.1	39.2
	5	59	60.8	60.8	100.0
	Total	97	100.0	100.0	

Question 19 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.6	1.7	1.7
	3	4	6.6	6.7	8.3
	4	29	47.5	48.3	56.7
	5	26	42.6	43.3	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 19 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.6	.6	.6
	3	5	3.2	3.2	3.8
	4	66	41.8	42.0	45.9
	5	85	53.8	54.1	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 20. It is important that neighborhood children be able to walk to school.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 20 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	3	3.1	3.1	3.1
	3	17	17.5	17.5	20.6
	4	34	35.1	35.1	55.7
	5	43	44.3	44.3	100.0
	Total	97	100.0	100.0	

Question 20 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.6	1.7	1.7
	2	1	1.6	1.7	3.4
	3	7	11.5	12.1	15.5
	4	20	32.8	34.5	50.0
	5	29	47.5	50.0	100.0
	Total	58	95.1	100.0	
Missing	System	3	4.9		
Total		61	100.0		

Question 20 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	.6	.6	.6
	2	4	2.5	2.6	3.2
	3	24	15.2	15.5	18.7
	4	54	34.2	34.8	53.5
	5	72	45.6	46.5	100.0
	Total	155	98.1	100.0	
Missing	System	3	1.9		
Total		158	100.0		

Question 21. Access to public transportation would be good for our neighborhood.

Question 21 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	7.2	7.2	7.2
	2	16	16.5	16.5	23.7
	3	30	30.9	30.9	54.6
	4	28	28.9	28.9	83.5
	5	16	16.5	16.5	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 21 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	9.8	10.2	10.2
	2	9	14.8	15.3	25.4
	3	14	23.0	23.7	49.2
	4	16	26.2	27.1	76.3
	5	14	23.0	23.7	100.0
	Total	59	96.7	100.0	
Missing	System	2	3.3		
Total		61	100.0		

Question 21 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	8.2	8.3	8.3
	2	25	15.8	16.0	24.4
	3	44	27.8	28.2	52.6
	4	44	27.8	28.2	80.8
	5	30	19.0	19.2	100.0
	Total	156	98.7	100.0	
Missing	System	2	1.3		
Total		158	100.0		

Question 22. A light rail connection to our neighborhood would be beneficial.

Question 22 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	20.6	20.6	20.6
	2	9	9.3	9.3	29.9
	3	21	21.6	21.6	51.5
	4	25	25.8	25.8	77.3
	5	22	22.7	22.7	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 22 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	13.1	13.3	13.3
	2	9	14.8	15.0	28.3
	3	17	27.9	28.3	56.7
	4	12	19.7	20.0	76.7
	5	14	23.0	23.3	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 22 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	28	17.7	17.8	17.8
	2	18	11.4	11.5	29.3
	3	38	24.1	24.2	53.5
	4	37	23.4	23.6	77.1
	5	36	22.8	22.9	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

Question 23. I would support bus service to our neighborhood.

Question 23 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	12.4	12.5	12.5
	2	24	24.7	25.0	37.5
	3	23	23.7	24.0	61.5
	4	24	24.7	25.0	86.5
	5	13	13.4	13.5	100.0
	Total	96	99.0	100.0	
Missing	System	1	1.0		
Total		97	100.0		

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 23 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	13.1	14.0	14.0
	2	8	13.1	14.0	28.1
	3	15	24.6	26.3	54.4
	4	18	29.5	31.6	86.0
	5	8	13.1	14.0	100.0
	Total	57	93.4	100.0	
Missing	System	4	6.6		
Total		61	100.0		

Question 23 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	12.7	13.1	13.1
	2	32	20.3	20.9	34.0
	3	38	24.1	24.8	58.8
	4	42	26.6	27.5	86.3
	5	21	13.3	13.7	100.0
	Total	153	96.8	100.0	
Missing	System	5	3.2		
Total		158	100.0		

Question 24. It is important to have consistency of architectural style controlled within the neighborhood.

Question 24 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	1.0	1.0	1.0
	2	4	4.1	4.1	5.2
	3	10	10.3	10.3	15.5
	4	42	43.3	43.3	58.8
	5	40	41.2	41.2	100.0
	Total	97	100.0	100.0	

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 24 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	11.5	12.3	12.3
	2	5	8.2	8.8	21.1
	3	17	27.9	29.8	50.9
	4	20	32.8	35.1	86.0
	5	8	13.1	14.0	100.0
	Total	57	93.4	100.0	
Missing	System	4	6.6		
Total		61	100.0		

Question 24 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	5.1	5.2	5.2
	2	9	5.7	5.8	11.0
	3	27	17.1	17.5	28.6
	4	62	39.2	40.3	68.8
	5	48	30.4	31.2	100.0
	Total	154	97.5	100.0	
Missing	System	4	2.5		
Total		158	100.0		

Question 25. I prefer traditional style homes such as those with a usable front porch.

KEY	
Survey Response	Code
SD	1
D	2
N	3
A	4
SA	5

Question 25 - Plum Creek

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	5	5.2	5.2	5.2
	4	31	32.0	32.0	37.1
	5	61	62.9	62.9	100.0
	Total	97	100.0	100.0	

Question 25 - Steeplechase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	3.3	3.3	3.3
	2	5	8.2	8.3	11.7
	3	16	26.2	26.7	38.3
	4	18	29.5	30.0	68.3
	5	19	31.1	31.7	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Question 25 - Total

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	1.3	1.3	1.3
	2	5	3.2	3.2	4.5
	3	21	13.3	13.4	17.8
	4	49	31.0	31.2	49.0
	5	80	50.6	51.0	100.0
	Total	157	99.4	100.0	
Missing	System	1	.6		
Total		158	100.0		

APPENDIX C

Group Statistics

Group Statistics

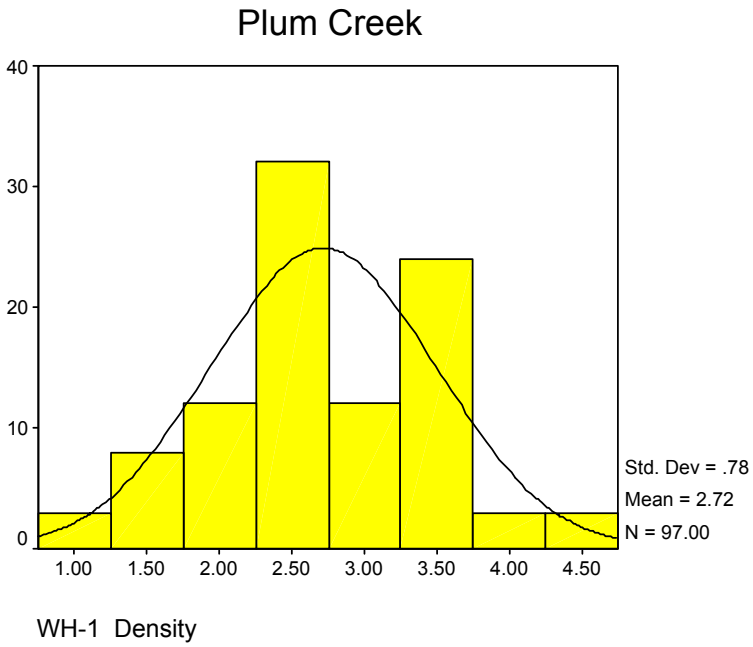
	LOCATION	N	Mean	Std. Deviation	Std. Error Mean
WH-1	0	97	2.71649	.775853	.078776
	1	61	2.10383	.776485	.099419
WH-2	0	97	3.91753	.636488	.064626
	1	61	3.41647	.820210	.105017
WH-2a	0	97	3.83093	.709072	.071995
	1	61	3.25820	.893084	.114348
WH-2b	0	97	4.13402	.694155	.070481
	1	60	3.86667	.857997	.110767
WH-3	0	97	3.10825	.852570	.086565
	1	60	2.95833	.986073	.127301
WH-4	0	97	3.73711	.869305	.088265
	1	60	3.44167	1.037809	.133981
WH-4a	0	97	4.12887	.733422	.074468
	1	60	4.00000	.781133	.100844
WH-4b	0	97	3.18385	1.145514	.116309
	1	60	3.27500	1.172835	.151412
WH-5	0	97	4.38660	.618740	.062824
	1	60	3.55833	.911748	.117706
WH-6	0	97	3.37113	.630304	.063998
	1	61	3.28689	.771681	.098804

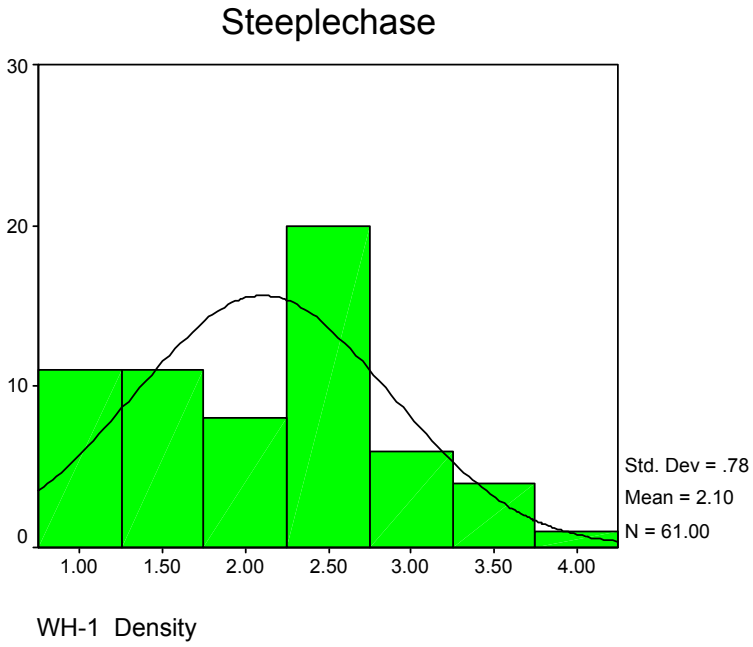
Location Codes:

0 = New Urban (Plum Creek)
1 = Conventional (Steeplechase)

Frequency Graphs & Tables of Independent Variable Mean Scores

WH1: New Urban residents are more likely to value a compact urban form than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 1 (*Density*)

(WH1) New Urban residents are more likely to value a compact urban form than would residents of a conventional suburban development.

Survey Question

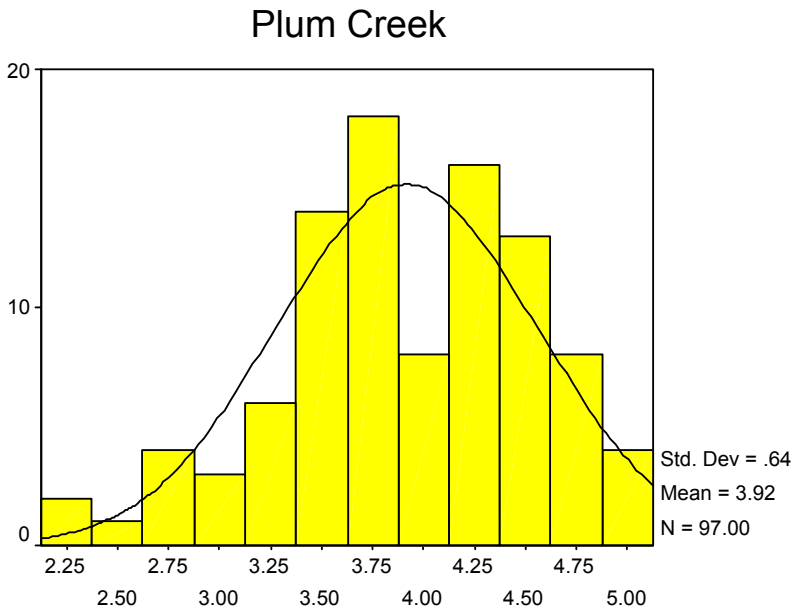
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
3. I prefer a more compact neighborhood with smaller lot sizes.							
	SA	A	N	D	SD		
New Urban		11.5%	22.9%	39.6%	26.0%	96	2.20
Conventional			9.8%	36.1%	54.1%	61	1.56
4. A smaller house lot size is acceptable if a park or other public space is located close to the home.							
	SA	A	N	D	SD		
New Urban	8.2%	36.1%	23.7%	25.8%	6.2%	97	3.14
Conventional	1.7%	16.9%	18.6%	28.8%	33.9%	59	2.24
5. Neighborhoods should not be spread out too much (very low density).							
	SA	A	N	D	SD		
New Urban	2.1%	16.5%	46.4%	28.9%	6.2%	97	2.97
Conventional	3.3%	13.3%	31.7%	30.0%	21.7%	60	2.47

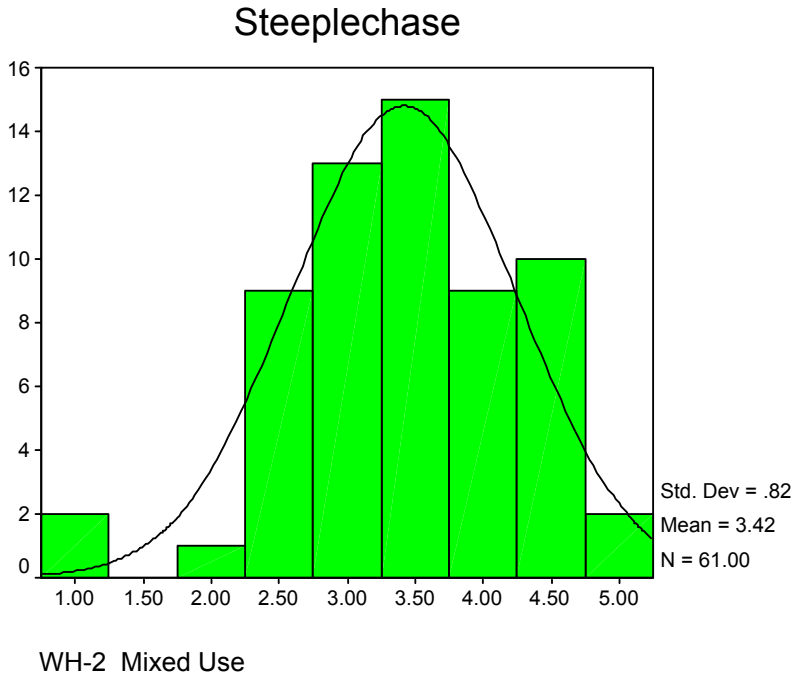
Mean Score for *Density* Independent Variable **

New Urban (*Plum Creek*)	**N = 97**	**Mean = 2.72**
Conventional (*Steeplechase*)	**N = 61**	**Mean = 2.10**

** Significant, $t(156) = 4.83$, $p < .001$, two tailed.

WH2: New Urban residents are more likely to value the mixing of land uses than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 2 (*Mixed Use*)

(WH2) New Urban residents are more likely to value the mixing of land uses than would residents of a conventional suburban development.

Survey Question

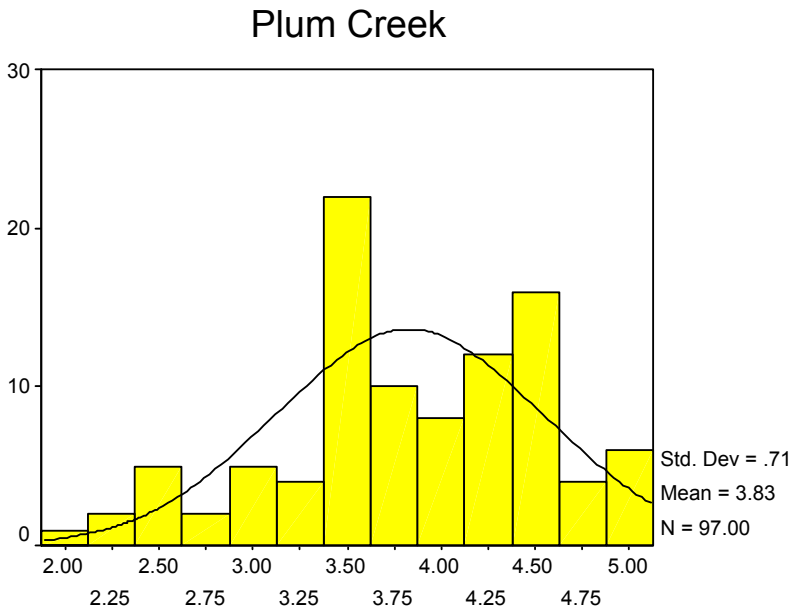
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
6. A place where adults could meet such as a small restaurant would be nice to have located <u>inside</u> our neighborhood.							
	SA	A	N	D	SD		
New Urban	37.1%	40.2%	12.4%	8.2%	2.1%	97	4.02
Conventional	21.3%	21.3%	16.4%	29.5%	11.5%	61	3.11
7. Mixing uses in the same building, such as having offices or housing located <u>over</u> a retail store, near other residential areas is acceptable.							
	SA	A	N	D	SD		
New Urban	16.5%	37.1%	13.4%	23.7%	9.3%	97	3.28
Conventional	8.3%	33.3%	16.7%	26.7%	15.0%	60	2.93
8. Places to work and places to live can exist side by side.							
	SA	A	N	D	SD		
New Urban	13.4%	43.3%	16.5%	24.7%	2.1%	97	3.41
Conventional	10.2%	27.1%	25.4%	28.8%	8.5%	59	3.02
9. A neighborhood should have parks and other public places where people can meet.							
	SA	A	N	D	SD		
New Urban	61.9%	35.1%	2.1%	1.0%		97	4.58
Conventional	55.0%	35.0%	8.3%		1.7%	60	4.42
10. I would like a dry cleaner, small store, or day care center <u>inside</u> my neighborhood.							
	SA	A	N	D	SD		
New Urban	30.9%	40.2%	13.4%	15.5%		97	3.87
Conventional	16.7%	18.3%	21.7%	33.3%	10.0%	60	2.98
11. I would like a variety of uses such as retail or office space to be located <u>close</u> to our neighborhood.							
	SA	A	N	D	SD		
New Urban	32.0%	55.7%	6.2%	5.2%	1.0%	97	4.12
Conventional	28.8%	42.4%	16.9%	8.5%	3.4%	59	3.85
12. I would prefer that our neighborhood have land uses other than just more housing subdivisions around it.							
	SA	A	N	D	SD		
New Urban	36.1%	48.5%	9.3%	6.2%		97	4.14
Conventional	32.2%	37.3%	18.6%	8.5%	3.4%	59	3.86

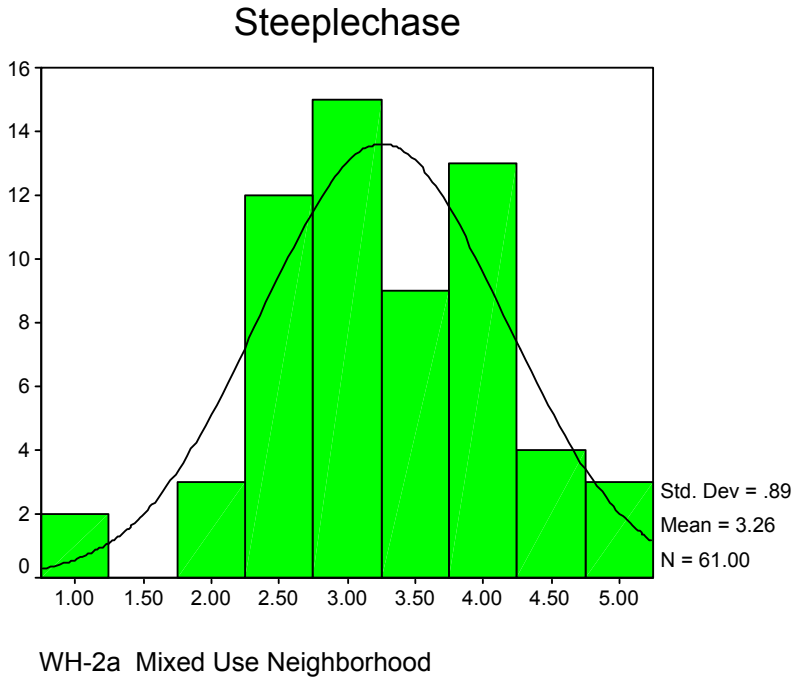
Mean Score for *Mixed Use* Independent Variable **

New Urban (*Plum Creek*)	**N = 97**	**Mean = 3.92**
Conventional (*Steeplechase*)	**N = 61**	**Mean = 3.42**

** Significant, $t(156) = 4.30$, $p < .001$, two tailed.

WH2a: New Urban residents are more likely to value the mixing of land uses within the neighborhood than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 2a (*Mixed Use Neighborhood*)

(WH2a) New Urban residents are more likely to value the mixing of land uses within the neighborhood than would residents of a conventional suburban development.

Survey Question

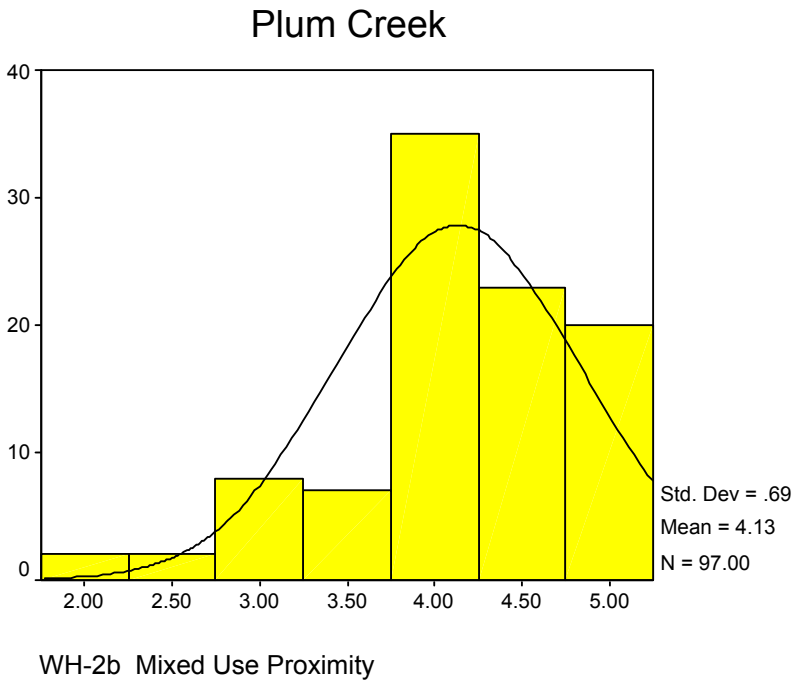
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
6. A place where adults could meet such as a small restaurant would be nice to have located <u>inside</u> our neighborhood.							
	SA	A	N	D	SD		
New Urban	37.1%	40.2%	12.4%	8.2%	2.1%	97	4.02
Conventional	21.3%	21.3%	16.4%	29.5%	11.5%	61	3.11
7. Mixing uses in the same building, such as having offices or housing located <u>over</u> a retail store, near other residential areas is acceptable.							
	SA	A	N	D	SD		
New Urban	16.5%	37.1%	13.4%	23.7%	9.3%	97	3.28
Conventional	8.3%	33.3%	16.7%	26.7%	15.0%	60	2.93
8. Places to work and places to live can exist side by side.							
	SA	A	N	D	SD		
New Urban	13.4%	43.3%	16.5%	24.7%	2.1%	97	3.41
Conventional	10.2%	27.1%	25.4%	28.8%	8.5%	59	3.02
9. A neighborhood should have parks and other public places where people can meet.							
	SA	A	N	D	SD		
New Urban	61.9%	35.1%	2.1%	1.0%		97	4.58
Conventional	55.0%	35.0%	8.3%		1.7%	60	4.42
10. I would like a dry cleaner, small store, or day care center <u>inside</u> my neighborhood.							
	SA	A	N	D	SD		
New Urban	30.9%	40.2%	13.4%	15.5%		97	3.87
Conventional	16.7%	18.3%	21.7%	33.3%	10.0%	60	2.98

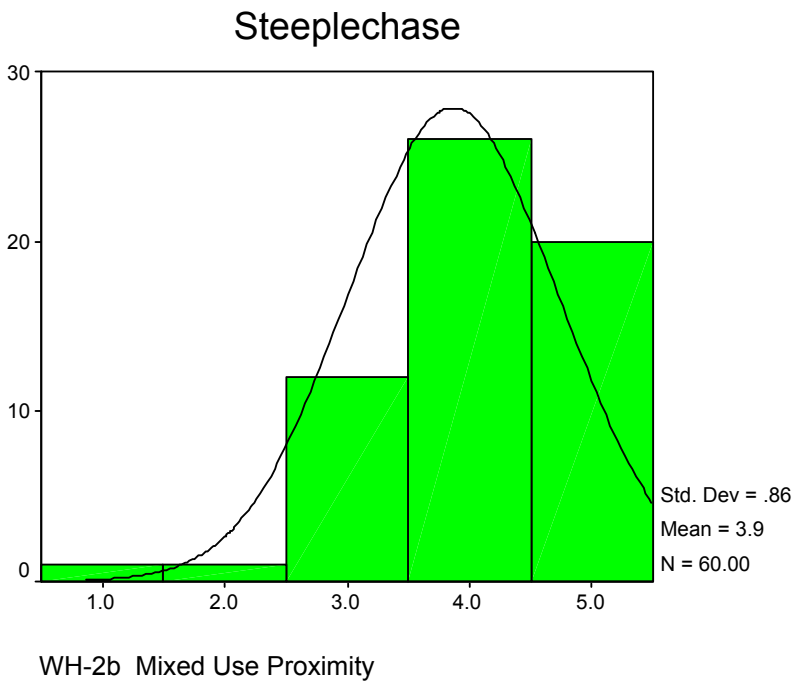
Mean Score for *Mixed Use Neighborhood* Independent Variable **

New Urban (*Plum Creek*)	**N = 97**	**Mean = 3.83**
Conventional (*Steeplechase*)	**N = 61**	**Mean = 3.26**

****** Significant, $t(156) = 4.46$, $p < .001$, two tailed.

WH2b: New Urban residents are more likely to value the mixing of land uses within close proximity of the neighborhood than would residents of a conventional suburban development.



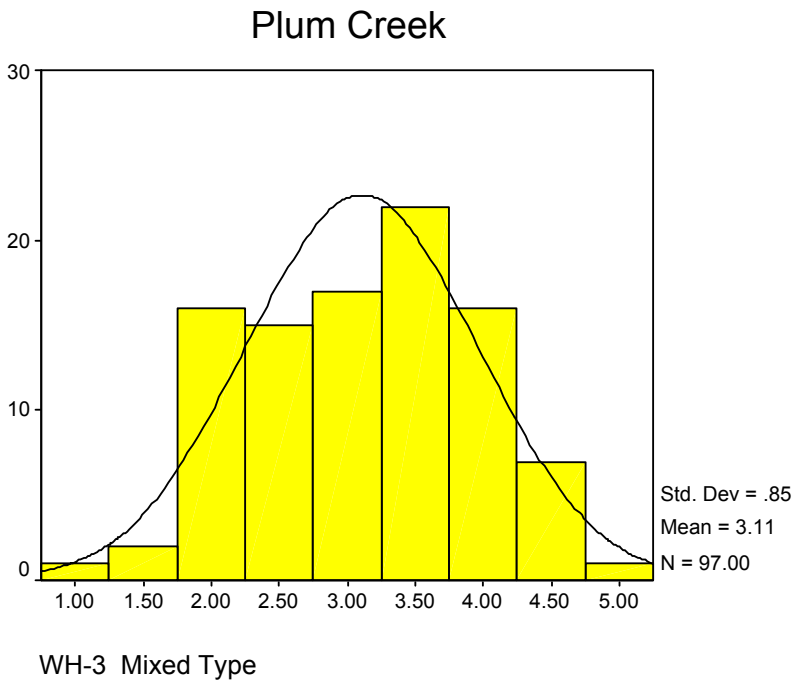


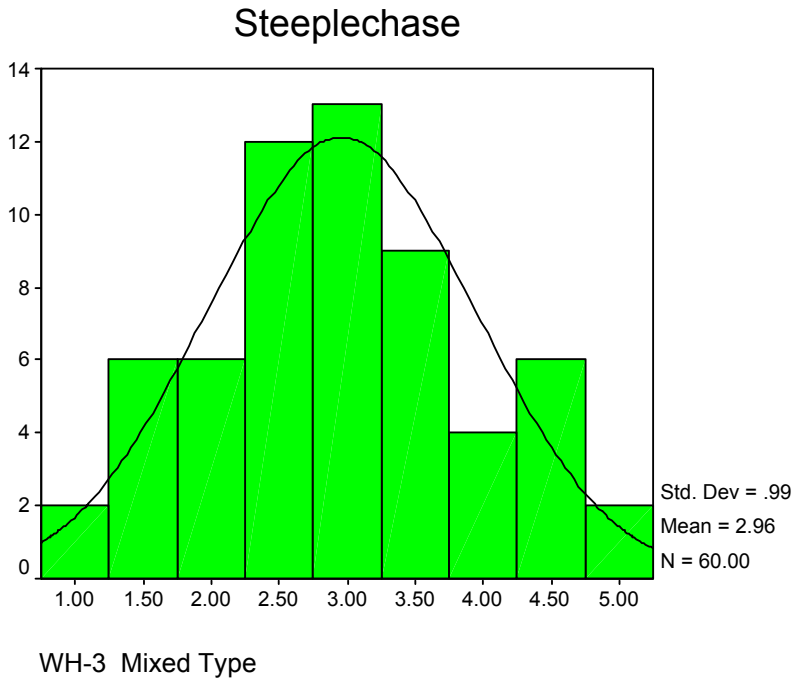
Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 2b (*Mixed Use Proximity*)							
(WH2b) New Urban residents are more likely to value the mixing of land uses within close proximity of the neighborhood than would residents of a conventional suburban development.							
Survey Question							
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
11. I would like a variety of uses such as retail or office space to be located close to our neighborhood.							
	SA	A	N	D	SD		
New Urban	32.0%	55.7%	6.2%	5.2%	1.0%	97	4.12
Conventional	28.8%	42.4%	16.9%	8.5%	3.4%	59	3.85
12. I would prefer that our neighborhood have land uses other than just more housing subdivisions around it.							
	SA	A	N	D	SD		
New Urban	36.1%	48.5%	9.3%	6.2%		97	4.14
Conventional	32.2%	37.3%	18.6%	8.5%	3.4%	59	3.86
Mean Score for *Mixed Use Proximity* Independent Variable **							
New Urban (*Plum Creek*)						**N = 97**	**Mean = 4.13**
Conventional (*Steeplechase*)						**N = 60**	**Mean = 3.87**

** Significant, $t(155) = 2.14$, $p < .05$, two tailed.

WH3: New Urban residents are more likely to value the mixing of housing types within the neighborhood than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 3 (*Mixed Type*)

(WH3) New Urban residents are more likely to value the mixing of housing types within the neighborhood than would residents of a conventional suburban development.

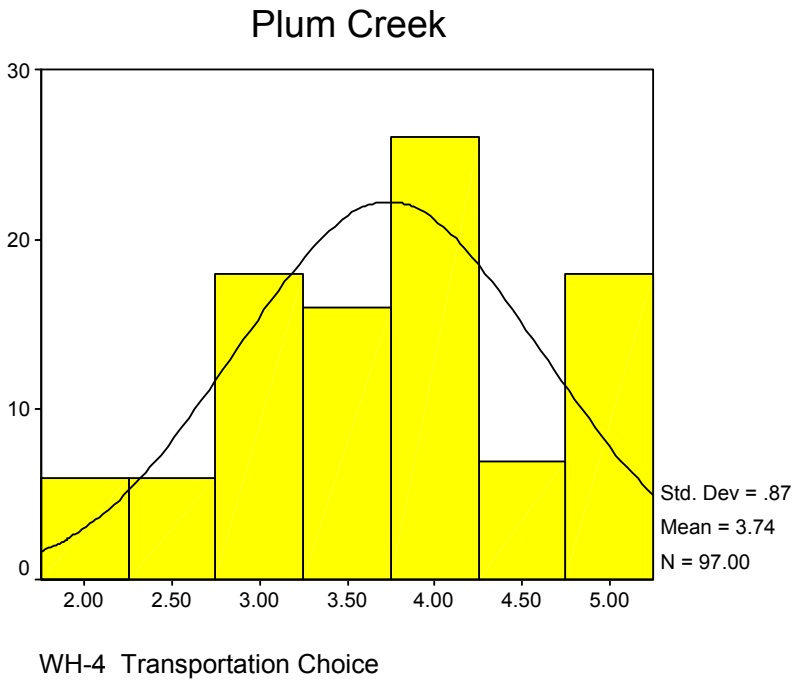
Survey Question

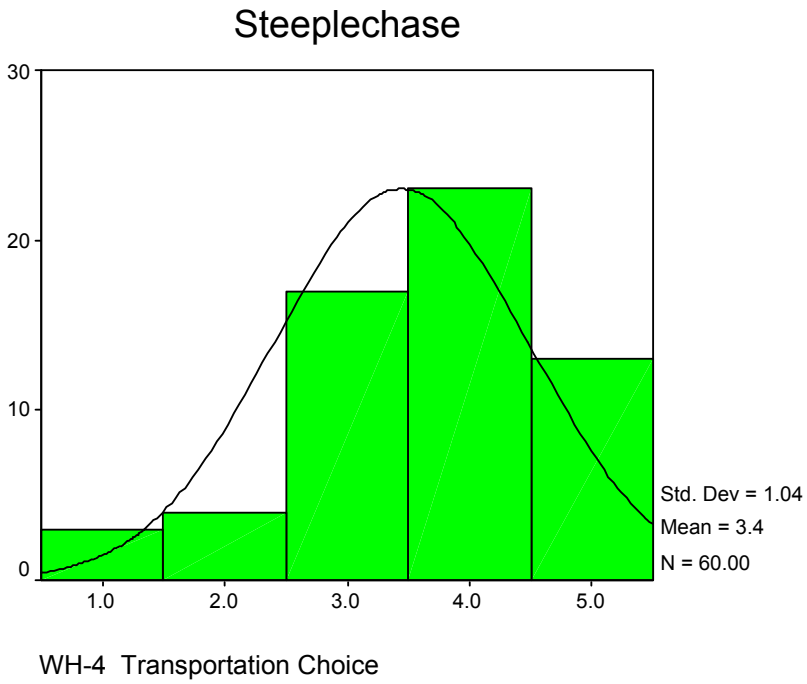
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
13. I like a neighborhood that offers a range of residence types such as condos or single family.							
	SA	A	N	D	SD		
New Urban	9.3%	34.0%	28.9%	25.8%	2.1%	97	3.23
Conventional	10.0%	28.3%	25.0%	26.7%	10.0%	60	3.02
14. Condos, townhouses, and single-family homes should be located away from each other.							
	SA	A	N	D	SD		Reversal Item
New Urban	9.3%	34.0%	26.8%	25.8%	4.1%	97	2.81
Conventional	12.1%	31.0%	34.5%	19.0%	3.4%	58	2.71
15. A variety of housing types make a better neighborhood.							
	SA	A	N	D	SD		
New Urban	6.3%	40.6%	31.3%	18.8%	3.1%	96	3.28
Conventional	18.6%	22.0%	27.1%	22.0%	10.2%	59	3.17

Mean Score for *Mixed Type* Independent Variable

New Urban (*Plum Creek*)	**N = 97**	**Mean = 3.11**
Conventional (*Steeplechase*)	**N = 60**	**Mean = 2.96**

WH4: New Urban residents are more likely to value transportation choices than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 4 (*Transportation Choice*)

(WH4) New Urban residents are more likely to value transportation choices than would residents of a conventional suburban development.

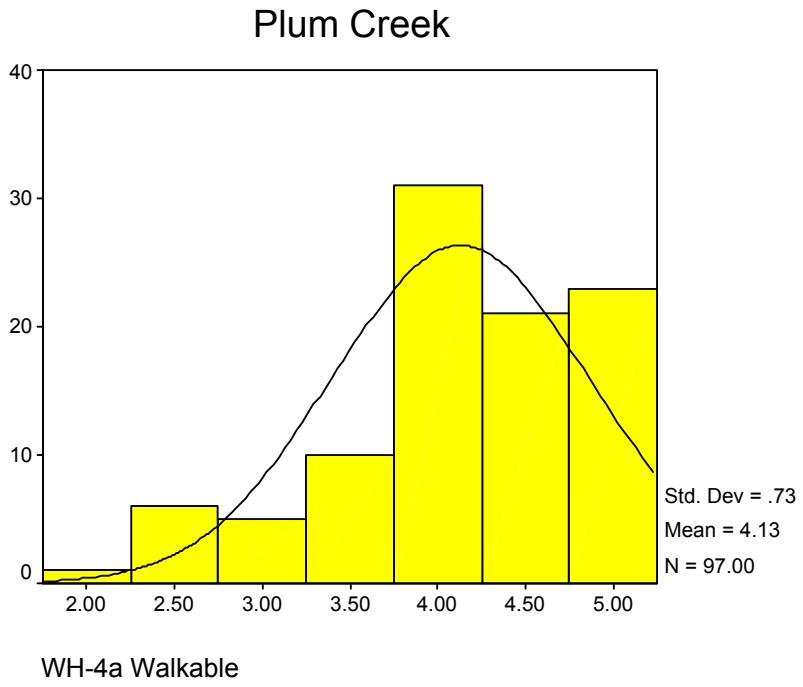
Survey Question

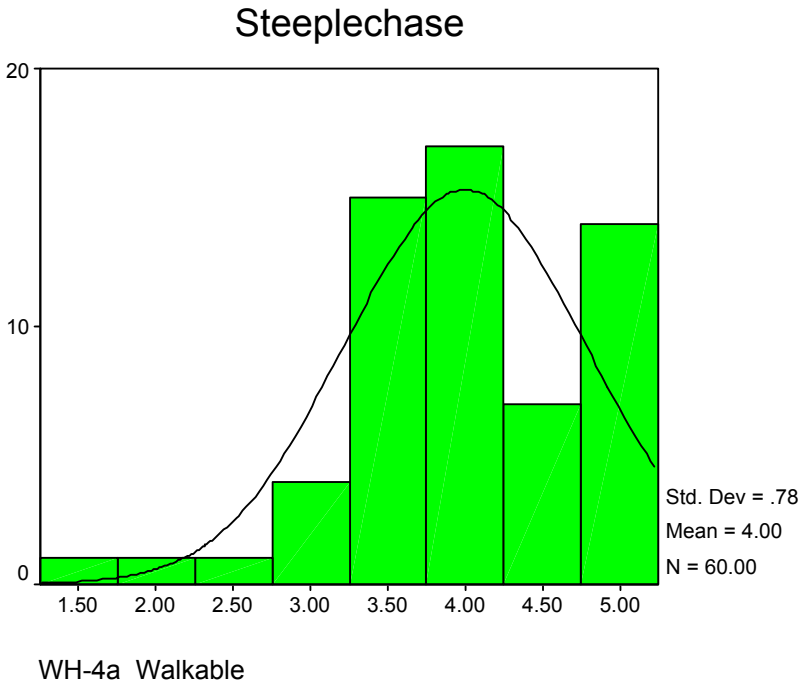
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
16. I prefer a neighborhood that you don't always have to take an automobile to get to every destination.							
	SA	A	N	D	SD		
New Urban	24.7%	42.3%	24.7%	8.2%		97	3.84
Conventional	15.3%	35.6%	25.4%	18.6%	5.1%	59	3.37
17. I would like a choice of options in addition to the automobile for transportation.							
	SA	A	N	D	SD		
New Urban	23.7%	34.0%	24.7%	17.5%		97	3.64
Conventional	26.7%	26.7%	25.0%	15.0%	6.7%	60	3.52

Mean Score for *Transportation Choice* Independent Variable

New Urban (*Plum Creek*)	**N = 97**	**Mean = 3.74**
Conventional (*Steeplechase*)	**N = 60**	**Mean = 3.44**

WH4a: New Urban residents are more likely to value a walkable neighborhood than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 4a (*Walkable*)

(WH4a) New Urban residents are more likely to value a walkable neighborhood than would residents of a conventional suburban development.

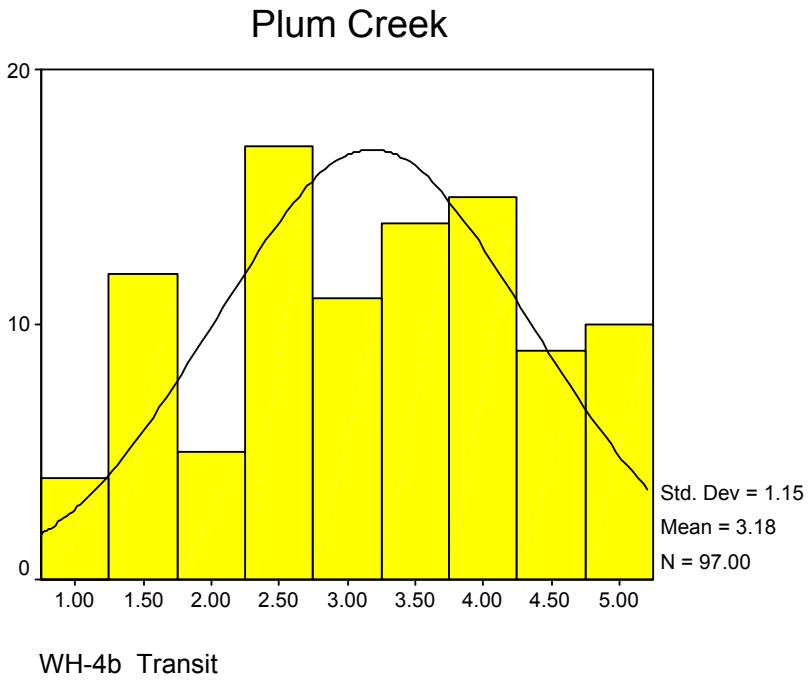
Survey Question

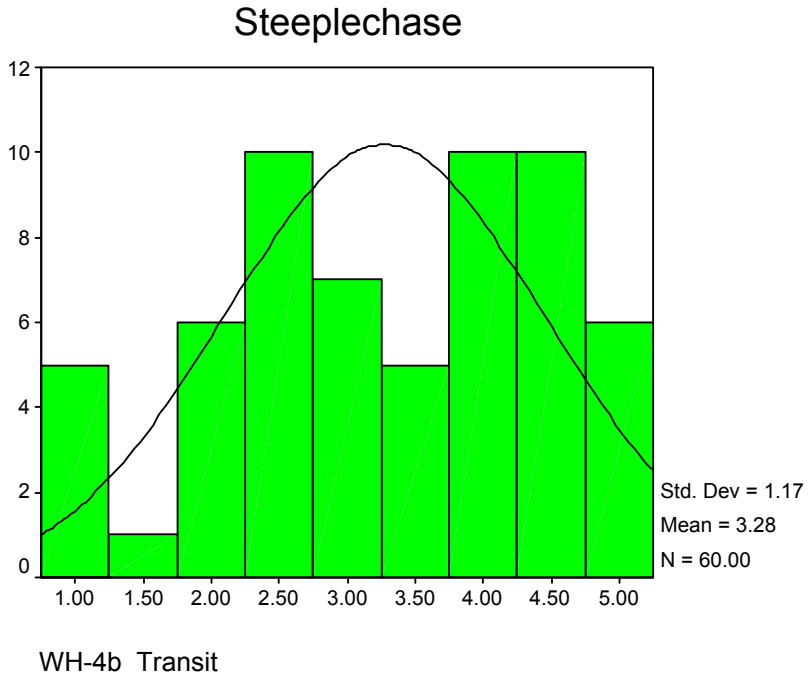
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
18. I like to be able to walk to a destination (ex. school, store) in our neighborhood.							
	SA	A	N	D	SD		
New Urban	32.0%	48.5%	12.4%	7.2%		97	4.05
Conventional	26.7%	38.3%	18.3%	13.3%	3.3%	60	3.72
20. It is important that neighborhood children be able to walk to school.							
	SA	A	N	D	SD		
New Urban	44.3%	35.1%	17.5%	3.1%		97	4.21
Conventional	50.0%	34.5%	12.1%	1.7%	1.7%	58	4.29

Mean Score for *Walkable* Independent Variable

New Urban (*Plum Creek*)	**N = 97**	**Mean = 4.13**
Conventional (*Steeplechase*)	**N = 60**	**Mean = 4.00**

WH4b: New Urban residents are more likely to value public transportation connections to the neighborhood than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 4b (*Transit*)

(WH4b) New Urban residents are more likely to value public transportation connections to the neighborhood than would residents of a conventional suburban development.

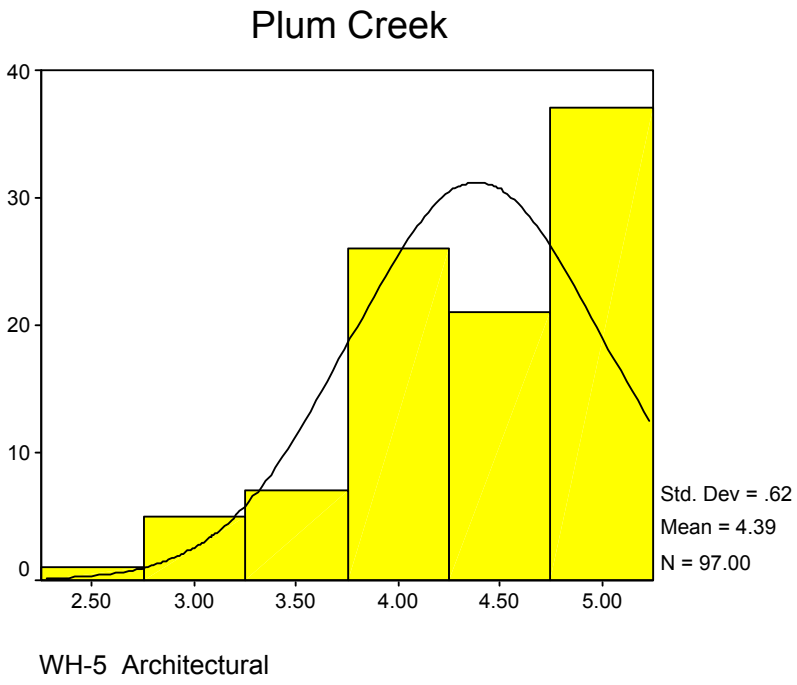
Survey Question

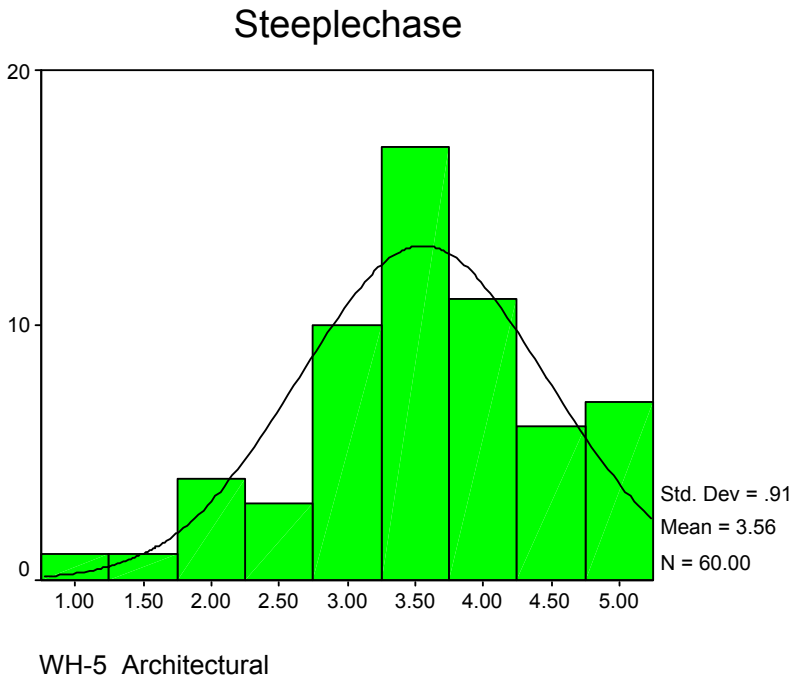
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
21. Access to public transportation would be good for our neighborhood.							
	SA	A	N	D	SD		
New Urban	16.5%	28.9%	30.9%	16.5%	7.2%	97	3.31
Conventional	23.7%	27.1%	23.7%	15.3%	10.2%	59	3.39
22. A light rail connection to our neighborhood would be beneficial.							
	SA	A	N	D	SD		
New Urban	22.7%	25.8%	21.6%	9.3%	20.6%	97	3.21
Conventional	23.3%	20.0%	28.3%	15.0%	13.3%	60	3.25
23. I would support bus service to our neighborhood.							
	SA	A	N	D	SD		
New Urban	13.5%	25.0%	24.0%	25.0%	12.5%	96	3.02
Conventional	14.0%	31.6%	26.3%	14.0%	14.0%	57	3.18

Mean Score for *Transit* Independent Variable

New Urban (*Plum Creek*)	**N = 97**	**Mean = 3.18**
Conventional (*Steeplechase*)	**N = 60**	**Mean = 3.28**

WH5: New Urban residents are more likely to value traditional architectural elements than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 5 (*Architectural*)

(WH5) New Urban residents are more likely to value traditional architectural elements than would residents of a conventional suburban development.

Survey Question

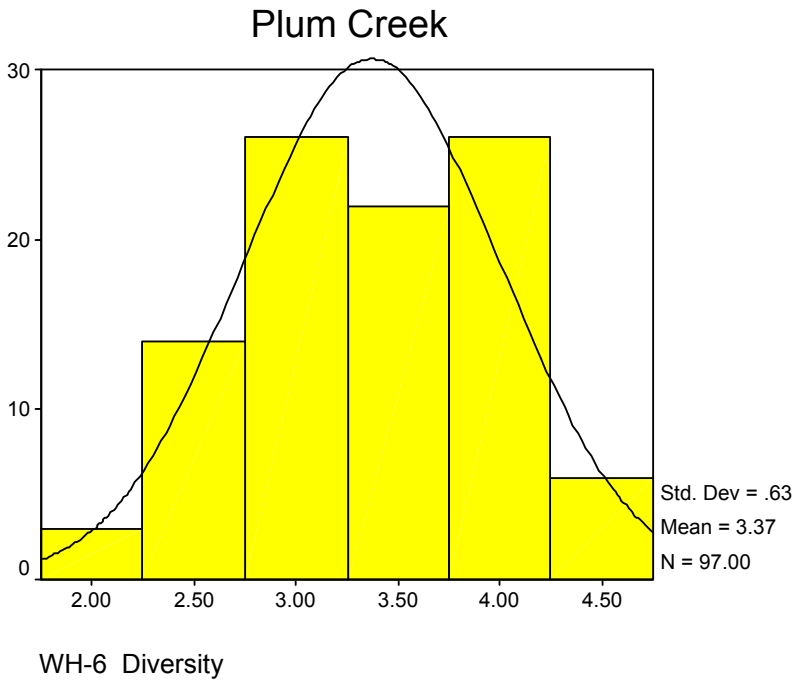
Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
24. It is important to have consistency of <u>architectural style</u> controlled within the neighborhood.							
	SA	A	N	D	SD		
New Urban	41.2%	43.3%	10.3%	4.1%	1.0%	97	4.20
Conventional	14.0%	35.1%	29.8%	8.8%	12.3%	57	3.30
25. I prefer traditional style homes such as those with a usable front porch.							
	SA	A	N	D	SD		
New Urban	62.9%	32.0%	5.2%			97	4.58
Conventional	31.7%	30.0%	26.7%	8.3%	3.3%	60	3.78

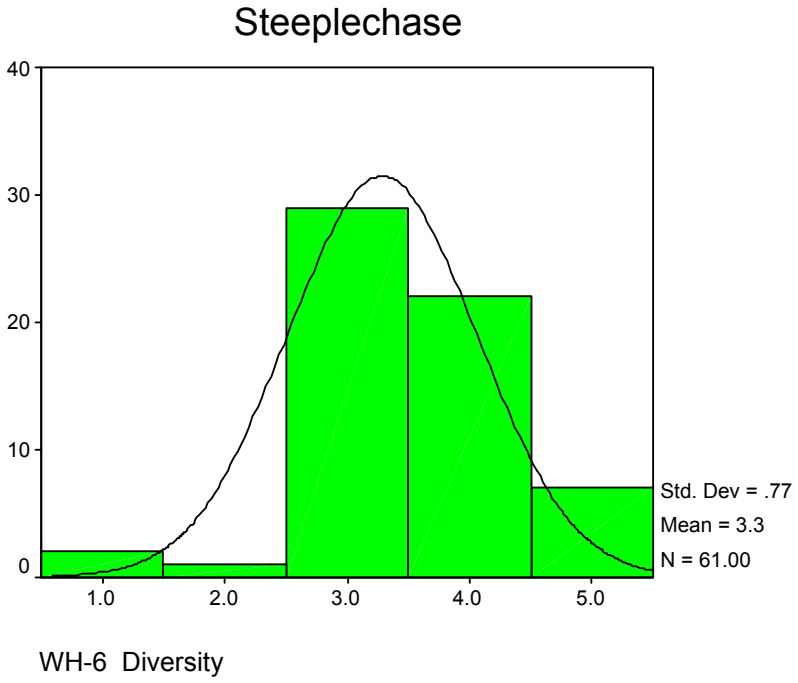
Mean Score for *Architectural* Independent Variable **

New Urban (*Plum Creek*)	**N = 97**	**Mean = 4.39**
Conventional (*Steeplechase*)	**N = 60**	**Mean = 3.56**

** Significant, $t(155) = 6.78$, $p < .001$, two tailed.

WH6: New Urban residents are more likely to value diversity among neighborhood residents than would residents of a conventional suburban development.





Plum Creek = New Urban
Steeplechase = Conventional Suburban Development

Working Hypothesis 6 (*Diversity*)

(WH6) New Urban residents are more likely to value diversity among neighborhood residents than would residents of a conventional suburban development.

Survey Question

Neighborhood Dichotomy	*Valid Responses*					*N*	*Mean Coded Score*
1. I prefer a neighborhood where young, middle aged and the elderly have housing options in the neighborhood.							
	SA	A	N	D	SD		
New Urban	49.5%	38.1%	12.4%			97	4.37
Conventional	40.7%	42.4%	11.9%	3.4%	1.7%	59	4.17
2. I prefer a neighborhood composed of residents with very similar incomes.							
	SA	A	N	D	SD		Reversal Item
New Urban	15.5%	42.3%	33.0%	8.2%	1.0%	97	2.37
Conventional	18.0%	32.8%	32.8%	13.1%	3.3%	61	2.51

Mean Score for *Diversity* Independent Variable

New Urban (*Plum Creek*)	**N = 97**	**Mean = 3.37**
Conventional (*Steeplechase*)	**N = 61**	**Mean = 3.29**

Independent Samples Test

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
WH-1	.043	.835	4.831	156	.000	.61267	.126822	.362161	.863179
WH-2	3.428	.066	4.302	156	.000	.50105	.116475	.270983	.731125
WH-2a	3.941	.049	4.465	156	.000	.57273	.128271	.319358	.826104
WH-2b	3.509	.063	2.140	155	.034	.26735	.124939	.020552	.514156
WH-3	.455	.501	1.008	155	.315	.14991	.148757	-.143939	.443767
WH-4	1.269	.262	1.920	155	.057	.29545	.153900	-.008566	.599459
WH-4a	.015	.903	1.043	155	.298	.12887	.123501	-.115097	.372829
WH-4b	.097	.756	-.480	155	.632	-.09115	.189864	-.466206	.283903
WH-5	5.235	.023	6.778	155	.000	.82826	.122197	.586877	1.069652
WH-6	.451	.503	.749	156	.455	.08425	.112446	-.137865	.306363