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Amenities, Walkability, and Neighborhood Stability: A Mixed Methods Analysis

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Abstract
The decline of the United States housing market in late 2006 produced a momentous shift in land values and home prices across the country. Evidence of this collapse was widespread by 2008, which helped spark a global recession that nearly brought the financial world to a standstill. Much of the early attention paid to these events focused on the root causes of this collapse, yet a gap in knowledge remained as to how some urban places thrived in response while others struggled to rebound. For the purposes of this study, urban and neighborhood stability are positive terms used to describe a host of economic and community outcomes. The dissertation examines stability at the city and neighborhood scale through a longitudinal, mixed methods study, which includes multiple regression analysis, hedonic pricing models, spatial analytics, and case study methods. In the first phase of research, the research uses regression analysis to examine areas within cities that demonstrated neighborhood stability. The second phase focuses specifically on the association between housing prices, the proximity to public and private amenities, and internal and external characteristics; specifically, this assesses the extent to which spatial relationships are statistically significant. The third phase of research employs qualitative methods, using case study research and environmental psychology to triangulate data. The research finds that, while there is some evidence of a relationship between specific types of amenities and housing market stability in some cities, there is substantial evidence that variability across cities informs these associations. In terms of direct lessons for city planning, there is strong evidence supporting the value--both with respect to housing prices and community stability--of publicly funded amenities and positive urban design interventions. Further, the findings provide a counter-argument to leading theories on walkable urbanism, and the research provides insight as to the role of city planning and public policy in seeking greater outcomes for urban and neighborhood stability.

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AMENITIES, WALKABILITY, AND NEIGHBORHOOD STABILITY:

A MIXED METHODS ANALYSIS

John Christopher Robinson

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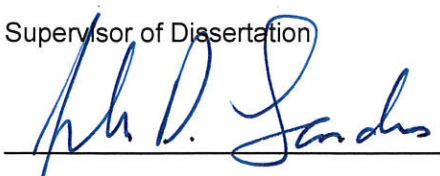

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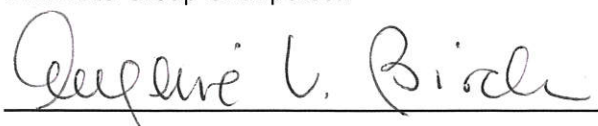

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AMENITIES, WALKABILITY, AND NEIGHBORHOOD STABILITY:
A MIXED METHODS ANALYSIS

For Molly:

You are the most wonderful, talented, inspiring, patient, and loving person.

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This journey, although it makes sense in retrospect, was not the original plan when I entered the Master of City Planning program at PennDesign in the Fall of 2008. My arrival at Penn coincided with the complete collapse of the global economy, which was simply an amazing time to be focusing on the dynamics of neighborhood change and real estate development.

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ABSTRACT

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A MIXED METHODS ANALYSIS

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John D. Landis

The decline of the United States housing market in late 2006 produced a momentous shift in land values and home prices across the country. Evidence of this collapse was widespread by 2008, which helped spark a global recession that nearly brought the financial world to a standstill. Much of the early attention paid to these events focused on the root causes of this collapse, yet a gap in knowledge remained as to how some urban places thrived in response while others struggled to rebound. For the purposes of this study, urban and neighborhood stability are positive terms used to describe a host of economic and community outcomes. The dissertation examines stability at the city and neighborhood scale through a longitudinal, mixed methods study, which includes multiple regression analysis, hedonic pricing models, spatial analytics, and case study methods. In the first phase of research, the research uses regression analysis to examine areas within cities that demonstrated neighborhood stability. The second phase focuses specifically on the association between housing prices, the proximity to public and private amenities, and internal and external characteristics; specifically, this assesses the extent to which spatial relationships are statistically significant. The third phase of research employs qualitative methods, using case study research and environmental psychology to triangulate data. The research finds that, while there is some evidence of a relationship between specific types of amenities and housing market stability in some cities, there is substantial evidence that variability across cities informs these associations. In terms of direct lessons for city planning, there is strong evidence supporting the value—both with respect to housing prices and community stability—of publicly funded amenities and positive urban design interventions. Further, the findings provide a counter-argument to leading theories on walkable urbanism, and the research provides insight as to the role of city planning and public policy in seeking greater outcomes for urban and neighborhood stability.

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For nearly a decade in the United States, we were witness to an unprecedented, sustained surge of rising home prices, and the domestic economy experienced a prolonged period of substantial growth. This did not occur in just one or a few markets—it occurred practically everywhere. Real estate development firms were at the crest of this surge and heralded as the great change agents of the 21st Century economy; this represented, by no small measure, a significant shift from the historical societal attitudes towards developers. It was almost as if the new Gold Rush had erupted; as if society had discovered a new infallible method of generating wealth. To keep up with demand—both on the development and capital liquidity sides—new, innovative financial products extended capital to individuals and households previously held out of the market. *With so little risk in the market, what was there to lose?*

The swift decline of the global economy brought about by a complete collapse of residential and commercial real estate markets effectively changed the rules governing finance and the built environment. On the part of homebuilders, commercial banks, and potential homebuyers, homes and their neighborhoods were increasingly viewed as assets, which represents a fundamental ideological shift in the nature of the values associated with homeownership and place-based communities. This was not always so. Whereas once homeownership was seen as a long-term investment—a good from which individuals and families derived *use value*—over the past several decades there has been a gradual shift towards a short-term focus. A fundamental piece of evidence was the compression of capitalization rates—a key indicator of the perceived value of property investments—across the United States. During this shift from goods-to-assets, the capitalization rates in small cities began to approach that of larger cities such as New York, Chicago, and San Francisco. In short, real estate investment became disconnected with location, and emphasized short-term capital gains.

One finds a myriad of reasons for this shift. For instance, households perceived homeownership as a path to wealth-creation for the “middle-class” (i.e. households with limited wealth-producing assets such as stocks, bonds, and other investment vehicles); and to a great extent, domestic policy has bolstered the filtering process through decreased regulatory review of mortgage products, legislation aimed at increasing the levered capacity of lending institutions, and tax

incentive programs such as the Home Mortgage Interest Deduction. Yet, the gradual transition in the perception of homeownership from sentimentalized goods associated with the experience of living, to assets primarily viewed as part of a larger domestic portfolio (explored in detail in the following section) was not necessarily negative. Homeownership, to a large extent, emerged as a viable means for generating wealth to a vast number of households who otherwise had limited options for establishing long-term financial stability. As the access to and availability of capital increased through a reduction in underwriting standards, homes became assets for millions of Americans, and real estate agents, lending institutions, and developers were at the center of this tremendous expansion of personal wealth.

In some respects, the Great Recession was the great economic shock that was not only destabilizing, but it was also a substantial market-correction. While the negative impacts were a devastating force for the domestic economy, it has brought attention to the way that individuals perceive homeownership. What should be understood, and is supported by a breadth of scholarly contributions, is that this perception had contributed to a fundamental change in the way the design of cities has evolved. While this shift may be seen as occurring slowly over time through a sharp disaggregation of uses by means of zoning regulation, the contemporary emphasis on housing as a commodity has contributed to a slow decline in the social life of neighborhoods. To put it quite simply, housing was the product, not the neighborhood. Meanwhile, households have become more mobile and the Internet has changed the way that we can interact with each other. The confluence of these factors has resulted in a more individualistic society—one in which our interpersonal connections are increasingly strained as we depend less on others around us.

A key question is whether anything can be done to improve the socioeconomic vitality of neighborhoods. In order to answer such a provocative question, we should try to understand what factors are positively associated with the *stability of urban places.* By introducing an urban stability framework, one should understand that this is holistic assessment of place that focuses on economic and non-economic outcomes. To provide a foundation for this examination, a key underlying question examines the nature of the problem: how did fundamental changes in the way individuals perceive homeownership create the very foundation upon which the domestic and global economies would collapse? In subsequent chapters—the framework for which is provided at the end of this introduction—this body of research examines the roles and responsibilities within this collapse in practice areas such as city planning, urban design, real estate development

and finance, and public policy.

Collapse

During the period between 2006 and 2008, a series of events began to unfold that would eventually become a complete unraveling of global financial markets, brought about by the simultaneous collapse of residential and commercial real estate markets. While some forecasted the possibility of these tumultuous events well in advance, the vast majority of scholars, practitioners, and policy makers were largely unaware of the impending crisis. Whether this was an unwillingness to admit that markets were on the wrong course or a belief that markets would adjust slowly and correct towards fundamentals, the global economy was wholly unprepared to withstand the severity and sequential nature of these shocks. And yet, while one might argue that the dust has yet to settle on this issue, one might readily acknowledge that a new period of uncertainty has emerged that could be termed, “where do we go from here?”

As a starting point, one should be careful to distinguish between past recessions[1] and this most recent series of events. Some would argue correctly that the history of real estate bubbles suggests that residential markets have played marginal roles in the collapse of the domestic economy. However, a key contributing factor to the most recent economic recession can be linked directly to irrational behaviors in housing markets. While some scholars appropriately suggest that this recession was the product of a credit bubble (i.e. as demonstrated by the compression of capitalization rates and the securitization of mortgage products), the connection with the residential real estate market is palpable and clearly distinguishes this recession from previous economic disasters.

One should also be cautious in acknowledging that making the connection between capitalization rate compression and irrational behavior in markets was difficult during the years leading to this collapse. As alluded to earlier, during the run-up of housing prices in the early 2000s, there was a general lack of consensus as to whether we were experiencing a housing boom or bubble. Karl Case and Robert Shiller even suggest that “the term ‘housing bubble’ had virtually no currency until 2002” (Case and Shiller 2003, 301). Echoing this sentiment, Mark Zandi argues that

1 Examples include the energy crisis that began in the late 1970s, the Savings and Loan Crisis of the late 1980s to early 1990s coupled with a shock in oil prices in 1990, and the “dot-com” bubble that collapsed in the early 2000s.

evidence of a housing bubble did not appear until 2003. In his view, the run-up to the bubble was, in fact, a housing boom:

> *Consistently strong activity was driven by well-supported demand and disciplined new housing supply. Buyers of second homes or vacation homes had every intention of holding onto them; they weren't "flippers" looking for a quick profit… Anyone seeking a fast buck was focused on the price of Cisco stock or perhaps eBay—not a Miami beach condo or San Diego ranch home. Speculation had taken over the stock market, but not yet the housing market. (Zandi 2009, 159)*

The nature of the boom-bust cycle is important, particularly as we examine the stability of urban places over time. At the same time, we should accept as fact that, over the past several decades, the United States housing market has undergone significant changes in terms of how the perception of homeownership has evolved as well as the ways in which homeownership is financed. Three main factors should be considered as the foundations for change: the shift towards a perception of housing as an asset; the securitization of mortgages and less stringent underwriting practices; and a widely-held view that markets were self-correcting.

This first key feature is that there has been a marked transition in the perception of housing from being considered a *good* to an *asset*. The significance of this cannot be understated, and it is crucial to understand its impacts in terms of the current residential housing crisis. A second feature is how the changes in financial markets have explicitly reinforced this sentiment through the securitization of mortgages and an exchange of short-term capital gains for a long-term mitigation of risk. The third feature is an enabling one: without it, the negative impacts of these changes might not have manifested so significantly. Since the early 2000s, capital market factors—specifically, an extended policy of suppressed interest rates and a prolonged period of high capital market liquidity—have enhanced the perception that home values would rise in perpetuity.

One of the central themes of this dissertation is whether neighborhoods or individual homes are considered to be goods or assets. While the distinction between these two terms has a long history in terms of economics and finance, one might argue that the attachment or association with homes as assets was not as prevalent until this recent collapse of the domestic residential real estate market. What follows is a thorough examination of these two terms, and how we might argue that there has been a slow and gradual transition to an asset-based mentality regarding

homeownership over the past few decades.

As a starting point for this discussion, John Logan and Harvey Molotch (1987) provide a useful argument for understanding the distinction between goods and assets.[2] Specifically, we should understand that goods are based on attachment of *use values* while assets are based on attachment of *exchange values*. In its purest form, use values reflect the satisfaction of material and non-material needs associated with a given place. When applied to goods, the derived utility from use values is constrained by the price of the good—as prices increase, consumption decreases. With exchange values, however, the relationship is the opposite—as prices increase, consumption tends to increase as there is a perception that individuals can capitalize on price appreciation. When exchange values are applied to housing, the structures become assets. The belief that there is some future monetary reward for acquiring this asset implies that both use values and exchange values are at play in the homeowner's decision-making process.

For decades, homeownership was limited to creditworthy buyers, and the perception of some future monetary value of homeownership in the United States is not new by any stretch of the imagination. Homeownership has long been viewed as a primary source of wealth generation, particularly for those households who do not have the financial resources for other investment vehicles. Where the perception of homeownership as an asset becomes problematic, however, is when there is the emphasis on the desire for some monetary return in the future, suggests Karl Case and Robert Shiller:

> *A tendency to view housing as an investment is a defining characteristic of a housing bubble. Expectations of future appreciation of the home are a motive for buying that deflects consideration from how much one is paying for housing services. That is what a bubble is all about: buying for the future price increases rather than simply for the pleasure of occupying the home. And it is this motive that is thought to lend instability to bubbles, a tendency to crash when the investment motive weakens. (Case and Shiller 2003, 321)*

While this argument suggests that the potential for instability is strong, some scholars suggest that the perception of homeownership as an investment is not the only reason for the residential market collapse. A host of other market deficiencies, federal deregulation, and capital market

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2 While the terms distinction between use and exchange values have a long history in economics literature, readers should note that there are particularly valuable contributions to the contemporary discussion of such terms in the context of urban planning and the post-capitalist discourse. The following chapter will discuss these themes in greater depth.

liquidity contributed to volatility. However, Robert Shiller suggests otherwise—that these emergent issues were products of, not contributing factors to, a rising bubble:

> *Psychological, epidemiological, and economic theory all point to an environment in which feedback of enthusiasm for speculative assets, or feedback of price increases into further price increases, can be expected to produce speculative bubbles from time to time… the interpretation of the bubble that I have just offered is not the conventional wisdom. Other factors are widely cited as the cause of the housing boom. I argue here that, to a large extent, these other factors were themselves substantially a product of the bubble, and not exogenous factors that caused the bubble. (Shiller 2008, 47-48)*

Shiller may be making too strong of an assertion here, but we should entertain this notion that potential homeowners, as consumers, may not have recognized the moral hazard of their investment (i.e. due to information asymmetries or irrational behavior).[3] As Glaeser, Gyourko, and Saiz suggest, irrational behavior may play a large role in the development of a bubble, demonstrated by an "exogenous burst of over-optimism about future prices that will last for a fixed period of time… [while] buyers do not know that they are being influenced by a bubble" (Glaeser, Gyourko, and Saiz 2008, 10). While they apply this argument to a theoretical model of markets, they found that there was credible evidence that such *irrational exuberance* could have been a factor in the residential market. That is, these authors suggest that deregulation and capital liquidity were responses to a seemingly insatiable demand for homeownership.

The decision-making behaviors of individuals in the market should be understood as something that can be influenced by the market itself. As discussed in the distinction between goods and assets, the perception of housing as an asset may lead households to consume more in the face of rising prices. One can attribute part of this rationale to fear of *missing out* on the market; in essence, "if I don't get mine now, I'll lose the opportunity." However, Case and Shiller (2003) suggest that the anticipation of a future payout might offset present concerns about affordability. This anticipation is based upon two very interesting assumptions (i.e. the value of future price increases and expected market stability), summed up here:

> *[Homebuyers] will not need to save as much as they otherwise might, because they expect the increased value of their home to do the saving for them… the expectation of large price*

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3 It would be difficult to argue that there was a collective and explicit societal rejection of the moral hazard argument. If this were to be true, it would represent a sharp departure from the logic of homeownership as a use value since it would require that consumers were simply investing for the short term.

> *increases may have a strong impact on demand if people think that home prices are very unlikely to fall, and certainly not likely to fall for long, so that there is little perceived risk associated with an investment in a home. (Case and Shiller 2003, 299)*

Some would argue that this highlights a critical flaw in Capitalism: the ability for individuals to take on risk is not only allowed, but it is encouraged. This is justified, in a sense, because a foundational principle of this economic framework is that there are not information asymmetries, and that regulation is sufficient to control irrational behavior. That is, actors within the market base their decisions on the same information, and actions outside of market fundamentals will be corrected towards a general equilibrium. However, the lesson from the Great Recession is that there exists a limit to the extent to which this can be true. A key question is *what opportunities does this new reality present* for the actors of change (i.e. city planners, urban designers, and real estate developers)? This leads in turn towards a broader conversation on the fundamental aspects of urban living and place-based communities—one that will lead back to the perception of housing as a good and not as an asset. This means these agents of change have a responsibility *to make better places*, providing the material and non-material assets that match household and consumer preferences. That is, if the market retreats from a perception of housing as assets and considers instead a holistic approach to place-oriented development, one might expect to find that change agents will return to encouraging the development of place-based communities, engendering an attitude towards aging in place, and realizing the desirable qualities of urbanism. This is the foundation upon which this dissertation adopts a stability framework for understanding how some urban places have rebounded more quickly from this collapse while others have struggled.

Examining Urban Stability

There is little reason to doubt that the concept of *resilience* is experiencing “its day in the sun.” From international conferences (such as the 2013 ACSP/AESOP Conference in Dublin, Ireland) to special issues in academic journals, resilience may seem as if it is suddenly everywhere. Cynics may say that scholars are using the term resilience simply because they have tired of the term *sustainability*. Perhaps instead, the permeation of resilience thinking across a variety of disciplines—including city and regional planning—is evidence of a postmodern shift in scholarship. Simply put, the academy has begun to adopt and share ideas across disciplines to construct metanarratives that enhance our understanding of the world. However, there is cause

for concern once the use of a term becomes widespread: it has the potential to become diluted. Speaking to this concern, Brian Walker and David Salt, offer the following:

> *"The word* resilience *is now common in many vision and mission statements. Ask the people who use the statements what they think it means, and you get a range of different answers, most of which relate to how is something or someone copes with a shock or a disturbance… concepts of resilience are used in all sorts of disciplines, but the term has four main origins—psychosocial, ecological, disaster relief (and military), and engineering." (2012, 2)*

With its foundations in ecology literature, the disaster relief origin seems to have the greatest applicability in the context of city and regional planning.[4] Specifically, the disaster relief framework combines the duality of ecological resilience: "one focused on the speed of return following a disturbance, the other focused on whether or not the system *can* recover" (Walker and Salt 2012, 2). In terms of the uptake of this framework in city and regional planning literature, there are several recent contributions of note. In a paper titled "Urban Hazard Mitigation: Creating Resilient Cities" (2003), David Godschalk suggests that scholars and practitioners embrace a new set of initiatives to address rising threats of natural hazards and terrorism—a clear response to the events of September 11, 2001, but well in advance of Hurricane Katrina in 2005. *The Resilient City* (Vale and Campanella 2005) focuses its attention on resilience in the context of natural disasters and human-impacted events through a series of international case studies. Similar in theme, *Planning for Coastal Resilience* (Beatley 2009) and *Resilient Cities* (Newman, Beatley, and Boyer 2009) are valuable contributions to resilience thinking in the context of natural disaster and resource conservation.

At the same time, there is a surge in scholarly discourse on *resilient regions*,[5] yet many of these contributions focus on a broad set of measurable outcomes. The contemporary discourse on resilience is, by no exaggeration, quite broad and deep. This dissertation on urban stability narrows this focus in its suggestion that a subset set of economic and non-economic outcomes should be the central focus of urban planners and designers at this point in time. That is, we

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4 Psychosocial resilience focuses on the ability of individuals to manage and recover from traumatic circumstances. Engineering resilience is separate from the other three as it accepts *bounded uncertainty;* in plain language, the shocks are known and expected (Walker and Salt 2012, 2-3).

5 Numerous examples exist, but a notable contribution is *The Network on Building Resilient Regions* at University of California – Berkeley, which has received funding from the MacArthur Foundation since 2006 (bbr.berkeley.edu).

should focus our attention on urban places that have demonstrated stability—that being the ability to recover readily from a severe systematic shock—in the context of the recent collapse of our real estate industry and its impacts on the domestic and global economies.

What this dissertation will explore, by means of literature and applied research, is a concept of urban stability. Central to this concept is the assertion that some of our urban places contained the social, economic, and material resources necessary to rebound from a massive economic shock. However, some urban places—especially newly constructed or designed places—were built with economic efficiency and developer profit as a primary concern, which Brian Walker and David Salt suggest may have been a contributing factor in their decline:

> *"'Efficiency' is a cornerstone of economics, and the very basis of environmental economics. In theory, an economy is efficient if it includes all the things that people want and value. An efficient economy, in the sense, is therefore a good thing and efficiency has become to be regarded as a laudable goal in policy and management. The paradox is that while optimization is supposedly about efficiency, because it is applied to a narrow range of values in a particular set of interests, the result is major inefficiencies in the way we generate values for societies. Being efficient, in a narrow sense, leads to elimination of redundancies—keeping only those things that are directly and immediately beneficial… this kind of efficiency leads to drastic losses in resilience." (Walker and Salt 2006)*

Much of the contemporary discourse focuses on what works now—for example, what can one learn from places that are successful models for development? Similarly, what lessons can one draw from places where the multitude of forces that influence the real estate market (i.e. urban planning, design, real estate fundamentals, and public policy) have coalesced to provide the opportunity for good places to become better? These, in themselves, are good questions. This contributes to a greater understanding of *where we go from here* by investigating contemporary examples of success. Yet, in considering the definition of success, perhaps one should entertain also the notion that success in a stability framework does not necessarily imply a place's return to its initial state:

> *"Consider again the basic definition of resilience. It's the capacity of the system to absorb disturbance and reorganize so as to retain essentially the same function, structure, and feedbacks—to have the same identity. Sometimes people read this as "staying the same" and think that resilience is all about keeping things exactly as they are. However, being resilient requires changing within limits—in fact, probing those limits." (Walker and Salt 2012, 23)*

This suggests, perhaps, that urban places might need to be flexible or adaptable to changing market conditions and household preferences. However, this points to a tension within the fields of real estate development and urban design. Broadly speaking, the contemporary definition of success in the field of real estate is based largely on profit: that which is profitable gets built, and developers tend to replicate models of development that are perceived as valuable and worthwhile investments. Likewise, the field of urban design seeks to create places of personal and community-based values, which contribute to the qualities of place, the imageability and legibility of place, and individual and collective place memory. At times, these motivations appear to be diametrically opposed; that is, if the value of place-making does not translate directly and immediately to developer profit, the likelihood of its implementation is greatly diminished. Flexibility or adaptability is not a common feature of real estate development; in fact, such an approach might increase the risk in failing to specify target markets, product life cycles, etc. Simply stated, if place-making contributes to desirability, then it is good for development; conversely, if it does not contribute to economic returns, then it may not be good for development.

This points to a deeper set of questions for critical thought, reflection, and examination. One should note, however, that such questions emphasize the long-term implications for real estate development and city planning as opposed to the short-term goals enumerated above. First, in addressing these questions about place making (i.e. the qualities of place, place legibility, and place memory), one might consider that the short-term benefits are in fact non-economic in nature. However, in the long-term, the benefits of place-making certainly have economic returns when done well. That is, place-making can contribute to the desirability of place, which over time contributes to the economic viability and stability of place. In the context of this observation another question emerges: *what places have weathered this storm well, and do we understand why?* Ultimately, this is the fundamental question about the stability of urban places. Historically, there has been a focus on economic stability, but there's much to be explored in terms of non-economic stability.

Defining the Research Objectives

Fundamentally, this is an examination of why, in the context of the housing collapse and economic recession, some urban places have thrived while others have struggled to rebound. A core focus of this research is examining whether a relationship exists between "neighborhood

stability" and walkability—or, as will become clearer through throughout this dissertation, *amenity density,* which in many respects is a proxy for walkability. In this context, this research explores and identifies the factors that are associated with the stability of urban neighborhoods in the years following the 2006-2008 collapse of the housing market. The purpose of introducing this stability framework is this: while some scholars have focused on the underlying causes of the housing market collapse, there is value in understanding why some cities, and particularly local markets, have either survived or prospered. If by examining the factors that contribute to such stability, the outcome may contribute to elevating the level of discourse shared among planners, urban designers, and developers on how to produce quality urban environments that are capable of sustaining periodic shocks in real estate and/or business cycles. That is, when one considers a longitudinal study of these places there is the possibility of revealing the "durability of value." That is, this deemphasizes focusing on the "flash in the pan" places of interest or quickly gentrifying places, and instead replaces this approach with one that is focused on the stability, stickiness, and the ability for individuals, families, and other types of households to age-in-place.

This research proposes a mixed-methods approach to identify and assess the dynamics of neighborhood stability. In the first phase of research, the research uses quantitative methods to examine urban areas within a sample of cities that are exemplar cases of stability. The second phase focuses specifically on the association between housing prices and internal and external characteristics, and specifically the extent to which spatial relationships are statistically significant. The third phase of research employs qualitative methods, using case study research and incorporating resident input and environmental psychology to triangulate data. The purpose of the third phase of research is to assess the degree to which amenity density is associated with neighborhood stability, specifically in the context of non-economic outcomes.

This research will fill a gap in knowledge about the extent to which walkability contributes to neighborhood stability. This research will examine this relationship both in terms of *exchange values* and *use values.* That is, exchange values are useful in describing the dynamics of neighborhood success, but the inclusion of use values—specifically, the comfort, pleasure, and meaning that individuals derive from dwelling spaces—provides a more complete and holistic understanding of urbanism. As such, concepts of *economic stability* are just as important as *social stability* when examining the success of neighborhoods. Specifically, individuals may perceive homes as goods, assets, or somewhere in between. Neighborhoods, however, represent the

nexus between goods and assets: they are places that foster an individual's development of identity, social memory, and community.

To focus attention on the theoretical framework underpinning this research, neighborhood stability is based on four positive characteristics, which are bounded by potentially negative extremes:

1. Housing price stability or modest appreciation (without extreme or rapid increases leading to gentrification or other external pressures resulting in resident displacement);

2. Intergenerational living, a diverse population, and the ability to age in place (without age restrictions or place identity geared towards a specific population segment);

3. "Place stickiness," or longer-than-average length of residency (without such tenure as to prevent new households or communities from entering); and

4. Suitability of design based on local environmental and material contexts (without being devoid of innovation or reinvestment as to lose the interest of mobile households).

The overarching intent is to provide a greater depth and richness of knowledge for urban planning, urban design, and real estate developers. Specifically, this research seeks to realign development interests with individual and community-based outcomes, moving the conversation from one that is currently dominated by financial and economic interests towards one that incorporates human and social needs as well. Ultimately, the intent is to demonstrate that there is a disconnect between what the market supplies (based on profit maximization) and what households demand (seeking comfort, pleasure, and community). The potential for enhancing an understanding of the positive features, characteristics, and qualities of neighborhood stability may lead to policy recommendations or action-oriented goals for planning and design, which will be examined at the conclusion of this dissertation.

Structure of the Dissertation

This dissertation partially fulfills the PhD requirements in the Department of City and Regional Planning at the University of Pennsylvania. The preparation of this manuscript including a review of pertinent literature and previous studies began in the fall of 2010. An exploratory study that used Philadelphia as a field laboratory for testing the underlying theory and methods supporting this work spanned between 2010 and 2011. The first few chapters of this dissertation explore the

literature and methods related to the study of cities, neighborhoods, and stability. The last few chapters examine the progression of research, which begins with coarse-grained quantitative analysis and ends with fine-grained qualitative methods, including case study analysis for a selected subset of urban places.

In chapter 2, I explore the breath of literature that supports the underlying theory and methods of this dissertation. This chapter provides a review of several key themes and topics, each of which has a potential relationship with the other, but often these relationships have not been explored or coalesced. As a starting point, I examine the literature that describes neighborhoods as place based communities as this is the unifying thread by which all the topics are related.

With a normative theory or framework for *neighborhood stability*, this helps to establish a baseline from which I can examine the contemporary discourse on walkability, and whether it is pertinent to a discussion of long-term values. In chapter 3, I explore the etymology of *walkability,* including the metrics used to define and describe this term, and I provide some thoughts and critiques of the contemporary discourse on this topic. Following this examination, I review the literature of research studies linking walkability, the value of place, and place values. In synthesizing this material, I investigate several critical themes that will support the use of walkability or amenity density in the context of urban stability. Further, I highlight several areas in which there are critical gaps in knowledge and provide suggestions for how to leverage this research towards a new conversation on urban stability.

In chapter 4, I described the progression of methods that, in concert with each other, comprise the methodology. This chapter begins with a discussion of my research design, which is a mixed-methods, longitudinal study of stability in urban places in the United States. What follows is a detailed description of how cities were delimited, and how a sample of 30 cities was drawn from these subsets of cities. In turn, this leads to a discussion of how this research was operationalized, which includes a detailed description of how and to what extent quantitative and qualitative methods are employed to address the research questions that are at the core of this dissertation. As part of this discussion, I examine the dependent variables used for analysis in phases one and two, as well as the key components of qualitative methods research and case study analysis in phase 3. In terms of the latter, I provide detail on how I expect each of these qualitative methods will help address gaps within my own quantitative analysis, while providing

richness to the narrative on the stability of urban places.

Chapters 5 and 6 present the findings from quantitative analyses at the coarse- and fine-grain, respectively. In terms of the former, the coarse-grained analysis uses census tracts as the unit of analysis for a variety of dependent variables. For the latter, the fine-grained analysis uses individual home sales as the unit of analysis, focusing primarily on the economic component of urban stability. For both phases of this analysis, a key question to be explored is whether walkability, or amenity density as I describe in this dissertation, is associated with urban stability. By examining this potential association at two very different scales, and with two different types and sources of data, my intent is that this will contribute to triangulation and, potentially, generalizable conclusions. It is important to note as well that the fine-grained analysis will focus on a subset of cities drawn from the original sample from phase 1. The subset of cities will also be used as the focus areas of study for the qualitative and case study methods in this dissertation.

In chapter 7, a qualitative analysis and case studies of individual neighborhoods within the subset of cities is presented. The primary question here is whether some urban neighborhoods cannot fit the analytic results of phases one and two. That is, I will investigate places of high and low signs but do not necessarily conform to the models' explanatory variables. The second important question is whether city planning and urban design have been effective in promoting in achieving stability. To address these questions, and to contribute to the triangulation of data, the following components will be discussed in this chapter: brief discussion on the history of place, and analysis of demographics, urban design analysis, and a brief discussion on the efficacy of planning.

In chapter 8, I synthesize and triangulate the findings from the quantitative phases of analysis as well as the qualitative phase of this research. In conclusion, I offer suggestions for potential future research projects related to the study of urban stability. In addition, I provide a summary set of policy implications that may contribute to the contemporary discourse on city planning, urban design, and real estate development with the intent of creating vibrant and urban places capable of sustaining macro-level shocks.

CHAPTER 2: A THEORY OF NEIGHBORHOOD STABILITY

In the immediate response to the collapse of global financial markets in 2008, a common question was whether the United States' housing market would rebound. Gradually the conversation shifted to specific cities and metropolitan areas as there were indications that some places were rebounding more quickly than others. While the scale of this discussion is an important one—there is much to be learned from this about the vitality of cities and regions, and an examination at the neighborhood or submarket scale has been largely absent from this discourse. A crucial question is "why?" That is, why has the neighborhood, or in real estate terms *submarket*, not been the focus of scholarly research?

One answer, perhaps, is that the economic vitality of individual neighborhoods does not provide an accurate signal or description of the economic vitality of a city or metropolitan region. That is, some might be satisfied in a comparative analysis of the macro-level economic health of cities. This dissertation, however, is concerned about the economic *and* non-economic well-being of neighborhoods for one principle reasons: neighborhoods are where people live, make memories, and create close, interpersonal connections with their neighbors.

In the United States, design and development has a long history of occurring at the site and district scale. Thus, it makes sense to focus attention on the neighborhood to examine what lessons emerge from the "places that got it right" versus those where design and development "got it wrong." It may come across as provocative or irresponsible to suggest that the "good neighborhood" is a product of design and development. However, in advancing a discussion about the stability of neighborhoods, the facets of neighborhood life that individuals experience ought to be examined thoroughly. Such an understanding would raise the level of scholarly discourse through a better understanding of how design and development decisions affect these vital components of neighborhood life, both through their physical expression as well as through the daily lived experiences of residents.

This chapter examines some of the more critical aspects of the neighborhood, the sum of which highlights several gaps in knowledge about the stability of neighborhoods. This discussion starts with an exploration of the individual's relationship with neighborhood space, ranging from (1) the perception of the neighborhood as a place-based community to (2) a more intellectual approach

to the discourse of space and place. This leads to a discussion of (3) the relationship among individuals within neighborhood space both with respect to the social life of neighborhoods and the contemporary discourse on the social vitality of urban places. Turning then to (4) the physical qualities of neighborhood space, the composition of each of these elements creates a foundation or lexicon for understanding the experiential qualities of urban neighborhood life. These sub-elements of neighborhood life provide the foundation for developing a theory of neighborhood stability—that is, where these facets are satisfied may be the places where individuals feel a sense of comfort and belonging, and where outsiders see the potential for their own communities.

The Neighborhood as Host to Place-Based Communities

In discussing the neighborhood, it is often difficult to describe what exactly a neighborhood is. That is, there are a variety of different ways in which people have come to understand and express their sense of place in the context of a neighborhood. One might readily acknowledge as well that there is no singular definition of a neighborhood. In some respects it is less difficult to explain what a neighborhood is not rather than what it is—it has many meanings and uses depending on the individual, community, or organization that seeks to define the term.

As has been stated previously, a neighborhood cannot be a neighborhood without residents. For example, the downtown office district without condo residents is not a neighborhood; similarly, a power retail center without residential uses is not a neighborhood. Perhaps it is odd as well that there is a density threshold at which one might define a neighborhood. For instance, agricultural lands at the periphery of cities are not neighborhoods, though people and families can be found throughout these rural landscapes. In this case, a single individual or small group of residents are insufficient to make a neighborhood. At what threshold the line ought to be drawn, however, is not entirely clear. Yet before delving into the discussion of what threshold might be inappropriate measure for determining a neighborhood versus non-neighborhood gradient, examining the concept of a place-based community helps to build an understanding on the perception of neighborhood space. Beginning at a fundamental level, one ought to consider the following statement on the individual's perspective of homeownership:

> *A man's home is his castle. This is true whether the castle is the traditional single-family detached dwelling or a modern apartment high in the sky… But most families and individuals do not live entirely within their castles. They live on the street in the neighborhood… What makes a neighborhood? In addition to individual homes, a neighborhood contains schools,*

> *churches, parks, and business centers. Some things are the result of joint effort—the street, storm drainage system, water supply, electricity, telephone, power, gas, and the sewage disposal system. Even street names and house addresses are part of the neighborhood as well as the individual residence. Letter carriers, milk delivery people, police officers, and delivery people are a few of the inhabitants who work in the neighborhood who do not live there. A man may live in his castle but he does not live alone. (De Chiara 1984, 12)*

Here are two concepts for exploration. First, how do individuals form community within a neighborhood? That is, how does one *become of a community?* Second, how might one come to define neighborhood boundaries? While a definitive answer has yet to emerge regarding the definition of neighborhood boundaries, many scholars have offered ideas that will be explored later.

In terms of *becoming of a community,* Robert Park argued that, in its simplest form the neighborhood exists as *a forum for association and human contact*, a concept that has strong implications for the organization of city life (Park et al. 1925). These notions of association and human contact (i.e. interpersonal connections) are explored in depth in subsequent sections on the social life and vitality of neighborhoods. Others, such as Milton Kolter define neighborhoods as *political jurisdictions* that serve as the underpinnings for a democratic society (c.f. Kolter 1969 in Hester 1975). This means of defining neighborhood space is particularly important in the context of the social vitality of neighborhoods in the context of an increasing concern and awareness of the declining civic life within the United States, explored in depth later. In addition, Rohe and Gates suggest a return to Park's ideas asserting that local community groups and neighborhood associations organize for the purpose of advocating on the behalf of their *shared space*, and their outlining of territorial boundaries within which they organize their activities is the best way to delineate neighborhoods (Rohe and Gates 1985). Clearly, the underlying thread unifying each of these concepts is the social nature of neighborhoods. That is, without some means of interpersonal connections, the neighborhood might not exist at all.

This is truly a provocative claim, but one that is supported by a breadth of scholarly perspectives throughout history. Writing during the late 19th century, Ferdinand Tönnies (2002, original text, 1887) argued that our civic life was once dominated by place-based communities with deep interpersonal connections and face to face relationships—a term he would call "gemeinschaft." The consequences of industrialization contributed to "gesellschaft," a condition in which individuals living within an urban society became increasing insulated from others, valuing

self-interests and domestic economics over the interests of community and interpersonal connections. And while some might question whether this bears any relevance to contemporary life, Joel Kotkin suggests that perhaps the digital age has only amplified this disconnect between individuals. Referring to a colleague of his, Bob Metcalf, who lives year-round in the town of Camden, Maine, Kotkin reinforces Tönnies' suggestions that deep interpersonal connections are still required for one to be considered within a place-based community:

> *Yet if he is in Camden, Metcalfe cannot really say he is of it. He has learned that neither he nor even his children will ever be accepted fully by the natives as one of their own, and this knowledge reinforces his sense of separateness from the traditional culture. "One old Mainer told me," Metcalfe recounts, affecting a Maine twang, "just because you put pigs in the oven doesn't make them muffins." (Kotkin 2001, 29)*

Separated by over one-hundred years, Tönnies and Kotkin offer a striking perspective on the notion of *being of* or *being within* a community. In contemporary society, it seems that one's residence, no matter how long, might be insufficient to be *of a place*. This raises questions regarding the notion of the neighborhood as a place-based community insofar that simply being in that place does not necessarily guarantee that one will be accepted as being *of it*. This reality of human interaction may be difficult to understand on an intellectual level. In plain language, people are not granted membership or admission simply by being in the place where a place-based community exists.

This leads to a second concept to explore: how might one construct *the boundaries of neighborhood space?* This is an important task to undertake as it helps to provide a sense of enclosure for a variety of aspects of neighborhood space, and not simply the notion that it is the home of a place-based community. We might start at the intersection of physical and sociological components as it provides the best means to focus on a select set of physical, sociological, and economic issues. However, at the same time we should understand that to residents, boundaries might not be easily understood, collectively shared, or even observable. For instance, Banerjee and Baer suggest that residents often define their neighborhood as a composition of elements, with each individual selecting different points of reference in identifying these spaces (Banerjee and Baer 1984). Using cognitive mapping exercises (see Lynch 1960), they find that in some cases, the neighborhood exists solely as the collection of homes on the street where one lives; at the other extreme, the neighborhood might extend well beyond what individuals perceive as

walkable simply due to the location of a place deemed necessary for daily life—a church, grocery store, school, or other similar amenities. Yet in these cases, individuals do not necessarily share or agree upon such living necessities. So, one might ask, do individuals within a community reduce this boundary definition further to something more conceptual?

At a fundamental level, the neighborhood is a place where individual residents attach meaning to the space in which they live (see in particular Gans 1962; Norberg-Schulz 1980; Relph 1976). Key to understanding the individual's interpretation of the neighborhood space is the relativistic nature of such interpretation and emotional attachment. That is, what might constitute a neighborhood to one resident may not necessarily be the same as another. From this, some important lessons emerge about the boundaries of neighborhood space, which lead to several crucial elements for the definition of neighborhood space. First, one ought to build upon the economic framework established in the previous chapter by understanding the intellectual and emotional constructs of neighborhood space versus place. Second, this metaphysical approach provides a foundation for examining the term community. Third, in recent years this association has evolved over time in contributing to the contemporary discourse on civic life and social capital. These components, when understood collectively, provide a basis for discussing the stability of urban places and neighborhoods.

A Sense of Space and Place

The space and place literature supports a broader foundation upon which to define the intellectual and emotional constructs of neighborhood space. Yet, there is great complexity in trying to distinguish between space and place. In common parlance, these two terms are often used interchangeably. And while their use can describe or identify one's relationship and understanding of physical and mental space, they do not mean the same things.

A common thread throughout the space and place discourse is the individual's subjective relationship to place through an attachment of meaning—similar, if not the same, to the literature on place meaning and identity in the preceding section. As Edward Relph (1976) would argue, place is *space with meaning.* This attachment of meaning is typically associated with *the experiential qualities of place*. Individuals readily identify and form a relationship with space—be it internal building space or the negative space created by surrounding objects—based on its physical and sensory features. Space implies, by its definition, a way of describing a volume or

expanse—we think of this as empty or unoccupied space. It is vapid. It may have articulation, but the articulation does little but to define the extent of its physical dimensions.

The transition from space to place emerges when there is some emotional, cultural, or historical event associated in time. Phrases used to describe these experiential qualities might include, “this is the *place* where I…” or “this is the *place* where we…” That is, individuals define place through concepts of *the how:* how their own mental constructions, memories, or shared experiences help to develop and identify with a *sense of place*.

Delimiting between space and place also requires establishing limits in the relationship to space. Douglas Kelbaugh suggests that “limits are what differentiate place from raw space, where they separate sacred from profane space or one secular space from another” (2007, 190). Such a distinction reinforces the locational quality of place. It is in the definition of *here* that one can define *there* (Cullen 1961). By defining a sense of what is *here*, one recognizes what distinguishes it from *there*. Relating this to the discussion of neighborhood space, we might acknowledge that the establishment of physical or emotional boundaries that define *here* or *home space* at the same time helps to define that which is not home territory. This mental construction of space pairs well with the relationships between *inside* and *outside* (Norberg-Schulz 2007), which one might also associate with a sense of being within a community versus being outside of the community.

Expanding this discussion of the experiential qualities of space, the term *phenomenology* becomes increasingly important to describe one’s sense of “here.” In suggesting a *return to things*, Christian Norberg-Schulz advocated the use of phenomenology within the space and place discourse in suggesting a reconnection of the human experience with the urban environment. Noting some relationship to *Emergence Theory* (De Landa 2006; Deleuze and Guattari 1987; Johnson 2002), Norberg-Schulz provides the following on the definition of place:

> *“What, then, do we mean with the word ‘place’? Obviously we mean something more than abstract location. We mean a totality made up of concrete things having material substance, shape, texture and colour. Together these things determine an ‘environmental character’… A place is therefore a qualitative, ‘total’ phenomenon, which we cannot reduce to any of its properties, such as spatial relationships, without losing its concrete nature out of sight.” (2007, 126; originally published in Architectural Association Quarterly 1976)*

One finds also that a key distinction between space and place is the interaction or relationship

between people and their environment in Norberg-Schulz's *genius loci*. This passage is particularly informative in terms of considering place character, which is explored later in this chapter.

> *"A place is a space which has a distinct character. Since ancient times the genius loci, or spirit of place, has been recognized as the concrete reality man has to face and come to terms with in his daily life. Architecture means to visualize the genius loci and the task of the architect is to create meaningful places where he helps man to dwell." (1980, 8)*

A contemporary of Norberg-Schulz, Edward Relph's analysis of place is particularly informative and revealing about several key themes of the experiential nature of place. The *experiential phenomena of the lived-world* is central to understanding the difference between space and place; it serves a threshold, the crossing of which serves to create and attach *meaning* with space. *Activities* and *relationships* are also important mental constructs, particularly with regard to the durability of place identity and character. Relph's *Place and Placelessness* (1976) explores in depth the experiential nature of place, though he focuses more on the attachment of meaning to places rather than their emergent qualities. Meaning and emotional attachment are particularly significant for Relph, as suggested in *Prospects for Places* (2007), such that:

> *"At the deepest levels there is an unselfconscious, perhaps even subconscious, association with place. It is home, where your roots are, a centre of safety and security, a field of care and concern, a point of orientation. Such insideness is individual but also intersubjective, a personal experience with which many people can sympathise; it is the essence of a sense of place." (2007, 120)*

There is something deeply romantic and nostalgic in Relph's writing. It is relatively easy to relate to his sentiments about place. He suggests that there exists places with which individuals attach memory and meaning; our birthplaces, hometowns, places of distinct memory (and sometimes negative connotations). Each engenders a deep connection with the individual. Such notions of place identity are core concepts for several design ideologies that have emerged over the past half-century (i.e. Critical Regionalism, the New Urbanism, and Compact Cities movements), particularly in focusing on the mental construction of home space or territory.

There are, as well, some very fundamental notions of occupying space that are informative for these intellectual frameworks that define the individual's a sense of place and belonging. For instance, the concept of *dwelling* is important for understanding the individual's relationship with home territory or neighborhood space. Martin Heidegger suggested that, "we do not dwell

because we have built, but we build and have built because we dwell, that is, because we are *dwellers*" (1971, 148). This statement is particularly informative in separating between the economic and social aspects of dwelling spaces. In essence, it is not the act of building, buying, or renting that contributes to self-identification as "dwellers," but instead it is the activities of dwelling—or inhabiting—a space that helps to form an emotional bond between the individual and physical space. The personalization of space and the formation of interpersonal connections with those sharing the neighborhood space contribute to this sense of dwelling.

This suggestion that there is a sense of purpose in dwelling is an interesting concept to consider. It is more than occupying or observing a space; moreover it is the emotional commitment to space that results in one's ability to dwell. Further distinguishing between what is space and what is place, Ivan Illich (1986) contributes some very thought-provoking concepts that expand upon Heidegger's notion of dwelling, Space, in his view, was the uninhabited, the unoccupied, the void that has yet to be filled. To this end, Illich stipulated:

> *"To dwell is human… Only humans can dwell… Most languages use living in the sense of dwelling… This equation of dwelling and living goes back to time when the world was still habitable and humans were in-habitants. To dwell then meant to inhabit one's own traces, to let daily life write the webs and knots of one's biography into the landscape." (1986, 679)*

What we might infer from this is that the act of dwelling is the act of imbuing a space with meaning. It is the activity of dwelling that provides meaning to the space, and thus transforms it into place. It has *become place* because the dweller has attached a purpose to the space. While this may appear fairly abstract in concept, we see this attachment of meaning as being central to the distinction between space and place in Relph's examination of this topic:

> *"Places are not abstractions or concepts, but are directly experienced phenomena of the lived-world and hence are full with meanings, with real objects, and with ongoing activities… our relationships with places are just as necessary, varied, and sometimes perhaps unpleasant, as our relationships with other people." (2007, 120)*

Yet, not all attitudes towards the space / place discourse are positive, romantic, or nostalgic. Of the Marxist critiques of the space discourse, Henri Lefebvre's *The Production of Space* (1991) offers some counterpoints in understanding the philosophical roots of space discourse. His development of a *unitary theory* comprises three principle fields: (1) our physical understanding of space, nature, and the Cosmos; (2) the mental construction of space based on logical and formal

abstractions; and (3) the social connection to space, particularly the “space of social practice, the space occupied by sensory phenomena, [which includes] products of the imagination such as projects and projections, symbols and utopias” (1991, 11-12). The unification of these fields, he suggests, enriches the discussion of the individual’s understanding and connection to urban space.

It is important to note that Lefebvre does not claim to have originated this *unitary theory*. Quite the opposite, in fact, as he credits the works of Hegel, Marx, and Nietzsche as being foundational explorations of the relationship between people, groups, institutions, and systems. However, he suggests that the worldview espoused by these theorists had been abandoned at the time of his writing (he originally produced the work in 1974), but he posits that three conditions persisted in the second-half of the 20th century:

1. The Consolidation of the State: consistent with a Marxian world-view, Lefebvre cites the increasing force of the State as a rational system for planning and ordering society. His concern focused primarily on the expected outcome that society, history, and culture would be leveled into conformity; *normality* was of primary interest to the State, as it seeks to end conflict and contradiction.

2. The Rise of Opposition to the State: similar to Newton’s *Third Law of Motion*, Lefebvre argues that there is an equal response to the violence of State power. The *violence of subversion* manifests as civil discord and unrest, creating conditions in which violence and pervasive negativity emerge. While he acknowledges to an extent that such violence is not readily apparent in modern society, he argues that the forces of subversion occasionally reassert themselves through struggle.

3. The Tension and Struggle among Social Classes: Lefebvre suggests that class struggles continue to exist, whether openly or subversively, throughout modern culture. While he does not suggest to know how this struggle will play out, this is a key concern for his project and undergirds his arguments on the sociological interpretation of space. (Lefebvre 1991, 24-25)

Combining Lefebvre’s unitary theory and Marxist critiques of Capitalism (see in particular Harvey 1973, 1985; Logan and Molotch 1987) reveals the duality in understanding the sociology of

space. When viewed from a humanist perspective—such as through the filters of Heidegger, Illich, Norberg-Schulz, Relph, and other contemporaries—the meaning of place is based upon an almost natural sense of emotional commitment. However, when seen from the perspective of class struggle and/or warfare, the individual's mental and social construction of space is an interpretation of space that he, the individual, is not responsible for or has a part in creating. Thus, the individual's relationship to space is bounded by his ability to connect meaning to that space.

Bringing this back to the neighborhood—as this discussion on the space and place literature may seem to be a detour—understanding the series of filters one might use to create a sense of place is paramount. As is explored in the following section, the social life of neighborhood space is essential to the formation of collectively-agreed upon neighborhood space. Further, to the extent that this represents a valued asset of neighborhoods is a key question in developing a stability framework. That is, if households are truly mobile, as Wurster (1964) and Tiebout (1956) have suggested, then what makes individuals and families stick around when things in the neighborhood are not going well? Moreover, what leads individuals to bond and bridge among community members to form community associations and neighborhood watch groups? In the following section, the literature that examines the nature of the social life of neighborhoods is examined as well as the growing body of literature that suggests that our social lives (at least that which is experienced in our home territory) has been in decline for decades—the consequences of which, some argue, will ultimately lead to a decline in the civic structure that has supported our democracy over the centuries.

A Normative Theory of Neighborhood Stability

The combination of pecuniary and mental investment in neighborhood space contributes to a holistic connection between the individual and his home space as well as among individuals collectively sharing their home spaces. In terms of the former, the individual (or household) has a financial stake in maintaining or upgrading their mentally-constructed home space; even in cases where the individual occupies a rental property, there still exists some return on use value for maintaining or personalizing one's home space. If one accepts such observations as fact, then the latter is well supported: individuals desire personal connections with their neighbors. For example, if an individual invests economic or emotional resources into another individual's home space, a shared interest develops. To this end, individuals would be encouraged to

develop personal relationships with other neighbors to verify and ensure that our interests in the collectively-shared neighborhood space are mutual and, to a certain extent, congruent. At a more fundamental level, however, one might acknowledge as well that humans are social in nature. That is, in an urban context, there is a firm commitment to live in proximity with others.

Understanding the social nature of neighborhoods requires a thoughtful examination of the evolution of literature and scholarly research dedicated to this concept. In some of the earliest sociological research on neighborhoods, the Chicago School theorists focused largely on the human condition in the context of various physical environments (Park et al. 1925; see also Hester 1975). This research led to the development of a new core focus: the study of human ecology. Roderick D. McKenzie introduced the term in his 1925 piece, *The Ecological Approach to the Study of the Human Community*. He argued that the study of urban life should focus not only on the individual's behavior within society, but "as a study of the spatial and temporal relations of human beings as affected by the selective, distributive, and accommodative forces of the environment" (McKenzie in Park et al. 1925, 63). The significance of this was the recognition of the physical environment as a primary factor in human behavior.

Placing the physical environment in economic terms, housing is considered a *bundle of goods* (O'Sullivan 2007), though this research considers how this definition might include not only what housing provides, but also the benefits that the surrounding neighborhood provides (see also Larice 2005). Using this broader definition serves as a foundation for a normative theory of the neighborhood. That is, if housing satisfies the dwelling interests of households, then perhaps the neighborhood serves a function that satisfies the communitarian interests of individuals. This acknowledges a basic notion that there is a trade-off between living in complete isolation (which provides space and perhaps a sense that one's home is one's castle) versus living in close proximity with others providing individuals with access to formal and informal networks as well as a necessary connection to civil society. Then, there emerges an expectation that people living in neighborhoods have an interest in preserving, promoting, and enhancing these social connections that are fostered by their neighborhood environment. Conversely, if the neighborhood fails to provide or enhance a sense of sociability, that neighborhood then fails to satisfy the conditions in which individuals bond and form associations towards the development of place-based communities.

While this normative theory might hold, the definition of what is the neighborhood remains unresolved. Just as a core characteristic of a neighborhood is that it is a residential district—that is, it must contain homes in which individuals live—residents often have different perspectives on what constitutes their neighborhood, the perception of which is largely based on cognitive knowledge (Lynch 1960; Banerjee and Baer 1984). The relativistic definition of the neighborhood may be based upon imageability or a sense of place, but some scholars have suggested that human contact and social associations may play a large part in an individual's definition of their "home territory."

What this suggests is that *neighboring is an activity*. To understand what this means and how it relates to place-based communities, Suzanne Keller offers the following:

> *Neighboring refers to the activities engaged in by neighbors as neighbors and the relationships these engender among them. Though role-determined to some extent, these activities are broader and less crystallized, consisting of organized as well as random elements… The neighbor is expected to help in times of need, ranging from routine household request for items of food or from help with a child to cyclical help with the harvest or housebuilding or in major crises such as floods, fires, and epidemics. Exchanging tools, informal visiting, and asking advice are among the more frequently mentioned activities. (Keller 1968, 29-31)*

This is a key concept in terms of understanding how individuals form community within a neighborhood. Sociologists like Keller suggest also that the neighborhood is a space where people live and dwell. However, the dimensions by which one might define this neighborhood space in both physical and social contexts yields a few compelling ideas for defining neighborhood space:

1. A physically delimited area having an ecological position in a larger area and particular physical characteristics arising from natural geographic conditions and from a particular configuration of activities and uses. The work of the Chicago School refers to these as "natural areas."

2. An area containing such facilities as shops, clubs, houses, and transportation that may be used by those living in the area or by outsiders.

3. An area representing certain values for the residents and for the larger community. Such values as cleanliness, quiet, safety, social solidarity, political cohesion, ethnic or religious

compatibility, aesthetic quality, and social prestige have different priorities for different individuals and groups and are present in different measure among the subareas of a community.

4. A field or cluster of forces working in and on an area to give it a special atmosphere. In part, this is an inscrutable phenomenon, and like the personality of an individual, it cannot be reduced to the composite elements since it is an outcome of their interrelations. (Keller 1968, 91)

One might summarize Keller's dimensions of neighborhood space as comprised of four principle components: (1) natural conditions that imply a sense of *physical limits*; (2) a set of amenities that inform *place identity*; (3) a place where shared or mutually-respected social values demonstrates *community harmony*; and (4) a combination of sensory factors that contribute to the *neighborhood character*. While it is true that determining a uniform set of standards by which one might describe successfully this first dimension, the other dimensions have significant bearing for this research. That is, in terms of describing neighborhood stability, one returns again to a normative theory that suggests that stability implies that residents are satisfied with the public and private amenities contributing to *place identity*, the social dimension supporting *community harmony*, and the multifaceted nature of *neighborhood character.* To examine this thoroughly, the dimensions of *community harmony* and *neighborhood character* are introduced in the following sections. In the next chapter, the notion that amenities have a pertinent role in this discussion plays an important role in contributing to this discussion of neighborhood space, and it is a significant aspect of the quantitative analysis of this research.

The Social Life of Neighborhoods

That there is a social dimension to the neighborhood should hardly be of any question. Yet at the same time, the scholarly discourse on the social vitality of neighborhoods suggests serious concerns. To examine the depth and nature of such concerns, the conditions under which we might consider a "healthy" neighborhood are explored. Later, the various elements of the social dimension for which scholars have voiced concern are examined as well.

On the social dimensions of neighborhood space, several scholars have examined evidence of residents' perception of that quality and character of the physical environment as well as

the activities that emerged naturally in the use of such space. Randolph Hester (1975, 1984) examined these themes in great depth, using environment behavior studies to understand the relationship between the urban environment and social activities. While his research was particularly revealing about the nature of human interaction in a variety of spatial configurations, he was somewhat conflicted about our seemingly nostalgic desires for rootedness in our home space.

In terms of understanding the nature of human interaction in the context of neighborhood space, Hester suggests that there are positive and negative physical environments that can have a direct impact on interpersonal connections. In plain language, *design matters*. However, Hester does not go so far as to suggest that there is one normative set of design principles that ought to be employed to enhance such interpersonal connections. Rather, design should respond to the needs and desires of a community, both from the perspectives of its individual members, subgroups, and the whole of the community. That design should be reflective of the community at large is an interesting point to consider, especially given increasing evidence of homogeneity and placelessness in cities and suburbs alike. If, instead, one were to be more reflective in developing an understanding of neighborhoods with high levels of community stability, one might embrace the notion that individuals first seek places that demonstrate evidence of social stability as opposed to identifying first the places that are viewed as exemplary or ideal forms of neighborhood design.

This leads to a question about the evolving discourse of neighboring in terms of the activities and actions of neighbors. That is, what does it mean to engage in neighborly activities? Speaking about the social nature of urban spaces, Jan Gehl (1987) suggested that one ought to distinguish between *necessary activities* (more or less compulsory activities such as education and work), *optional activities* (leisure activities permitted by time, access, and capital), and *social activities* (those that require the presence of others in social space). These ideas about activities, particularly *social activities*, translate particularly well to the discussion of neighborhood space. Others suggest that *engagement* is an indication of something important about the social health of a neighborhood—Sidney Brower would be one such author. He recognizes the significance of social interaction and neighboring (Keller 1968) and the spaces that engender such interactions, describing this as “the nature and [extent] of the interaction among residents and the presence of facilities that foster or inhibit these interactions” (Brower 1996, 35). This is a crucially important

relationship: not only is there some agreement between Hester's suggestion that there is a relationship between physical space and the interests of residents, but this supports as well arguments that *good neighborhood space* fosters and cultivates a sense of community.

In providing evidence on the social vitality of neighborhoods, one should try to deconstruct what stability entails. A comparison of two hypothetical neighborhoods should suffice. Both Neighborhood A and Neighborhood B experience the same shock—for simplicity sake, one can use a sharp rise in personal property crime. In Neighborhood A, one's sense of community is almost immediately threatened: looting occurs, neighbors become suspicious of neighbors, and there is no social organization or order to maintain a sense of community. Conversely, in Neighborhood B, one's sense of community increases: looting occurs, neighbors get together to form a neighborhood watch, and a social organization emerges to address other issues of local importance. In these two extreme cases, Neighborhood B is more stable than Neighborhood A—it experiences a shock and rebounds to its previous identity, though perhaps in a different form and composition than before the shock. There can be many reasons to distinguish between the two neighborhoods, and quantitative and qualitative research could be exhaustive while still searching for some generalizable conclusion.

What this example highlights is a particularly interesting concept called *social capital* that has gained traction over the past couple of decades. Yet social capital is an ambiguous term, and the proper use of this term is a matter of contemporary scholarly debate. Its lineage can be traced back to the 18th century writings of Alexis de Tocqueville, but a foundational definition was advanced by Pierre Bourdieu during the late 20th century. Separated from economic and cultural capital, social capital is comprised of social obligations, which, he argued, could be converted into economic capital and leveraged as a form of class distinction (Bourdieu 1986). In a more simple form, what Bourdieu describes here is a basis for measuring the social *connectedness* of individuals, as well as the potential motivations for civic engagement. Putnam and Goss (Putnam and Goss 2002) expand upon this definition of social capital: it exists as a description of the social networks and associated norms of reciprocity among individuals.[1] This, they suggest, is

1 Providing a counterpoint for contemporary debate James DeFilippis (2001) offers a different perspective on social capital, which provides the counterargument for contemporary debate. He argues that the definition advanced by Putnam and his colleagues is faulty and misguided in its applications for community development. Citing Bourdieu (1986), DeFilippis sees two areas where Putnam has misconstrued the meaning of social capital. First, social capital is

insufficient without understanding four distinctive classifications, or types of social capital. *Formal versus informal types* relate to how individuals form interpersonal relationships. Formal social capital may be understood through parents' organizations and labor unions, while informal types are products of recreational leagues and "third place" (Oldenburg 1989) social interactions. *Thick versus thin types* are better defined as *strong-ties versus weak-ties*, with strong ties stemming from more frequent interactions. *Inward-looking versus outward-looking types* reflect whether the development of social capital is intended for place-based uses as opposed to more public uses. *Bridging versus bonding types* serve to bring individuals together from heterogeneous groups (bridging) and homogeneous groups (bonding).

This last classification of social capital is most closely related to urban form, neighborhoods, and the potential association with place qualities. As Dreier, Mollenkopf, and Swanstrom argue, *place matters:* "where we live makes a big difference in the quality of our individual lives… the functioning of the places where we live also has a big impact on the quality of our society" (Dreier, Mollenkopf, and Swanstrom 2004, 3). In the context of contemporary American society, however, there is a fundamental concern that some places are becoming fundamentally unequal in terms of socioeconomic forces, resulting in economically homogeneous enclaves. Alexis de Tocqueville, in the second volume of Democracy in America (2004, original edition 1840), argues that the equality of societal conditions were a potential threat to public life. In his view, citizens who entrust their concerns to public representatives would inevitably withdraw from public life, thus abandoning their concern for that which occurs outside of the intimate realm (Sennett 1977). Richard Sennett argues that this loss of public life is the result of a shift towards individualism, which is reinforced by an industrialized modern society.

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never truly disconnected from economic capital, and the production and reproduction of capital is inherently about power (e.g. capital and power are synonymous). Second, social capital is a product of all social networks in which an individual is embedded, and not the outcome of social relationships. If this were the case, DeFilippis argues, social networks without the necessary means to access other forms of capital would be rendered invisible. Another point of contention DeFilippis offers is the notion that only individuals possess social capital. This contrasts with Putnam's position (Putnam 2000, 2002; Putnam, Feldstein, and Cohen 2003) that both individuals and communities can possess social capital. In the case of the latter, social capital becomes both a *private* and *public* good, a shift that DeFilippis claims (citing Skocpol 1996) is evidence of "methodological individualism." However, this part of the debate focuses more on the appropriateness of aggregating data rather than a critical understanding of what social capital is and how individuals use it.

Among other factors, the perceived failure of urban neighborhoods to engender a sense of community has contributed to the prolonged period of mobile households leaving urban centers for the suburbs (Wurster 1964). Melvin Webber (1963) suggested that American society had experienced a slow decline of place-based communities in favor of interest communities, reinforced by the emerging middle class' broad access to information, mobility, and increased income and personal wealth. His recommendation for planning was a return to pragmatism paired with an understanding of the processes of urban society; specifically, he suggested that this required a clear distinction of space and place, with a particular focus on human interaction, as fundamental to renewed efforts at city making. Whether these recommendations were misunderstood or unheeded is unclear. What is clear, however, is that the decline of place-based communities has continued to persist.

Ray Oldenburg (1989) had much to contribute as well, suggesting that the loss of civic life could be attributed to a slow but steady divorce of social spaces ("third places") from neighborhoods and other place-based communities. Some scholars have suggested that it is the social framework of neighborhoods that has contributed to this decline. Oldenburg (1989) argued that the privatization of social spaces has resulted in a degradation of the human relationships and social capital. Neighborhood-based third places, once an integral part of the urban fabric and a key facet of the everyday pattern of living, became increasingly privatized as individuals sold their labor rather than the products of their labor. What is at risk in contemporary society, as Oldenburg (1989) argues, is that the privatization of both social spaces results in a degradation of the human relationships and social capital. For some scholars such as Robert Fishman, Joel Garreau, and Robert Putnam, this is serious enough to suggest that individuals have become denizens in isolated homes afraid of or disgruntled by their neighbors and apathetic towards civic engagement.[2] As a result, society suffers from fewer close relationships and a general disconnect from public life, which impacts citizenship and community.

One also finds arguments that this decline of public life extends to civic and political engagement.

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2 Each author has a different approach to this topic. Fishman (1987) looks at the negative social impacts associated with the rise of suburbia. Garreau (1991) explores the notion that edge cities *lack soul* and a sense of common purpose for residents. Putnam (2000) examines changing trends in American public life, and how traditional activities supporting the development of social capital (i.e. bonding and bridging between individuals leading to trust and altruism) have declined sharply since 1950.

Robert Putnam (2000) notes that engaging in political life reflects the most public actions of individuals, he offers four other arenas in which one ought to measure civic engagement: first, participation in community institutions and activities (e.g. clubs and community associations, religious organizations, and labor unions); second, informal activities that link individuals such as card parties and bowling leagues; third, areas of trust and altruism, namely philanthropy and volunteering; and fourth, changing trends in the ways which individuals connect with each other (e.g. small groups, social movements, and the Internet). As society moves away from traditional notions of place-based communities towards individualistic behavior and ephemeral associations, the question here is simple: how can one identify and assess the factors most positively associated with neighborhood stability? This represents both a challenge and an opportunity for this research.

The Character of Neighborhood Stability

Focusing attention on the character of place requires an understanding of two concepts: first is aesthetic character; second, the character of place, or more aptly ambiance. While aesthetics contribute significantly to a sense of place via identification and place legibility, the character of place is associated with the culture of use and activity. Speaking to the latter, Christian Norberg-Schulz posited that character is a more general concept than space, typically using adjectives to describe *how a place is*; that is, it "denotes a general comprehensive atmosphere" (2007, 130). One also finds suggestions that character has as much to do with the physicality of place as it does with the ways in which people occupy and use such spaces, as Jan Gehl argues:

> *"The lively city is a relative concept. A few people in a narrow village street can easily present a lively, beckoning picture. It is not numbers, crowds and city size that matter but the sense that city space is inviting and popular that creates a meaningful place… 'People come where people are' is a common saying in Scandinavia. People are spontaneously inspired and attracted by activity and the presence of other people." (Gehl 2010, 63-65)*

Over time, theories of how to best achieve notions of *great neighborhoods* have evolved significantly. Clarence Perry's "Neighborhood Unit" (1929, 1939) explored a concept of centrally-organized amenities and facilities supporting a variety of densities, ranging from suburban to urban locations. Modernists, such as Le Corbusier (translated 1967, originally published 1935), advanced the concept of *the superblock*, stipulating that dense forms of urban living would provide the opportunity for open space—perceived as a necessity for human comfort

and respite. Gans (1962) suggested that ethnic enclaves might provide a suitable cultural backdrop upon which communities would grow and thrive. Contemporary theories of the great neighborhood, particularly those emanating from the New Urbanism, weave together some of the important concepts of social living and build upon the prescriptive approach advanced by Perry's Neighborhood Unit.

One also finds that notions of *ambiance* and *engagement* (Brower 1996) are particularly useful for understanding character. Brower suggests that the *ambiance of place*, for instance, provides a sense of not only the mix and intensity of uses, but also includes the appearance and form of the physical environment. This idea of the ambiance of place compliments Jane Jacobs' principles of good urbanism—that is, a mixture of uses as well as variety of building age and condition (Jacobs 1961). Notions of *engagement* (described earlier) also suggests something important about character and place qualities. Describing this as "the nature and [extent] of the interaction among residents and the presence of facilities that foster or inhibit these interactions" (Brower 1996, 35), Brower recognizes the significance of social interaction (Keller 1968) and the spaces that engender such interactions (Hester 1975). *Choicefullness*, while an important notion for defining the quality of neighborhood space, requires ambiance and engagement as preconditions. To the extent that individuals find "opportunities for residents to choose alternative locations, life-styles, and living arrangements" (Brower 1996, 41), one should expect that diversity of amenities (including housing stock) and a willingness to engage socially with others must exist prior to satisfying any notions of choicefullness. Neighborhood stability might require, then, that choicefullness is ultimately an inherent component of success. However, with regards to neighborhood stability, one might ask whether urban design interventions are or have been effective in reinforcing these facets of place character.

Despite the fact that concerns for these facets of place character have persisted, Allan Jacobs and Donald Appleyard saw the potential to address these through the practice of urban design. In establishing several goals for *good urbanism*, they highlighted authenticity and meaning as a centerpiece of their position: "an authentic city is one where the origins of things and places are clear" (1987, 116). This belief in the value and desirability of *the authentic* is one on which many place theorists have focused their attention. Douglas Kelbaugh (2007) provides useful insight on how the Critical Regionalist approach to design reinforces senses of place, nature, history, craft, and limits. Ahmed M. Salah Ouf (2001) suggests that heritage conservation is

fundamental to authenticity in his examination of urban conservation in the United Arab Emirates. This pairs well with Jivén and Larkham's perspective (2003), which calls for a return to design approaches enmeshed with the genius loci (Norberg-Schulz 1980), McHargian techniques of environmental suitability (McHarg 1969), and M.R.G Conzen's appreciation for historicism and character (Conzen 1949). Each of these perspectives helps to reveal *the authentic:* that a sense of place emerges over time (i.e. morphologically) through the co-option and adaptation of space by individuals and communities. The *inauthentic*, the antithesis of *the authentic*, represents the invention or manufactured spaces that lack historicity, which is fundamental to the creation of a sense of place (Jivén and Larkham 2003).

Another concept that pairs well with this discussion of character is that of *place identity*. Understanding this concept of *identity* is crucial for urban designers, planners, and developers alike, yet its construction is rife with complexity. That is, identity is an abstract concept insofar as it is both objective and subjective. It is objective in the sense that people may easily agree on *how to identify* objects in the urban environment. This process of identification, as Kevin Lynch posits, is "the sense of equality with something else, but with the meaning of individuality or oneness" (1960, 8). On the other hand, as suggested by Relph, *place identity* may be associated with the meaningful and "significant centres of our immediate experiences of the world" (Relph 1976, 141). This delicate balance between the objective and the subjective is a common thread in space/place discourse, and several scholars have examined the interplay between these two concepts in the identity and legibility of place.

What emerges from this discussion of identity and place legibility reinforces the aforementioned concepts of place—that individuals derive meaning of place through our association and interaction with space. This association, or frame of reference, is a key component of cognitive mapping techniques employed by Lynch (1960).[3] The outcomes of this research contributed to an understanding of the visual qualities of cities, particularly with reference to physical forms such as paths, edges, districts, nodes, and landmarks. This theoretical contribution has contributed to the research methods of urban design education—an introductory tool of sorts that all aspiring urban designers learn as they engage in understanding the visual clues and reference points that help

3 It is important to note the relationship between Lynch's cognitive mapping and Gordon Cullen's *Serial Vision* (1961). While Cullen focused primarily on the composition of the urban landscape (but not distinct elements of the composition), both are crucial to understanding identity and place legibility in urban settings.

define an individual's identification of known places. Perhaps, however, it emphasizes too strongly the use of the physical environment through movement (Madanipour 1996). In that regard, one must also look to how the culture of practice can help define place qualities and character.

Beyond the physical characteristics of place legibility, imageability, and identity, neighborhood stability should be understood as well through a set of economic filters. Specifically, the treatment of the neighborhood as a good must differentiate between a traditional view of goods and a more complex set of characteristics (Lancaster 1966). As described above, the physical features of the neighborhood are but a subset of a larger set of attributes constituting the neighborhood. Galster (2003) suggests that the unifying feature of such attributes is that they are spatially based. To understand these attributes in terms of their direct relationship to the neighborhood—and not to another neighborhood—this requires that one is able to determine the spatial boundaries that inform one's understanding of a particular neighborhood's attributes. However, Galster notes as well that attributes are not necessarily unique to a particular neighborhood as there may be instances in which such attributes are shared by a collection of contiguous areas.

There are several ways in which the spatial boundaries of the neighborhood are defined. The information provided by geography or political jurisdictions has received some attention earlier in this chapter, but there are other filters through which the neighborhood can be defined. First, physical attributes, such as infrastructure and architectural vernacular can inform one's understanding of the neighborhood territory. For instance, the presence of street hierarchies where one can differentiate between local roads and collector streets can provide a sense of definition. Second, topography and other natural physical boundaries can help to delimit the boundaries of neighborhood space—this is particularly true for areas where there are strong perceived barriers between residential areas. A third means, as suggested by Galster (2003), of understanding neighborhood space is through the collective aggregation of residents that share similar traits or characteristics—he offers race, income, and life-cycle stages as examples of this point. This final point is more difficult to ascertain in practice, particularly with respect to the notion that this presumes perfectly informed residents or visitors in terms of the demographic attributes of a given area. This may be something that can be understood over time, but it is not necessarily a set of information that one can recognized immediately upon entering an area where such aggregations of population characteristics are found.

These different filters for neighborhood space contribute to a duality of understanding neighborhood territory, particularly with respect to the stability of neighborhoods over time. That is, some attributes of the neighborhood can be assessed upon visual inspection, whereas other attributes such as the aggregation of demographic trends are better understood over time. Further, one should note that new entrants to neighborhoods have an ability to change the perception of these attributes such that consumers are also contributors to the identity of the neighborhood (Galster 2003, 158). That is, the dynamics of neighborhood stability are influence not only by macro-level conditions such as the overall economic health of the city, but these dynamics respond as well to the changes of and in residents.

Related to the dynamics of neighborhood stability is the level of homeownership. In particular, Rohe and Stewart (1996) examined four areas in which neighborhood stability might respond to homeownership: length of tenure of residents, property values, physical condition of properties, and social condition in the neighborhood. Their findings, which follow a host of other scholarly studies, suggest that homeownership levels are positively associated with length of tenure. They note as well that a breadth of research finds that mobility (i.e. household turnover) is positively associated with a host of other factors: household income, change in income, household size, change in household size, minority status, dwelling unit crowding, dissatisfaction with the neighborhood, and racial change (1996, 52). In terms of the stability of property values, however, their findings did not find a direct link between homeownership and values, save for the observation that homeowners had a greater likelihood of maintaining and improving upon their homes. That is, where there is evidence of residential upkeep, property values appeared to be more stable. Finally, in terms of the connection between homeownership and social conditions within the neighborhood, their research findings included a connection between homeownership and involvement with community organizations, but there was a lack of evidence supporting some broader contribution to social outcomes within the community.

In the context of these findings on neighborhood stability, if there are conclusions and policy recommendations emanating from the research findings, it is important to consider the implications of potential planning and policy interventions. To this end, Galster (2003) argues that concentrated interventions for neighborhoods at risk of decline are a far better decision in terms of allocating scarce public resources than to spread these same resources across a multitude of neighborhoods. How, then, to describe the areas in which such investments should

be leveraged is a key focus for this research, particularly with respect to the findings from each of the forthcoming phases of analysis.

Key Lessons of the Neighborhood Literature

Summarizing the literature on neighborhoods is a complicated task. The principle reason for this is that our own individual experiences and interpretations of neighborhood life are deeply personal, relativistic, and complex. At one extreme, the neighborhood is a place of positive experiences, strong interpersonal relationships, and a sense of place; at the other extreme, the neighborhood is a place of regret, fear, and ambiguity.

In terms of the key lessons emanating from scholarly research, there are four key themes that to highlight: (1) notions of "the good neighborhood," which satisfies the economic and social needs of place-based communities; (2) the relativistic constructs of neighborhood space, defined by physical, emotional, and environmental factors; (3) the sense of place, ranging from an individual's perspective on place identity and character to a community's shared set of values and self-reinforcing social norms; and (4) the social life of places, on which many scholars have concerns for the perpetual decline of civic life. Each of these themes, independent of each other, is interesting when considering the daily-lived experience of urban residents. Woven together, however, they become important mechanisms through which one can begin to understand the potential for urban stability.

In summarizing a normative theory of neighborhood stability, there are four central themes: *long-term desirability*, measured by the durability of economic values; *staying power*, such that residents remain in their neighborhood longer than average U.S. residents; *age diversity* insofar that the place satisfied the needs of households at various life stages; and *place character*, meaning that the urban form and architectural vernacular is contextually relevant to its home city. It may be difficult to recognize these places since, in a sense, they are not meant to stand out. That is, the antithesis of neighborhood stability can take several forms: places where price instability exists in either positive or negative terms; places characterized by transient populations or insular communities that have perceived barriers to entry; places that satisfy the needs of a single demographic, serving only young urbanites, families, or older populations; or places lacking context and conveying a certain sense of placelessness. They are not *timeless places*; rather, they are bounded by time. To some, this has some semblance of the nostalgic, but this

contributes to a teleological discourse of the search for *the authentic*. Whether the authentic exists and how such conditions in which the authentic emerges is a key question that this dissertation examines.

CHAPTER 3: WALKABILITY — THE NEW URBAN PANACEA

Over the past few decades, the discourse on *walkability* has become prevalent in nearly all of the traditional design disciplines and within real estate development practice. Seemingly out of nowhere, scholars and practitioners have become fixated on whether walkable places are, in some sense, *better than non-walkable places*. One way of assessing the validity of this claim is to look at the economic vitality of places. In the few years since the housing bubble collapsed in 2008, housing markets have struggled to rebound. Putting this in context, Robert Shiller, co-founder of the S&P/Case-Shiller home price index, suggests that "there's a substantial risk of home prices falling another 15%, 20%, or 25%" (Cristie 2011). Yet some urban areas continue to be strong performers, and several prominent studies provide evidence that homes in walkable neighborhoods show higher resale values than their less walkable counterparts. Yet a key question remains: why do some neighborhoods continue to be desirable, and others less so? Specifically, *is walkability the new urban* panacea, a sort of cure-all for every urban ailment? Some scholars suggest that the answer to this is a very complex one, but transportation accessibility and connectivity to amenities and job centers lie at the heart of this. Specifically, these scholars posit that the answer is walkability. Assessing the degree to which this is true is the core focus of this research.

In hindsight, one might see this conversation as having certain inevitability and a slow ascendancy towards contemporary discourse. This may reflect, in part, a response by scholars and practitioners to a call to action about society's *Limits to Growth* (Meadows et al. 1972) coupled with a new set of teleological outcomes governing our decisions for a *sustainable future* (World Commission on Environment and Development 1987). These two pieces contributions an emerging debate about our culture of consumption and praxis of development, yet it appears that either these challenges have yet to gain traction or that there has been a failure to respond adequately. As evidence of this point, while the last several decades have yielded unprecedented growth and wealth generation as a result of creating a large homeownership class, there are increasing concerns for the consequences of physical and socioeconomic isolation among individuals within our contemporary cities.

This notion of some teleological aim has been present in "the great neighborhood" debate since

Jane Jacobs (1961) made the case for short blocks, ample sidewalks, and a mixture of uses. In recent years, this has become a research focus for scholars like Christopher Leinberger and a host of like-minded real estate development practitioners. In *The Option of Urbanism: Investing in a New American Dream* (Leinberger 2008), Leinberger suggests that conditions are ripe for a renewed interest in city living, and *walkable urbanism* is the key selling point for attracting affluent and mobile urbanites. However, measuring walkability remains in its infancy, and some authors suggest that the current body of knowledge lacks an operational definition (Moudon et al. 2006). However, with a variety of methodological approaches defining walkability—some based upon the availability of local opportunities and others as observed pedestrian activity—and further refinement is needed to produce better research for explaining walking behavior as well as the willingness for residents to pay a premium to live in walkable environments.

Yet there is a clear disconnect between the old and the new. That is, Jane Jacobs' theories of *the great neighborhood* were based on a sense of long-term, lasting value—the types of places that people found desirable over a long period of time, which suggests some connection to the stability of urban places. The current discourse, highlighted by Christopher Leinberger's arguments, suggests something altogether different: walkability is perhaps a proxy for increased economic value for landowners, though it says little about the long-term durability of value or the potential connectedness of individuals. Understanding whether Jacobs' arguments hold merit such that walkable or amenity-rich places retain their value, character, and sense of interest remain key topics for closer examination.

Theorizing Walkability

The desire to create walkable places has a lengthy history in the body of urban planning and urban design literature. The experience of over 100-years of neighborhood planning interventions has been particularly instructive (see in particular Birch and Silver 2009). Ranging from early-20th century theories of human ecology and 'the Neighborhood Unit,' the hard lessons of slum clearance, urban renewal and community-based organizations, to new ideas about community-based development, design typologies and urban form, this knowledge contributes to the current discourse on walkability (Rohe 2009).

While the history of this discourse is particularly informative about the principle elements of walkability, few have expressed a simple theory of walkability—what does it mean, how do we

recognize it, and can we implement it? However, Jeff Speck's recent contribution, *Walkable City*, offers some insight that is the foundation upon which a revised approach to measuring walkability emerges:

> *The General Theory of Walkability explains how, to be favored, a walk has to satisfy four main conditions: it must be useful, safe, comfortable, and interesting. Each of these qualities is essential and none alone is sufficient. Useful means that most aspects of daily life are located close at hand and organized in a way that walking search them well. Safe means that the street has been designed to give pedestrians a fighting chance against being hit by automobiles; they must not only be safe but feel safe, which is even tougher to satisfy. Comfortable means that buildings and landscape shape urban streets into outdoor living rooms, in contrast to wide open spaces, which usually fail to attract pedestrians. Interesting means that sidewalks are lined by unique buildings with many faces and that signs of humanity abound. (Speck 2012, 11)*

Speck's contribution on this *General Theory of Walkability* is rich with detail when one considers its thematic linkages within the larger body of literature on this topic. The first, *usefulness*, highlights an important facet of the current discourse on walkability: pedestrian activities are, to an extent, destination oriented. This suggests that there is some intentionality to walking—there is the intention of having somewhere to go, and in choosing to walk to that destination one might seek to satisfy several other conditions. There is as well a related, but unspecified, criterion for Speck's observation: walking is based on proximity, or *how close* the desired destination appears to be (Forsyth and Southworth 2008). While this may appear to be a somewhat obvious observation, it is impossible to ignore; that is, there are limits to the extent individuals will choose to walk over some other choice of movement. Two important studies highlight the significance of proximity. The first finds that for both transportation and recreational pedestrian trips, the *distance to destination measures* were highly effective in assessing the walkability of environments (Lee and Moudon 2006). A second, measuring walking to and from transit stations, found an overwhelming majority of survey participants highlighted the "shortest or fastest route" as their primary criterion for selecting their route (Weinstein Agrawal, Schlossberg, and Irvin 2008). This aspect of usefulness and proximity in depth is operationalized in subsequent sections of this chapter, particularly with respect to how researchers and practitioners have formed metrics and measurements for walkability upon these characteristics.

The second, *safety*, suggests something else: individuals avoid spaces that one perceives to be physically threatening. Whether this is as simple as avoiding auto-dominated environments,

as Speck suggests, one might also consider that the perception of crime or vacant, dilapidated spaces are threats. In design-oriented research of the built environment, Donald Appleyard, M. Sue Gerson, and Mark Lintell (1981) examined neighborhood street networks and found that there are essential elements for a healthy environment and a strong social community. However, the benefits to social communities notwithstanding, there is mixed evidence in support of Speck's claim—that perhaps, *what is known* regarding safety may not be supported in scholarly research. Analyzing pedestrian patterns of activity using a space syntax methods, Stonor et al. found that in a dense urban environment such as London, "pedestrians will tolerate high-levels of nearby road traffic… the presence of the traffic itself is not necessarily a deterrent" (2003, 6). Further, in research related to physical health and activity, there is less compelling evidence that higher levels of safety influence pedestrian activity. In a meta-analysis spanning 19 quantitative studies on physical activity, Humpel et al. (2002) found evidence on both sides of the argument: both Sallis et al. (1997) and Booth et al. (2000) demonstrated positive correlation between the perception of safety and pedestrian activity, while King et al. (2000) found that neither safety nor poor weather (i.e. related to the "comfort" dimension) were related to physical activity.[1] These studies suggest a clear tension between *values and attitudes* versus *behaviors*; that is, a survey of our attitudes might indicate that we value safety, but our observed behavior suggests otherwise.

The third and fourth themes, *comfort* and *interest*, offers something rather compelling about the physical character and design of urban spaces. In the same study highlighted above, Humpel et al. (2002) found several studies where aesthetics and neighborhood character variables were positively correlated with physical activity. However, there is much more within this vein of literature. One of the more well-known and widely referenced pieces of literature here is Cervero and Kockelman's *Travel Demand and the 3Ds: Density, Diversity, and Design* (1997). What is particularly significant about this piece is that it recognizes the value of diversity and design—aspects that design advocates suggested have had a significant impact on the quality of the pedestrian environment—in terms of reducing vehicular travel demands and trip generation from the perspective of transit scholars. Sharing this approach of correlating built environment

1 In the years following, Badland and Schofield (2005) reviewed similar meta-analysis studies linking transportation, urban design, and physical activity and found little evidence that would contradict this weak link between the perception of safety and physical or pedestrian activity (see in particular McCormack et al. 2004).

characteristics with pedestrian activity, Frank et al. (2005) analyzed land-use mix, density, and street connectivity to produce a "walkability index." In controlling for socio-demographic covariates, they found that each of these components (i.e. land-use mix, density, and connectivity) was positively correlated with physical activity. These two studies demonstrate that, at a coarse-grained analysis, positive urban form character and composition—at least from the perspective of neo-traditional design advocates—are positively associated with higher observed levels of pedestrian and physical activity.

At a more fine-grained analysis, one can begin to understand whether comfort and interested can be deconstructed into perceptions of aesthetics and place character. In examining these themes in the context of "picturesque" urban form patterns,[2] Raymond Isaacs (2000) found evidence that highlights the dual nature of experiencing aesthetics. Specifically, he suggests that urban form patterns that are "more aesthetically appealing" require human activity in order to be perceived as desirable walking environments; conversely, "less aesthetically appealing" environments with ample human activity are perceived as more favorable. What this duality suggests is that comfort and interest may support pedestrian activity, but the presence of people makes spaces *more interesting.* Herein lies the tension between codifying the built environment and environmental behavior studies. Advocates of the former (see in particular Day et al. 2006; Ewing et al. 2006; Ewing and Handy 2009) suggest that it is possible to quantify and distinguish among the desirable characteristics of the physical environment. However, proponents of the latter would suggest that such methods of codifying are only part of the process, and that to understand whether such spaces encourage or enhance pedestrian activity requires a basic understanding of the culture of practice and use for such spaces.

Examining the Usefulness of a Walk

In terms of the *usefulness of a walk*, one should also recognize that people typically have a set of options to choose from with respect to their mode of travel. In choosing to walk, this choice has to carry some advantage over other means of travel. In some cases, we might think of the opportunity costs related to time: for cycling, the costs might include a perceived sense of

2 As summarized in Isaacs (2000), the principle components of picturesque urban form includes: a variety of open spaces connected by meandering streets or passages; visual or focal points of interest, landmarks, and orientation aids; controlled views into plazas and open spaces; and coherent architectural vernacular with complex and interesting details.

danger in mixing with other modes of transit or the effort required to pedal along; for car travel, such costs might include the time it takes to park or the amount of money spent on gasoline; for transit, these costs may be monetary (i.e. for a transit pass) or the time spent waiting for transit to arrive. However, these opportunity costs are offset by the amount of time saved in comparison to walking. In plain language, it typically takes longer to walk than for any other mode. Here is a key question: why do people choose to walk? It is simply to satisfy some urge to get outside and have the freedom to meander along a path of one's own choosing? Or, do individuals walk because there is the choice to stop where one wishes without considering parking, locking a bike, or waiting for the next bus to come? Ultimately, what one might understand as the key advantage to walking is that we have a myriad of choices; that is, the purpose of the walk does not have to be determined at the outset, but setting a path along which we have ample choices may be a crucial incentive for choosing to walk.

Generally speaking, urban places are compact and walkable. In some respects, this is a product of density, but to have choices there must be some set of potential destinations—be they places of respite or amenities. Yet many urban places provide insufficient quantities of amenities to encourage walking. Walkable, or "amenity-rich," environments are places that supply a greater degree of choice among different categories of amenities. In addition, such places should provide a range of quality that meet the demands and preferences of a wide range of households, not just a single demographic. Yet the market has failed to produce a sufficient supply of these places, and there should be a keen interest in the reasons why this is.

Some scholars suggest that there has been a gradual shift in what the market demands. For example, Christopher Leinberger (2008) has suggested that interest in *walkable urbanism* has increased as a desired alternative to auto-oriented, single-use neighborhoods. Yet practitioners argue that creating local-serving, walkable neighborhoods[3] is difficult either to achieve. The tight regulatory environment in which design professionals and developers work does not lend itself to implementing walkable urbanism. Specifically, the separation of uses through zoning regulations has contributed to places that are interesting and places that are not as interesting. Contemporary advocates of walkable urbanism suggest that a greater mixing of uses, not the

3 Leinberger (2008a; 2008b) defines "local-serving" walkable urban places as primarily bedroom neighborhoods with limited commercial venues serving everyday needs (i.e. grocery store, drug store, and some retail and dining); "regional-serving" places provide a broader set of uses and employment in retail, medical, entertainment, cultural, higher education, etc.

separation of uses, creates interesting and pleasurable experiences. However, these same advocates suggest that lending institutions and private equity sources perceive deviations from the standard real estate products as either too risky or unable to achieve desired timely returns on investment (Leinberger 2007)—this is despite the evidence of market research that demonstrates that between 30 to 50 percent of target consumers desire mixed-use, walkable places (Leinberger 2005, 28). As a result, opportunities to shift individual behavior—from reliance on vehicular transportation to alternative forms of transportation such as walking, biking, or mass transit—are lost or minimized.

In describing the usefulness of local amenities, and how they might contribute to a sense of place as well as the mental construction of neighborhood space, there are several notable contributions emanating from a rich history of planning literature. In the 1920s and 1930s, Clarence Perry (1929, 1939) suggested that a residential area becomes a neighborhood simply by adding a church, school, and other cultural amenities—this constituted, both in urban and suburban contexts, "the Neighborhood Unit." This was not the only prescriptive or normative expression for the appropriate design of towns and neighborhoods, nor was it the first attempt at codifying the neighborhood. At the turn of the 20th Century, the Garden Cities Movement (Howard and Osborn 1946) described the relationship not only between outlying areas and central cities, but it also described some of the basic functions necessary for the outlying areas. However, not everyone agreed with such prescriptive or formulaic approaches. Herbert Gans, for example, saw the neighborhood as a place where residents attach some deeper meaning to place (i.e. through the development of community and neighborly associations; Gans 1962).[4] While the former describes a normative perspective on how design and spatial arrangement can foster a sense of community, the latter posits that common interests and collective place memory supersedes any notion of design.

This tension suggests that, while scholars and practitioners associate walkability with successful places, there is a general lack of consensus as to how such places ought to be designed. Focusing solely on the physical and social components of neighborhoods, this lacks an understanding of the density, spatial organization, and form characteristics that make places interesting or comfortable. Further, while an understanding of walkability continues to evolve, the

4 For the attachment of meaning to place, see contributions from Edward Relph (1976) and Christian Norberg-Schulz (1976, 1980).

development of metrics and measures often relies on the belief that preferences are universal. While scholars have long acknowledged that desirability and satisfaction are varied occurring to individual tastes and preferences, this is not reflected in the construction of these metrics. Theory, in a sense, has failed in translation for practitioners.

In exploring the various methods designed to define walkability, Manaugh and El-Geneidy (2011) offer a comparative assessment of four common walkability indices in Montréal: *the walkability index* (Frank et al. 2005; for network buffers around residences and commercial centers see Cerin, Leslie, Owen, et al. 2007; and Saelens et al. 2003), which generates “walkable” buffers around identified areas of interest; *walk opportunities* (Kuzmyak, Baber, and Savory 2005; for importances and desirability of possible destinations see Banerjee and Baer 1984), which intends to identify different types of activities to explain walking behavior; a *pedshed method* (Porta and Renne 2005), which generates a simple, straight-line walking buffer after removing large physical barriers such as highways; and the *Walk Score (Front Seat 2011)*, which assigns values to individual postal code points using a gravity-based measure of a variety of potential walking destinations. Of these measures studied, Manaugh and El-Geneidy found that each performs well in describing walking behavior, with the greatest correlation found with home based shopping trips.

What these metrics fail to account for, however, are two important distinctions with regard to usefulness. First, choice is not unilateral in terms of each walk. That is, preferences differ with respect to the purpose of the walk, be it for recreation or the intent to arrive at some destination. Second, the complexity of choice and the spatial arrangement of the physical environment (as suggested by Alexander 1965) is often undervalued or altogether ignored. That is, the complexity of urban space may be something that heightens the senses and provides individuals with an unquantifiable enjoyment of the physical space. This point is difficult to reconcile with respect to metrics that provide a single value for the walkability of a place, nor does it translate easily to a comparative analysis of one place versus another. Yet, as the next section will examine, there are several studies that suggest that, at the very least, such metrics can provide a sense of the economic values attributed to urban places where choices exist versus places where there are a lack of choices.

Previous Studies Linking Walkability with Value

The desire to create a model explaining walkability typically depends on identifying the destinations that encourage walking behavior. The types of amenities considered as appropriate proxies for walking opportunities comes from a range of scholarly research that observe walking behavior (Frank, Engelke, and Schmid 2003; Saelens, Sallis, and Frank 2003; Giles-Corti et al. 2005; Day et al. 2006; Lee and Moudon 2006, 2006; Moudon et al. 2006; Weinstein Agrawal, Schlossberg, and Irvin 2008). These studies generated significant knowledge about both the urban design characteristics that encourage pedestrian activity as well as the destinations (i.e. amenities) that encourage walking behavior.

One should note as well that there are several studies (Carr, Dunsiger, and Marcus 2011; Cortright 2009; Duncan et al. 2011; Leinberger and Alfonzo 2012; Manaugh and El-Geneidy 2011; Tu and Eppli 1999) that indicate higher price premiums for residential and commercial uses in walkable places, which suggest a demand for these places in contemporary housing markets. But these studies demonstrate little, if anything, about the *durability* of value. That is, these studies suggest that walkable places are desirable because people will pay a premium for them, but they explain whether this translates to long-term satisfaction with such places. In particular, one should question whether they contribute knowledge as to an individual's sense of place or belonging. Such questions are what this dissertation seeks to explore in depth, but first we should examine these notions of desirability in the marketplace.

Dominating the current conversation on measuring walkability, the Walk Score (Front Seat 2011) is a useful point of departure for this research. Preliminary research tells us that the Walk Score methodology is reasonably successful for explaining housing premiums associated with walkability. And yet, while these research efforts do not engage in a discussion of negative externalities or disamenities, a review of their findings is pertinent. Joe Cortright (2009) shows that in comparing "highly walkable" areas versus "average levels" in typical metropolitan areas, homes with *above average* levels of walkability command a premium of $4,000 to $34,000 over counterparts in their submarket. Assuming that this is an indicator of household preference (according to theory advanced in Tiebout 1956), one might argue that the Walk Score has strong explanatory power. Pivo and Fisher (2010) find results that are both positive and significant, but the explanatory power of the Walk Score seems to favor commercial over residential in terms of market value and net operating income (NOI). Specifically, a single-point increase in a property's

Walk Score produces as 0.9 percent value premium for retail versus 0.1 percent for residential; similarly, the same single-point increase results in a 0.7 percent increase in retail NOI versus 0.1 percent increase in residential apartment NOI. What this might imply, then, is that according to the Walk Score method, retail may receive a greater proportional benefit than individual residences; as such, one might conclude that there are an additional host of variables that factor into explaining price premiums for residential properties.

While the Walk Score has gained popularity and traction in contemporary research, it leaves much to be desired. In particular, there are two core concerns. First, the Walk Score does not provide for flexibility according to regional contexts and local patterns of urban development. That is, neighborhoods are evaluated against a standardized "expectation of goodness" without regard for what is locally appropriate or justified in the real estate market. Second, it does not address variations in the demands of different household segments. Simply stated, it assumes that all households demand the same bundle of goods, regardless of household size, composition, income, or mobility. What this research intends to demonstrate is that these two issues are key aspects of measuring walkability. Specifically, when considering whether walkability is truly desirable, but one must understand first what is perceived as desirable before developing a metric to measure such desirability.

Critiquing the Walk Score

There are other reasons to question the Walk Score as a perfect measure of walkability—at least as designed currently. Both Cortright (2009) and Pivo & Fisher (2010) suggest several critiques of the Walk Score. First, the Walk Score measures proximity *but not connectivity,* such that it does not consider physical impediments to walking like topography, physical barriers, or street patterns (Pivo and Fisher 2010). Whether this measure should be improved to address this potential deficiency is up for scholarly debate. Second, the Walk Score measures opportunity *but not activity* (Cortright 2009), which implies that premiums are associated with place rather than actual walking behavior—the question is whether residents actually find the local amenities desirable. Third, land use mixing—either as a measure of the total intensity of uses or with regard to the mix or profile of uses—is not considered as a factor (Pivo and Fisher 2010). What this means is that an area does not necessarily have to include housing to receive a score, nor is density considered important.

What is equally problematic is the way Walk Score assigns values based on limited, weighted counts of administrative data. The categorization of amenities does not consider important characteristics such as subtype (i.e. supermarkets versus corner stores or bodegas), target market (i.e. affluent versus low-income households), or quality (i.e. do residents actually use the amenities in closest proximity). The question of *subtype* is particularly important if the weighting scheme considers things such as supermarkets and corners stores as having equal value (one might readily assume that they do not). To be specific about the methods used, the Walk Score[5] generates an index between 0 and 100 for individual postal codes. A straight-line walking distance relates individual addresses to a variety of amenity types and activities: grocery, restaurants, shopping, coffee, banks, parks, schools, books, and entertainment. Each of these identified factors has an associated weight based upon previous scholarly attempts at defining the key drivers of walking behavior (see in particular Moudon et al. 2006; Lee and Moudon 2006; Cerin, Leslie, du Toit, et al. 2007).[6] Some categories allow for multiple instances, such as restaurants (10), shopping (5), and coffee (2); in cases of multiple observations, this methodology counts those in closest proximity, with each additional instance weighted less according to general principles of decreasing marginal utility. Finally, the Walk Score employs a distance decay function for up to 1.5 miles to determine a second weighting for each observed amenity: within a quarter-mile, amenities have "full value"; at 1 mile, an amenity's value drops to 12%; and at 1.5 miles, the amenity has zero value.

In essence, this implies that the amenities are non-rivalrous goods, which may be problematic for high-density areas where residents may be "competing" for access to different amenities. It also means that shopping centers can receive a high Walk Score despite an absence of any housing and complete separation from a residential development altogether. Similarly, the issue

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5 This is intended to provide a summary of the Walk Score methodology. A more in-depth explanation of the factors involved and methods of calculation are found in a white paper titled *Walk Score Methodology* (2010) on the Walk Score site, which used to be found at http://www2.WalkScore.com/pdf/Walk ScoreMethodology.pdf. Front Seat no longer posts their methods online, however, the author retrieved a copy before it was removed from the site.

6 In a survey on popular walking destinations in King County, Washington, Moudon et al. (2006) found residents reported weekly walking trips to grocery stores (45.9%), non-fast food restaurants (23.0%), drug stores (19.2%), convenience stores (16.3%), banks (15.8%), cafés/coffee shops (15.0%), and post offices (12.8%). Of the 445 respondents (of 608 total participants) who walked for recreation, 83.4% used neighborhood streets, 42.5% sought walking or jogging trails, 18.0% for indoor gyms or fitness centers.

of income seems pertinent, especially if considering that some residential areas house a variety of income levels. Further complicating this point, a key finding from Manaugh and El-Geneidy is that “while wealthier households may be more responsive to improvements in the walkability of their neighborhood, the results suggest that the number of people walking in more affluent areas may never equal those walking in neighborhoods made up of individuals with less income and lower car access, regardless of the quality of the pedestrian environment” (Manaugh and El-Geneidy 2011, 315). This is important for this research as it suggests that perhaps mobility choice is an outcome of higher socioeconomic conditions, and that comparing the walkability of different neighborhoods should first control for demographic characteristics such as income.

This concern raises an important task for this research: how is walkability measured effectively? Walkability if often defined as a pedestrian activity occurring between two destinations, but what about places of respite and relaxation? If walkability is considered to be as vital to social aspects of urban living, one should also consider the spaces in which social activities occur.

Lessons Emerging from the Walkability Discourse

There are several important lessons that can be drawn from the walkability literature, and these contribute to building a connection with the stability of urban places. First, there is a clear foundation upon which to construct a general theory for walkability. Specifically that, to encourage walking behaviors, physical environments must have the ample opportunities and choices to be useful, be perceived as safe for pedestrians, and foster a sense of comfort and interest. These tenants are simple, but useful, contributions to this discourse. In particular, the notion that walking must be useful is an important consideration. This speaks not only to the provision of public and private amenities, but also to encouraging the interest of individuals who make the choice between walking and other modes of transportation.

A second key lesson is that contemporary research focuses on static snapshots of the economic values associated with walkability. What is missing from this conversation is a consideration of the durability of such economic values as well as some understanding of the non-economic values derived from walkable places. Namely, are walkable places more conducive to human interaction, as suggested by advocates such as Jane Jacobs (1961), Suzanne Keller (1968), Bruce Appleyard (1981), Jan Gehl (2010), the New Urbanists (1996), and others? If so, a key question is whether one can find evidence that supports this assertion; this leads to a second,

more important, question that, if valid, how might city planners, urban designers, developers, and policy makers build and shape environments that engender such interactions.

The third lesson is that there exists an opportunity to continue the development of walkability metrics. One might suggest that we are in the first evolution of such metrics (i.e. Walkability v1.0), where we are trying to understand at a very basic level how to quantify walkability at coarse-grained detail in order to compare urban places. The second evolution requires that one unpacks these metrics to examine whether there are generalizable conclusions about the usefulness of some aspects of walkability versus more nuanced metrics that align closer to socio-demographic preferences for individuals and households at different life stages.

A fourth lesson focuses on the scale or unit of analysis for research. Currently, the coarse-grained approach provides an ability to make gross comparisons of places, but a fine-grained understanding is lacking that would allow a differentiation among not only urban places, but even at the neighborhood scale. In the chapters following, this dissertation will explore in detail how different scalar approaches may or may not resolve this question. Ultimately, what will be useful is the triangulation of findings through both quantitative and qualitative analyses, providing an understanding not only of walkability at different scales, but also whether this concept has any relevance in the context of a framework for urban stability.

CHAPTER 4: RESEARCH DESIGN, METHODOLOGY, AND METHODS

The preceding chapters detail three key threads providing the impetus for this research. First, the sharp decline of the United States housing market, which contributed to a global economic recession, has left some urban places struggling while other places have thrived in spite of the downturn; in turn, the stability framework adopted within this research assesses the range of response within such urban areas. Second, a normative theory of neighborhood stability posits that economic and non-economic outcomes are synergistic. Third, that the contemporary discourse suggesting that walkable urbanism produces greater outcomes for residents and developers has yet to demonstrate any relationship with long-term outcomes for individuals and households. Weaving these three threads together, the methodological approach to this dissertation examines whether (1) there exists a connection between neighborhood stability and walkability (or amenity density, as a proxy), and (2) such connections are generalizable across a range of cities in the United States. In short, the underlying question that emerges here is: *are walkable urban neighborhoods more stable than their non-walkable counterparts?*

The research methodology in this chapter details a mixed-methods study comprising of three analytic phases: a longitudinal, coarse-grained quantitative analysis examining a diverse sample of 30 U.S. cities; a fine-grained, comparative quantitative analysis that explores a subset of cities; and a multi-case study approach to explore less tangible qualities of neighborhood stability. As stated previously, the core aims of this research are to examine this concept of neighborhood stability and to explore the potential connection between stability and walkability.

Summary Research Design and Methods

In the first phase of research, the research examines the association between walkability and urban stability at the Census Tract level. This exploration employs a combination of regression analysis methods and spatial analytics while controlling for demographic, economic, and external characteristics. The approach is intentionally general in nature and conducted at a macro-level, employing a “broad brush” application of walkability by measuring the *density* of amenities—the specific method is detailed further on in this chapter. The key questions for this initial phase are what factors, if any, are strongly associated with housing price stability, lower resident turnover

rates, and greater age diversity. Specifically, this phase offers a comparative assessment of these components of stability with different levels of amenity density and demographic analysis at the Census Tract scale.

In the second phase, this research increases its focus to a micro level by examining individual housing transactions as the principle unit of analysis. At this level of analysis, a network-based spatial analysis of these relationships is possible, which to a degree emulates the lived experience of individuals within a community. Specifically, this phase examines the potential connection between housing prices and neighborhood amenities. However, a trade-off of working at this fine-grained detail is that demographic and economic variables, typically measured at more macro scales, are attributed to larger units of analysis. In simple terms, the methods employed here explore the potential association between stability and walkability and focuses on the connection between origins (i.e. homes) and destinations (i.e. public and private amenities). In this second phase, walkability is operationalized based upon a combination of several elements, which draws from a breadth of scholarly research and contemporary metrics. These "elements" treat amenities types separately based on categorical distinctions as opposed to creating a weighted index as many conventional metrics do. While it would be ideal to have a single continuous variable for walkability from a quantitative standpoint—as is common in many contemporary metrics—but as discussed in Chapter 3, these metrics provide little in terms of comparing places or how change agents may improve such places.

The third phase of research employs qualitative methods, using case study research and incorporating environmental psychology to triangulate data. The purpose of the third phase of research is to assess the less tangible qualities of neighborhood stability. What this dissertation presupposes is that the contemporary discourse on walkability is valid; that is, one can find clear evidence that the market places an economic premium on walkable places using conventional metrics. However, what is not clear is whether the capitalization of walkability translates to long-term economic stability; further, little if anything is known about whether walkability supports, enhances, or has no effect on long-term non-economic outcomes. Ascertaining the extent to which there exists a positive relationship between walkable places and neighborhood stability is the key focus of this third phase.

Serving as an overarching framework for this research, each of the three principle phases of

analysis consider the following three questions:

1. Have amenity-dense urban areas retained economic stability and housing values more so than places without such amenities?

2. Are all amenities positively associated with economic stability in local housing markets, or do the types of amenities matter?

3. Do households remain longer in their communities where amenities are dense as opposed to areas where there are fewer amenities?

These questions highlight the key concepts that serve as the foundation for this urban stability framework. As described earlier in this dissertation, neighborhood stability exists where four basic conditions are met, which are bounded by potentially negative extremes:

1. Housing price stability or modest appreciation (without extreme or rapid increases leading to gentrification or other external pressures resulting in resident displacement);

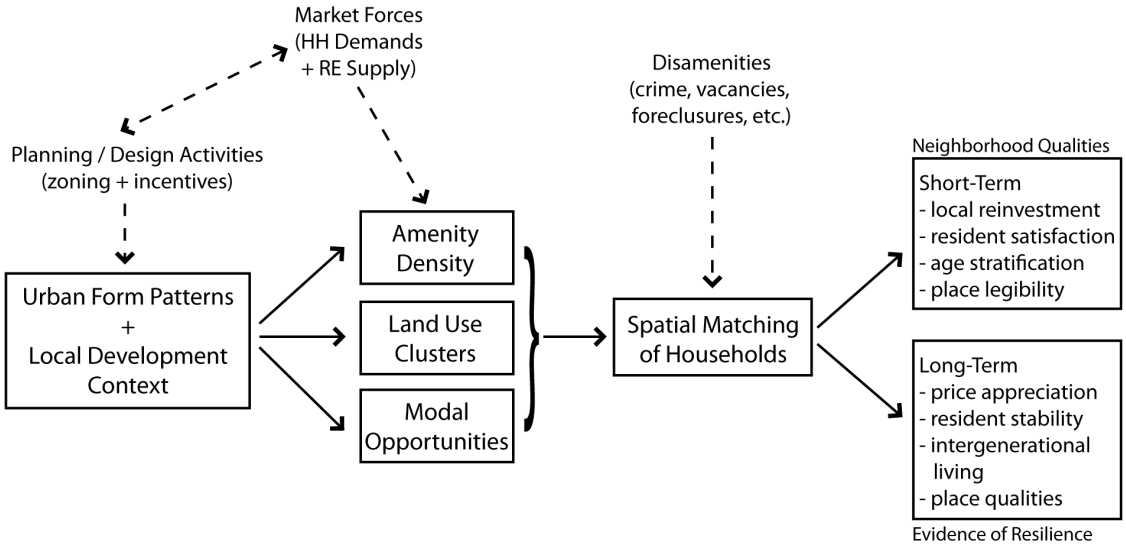
2. Intergenerational living, a diverse population, and the ability to age in place (without age restrictions or place identity geared towards a specific population segment);

3. “Place stickiness,” or longer-than-average length of residency (without such tenure as to prevent new households or communities from entering); and

4. Suitability of design based on local environmental and material contexts (without being devoid of innovation or reinvestment as to lose the interest of mobile households).

The conceptual framework (Figure 1) illustrates the relationships that investigated throughout this research. This conceptual framework addresses the deficiencies in conventional walkability metrics by integrating metrics for potential destinations while taking into account existing urban form patterns and local development processes. Indicated by the dashed lines in the following graphic, this research proposes an examination of how local planning activities, market forces, individual preferences, and disamenities may influence the connections among identified outcome variables. The quantitative phase assesses the degree to which such outcomes are explained by administrative and proprietary types of data, while the qualitative phase of analysis examines areas in which a quantitative approach is unable to explain outcomes.

Figure 4.1: Conceptual Framework for Dissertation



Hypotheses

In the context of this conceptual framework, several hypotheses are tested, and as discussed above some are more appropriate for quantitative methods while others are suitable for qualitative methods. The following sections differentiate among these hypotheses, which are reintroduced in each analytic chapter.

Phase I Analysis: Coarse-Grained Quantitative Analysis

In the first phase (quantitative section) of analysis in Chapter 5, the primary focus is identifying the factors most associated with economic and non-economic stability in urban areas. The general hypothesis is that urban stability is characterized quantitatively as: (1) housing price stability or *modest* (i.e. not rapid) increases; (2) age diversity signaling place satisfaction for a variety of household types; and (3) longer resident length-of-stay using the percentage of short-term households as a proxy. In the qualitative phase of this research, the expectation is that price stability and longer household tenure is greater in areas where there exists a higher concentration of public and private amenities (i.e. cultural, dining, local services, retail, recreation, and supermarkets) than in places where there are lower concentrations. The expected association between age diversity and amenity density is unclear at this point; simply stated, people at different life stages and household types are likely to have different preferences for different sets of amenities. While these hypotheses are expected to hold statistically, the quantitative analysis will reveal only a partial understanding about the potential association between stability and other

exogenous factors.

Phase II Hypotheses: Fine-Grained Quantitative Analysis

Taking the quantitative approach to a finer grain of analysis in Chapter 6, this research enters an arena that has yet to be well-defined. That is, the data necessary to perform tests for individual housing transactions are proprietary (i.e. not publicly available through administrative data resources), and the research base to which one might connect a methodological foundation is limited—this research then builds a foundation off of urban economic theory and real estate fundamentals. Specifically, this research seeks to unpack the spatial economics of place in so far that external characteristics (i.e. neighborhood amenities, local demographics, and real estate submarket factors) are examined alongside internal characteristics of individual housing units (i.e. livable square, lot size, unit type, and number of bedrooms and bathrooms).

The key advantage of this approach—and what provides a clear linkage between a macro-level quantitative analysis and micro-level case study methods—is that the analytic models can control for internal characteristics of individual housing units. This approach is capable of differentiating between individual housing units by controlling for internal characteristics such that housing becomes a *heterogeneous* good rather than a *homogeneous* good. By controlling for variability within the housing stock, there is the potential to reveal market demand for external factors such as proximity to positive amenities as well as observable neighborhood characteristics like community demographic profiles and submarket forces (i.e. density and vacancies).

In terms of general hypothesis for which external characteristics are strongly associated with housing market stability (i.e. urban economic stability), conventional wisdom emanating from the current discourse suggests that proximity to *all types* of public and private amenities is capitalized into housing prices. While such assumptions have yet to be assessed, a clear interest of this research is whether the analysis results at the Census Tract level are in line with analyses conducted at the level of individual housing units. A more specific hypothesis, then, is that some amenities are capitalized into transaction prices whereas other amenities are not. Simply stated, this research is able to differentiate between those amenities that influence housing market decisions versus those which do not.

Phase III Hypotheses: Case Study Research

To understand neighborhood stability at a greater depth, this research uses qualitative methods to explore the findings and potential explanatory gaps of the quantitative phases of analysis. The hypotheses for this portion of the research are more directly linked to the unknown intervening variables—variables that are difficult to quantify using administrative or other proprietary quantitative data. In addition to adding a depth of understanding to the results of the preceding quantitative phases, the hypothesis is that household locational preferences are related to specific amenities perceived physical qualities of neighborhood space. If true, this would be a significant finding, as it calls into question that there exists a *universal preferences for amenities,* which typically serves as the foundation for the contemporary discourse of walkable urbanism.

Exploratory Research: Methods and Preliminary Findings

In exploratory research testing the association between walkability and 2007 home prices in Philadelphia, a number of key findings emerged that support this proposed course of research. It is important to note, however, that this research focused specifically on economic outcomes; specifically, this examined the relationship between housing prices, amenities, and disamenities. However, this methodological approach provides a foundation upon which this dissertation proceeds in an examination of economic outcomes and non-economic outcomes, which contributes to the underlying concept of neighborhood stability.

A key contribution to this research is the use of a hedonic price model, which offers the benefit of precision in relating individual home sales to a variety of independent variables. At a fundamental level, this method examines at the market price that buyers and sellers are willing to exchange non-identical or *heterogeneous* goods (Pozdena, 1988). This exchange price is then described in its relationship to various characteristics, or “attributes,” for each property. At the same time, the addition of geographic information system (GIS) analytics added considerable power to conventional hedonic price modeling. Specifically, each individual home sale is related spatially to positive and negative external characteristics. In simple terms, this examines how individual transactions are influenced by the proximity to public and private amenities as well as negative spillover effects from crime or locally undesirable/incompatible land uses such as vacancies or large industrial parks.

This exploratory research employed two distance-based associations of amenities and disamenities on home prices, which revealed several interesting findings: *buffer analysis,* or how many data observations are contained within a specified distance of an individual property; and *distance-based relationships,* or a continuous variable based upon the average and individual distances between each property and a defined target set of data points. For buffer analysis, the question is whether *amenity density* is a statistically significant variable associated with housing price premiums. The key assumption is that amenities located within "walking distance"—data points that exist within a quarter-mile radius of individual properties (Perry, 1929, Perry, 1939, Congress for the New Urbanism, 1996)—provides a sense of whether the surrounding area provides a greater degree of choice by offering a large number of different amenities. For *distance-based relationships*, the underlying question is not one of density, but whether smaller average distances to clusters of similar amenities are more strongly associated with higher housing price premiums.

At the core of this exploratory research, the basic question tested was what local submarkets (i.e. neighborhoods) are high in value, and to what extent external characteristics are strongly associated with such price premiums. In response to these questions, two hypotheses were examined such that the value of urban neighborhoods was directly related to two factors: (1) housing located within walking distance to a sufficient number of amenities, as determined by different density thresholds (i.e. higher density neighborhoods required a greater number of amenities in comparison to low-density neighborhoods); (2) market stability and longer resident tenure was greatest in areas where there exists a spatial match of amenities and household market segments demanding such amenities.

Introducing some complexity to this analysis, potential intervening variables were introduced for negative external characteristics such as crime, vacant properties, and large undesirable land uses (i.e. land designated for use by heavy industrial firms). The incorporation of such factors was based upon the expectation that these characteristics have a negative association with housing prices, and potentially, negate any potential positive associations with ample amenities. This was particularly important in the sense that unsafe physical environments detract from resident satisfaction with place.

After completing the metro-level analysis relating housing prices to local amenities and

disamenities, this study focused on six neighborhoods located within the city limits of Philadelphia: three high-density neighborhoods located around the central business district (CBD), and three low-density neighborhoods located towards the outskirts of the city bounds. The three lower-density were selected on the basis of comparable per-square foot sales prices relative to the urban submarkets, and these areas were also delimited by different demographic and household compositions. This finer-grained research examined whether there are consistencies in the demographics and household characteristics of urban dwellers. In addition, the analysis explored whether there were similarities or dissimilarities between these characteristics in low-density neighborhoods.

Contributing to the robustness of these assessments, the study used ESRI Consumer Data to determine whether there are similarities or dissimilarities in household spending patterns. The reason for including this data is to help determine whether (1) different household types see shifts in their spending patterns, and (2) whether they spatially sort in areas that match their consumptive preferences within the city boundary.

In high-density urban areas, this research expected that household size and composition would be weighted towards single occupants and unmarried households, which have a proportionately higher amount of dispensable income available for spending. This is in agreement with basic urban economic theories which suggest that substitution effects (i.e. the trade-off between total housing consumed for proximity to the CBD) are coupled with an increase in expenditures for consumer goods (Mills and Hamilton, 1984, O'Sullivan, 2007). Simply stated, urban households maximize their utility not only on the basis of the trade-off between housing and transportation costs, but they increase also their spending on local amenities. Further, for low-density areas located outside the CBD, urban economic theory dictates that households consume more total housing at a lower cost per square foot. In response, households offset transportation costs, which account for both the actual cost of travel to work as well as the opportunity cost related to travel time.

Preliminary Findings

The analysis of housing prices in the context of a variety of demographic and external characteristics provided some insight on real estate dynamics. Yet the true value of this modeling was revealed in examining the model's explanatory value for different neighborhoods within

the City of Philadelphia. While the initial tests focused on whether the results themselves were compatible with the general hypotheses, a second set of questions assessed whether these hypotheses hold when looking at smaller subunits of the city—the three high-density areas located in Center City (Center City West, Center City East, and Wharton/Hawthorne/Bella Vista) and the three low-density neighborhoods (Bustleton, Chestnut Hill, and Roxborough) located at the extent of the city boundary.

The selection of neighborhoods used two simple criteria. First, neighborhoods were selected where price per square foot home sales were above the city's mean value. Second, densely populated neighborhoods (i.e. located in the city's CBD) and those with significantly lower densities (i.e. around or less than 5 dwelling units per acre) were another criterion for selection. Using these selections, this research examined whether the hypotheses held according to two conditions: (1) a conventional approach looking at household demographics; and (2) a market-analysis approach looking at the relationship between amenity density and consumer expenditure patterns.

Testing for demographic characteristics, there are several interesting points that confirmed basic rent gradient theory. In the urban neighborhoods closest to the CBD (e.g. Center City East and Center City West), one finds the highest average price per square foot. Similarly, the neighborhoods furthest from the CBD (i.e. low density neighborhoods) have comparably lower prices per square foot. While lower costs may explain by the trade-off between housing consumption and travel costs, there is evidence that the lower-density neighborhoods were populated by a proportionately higher number of family households—households that may ultimately seek larger homes to accommodate relatively larger family sizes.

There were, however, some outliers in neighborhood-scale analysis. In the high-density neighborhoods, the Wharton/Hawthorne/Bella Vista neighborhood featured relatively lower prices than do the neighborhoods immediately adjacent to the North. There are two factors that may have contributed to this difference. First, this neighborhood exists outside of the CBD, and land prices are unlikely to be affected by competition from commercial firms that seek to be located in the CBD. In part, this confirms rent gradient theory to an extent, but one might also point to the presence of zoning controls that limit the type of development that can occur in this area. Further, as mentioned previously, a second factor is household composition. Compared to its high-density

peers, the proportion of family households is higher, which may suggest that these households have a different set of preferences and choices when it comes to housing expenditures in the overall household budget.

In the lower-density neighborhoods, Chestnut Hill was another outlier. There were two characteristics here that distinguish it from the other neighborhoods: (1) total home prices are significantly more than its peer group; and (2) price per square foot is higher than its peer group. Household composition and proximity to the CBD, examined above, would not account for such these differences. Each of the peer neighborhoods had similar conditions in this regard. What stands out is the size of the homes sold during this time period. On average, the homes are significantly larger than those in the peer group (approximately 45-60% larger on average). What this suggests is that these homes are not substitutable goods, and if located in the same neighborhood would be considered part of a different asset class. In the context of the metro area as a whole, these homes may represent a unique housing product, and for that reason may carry a premium due to relative scarcity within the city of Philadelphia.

An examination of personal expenditures yields some interesting information about these neighborhoods. Households located in the CBD have higher total per capita expenditure levels, and spend more on consumptive activities than do households in low-density areas. Some surprising evidence emerges from this analysis. In the high-density neighborhoods, per capita spending in the Wharton/Hawthorne/Bella Vista neighborhoods are relatively similar to the peer group, even though there are proportionately lower densities of amenities in this area. A “lack of congestion” or competition for consumption does not appear to explain this, as the population density is comparable to the other high-density neighborhoods. What may explain this, however, is proximity to amenities available in the adjacent neighborhoods. For example, it may be the case that households in this neighborhood benefit from their proximity to areas where amenity density is high. In may also be the case that there is a threshold beyond which additional amenities may not have much of an effect on individual consumption.

The Chestnut Hill neighborhood was again unique in this analysis. The reason for this may be a simple one: total expenditures per capita were significantly higher than all of the peer group neighborhoods. It seems reasonable to conclude that these households spent a proportionately similar amount of their annual household budget on consumptive activities, which was higher

based on a proportionately higher household budget. What is not explained as part of this analysis, however, was whether the local amenities are themselves higher in quality, which requires greater levels of spending.

This research demonstrates that there was merit in exploring these questions further. While the use of a single city (i.e. Philadelphia) was useful to the extent that it helped solidify the theoretical foundation and methodological approach for this dissertation, it is hardly sufficient to suggest that this exploratory research met the test for generalizable conclusions for urban stability, much less for a single-year study of housing price premiums at a national scale. The next section explores how this dissertation broadens this scope of analysis to include not only large cities but small cities as well. Further, the city scoping phase details how cities were incorporated where housing prices have stabilized between 2000 and 2010 as well as those that have declined over the same time period.

Scoping Cities for Analysis

Returning to the dissertation's research, the decision to focus on center cities—and not metropolitan statistical areas ("MSAs")—is straightforward: when research focuses on MSAs, the combination of center cities and suburbs introduces a separate set of potential intervening variables related to the personal calculus of households choosing where to live and work. Specifically, quantitative models must assess the intervening effects of individual and household preferences for school choice, property tax rates, and the quality and provision of local services. Putting this into context, Richard Florida suggests that has influenced a tremendous period of household mobility:

> *"For the first time ever, a huge number of us have the freedom and economic means to choose our place. That means we have an incredible opportunity to find the place that fits us best. But this remarkable freedom forces us to decide among a large number of options. Today there are many types of communities out there, all with something different to offer." (Florida, 2008)*

That there is evidence of greater household mobility should be of little question. What is the question, however, is where households choose to migrate to and why? In the United States, there are few cities with over 1 million residents, and population figures drop off fairly quickly with 285 cities of over 100,000 in population. In choosing cities, two vectors were employed: change in

Figure 4.2: Selected Cities for Dissertation Research

median home values between the 2000 and 2010 as a proxy for real estate market fundamentals; and distinguishing between high, medium, and low proportions of Creative Class populations. In terms of the former, the logic is clear: to what extent is urban stability associated with city-level conditions; specifically, to what extent can it is possible to isolate the macro- and micro-inputs to stability? In terms of the latter, this asks whether employment composition in different industries has an association with housing values. This question is particularly interesting in the context of the contemporary discourse of municipal planning and policy efforts, some of which have focused on the Creative Class as the centerpiece for regional and global competitiveness.

Cities were organized into categorical segments for high, medium, and low using half a standard deviation from the sample mean. Then, three criteria were used to select cities from these segments: (1) the largest city in terms of total population, (2) the densest city in terms of population per square mile, and (3) the least dense city in terms of population per square mile. Finally, three cities (i.e. Atlanta, Georgia, Philadelphia, Pennsylvania and Salt Lake City, Utah) were included as these are suitable locations for case study analysis in subsequent phases of the dissertation. In total, 30 cities were included in this research.

Table 4.1: Summary Data for Selected Cities, Sorted by 2010 Population

	City population		Population density per square mile	
	2000	2010	2000	2010
Los Angeles, California	3,694,820	3,792,621	7,883.6	8,092.3
Chicago, Illinois	2,896,016	2,695,598	12,722.2	11,841.8
Houston, Texas	1,953,631	2,099,451	3,258.3	3,501.5
Philadelphia, Pennsylvania	1,517,550	1,526,006	11,316.5	11,379.5
Phoenix, Arizona	1,321,045	1,445,632	2,556.7	2,797.8
San Diego, California	1,223,400	1,301,617	3,762.1	4,002.7
San Jose, California	894,943	945,942	5,069.8	5,358.7
San Francisco, California	776,733	805,235	16,571.0	17,179.1
Austin, Texas	656,562	790,491	2,204.0	2,653.6
Detroit, Michigan	951,270	713,777	6,856.0	5,144.3
Seattle, Washington	563,374	608,660	6,711.4	7,250.9
Milwaukee, Wisconsin	596,974	594,833	6,210.6	6,188.3
Oklahoma City, Oklahoma	506,132	579,999	834.6	956.4
Fresno, California	427,652	494,665	3,819.8	4,418.3
Atlanta, Georgia	416,474	420,003	3,127.8	3,529.0
Hialeah, Florida	226,419	224,669	10,555.7	10,474.1
Chesapeake, Virginia	199,184	222,209	584.5	652.0
Salt Lake City, Utah	181,743	186,440	1,635.7	1,678.0
Brownsville, Texas	139,722	175,023	1,055.9	1,322.6
Peoria, Arizona	108,364	154,065	621.3	883.4
Palmdale, California	116,670	152,750	1,101.1	1,441.6
Paterson, New Jersey	149,222	146,199	17,705.5	17,346.8
Kansas City, Kansas	146,866	145,786	1,176.7	1,168.1
Syracuse, New York	147,306	145,170	5,882.1	5,796.8
Savannah, Georgia	131,510	136,286	1,274.9	1,321.2
Coral Springs, Florida	117,549	121,096	4,940.7	5,089.8
Norman, Oklahoma	95,694	110,925	535.3	620.5
Columbia, Missouri	84,531	108,500	1,340.1	1,720.1
Cambridge, Massachusetts	101,355	105,162	15,873.9	16,470.2
Daly City, California	103,621	101,123	13,520.5	13,194.5

Source: 2000 and 2010 United States Census

Examining Urban Stability through the Use of Quantitative Methods

Phase I Analysis: Intent and Assumptions

This first phase of analysis examines three of the four components of stability: (1) economic stability via median self-reported home value change; (2) “place stickiness” via household turnover rate; and (3) evidence of urban places that feature a diverse set of age ranges, which may indicate the potential for aging-in-place. In the case of the home values, significant increases in housing prices may be a sign of gentrification or the displacement of residents. In the case of the latter, a lack of household turnover may signal a barrier to entry for households, young and old. For the question of age diversity, the impact of “too much” aging in place may result

in the creation of urban enclaves that have feature high internal social stability, but may not be well suited for new residents looking to engage with and enter into place-based communities. Testing this empirically, this research looks to identify and isolate outliers within each city. These outliers may skew the data and results, and controlling for such instances requires a robust and defensible approach—details of such transformations are discussed in the appropriate analytic sections.

Using data from the 2000 and 2010 U.S. Census, the research employs regression analyses for each city using census tracts as the unit of analysis. In terms of operationalizing this phase of research, the models test dependent variables using a linear regression model (i.e. Ordinary Least Squares) while adding for fixed-effects controls such as city-level housing price change (i.e. as a proxy for macro-level economic health). Broadly speaking, what this level of analysis looks for is areas of consistency and inconsistency among the cities as well as inter-categorical comparisons. What is of particular interest is whether amenity density—which is examined using both the Walk Score as well as a deconstructed metric—has a statistically significant association with the dependent variables. In specifying the dependent variables for this phase of analysis, they help to address the following three questions:

1. What are the key factors associated with tract-level changes in self-reported home values in 2000 and 2010?

2. What are the key factors associated with changes in new residents (i.e. living in the tract for less than 10 years) in 2000 and 2010?

3. Which factors are associated with tracts that feature a diverse range of age in each tract for 2000 and 2010?

Phase II Analysis: Intent and Assumptions

For the second phase of analysis, the research transitions to an assessment of the relationship between housing prices, internal characteristics, and external neighborhood attributes. This approach is based upon hedonic pricing models, which provide insight as to price premiums that buyers within the market are willing to pay for given choice within that market.

In terms of the underlying theory supporting hedonic price modeling, Malpezzi (2003) suggests

that there is a general lack of a unifying theory that was advanced early in the historical use of this approach. In particular, he notes that the early research presented elegant models, but there were differing accounts of what ought to be included in these models. What is unclear is whether this is a product of uncertainty for or lack of consistency within the data available to this research, or if there is some other reason for a lack of theory. What is clear, however, is that one can trace the lineage of scholarly thought on the use of these models to two sources: Kelvin Lancaster and Sherwin Rosen.

Writing in the late 1960s, Lancaster (1966) advanced an alternative to traditional economic theory about the utility derived from goods. Specifically, he applied microeconomic theory to the exchange of housing units where utility is provided not by the housing unit alone, but by the characteristics of the unit itself. This marks a significant shift in the treatment of housing as a homogeneous good to a heterogeneous good. Providing an example of this, Lancaster offered the choice between a gray Chevrolet and a red Chevrolet. Traditional economic theory would view them as one in the same while we should understand the difference in color might have some relevance in terms of the consumption preferences within the market (1966, 134). To summarize the foundation upon which he based his arguments, there are three points to understand:

1. The good alone does not provide utility, rather it is the characteristics of the good that give rise to utility;

2. In general, goods possess multiple characteristics, but many characteristics are common in different goods (i.e. this allows for commonalities across goods); and

3. Combined goods may possess characteristics different from the component goods alone (i.e. the whole is not only greater than the sum of its parts, but it may be understood as something different from the sum of its parts).

Sherwin Rosen (1976), following Lancaster's work a decade later, effectively speaks to the nature of transactions and how consumers interact within the market considering a number of competing bids and offers for different characteristics. That is, the market is populated by willing buyers and sellers that are working with similar, not necessarily symmetrical, frameworks of information. In addition, they are competing to price out characteristics while eventually reaching a clearing price within the market. In essence, Rosen's contribution was one of markets seeking equilibrium, such

that there is some negotiation within the market such that a clearing price can be reached.

Offering a more contemporary reflection on hedonic pricing models, Malpezzi (2003) offers a rich, in-depth assessment of other scholarly contributions to its applications in practice. Establishing a framework of limitations, Malpezzi notes three overarching concerns with which applications of such models should be considered:

- Hedonic models must be supported by a strong theoretical foundation including that markets are not necessarily at equilibrium;
- To the best extent possible, one must construct models that are fully specified (i.e. few, if any, omitted variables) and adequately reflect the target market; and
- The design (i.e. specification) of models should be used to its maximum benefit (i.e. having a lack of better modeling options).

At a basic level, one should understand hedonic pricing models as analysis of housing transactions that are deconstructed into prices and quantities, effectively allowing for comparison across places. In terms of places themselves, Stegman and Rasmussen (1980) note that hedonic pricing models should incorporate locational and related neighborhood attributes as they are valued components of the housing bundle. In summary, this approach views price (or rent) as a function of (1) structural characteristics, (2) neighborhood attributes, (3) location within the market, and (4) time.

It is necessary to discuss as well the primary alternative to this approach: repeat sales analysis. First and foremost, repeat sales analysis has the advantage of being based upon actual transactions data, and to an extent eliminates concerns over omitted variable bias (Malpezzi 2003). One should note, however, that this research uses actual transaction data, so this point is not a concern. Malpezzi suggests as well that repeat sales do not necessarily require information about the units as this information is inherently coded into the sales price of the unit itself. To an extent, this approach can be used to assess markets in which there is publicly available data at specific geographies, especially when drawing down for large geographies.

There are, however, drawbacks to this approach. First, this approach fails to fully address the omitted variable bias insofar that neighborhood variables are specified. That is, place-to-place

comparisons are not possible unless these are specified in the model, as they would be in the hedonic model. Second, repeat sales do not address that which the housing supplies insofar that units are upgraded over time. That is, the repeat sales model assumes that the unit stays the same over time, while a hedonic pricing model does not treat housing in a longitudinal analysis way—that is, change in the unit over time is effectively built into clearing price within the market.

One should note that there are several assumptions used in the application of a hedonic pricing model.

- The data must document the whole market under consideration; however, steps were made to correct for data reporting errors in data reporting such as zero-cost home sales and homes without square feet.
- Property characteristics, such as square feet and price, must vary continuously and over a wide range of values (i.e. reinforcing the notion that these are heterogeneous goods).
- Consumers are assumed to have similar perceptions of the property characteristics as well as having adequate access to the information used in the decision making process. At a basic level, this implies that buyers do not have asymmetrical information (i.e. that some buyers have the advantage of insider knowledge of potential market growth or public interventions that would otherwise increase the value of the property at a future date).
- Migration and moving costs are marginal such that buyers can choose to purchase in another area at no real disadvantage.

Additionally, there exist a few limitations of this model. While these do not negate the results, they should be taken into consideration such that the model's explanatory value should not be expected to fully describe the relationship between housing prices and internal/external characteristics.

- The data does not represent all of the characteristics that influence buyers' decisions. Specifically, internal housing characteristics, including number of bedrooms, bathrooms, housing product types (i.e. single-family detached, single-family attached, multi-family attached apartment and condominiums, etc.) are the primary means for testing internal

characteristics.

- Information on buyers—such as annual income, overall debt burden, and household size—is not available and is typically considered private information. As such, this model assumes that buyers are maximizing their utility within financial or other household constraints.

Using individual housing sales transactions as the unit of analysis, the research examines the association between price premiums and (1) internal characteristics as well as (2) locational characteristics. In terms of the latter, there are two primary features with which to differentiate. First, locational characteristics should be understood as the demographic and housing market features of an urban area. Specifically, this looks at the socio-economic makeup of a given place as well as the conditions of the housing market, measured largely by Census variables. In terms of the former, the incorporation of spatial analytics, based upon network-based calculations of distance and accessibility, provide a more nuanced understanding of proximity. Simply stated, this research is able to measure whether location-based amenities are accessible or separated based on physical barriers or other impediments.

Neighborhood Research: Multiple Case Study Analysis

The third phase of analysis marks a clear transition from an urban economics and real estate development focus to a city planning and urban design focus. While the quantitative phases of this research may help to identify the key features of stability and its connection to walkability, to derive valuable insight about urbanism and potential policy implications requires a more nuanced study of cities and neighborhoods. A second possible outcome of the first and second phases of analysis is whether amenity density has a greater association with housing prices at the Census Tract level versus individual housing transactions. Specifically, while amenities may be capitalized into housing prices at the Tract level, this association may be less significant for individual home sales within the same area.

As such, two key questions emerge. The primary question is whether some urban neighborhoods do not fit the models' results of Phases I & II; that is, how one might explain places of high stability that do not necessarily conform to the models' explanatory variables. A secondary and important question is whether activism in city planning and urban design is associated with or

effective in enhancing stability.

Case Study Protocols

The first step in generating a set of case study neighborhoods is to establish specific controls. The use of matched-set analysis (a subset of multi-case study methods) of each city features two neighborhoods, each exhibiting high economic and non-economic stability factors relative to other units within each city. This approach is helpful in addressing the secondary question about the efficacy of planning; that is, the research can control for planning capacity and activism by identifying two neighborhoods from the same city.

In terms of selecting neighborhoods, density is a key measure for which to control. Ideally, residential densities should be sufficient to suggest an “urban level” neighborhood. As a threshold, the selection of neighborhoods with at least 8 net dwelling units per acre would be preferable. In simple terms, this requires limiting the universe of neighborhoods to those where there are 8 dwelling units per residential acre. This is different from a gross calculation, which calculates the ratio of dwelling units to the total land area. The key difference is that a gross calculation may eliminate neighborhoods where there exists a large proportion of commercial and other uses, which may inadvertently omit neighborhoods with high amenity density. However, as will be detailed later, the cities selected for case study analysis fail to reach these thresholds across the entire jurisdiction—a product of the historic development patterns of each city.

At the city level, there are a number of issues to be considered: planning culture and the degree of public sector activism; community involvement and civic participation; school choice, accessibility, and the fiscal stability of such services; public debt and its impact on the ability to deliver services as well as plan for future interventions; socio-economic histories of place and community, etc. At the neighborhood level, an understanding of how the quality and character of the public realm encourage pedestrian activity is vital to exploring the possible connection between stability and walkability.

A Short History of Place: this is a fact-filled examination of the social, cultural, and economic history of each city and, to the extent possible, its neighborhood structure. Since World War II, a host of issues and events have emerged that have had an impact on the social and physical conditions of urban places. Of particular interest is the experience of each neighborhood in response to urban succession, urban renewal, periods of macro- and micro-economic shocks.

The study of place also examines the history of physical development, diversity of household income and wealth, key local industries, and classification of urban form patterns using contemporary definitions (i.e. organic, traditional gridded, planning-era gridded cities, etc.). In addition, it is be important to identify catalytic events, particularly in terms of major planning interventions, and their perceived impact(s) over time.

Demographic Profile: following an exploration of the history of place, understanding demographic composition are informative. In this analysis, several key data points are examined including: median age, racial diversity, median income, household composition (i.e. size and family structure), children below 18 as a percentage of the total population, tenure and length of stay, mode of transportation to work, poverty rate, and unemployment. These data are calculated using percentages for comparison among the case studies.

Urban Design Analysis: there are three methods that used to document urban design and public realm characteristics of each neighborhood:

- Primary source data collection: there are some scholarly efforts that provide the basis to conduct this analysis. A starting point for this analysis is outlined in *Walk This Way* (Leinberger and Alfonzo, 2012) which incorporates the Irvine-Minnesota Inventory, an urban design physical assessment tool developed in 2006 (Boarnet et al., 2006, Day et al., 2006). Reid Ewing and Susan Handy (2009) have explored this subject and have attempted to “quantify” urban design qualities and characteristics as well. While there are a breadth of potential data points, this analysis is limited to a select number of variables, including: characteristics of the pedestrian environment (sidewalks, street crossings, curb cuts at crossings, accessibility issues, etc.), public realm characteristics (landscaped public spaces, parks, and natural features), residential land uses (diversity of housing stock, consistency in street wall, vacancies and apparent blight), and physical barriers (elevated highways, gated communities, water bodies, roads with 6 or more lanes).

- Morphological analysis: figure-ground studies (see Jacobs, 1993, Rowe and Koetter, 1978) of urban form illustrate connectivity density. These help to define space usage (i.e. the percent of public rights-of-way versus residential area, percent of pedestrian space, etc.) and scale comparisons. In addition, a key contribution for the field is the classification of urban form patterns in terms of its amenities density: “the field”

(amenities spread throughout the neighborhood), “the node” (a central point of focus within the neighborhood), and “the corridor” (a string of nodes connected along a linear street).

The Efficacy of Planning: addressing the secondary question on the efficacy of planning in terms of promoting stability and/or walkability is a significant challenge for this research. A potential outcome is that these case studies may yield additional questions about the efficacy of planning, particularly for neighborhoods that existed prior to the emergence of the city planning profession. Providing closure to these case studies, this research focuses on outcomes that can be operationalized in other neighborhoods and cities, while acknowledging that there are potential unresolved issues where (a) planning has either been largely ineffective in addressing, or (b) planning has missed or has yet to address key opportunities within each of these neighborhoods.

Triangulating the Findings for Each Phase of Analysis

The triangulation of data from both the quantitative and qualitative phases of this research may yield possible lessons for city planning and urban design. To triangulate the data, the analysis in Phases I & II is compared with the qualitative research findings in Phase III to examine several issues contributing to (but not limited to): evidence of urban design and community outcomes (e.g. resident satisfaction and human comfort, sense of place/imageability, and whether there are observable factors contributing to the relative stability and desirability of their local neighborhood. Combining primary source data with a grounded theory research approach, there are three basic inductive questions that are explored:

1. Are there commonalities among stable neighborhoods that appear to reinforce or bolster their economic and/or social outcomes?

2. Are there commonalities among stable neighborhoods that serve as a braking force or limiting factor in achieving greater economic and/or social outcomes?

3. In examining neighborhood stability, are there key differences that are not among each set’s commonalities that either enhance an understanding of the key factors of stability and/or the antithesis of stability?

The study of non-economic factors may help to explain or fill the gaps in this research, particularly

where quantitative and spatial analyses fail to adequately explain housing market dynamics, resident stability and resident tenure. These variables contribute robustness to the research as well as include a set of variables that have not been previously incorporated into similar research.

CHAPTER 5: URBAN STABILITY AT 30,000 FEET

In this section of the dissertation, the primary focus is exploring the nature of urban stability at a coarse-grained level of analysis. Using the census tract as the unit of analysis, this phase uses a panel-data approach (i.e. a longitudinal study for the same observational units over time) in examining the relationship between three dependent variables and a host of independent variables. Of chief concern, as stated throughout the preceding chapters, is whether measures of urban form characteristics have a demonstrable association with urban stability. This research (as well as the following chapter employing a more fine-grained analytic approach) assesses the extent to which such conclusions have the ability to be extended to a study of the durability of value and the stability of communities.

To review the city scoping section in the preceding chapter, this phase of analysis examines the urban stability framework in a sample of 30 cities in the United States. This sample of cities—widely distributed geographically and ranging in both population size, density, and economic vitality—reflects the breadth of cities across the country. As such, this analysis seeks to distinguish itself from contemporary research focusing on a single or selected subset of choice cities by assessing the economic and non-economic stability of cities experiencing either growth or decline. While this phase of the research dovetails with the second phase of fine-grained quantitative analysis, this chapter highlights some of the key data and methods used in both phases.

The structure of this chapter follows a conventional empirical analyses. First, the research questions are proposed in the context of specified hypotheses for the expected outcomes. Second, an in-depth explanation of the data is used to explore these hypotheses, which details both the raw data itself as well as the transformation of this data into a robust product. In the third part, the specific methods are detailed in terms of analyzing the data, which includes as well a comparison of the Walk Score™ with a series of walkability metrics that created to address certain deficiencies of this metric. The fourth section discusses the results of a series of models. For each dependent variable, a sequential approach in building regression analysis models is employed; as such, there are subsections that examine the progression of analysis for each of these dependent variables. A fifth concluding section discusses the outcomes of this analysis and

highlights the key findings that are examined at a finer-grain of detail in the subsequent chapter.

Research Questions and Hypotheses

To review the ideological crux undergirding this research, the principal interest is to investigate why some urban places have rebounded from the collapse of the housing market while others have struggled to regain stability. To an extent, some of the factors associated with such different outcomes are highly localized and regionally-specific. However, this research is interested in whether generalizable findings are revealed that support a broad understanding of the factors most strongly associated with urban stability throughout the United States.

In this first phase of analysis, the focus is on identifying the factors most associated with stability. To review how stability is operationalized, this concept is defined quantitatively as: (1) housing price stability or *modest* (i.e. not rapid) increases; (2) age diversity signaling place satisfaction for a variety of household types; and (3) longer resident length-of-stay using percent of short-term residents as a proxy. The expected association between age diversity and amenity density may be unexpected; simply stated, one might assume that people and households at different life stages and composition types are likely to have different preferences for different sets of amenities. Yet, one might also readily assume that there is some merit in the expectation that all households derive a certain amount of utility from specific types of amenities. This potential relationship, as well as other associations with the dependent variables, are explored later in this chapter.

It is important to note that, while these hypotheses are expected to hold statistically, this coarse-grained approach to quantitative analysis will reveal only partial information about the potential association between stability and other exogenous factors. For this reason—as well as engaging in a thorough, multi-scalar approach to this research question—subsequent chapters will examine this topic using a multi-scalar, mixed-methods approach.

Principal Questions for Coarse-Grained Quantitative Analysis

The first question that for examination is “what are the key factors in tract-level changes in self-reported home values (SRHV) between the 2000 and 2010 United States Census?” To explore this question, the following function relating change in median home values and a series of controls is proposed:

$$\Delta SRHV_{2000-2010} = f\left\{\begin{matrix} amenity\ density, \\ demographics, \\ CB\ distance, \\ density, \\ urban\ form\ characteristics \end{matrix}\right\}$$

In breaking down these components, we can organize this function as composed of several parts.

- Metrics for walkability and amenity density are aggregated to each census tract based on point-level business data for 2000 and 2010;
- Demographics, which includes changes in median household income, educational attainment, poverty, unemployment, etc.; also included in this are a set of submarket characteristics such as vacancy rates and the percentage of owner-occupied housing;
- Urban form characteristics assesses intersection density as a proxy for compactness; and
- "CBD_Distance" and "Density" controls help in isolating the association with these factors as related to spatial and urban form, controlling for multicollinearity as needed.

A second question is "what are the key factors in household turnover 2000-2010?" Specifically, this relies on understanding the percentage of new households in each census tract as a proxy for community stability. That is, areas with a high percentage of new households (i.e. living in the census tract less than 10 years) is an indicator of household turnover; conversely, areas with a low percentage such households reflects some measure of stability in place-based communities. The following function relates the change in resident turnover to a series of controls.

$$\Delta turnover_{2000-2010} = f\left\{\begin{matrix} amenity\ density, \\ \Delta SRHV_{2000-2010}, \\ demographics, \\ Urban\ Form\ Characteristics \\ CBD\ Distance, \\ Density, \\ percent\ unemployment \end{matrix}\right\}$$

Similar to the previous model, this model introduces controls for amenities, disamenities, and fixed local effects. Included in this model are changes in median self-reported home values to examine whether trends in the submarket are associated with household turnover. These factors could be considered a signal of active filtering or potential gentrification, and may therefore have

issues with multicollinearity. It will be interesting to see if one or more of these variables are statistically significant and potentially a robust indicator for resident turnover.

A third question is “what are the key factors related to the change in age diversity between 2000 and 2010?” The model proposed for this dependent variable specifies the same variables as for resident turnover, so on the surface the underlying theory for each model appears to be the same. This is not completely accurate, however, as some measures are controls while others are expected to be more explanatory—the discussion of which will occurring later in this chapter.

$$\Delta age\ diversity_{2000-2010} = f\left\{\begin{array}{c} amenity\ density, \\ \Delta SRHV_{2000-2010}, \\ demographics, \\ Urban\ Form\ Characteristics \\ CBD\ Distance, \\ Density, \\ percent\ unemployment \end{array}\right\}$$

Research Data

The quality of a research project depends not only upon the research question, sound methods, and underlying theory, but it is necessary as well to have access to great data. Some data is obtained through observation; other data is sourced through administrative, institutional, or corporate entities. Both quantitative phases of analysis take a “Big Data” approach to exploring the research questions. While my approach is supported by a sound, theoretical application of findings from previous research initiatives across a breadth of topics, this dissertation expands upon these studies in both scope and scale. The intent is not to validate the findings of previous studies; rather, it is to examine the extent to which these findings are generalizable and portable for a broad range of cities and neighborhoods throughout the United States.

To conduct this research, the United States Census, InfoGroup (business data), the Walk Score™, and the TomTom street network data for North American (available through ESRI) serve as the primary data sources for this analysis. Within these data sets, there are several points worth addressing in terms of their applicability to research of this nature, and what follows in a brief discussion of their use.

Census Data

The key challenges for a longitudinal study of U.S. Census Tract data emerge from two issues.

First, the redistricting of tract boundaries over time presents some difficulty in terms of comparing places across time. However, the US2010 Project (Logan et al., 2012) has created a vital data crosswalk tool that allows for researchers to address this issue for a select set of variables. This phase of the dissertation relies heavily on this publicly-available product, and without it much of the demographic and housing controls used in the regression models would not be possible.

While the US2010 Project details their approach in depth—and readers are encouraged to explore this data as it may be useful in other longitudinal studies—it is useful to summarize the issues that the researchers have been able to resolve. First, there are three basic types of changes in tract geography: (1) "consolidation," or the merging of multiple preexisting tracts into a single tract; (2) "split," where a preexisting tract is separated into multiple tracts contained within the original boundary; and (3) "partial change," where slight modifications to adjacent tract boundaries appear to be minor but may in fact have significant implications in terms of the realignment of contained households. For the 2000 and 2010 tract boundaries, the US2010 Project is aided by the use of TIGER/Line shapefiles, which allows the researchers to aggregate the data up to newly-defined tract levels. In cases where each block is contained within a tract boundary, the nested data is sufficient to populate the adjusted tracts. However, in cases where tract boundary lines cross through a block, the researchers assume that all population characteristics have the same distribution throughout the block. This, they cite, is the main source of error in estimating the characteristics for such areas.

A second challenge is the transition from the Census "long form" to the American Community Survey (ACS). This has created two separate pools of demographic data—the former is static, while the latter is collected on a year-to-year basis. To conduct analysis at the tract level, the 5-year aggregated survey is used to address data suppression at for this unit of analysis. While the dynamic nature of the ACS is less than ideal, it remains the best source of data on population characteristics not included in the decennial census.

InfoGroup and Business Data

A core component of this research is the creation of a new metric for amenity density. The desire to create a metric explaining amenity density depends on identifying the destinations that encourage walking behavior. However, this is not a reexamination of actual walking behavior per se as numerous studies have already researched this successfully (Saelens et al., 2003, Frank et

Table 5.1: Local Amenities by Category for Phase I and Phase II Analysis

Amenity Type	NAICS Code	Business Description
Cultural		
	71110000	Performing Arts and Related Industries
	71210000	Museums and Historical Sites
	81310000	Religious Organizations
	81340000	Civic and Social Organizations
Dining		
	72210000	Full-Service Restaurants
	72220000	Limited-Service Eating Places
	72240000	Drinking Places
Grocery Stores		
	44511000	Supermarkets (>40,000 square feet)
Recreation		
	71120000	Spectator Sports
	71310000	Amusement Parks and Arcades
	71390000	Other Amusement and Recreation Industries
Retail		
	44200000	Furniture and Home Furnishings
	44511000	Convenience Stores
	44520000	Specialty Food Stores
	44600000	Health and Beauty (excl. Pharmacies)
	44800000	Clothing and Accessories
	45100000	Sporting Goods, Hobby, Book, and Music
	45200000	General Merchandise
	45300000	Misc. Merchandise (excl. tobacco shops and adult purchases)
Services		
	44413000	Hardware Stores
	44611000	Pharmacies
	49100000	Post Offices
	49200000	Couriers and Messengers
	52210000	Depository Credit Intermediation
	62440000	Child Day Care Services
	81210000	Personal Care Services
	81230000	Dry-cleaning and Laundry Services
	81291000	Pet Care (excluding Veterinary) Services

al., 2005, Giles-Corti et al., 2005, Ewing et al., 2006, Frank et al., 2006, Lee and Moudon, 2006a, Lee and Moudon, 2006b, Moudon et al., 2006, Forsyth and Southworth, 2008); it is instead a metric that incorporates these findings in support of research that identifies destinations and amenities as proxies for walking opportunities.

The following areas categorized the amenities used in this analysis: local services, retail, dining, recreation, culture, and grocery stores. Each set of categories is derived from InfoGroup business data for 2000 and 2010. To construct a complete set of variables for point-level amenities, several tools (i.e. models) are coded in ArcGIS to generate new shapefiles based on the North American Industry Classification System (NAICS) codes. These codes, listed below in a table, populate separate shapefiles, each of which are merged with tracts within the selected cities. TABLE X identifies the types of amenities used to generate set of independent variables for amenities, and following this table is a brief description of the amenities nested within each amenity type.

Cultural Amenities: cultural institutions may provide economic and non-economic benefits to neighborhoods. Cultural institutions are places of enjoyment but are not typical daily or weekly destinations. However, their iconic nature contributes to imageability and a local sense of place. Often, one finds that these institutions are accompanied by nearby dining and retail, and this research carefully controls for multicollinearity wherever possible.

Dining: local restaurants provide both a destination for residents as well as a “Third Place” destination where people can meet, gather, and socialize (Oldenburg, 1989). These are considered to be a strong component of urban neighborhoods, and clusters of restaurants may contribute to place identity and imageability. The use of this data is limited, however, only to dining establishments that offer sit-down service (i.e. they are not strictly take-out) as well as drinking establishments (i.e. bars but not dance clubs, social clubs, etc.).

Grocery Stores and Retail: researchers (Lee and Moudon, 2006a, Moudon et al., 2006) have shown that grocery stores (specifically supermarkets) are a primary walking destination for residents, and residents will walk further distances than any other category to access these resources. One of the limiting factors, however, is that grocery stores come in a variety of sizes and types, and convenience stores are not a substitute for a supermarket (note: convenience stores are included in the Local-Serving Retail category). To control for this, the selection of grocery stores is limited “supermarkets,” specifically those with large numbers of employees, which is coded separately into the InfoGroup data set.

Retail: research has shown that retail or consumptive shopping trips also one of the primary drivers of walking behavior (Moudon et al., 2006). However, this research does not assume

that all types of retail activities result in an economic or non-economic benefit to homes or communities. That is, to an extent one might assume that there is a benefit to being located near a small clothing shop or place to buy jewelry or small household items, but being located immediately adjacent to a big-box store may be less appealing (i.e. in terms of economic outcomes) or may not provide a suitable social space for residents (i.e. in terms of non-economic outcomes such as social mixing). As such, the selection of businesses is based upon consumption activities that are a mix of convenience-based shopping as well as those businesses that feature “social browsing” (i.e. places of interest where one does not necessarily make a purchase, but one might consider future purchases).

Recreation: places for recreation range from passive activities (i.e. parks and public spaces) to active places of recreation (i.e. sporting fields, recreational trails, etc.). Some types, such as spectator sport venues, are often considered anchor institutions around which new residential development and supporting retail and dining often emerge. This data set includes both recreation types and includes major public parks—each is identified using their polygon’s centroid.

Services: local-serving services may contribute in both economic and non-economic terms to the vitality of neighborhood life. The selection of data is dependent upon the assumption that such uses are commonly desired factors of a neighborhood’s ability to provide basic needs and services for local residents. This research assumes that local hardware stores, laundry services, day care providers, etc. are suitable social spaces where people may interact frequently over time, and may be perceived as having some economic benefit as well.

The spatial analytics used to transform point-level data into a measure of amenity density for each tract is discussed in the following section. It is important to note as well that these same amenity classifications are used by network-based metrics in the subsequent chapter on fine-grained analysis.

Intersection Density

There are several ways in which urban form patterns can be analyzed and deconstructed into metrics. Intersection density, or the number of nodes where streets intersect in the TomTom Navigation dataset, is a good proxy for urban form compactness and connectivity. Specifically, an

area with a large number of intersections indicates that there are a large number of connected streets; in turn, this indicates that there are a larger number of blocks within a square mile, which indicates compactness in terms of urban form.

There are, however, some limitations to the basic tools available through ArcGIS 10. Specifically, “dangling nodes” (i.e. terminal points or dead-end streets) and 2-arc intersections (i.e. where one street meets another at common terminal point) are included in the network analysis toolset. Using a script created by Linda Beale (2012), these limitations were overcome by specifying intersections must have at least 3 arcs or streets that pass through a single intersection. This process provides a much more robust measure of intersection density than the conventional network analyst function of street shapefiles, which invariably overestimates the total number of intersections.

To further enhance the robustness of this metric—particularly with respect to measuring urban form and pedestrian connectivity—two additional steps generate a clean dataset. First, interstate and state highways (which are impassable or difficult to cross by foot or bicycle) are removed from the streets layer prior to analysis. Second, intersections within 50 feet of each other were joined together using the “Summarize” tool in ArcGIS. While this second step might appear to be unnecessary, in urban areas where there are divided thoroughfares or boulevards, the number of potential intersections increases with every median or pedestrian refuge. By using 50 feet as a control, this step avoids “double counting” intersections for divided thoroughfares and boulevards while at the same time counting for smaller block faces (i.e. assuming two back-to-back residential plots are at least 25 feet in depth).

Methods of Analysis

To answer the research questions proposed earlier in this chapter, multiple regression analysis compares the three dependent variables (i.e. percent change in median self-reported home values, percent change in new households, and percent change in age diversity) with a host of population characteristics, economic variables, housing and population density, housing market indicators, and city-level economic variables; the last set of variables establish a baseline for city-level economic vitality and serve as a fixed-effects control among each city. To an extent, this approach emulates a hedonic pricing model, though this approach extends not only in terms of the variables that included in this analysis, but also in terms of the non-economic outcomes used

as dependent variables.

It is pertinent, then, to review what a conventional hedonic pricing model typically entails. This type of model examines internal characteristics for each property, often including information about zoning classification and proximity to some external characteristics. By incorporating GIS-based spatial analysis, this expands the potential for this approach as the data for each unit of analysis (i.e. Census Tracts) can be understood not only in terms of what is contained by the tract itself, but it is informed as well by its spatial relationship with other variables in proximity.

The underlying assumption supporting this approach is that different control variables, when controlled for in each model, enhances an understanding the key variables upon which to focus. In this research, the primarily concern is the potential relationship between the aforementioned dependent variables and various measures of amenity density, including measures of urban form patterns and compactness. These models are best described as “first-difference models,” which seeks to control for observed differences over time using panel data. As such, the indicators used in this analysis are based upon 2000 Census and InfoGroup Data as well as change estimates between 2000 and 2010. The former grounds the indicator in time while the later provides an assessment of the extent to which such change may have an association with the change in the dependent variable. That is, without the former, the model would respond only to the change in the independent variables without having any sort of control for the initial observed value.

There are some benefits and drawbacks to this approach. On the benefits side, introducing a wide variety of demographic controls—all of which are conventional indicators in multiple regression analysis focusing on social and economic outcomes—allows the possibility of concluding that other variables of interest are significant provided that some of the following concerns are acknowledged and addressed. In part, one of the potential drawbacks is that the inclusion of two variables (i.e. baseline and change) for the same indicator, there is some multicollinearity as the latter requires an understanding of the initial position. Controlling for this requires that the models include metrics for variance inflation factor, or VIF scores. A second potential issue is that the model may be interpreted as over-fitting the data. Again, VIF scores are helpful in identifying such variables as is the careful selection of variables to be included in the final model (this point is addressed in the Results section of this chapter as well). In addition, multiple iterations of removing independent variables (i.e. by examining probability scores as

well as standardized beta coefficients) yields models that are lean and robust. Included in the appendices are fully-specified models without removing variables initially envisioned in the research model.

The following reviews the key outcome variables used in these models.

Dependent Variables

- *Dependent variable #1—percent change in Self-Reported Home Value* [d1SRHVpchg] as indicated by the change in home values reported between the 2000 Census Long Form (SF-3) and 2006-2010 5-Year ACS, with the former adjusted for inflation to 2010 U.S. Dollars.

- *Dependent variable #2—percent change in short-term residents* [d2_10yrs_pchg] as indicated by the change in residents living less than 10 years in each tract (2000 Census) and residents having moved to the tract after 2000 (2006-2010 ACS).

- *Dependent variable #3—age diversity* based on the Simpson diversity index using four categories of age composition available through the US2010 Project: under 18 years of age, 18 to 34 years of age, 35 to 64 years of age, and over the age of 64.

Independent Variables for Amenities

Using Census Tracts as the primary unit of analysis for OLS regression models, a majority of the data is readily available. For amenities, however, some spatial analytics were necessary to overcome a very basic fact: not every Census Tract contains, for example, a supermarket or recreational areas. That is, the variable sets representing Tracts without such amenities exhibit strong positive skewness, so much so that data transformations (e.g. recalculating values using a natural logarithmic transformation) are not helpful in resolving such issues.

To address this issue—and to get at the larger issue of amenity density—a two-stage process was employed in ArcGIS. First, the “Euclidean Distance” tool creates a raster that relates the distance between individual cells and points of interest. The resolution of this analysis was very fine-grained, using 25 m^2 cells as the basis for the distance for each amenity type. In plain language, this allows for very large areas (i.e. Census Tracts) to be broken up into very small cells, for which distance to amenities is calculated for each cell. In the second step, the “Zonal

Statistics as a Table" tool allows for each of these cells to be aggregated back to the Tract-level using the mean of all internal raster cells.

- *Cultural amenity density* as measured in terms of a baseline for 2000 [cul2000qtmi] in terms of the cumulative average for each census tract for the Euclidean (i.e. "as the crow flies") distance between each cultural institution and 25 square meter cells, which is based upon a national raster dataset generated by ArcGIS. A second metric [pchgCul] measures the change in the cumulative average between 2000 and 2010. As cultural institutions represent both iconic features of cities as well as centers of civic importance, these variables are expected to have a negative association with each of the dependent variables *as higher values represent greater average distances to such amenities.*

- *Dining amenity density* as measured in terms of a baseline for 2000 [din2000qtmi] and as a change in the cumulative distance [pchgDin] as detailed above for "cultural amenity density." As dining establishments are a potential positive amenity for an urban area, this depends on households having the disposable income necessary to frequent these businesses. As such, these variables are expected to have a negative association, but possibly not statistically significant, with each of the dependent variables *as higher values represent greater average distances to such amenities.*

- *Recreational amenity density* as measured in terms of a baseline for 2000 [rec2000qtmi] and as a change in the cumulative distance [pchgRec] as detailed above for "cultural amenity density." As recreational amenities, both active (i.e. recreational and professional sporting venues) and passive (i.e. public parks, wildlife sanctuaries) are a strong positive amenity for an urban area expect that these variables will have a negative association with each of the dependent variables *as higher values represent greater average distances to such amenities.* In particular, a decrease is expected in the change variable will have a strong, statistically significant, negative association with the dependent variables as the addition of such amenities is not frequent in urban settings.

- *Retail amenity density* as measured in terms of a baseline for 2000 [ret2000qtmi] and as a change in the cumulative distance [pchgRet] as detailed above for "cultural amenity density." As retail establishments promote a vibrant street life, these are expected to be a positive amenity for an urban area; however, this depends on households having the

disposable income necessary to frequent these businesses. As such, the expectation is that these variables will have a negative association, but possibly not statistically significant, with each of the dependent variables *as higher values represent greater average distances to such amenities.* One should note, however, that there are no controls for "quality" of these retail establishments short of the types of businesses that are included. That is, the quality of products offered at these establishments are likely to respond to the surrounding conditions, specifically income and household types, and the variability of quality may confound the association of this data relative to the dependent variables.

- *Local services density* as measured in terms of a baseline for 2000 [ser2000qtmi] and as a change in the cumulative distance [pchgSer] as detailed above for "cultural amenity density." Local services, while potential important for the daily-lived experiences of residents, may not have an explicit relationships with some of the dependent variables. Specifically, these variables are expected to have a negative association with the non-economic dependent variables (i.e. change in short-term residents and change in resident age) *as higher values represent greater average distances to such amenities.* However, there is not an expectation that these amenities will be capitalized into home values such that potential residents may not look to "buy into" an area simply because these services are provided. Simply stated, they may have an impact on non-economic values but not on economic returns to home values.

- *Supermarket density* as measured in terms of a baseline for 2000 [sup2000qtmi] and as a change in the cumulative distance [pchgSup] as detailed above for "cultural amenity density." As the literature review demonstrates, research indicates that supermarkets are an indicator of walking behavior, and some studies using supermarkets as a measure of walkability find correlation between this type of variable and housing prices. As such, these variables are expected to have a negative association with each of the dependent variables (i.e. change in short-term residents and change in resident age) *as higher values represent greater average distances to such amenities.*

- *Walk Score*™ [ws_val] is a proprietary metric developed by FrontSeat and is a conventional metric used by many researchers and real estate services. While several

studies have linked higher Walk Score values to housing price premiums and lower risk of mortgage default, this single-value metric is difficult to unpack in terms of its components as well as in comparing different areas of the same values. Despite these concerns, this research expects similar positive results as previous studies, and that this variable will indicate positive, statistically significant associations with each of the dependent variables. However, one should note that this date is based on 2012 figures (which was available at the time) and the Walk Score is only available back to 2007. As such, it is not a suitable metric for panel or longitudinal studies of this length, and it should be considered as a control measure against which my own measures of amenity density are compared. A second key factor to note is that, at this scale of analysis, the research was able to source data at only the Tract centroid; while this is less than ideal (as the centroid is not directly linked to a central mass of population or physical development), it is a proxy for comparison to previous studies.

Independent Variables for Urban Form

- Distance to the Central Business District (CBD) is an indication of centrality relating each tract to the local municipality's core area. To construct this metric [cdbDistMi], each municipality's town or city hall was used as the origination point, and each tract's Euclidean distance is measured in miles relative to the centroid of each tract. While the expectation is that this variable will have a negative association with the dependent variables (i.e. longer distances to the CBD are less desirable), this has the distinct disadvantage of not accounting for other job centers that may exist within each municipality.

- *Housing density* is measured using the number of dwelling units per acre is represented both by the baseline in 2000 [duAC00] as well as a change variable [pchg_duAC]. The expectation is that there is a positive, statistically significant association with home values. In particular, such a positive relationship will confirm the assumption that the addition of housing units in urban areas is the result of demand pressure for housing, which may be the result of macro-level effects such as city-wide population increases *or* by micro-level effects such as greater quality or quantity of amenities. For non-economic outcomes, however, the expectation is that these variables will have the opposite effect.

For observations where the increase in marginal, one might assume that this is an indication of the conversion of underutilized land. However, in cases where there is a substantial increase in housing unit density, this is likely a result of redevelopment that may result in displacement of existing residents and/or rising dissatisfaction by long-term residents. In such extreme cases, one might readily assume that such changes will be negatively associated with the length-of-stay of households as well as a shift in age composition.

- *Intersection density,* as indicated by the number of intersections per square mile [iDensSqMi], is a conventional metric for measuring the compactness of urban form. That is, more intersections (i.e. of at least two streets) per square mile indicates smaller block sizes and greater accessibility for a variety of transportation modes. While the expectation is that this will have a positive association with each of the dependent variables, one should note also that this research is interested in evidence of human-scale design. As such, highways and vehicular ramps are not included in this analysis; if they were, this might overstate this significance of highway overpasses and interchanges as this calculation in two-dimensions (i.e. read from plan-view via shapefiles) suggests numerous intersections.

Independent Variables for Demographics—Relative to Local Municipality

- *Relative household income and income change*, as measured by 2000 median household income [mIncTh00R, in thousands of dollars] and the percent change in median household income between 2000 and the 2006-2010 ACS [chgMedIncR]. I expect that this variable—specifically, the change in median household income—will have a positive association with home values, but the expectation is the opposite result for non-economic outcomes. That is, with sharp rising income levels, one might expect two issues to be at play: first, homeowner reinvestment (i.e. filtering in place) might result in perceived rising home values; second, this might signal redevelopment, with incoming households occupying new construction (i.e. active filtering). However, for non-economic outcomes, rising incomes might signal the displacement of current residents.

- *Relative racial composition*, as measured by the percent of whites in each census tract in 2000 [pWht00R] and the change in percent composition between 2000 and the 2006-

2010 ACS [chgPWhtR]. Race is a contentious subject when discussed in the context of home values. Historically, when researchers have observed decreasing home values and white populations, the term *white flight* has been used; similarly, when researchers have observed the opposite, one finds suggestions of *gentrification*. Both are pejorative terms, but this research cannot avoid acknowledging their existence and concerns. As such, the expectation is that these variables will have a positive association with home values. However, for age composition outcomes, there is great difficulty in suggesting a hypothesis. Even more difficult is the association with short-term residents, though one might readily assume that significant changes in tract-level racial composition is less likely to be a result of household formation and more likely to be a result of household mobility. Thus, for this dependent variable, one expects that these variables are highly collinear and not appropriate for use in this specific model.

- *Relative educational attainment*, as measured by the percent of adults with at least a bachelor's degrees as of 2000 [pCol00R] and the change between 2000 and the 2006-2010 ACS [chgPColR]. The expectation is that these variables will have a positive association with home values, while a negative association is expected for household length-of-stay and age diversity. In terms of the latter, this presumes that substantial changes in the percent of adults with at least a bachelor's degree is less likely to be the result of adult-level education and more likely to be the result of wholesale changes in households. Thus, while a negative association is expected, it is likely to be highly collinear with both non-economic dependent variables.

- *Relative poverty levels* are measured using the U.S. Census definition of the percent of individuals below the poverty line in 2000 [pPov00R] and the change between 2000 and the 2006-2010 ACS [chgPPovR]. I expect that these have a negative association with home values as higher or increasing poverty levels indicate an area that is either falling out of favor or has suffered a substantial localized negative impact. As these are calculated relative to each municipality, the expectation is that these variables internalize, to a certain extent, macro-level economic conditions. As for the association with the non-economic dependent variables, the potential relationship is unclear. Mostly likely, substantial changes in poverty levels (when calculated relative the city-wide levels) may indicate some *filtering* within the tract. Thus, we might expect that these variables may be

collinear with both non-economic dependent variables.

- *Percent unemployed individuals* as measured as the percent of adults in the labor force that are unemployed in 2000 as well as a change variable for the period between the 2000 Census and the 2006-2010 ACS. The expectation is that these variables will have a negative association with home prices, but they may not be statistically significant as evidence of unemployment is possible an issue of perception based on property upkeep and reinvestment.

Independent Variables for Housing Market Conditions

- *Percent owner-occupied housing units*, as measured by 2000 [pOwn00] and change between 2000 and the 2006-2010 ACS [chgPOwn], are a potentially important factor in terms of both the economic and non-economic outcomes studied in this research. In terms of economic outcomes, the expectation is that higher levels of homeownership at the baseline are positively associated with home values. In terms of the change variable, however, interpreting the coefficient's sign may be difficult. For instance, a positive association may signal a strong housing market where rental owners may have the opportunity to capitalize on rising values; on the other hand, a positive association may also signal weakness in the housing market, as market rental rates may no longer support the debt service and/or maintenance of properties. As such, this coefficient will have to be assessed in the context of other variables. In terms of the non-economic outcomes, a positive association with length-of stay is expected as this could signal stability in the housing market via decreased household turnover; for age composition, however, rising homeownership may signal aging-in-place, resulting in a weak, negative association with this dependent variable.

- *Percent of vacant units*, as measured by 2000 [pVac00] and change between 2000 and the 2006-2010 ACS [chgVac], are also a potentially important factor in this research. In terms of home values, a strong, negative association is expected as this indicates either (1) local disinvestment by residents, (2) lack of upgrading on the part of the municipality relative to other urban areas, or possibly a combination of these two factors. In terms of length-of-stay, these variables are likely to be negatively associated but may be also collinear as this suggests some mobility out of the tract. However, for age composition,

there is likely to be a negative correlation as older householders may be less mobile financially and/or have stronger personal ties to their communities.

Comparing the Walk Score™ to Metrics for Amenity Density

Before discussing the regression results for each of the dependent variables examined during this phase of research, it is pertinent to explore whether there are tangible differences between the Walk Score and this new measure of amenity density. Here, a key question is *do these metrics contribute value to the contemporary discourse on walkability, or do these simply replicate a conventional metric?*

There are some important observations in which the metrics calculated for amenity density in this research differ from Front Seat's Walk Score metric—as well as how one might interpret these metrics as suitable proxies for analysis. As a starting point, the following bullets summarize what the key concerns emanating from the use of the Walk Score, each of which is addressed in the development of the deconstructed metrics for amenity density used in this research:

- Single-value outcomes: the Walk Score provides a single-value outcome that is based upon the distance between a reference point and several categories of amenities. While several studies have noted that has a statistically significant and positive association with housing price premiums, it is difficult to determine whether a single amenity type or combination of amenities are true signals with regard to economic outcomes. *The deconstructed metrics places these amenities into different categories based on their consumptive use.*

- Point of origin: as the Walk Score is a proprietary dataset there is a cost associated with its use. To mitigate costs for research projects where the unit of analysis is a Census Tract, some researchers (including this study) use the Walk Score value for the centroid of each tract. However, a key concern here is whether that centroid value can accurately reflect the condition for an entire census tract. *The deconstructed metrics aggregate these values as an average of the entire census tract based on 25 square meter raster cells that determine the Euclidean distance to the closest amenity within each category.*

- Value weighting and count restrictions: within each amenity type, each additional amenity has a lower weighted value, and there are restrictions as to how many amenities may be

included in the metric. The perceived intent for doing so is to generate higher values for places of centrality while also controlling for density to an extent; however, this makes it difficult to determine whether one type of amenity in close proximity is more or less important than several other amenities located further away. *The deconstructed metrics aggregate values for the entire tract, which reduces the need for this approach to a certain extent.*

- Distance decay: the Walk Score metric uses a distance decay function to weight the value for each amenity included in the analysis. This second weighting scheme increases the difficulty in determining the value of proximity. *The deconstructed metrics do not account for distance decay as based on the presumption that everyday choices are made based upon complex distance decay functions. This assumes that people perceive distance based upon distance alone.*

Table 5.2: Correlations among Various Measures of Walkability and Amenity Density

		cul2010	din2010	rec2010	ret2010	ser2010	sup2010	ws_val
cul2010	Pearson Correlation	1	.825**	.682**	.813**	.827**	.660**	-.612**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	5337	5337	5337	5337	5337	5337	5298
din2010	Pearson Correlation	.825**	1	.723**	.881**	.895**	.719**	-.701**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	5337	5337	5337	5337	5337	5337	5298
rec2010	Pearson Correlation	.682**	.723**	1	.717**	.738**	.648**	-.564**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	5337	5337	5337	5337	5337	5337	5298
ret2010	Pearson Correlation	.813**	.881**	.717**	1	.900**	.721**	-.654**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	5337	5337	5337	5337	5337	5337	5298
ser2010	Pearson Correlation	.827**	.895**	.738**	.900**	1	.716**	-.639**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	5337	5337	5337	5337	5337	5337	5298
sup2010	Pearson Correlation	.660**	.719**	.648**	.721**	.716**	1	-.574**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	5337	5337	5337	5337	5337	5337	5298
ws_val	Pearson Correlation	-.612**	-.701**	-.564**	-.654**	-.639**	-.574**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	5298	5298	5298	5298	5298	5298	5298

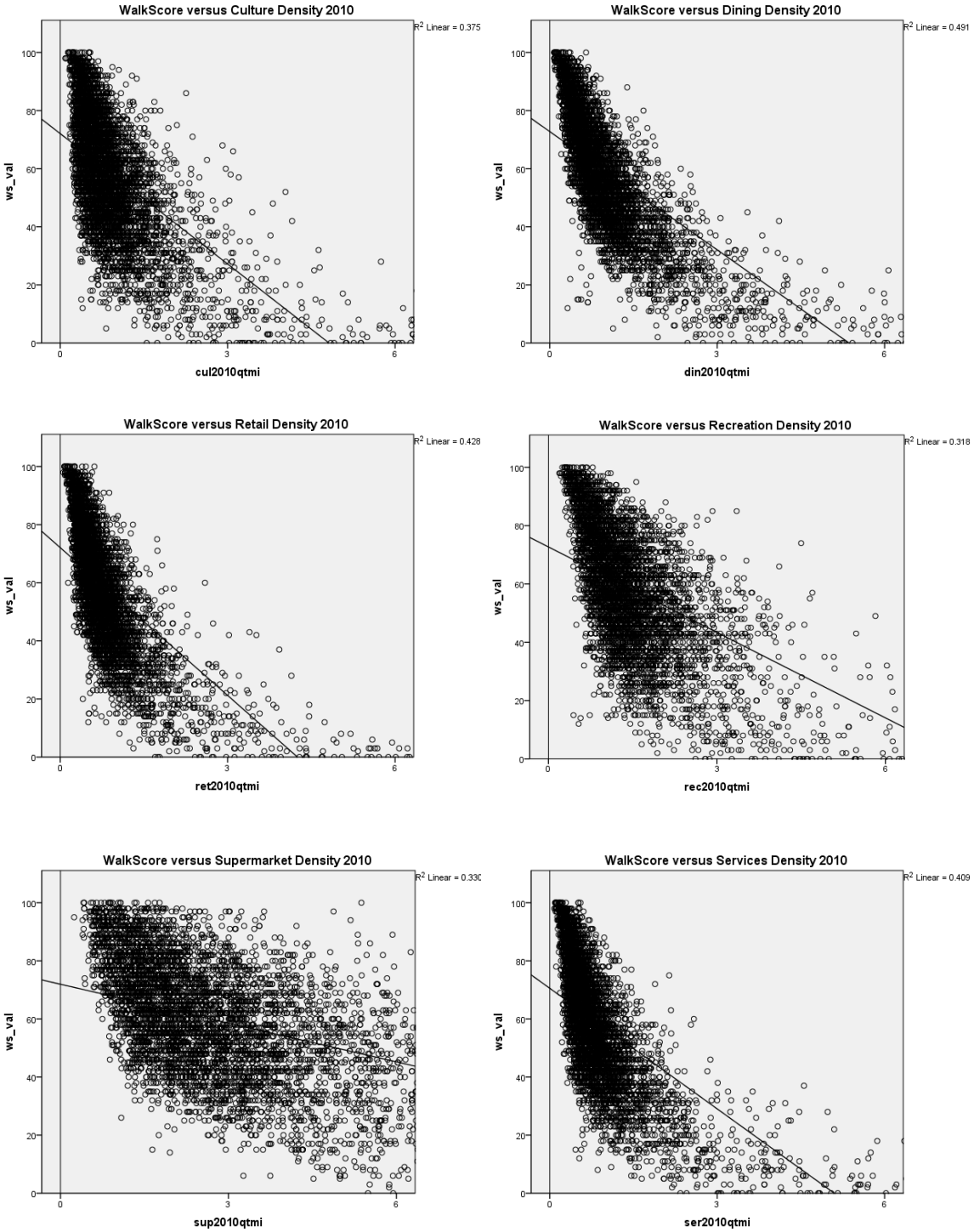
**. Correlation is significant at the 0.01 level (2-tailed).

In the context of these differences between the Walk Score and type-specific amenity density metrics, the following table highlights the correlation among the various metrics.

The correlation matrix (Table 5.2) on the preceding page highlights some key observations about the relationship between the type-specific amenity density metrics and the Walk Score. First, the each type-specific metric is negatively correlated with the Walk Score; as each type-specific metric decreases in value, the Walk Score increases in value. This may be counter-intuitive at first, but each type-specific metric is based upon the mean distance to amenities within Census Tracts at quarter-mile increments. That is, smaller mean distances indicate a “tighter clustering” of amenities within a tract, which the Walk Score would report with higher values. The following comparisons of the Walk Score to the deconstructed metrics using scatterplots illustrate this point particularly well.

The illustrations on the following page (Figure 5.1) illustrate how these type-specific amenity density metrics are a suitable proxy for the Walk Score; however, they do not replicate exactly the Walk Score values. If this were the case, one would expect to see the points aligning perfectly along a negative 45-degree slope. With dining, retail, and services densities the best-fit line approaches a negative 45-degree slope, but this relationship is less pronounced with culture, recreation, and supermarket densities. Taken as a whole the statistically significant correlation among these metrics is persuasive in terms of considering type-specific metrics as a proxy for the Walk Score, and this comes with the additional benefit of using these as independent variables that deconstruct a conventional metric for destination-based walkability.

Figure 5.1: Scatterplots for Amenity Density Metrics vs. Walk Score, Tract-Level



Regression Models

To determine whether the multiple regression analysis supports the underlying theory and research hypotheses requires an understanding of the simultaneity of its reported outcomes. First, the model reports beta coefficients where the signs (i.e. positive or negative) indicate whether there is a positive or negative association with the dependent variables. Second, a "good model" provides the *goodness of fit,* or the R-squared value. Too many independent variables, however, and one should immediately begin to question the extent to which each variable contributes to understanding the relationship between the dependent and independent variables. In simple terms, this research examines whether the model is over-fitting the data (i.e. based on "noise"), or whether we find an accurate depiction of the factors at work (i.e. the "signal")—see (Silver, 2012).

In other terms, with higher R-squared values, the model is doing a "better job" at explaining the relationship between housing prices and local amenities. Further, what this reveals is the model's overall ability to explain the proportion of variation in the model. For instance, with an R-squared value of 0.40 (e.g. the value of the final model), this tells us that the model can account for 40% of the variation in housing prices. The remaining 60% is either unexplained or cannot be attributed to the data presented in the model.

In terms of the development of each model, the primary interests are best explained according to four criteria:

1. Support hypothesis testing such that includes independent variables that act both as controls (i.e. demographic and housing submarket indicators) as well as key variables of interests (i.e. amenity density metrics and intersection density);

2. Examine whether changes in the dependent variables are best explained by initial conditions in 2000 (base model) versus changes between 2000 and 2010 (change models);

3. Include some means of controlling for local context such that demographic control variables are calculated relative to each city's level. That is, each census tract's value is calculated similar to an index based upon the macro-level state of each city;

4. Control for overall economic vitality for each city by including a variable for the change in

median self-reported home values at the city level. This is in part a fixed-effects approach to regression analysis, but this incorporates some means of assessing economic health as opposed to adding a dummy variable for each city.

In addition to these criteria, this research assess the value and robustness of each model with several key points in mind. That is, with a broad range of demographic, housing submarket, amenity, and urban form variables to consider, the construction of a robust regression model relies on two key factors: (1) a strong theoretical argument supporting the inclusion of specific independent variables; and (2) the statistical significance of the independent variables used in the analysis. A third factor strongly considered in the construction of these models was the multicollinearity among the independent variables. That is, each model included tests for serial correlation (i.e. Durbin-Watson statistic) as well as multicollinearity (i.e. VIF scores among explanatory variables), and variables were removed from the analysis that appeared to contribute to either issue.

For the ordinary least squares (OLS) approach, a series of models were created across all cities in the analysis—not individual models for each city. This approach seeks to determine whether the association between the dependent and independent variables are generalizable across the United States for a range of city sizes, economies, and densities. The initial test for model robustness uses an OLS model for demographic, housing submarket, amenity, and urban form variables for the initial year in SPSS 19. With a robust set of core variables, the amenity change variables are then introduced as well as changes in demographic variables—housing submarket change variables are not used as they are likely to be collinear with the dependent variables.

Urban Stability Part I: Change in Median Self-Reported Home Values

The first measure examined for urban stability is the *change in median self-reported home values* by Census Tract between the 2000 Census and 2006-2010 American Community Survey. This represents that reported change in home values for all participating households, aggregated to a median value for each tract. What this excludes, however, are variables for the number of bedrooms, bathrooms, or total square footage at the aggregate level—typical components of a hedonic price model and key variables in Phase 2 Analysis. The expectation, however, is that demographic, housing submarket, and amenity variables are sufficient for explaining the stability of self-reported home values at this scale of analysis.

The initial regression model, the 'base' model, examines the relationship between the dependent variable and the independent variables stipulated in the theory-driven model. To an extent, this approach "over-fits" the model by using each of the variables from the hypothesis. The 'fixed-effects' model refines this base model in two key features: (1) variables controlling for each city (i.e. "dummy variables") that help to account for variability of factors between cities, and (2) independent variables are reduced to the set . That is, the former controls for the variability of economic, demographic, and form characteristics among cities, the independent variables used these regressions can reveal whether these results are generalizable in nature; the latter produces a more robust set of indicators for discussion.

Table 5.3: Base Model for Change in Self-Reported Home Values, 30-City Sample

Dependent: Change in Median Self-Reported Home Values, 2000 Census - 2006-2010 ACS					
N (observations)	5337		R Square	0.215	
Durbin-Watson	1.148				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	177.809	9.244		.000	
Median Home Value, 2000 ($Th)	.152	.010	.241	.000	1.242
Cultural Amenities, Mean Distance (qt Mile)	9.217	2.826	.081	.000	1.333
Recreation, Mean Distance (qt Mile)	-2.870	1.563	-.036	.000	1.340
Retail, Mean Distance (qt Mile)	-14.246	3.636	-.124	.000	1.257
Services, Mean Distance (qt Mile)	7.816	3.106	.085	.000	1.262
Dining, Mean Distance (qt Mile)	5.673	2.777	.065	.000	1.441
Supermarkets, Mean Distance (qt Mile)	-3.839	.710	-.102	.000	1.925
Distance to CBD (Miles)	2.967	.293	.144	.000	2.483
Dwelling Units per Acre, 2000	-.094	.133	-.010	.000	1.053
Change in Dwelling Units per Acre	.055	.012	.058	.016	1.936
Intersection Density per Square Mile	.171	.021	.118	.000	5.393
Relative Median Household Income	-36.612	5.329	-.162	.000	2.109
Relative Percent College Attainment	-252.032	52.286	-.062	.000	2.907
Change in Relative Percent College Attainment	.066	.014	.062	.000	1.116
Relative Percent below Poverty Line	-.213	.033	-.135	.000	3.169
Change in Relative Percent below Poverty Line	-.099	.019	-.067	.004	1.142
Percent White, 2000	-2.837	2.250	-.021	.007	3.172
Change in Percent White, 2000	.011	.007	.020	.000	1.218
Percent Owner Occupied, 2000	-.802	.084	-.174	.000	5.034
Percent Vacant Housing Units	-4.956	.300	-.239	.029	2.582

What should be noted is that the base model (Table 5.3) is not the final model, nor is it the ideal model—as will be explained in detail. However, it is the model that best aligns with the research framework and underlying hypothesis for this dependent variable, and there is value in discussion how the results are from the hypothesis. As the table above illustrates, there are positive and negative features of this base model. On the positive side, the independent variables are all statistically significant. On the negative side, however, the model does a poor job of *explaining* the variability of the data. Before introducing the fixed-effects model, which will control for intercity variability, it is relevant to highlight the initial results. This “first pass” at the data reveals some interesting points to consider.

One important feature of these models is that with some demographic and physical condition factors there are two variables for each factor to establish a first-differences model. For example, for the college attainment variables, there is one that grounds the data in 2000, which allows the change variable to become more relevant. If the first variable were not controlled for, then the change variable would not be grounded at the tract level. In short, the discussion focuses more on the change variable and, while not ignoring the grounding variable completely, it does not treat it as necessarily relevant to assessing the degree of association with the dependent variable. The same can be said for the grounding variable related to the dependent variable (e.g. *median home value, 2000* in this case).

Starting with expected outcomes, each of the change variables, college attainment, percent White, dwelling unit density, and poverty rates had the expected outcomes. For the change in *relative percent college attainment*, tracts within each municipality—readers should recall the discussion of “relative variables”—where the proportion of individuals with at least a college degree is increasing faster than other tracts indicate a statistically significant positive association with median home value stability over the study period. Similarly, places where the *relative change in individuals below the poverty line* is increasing, there is a statistically significant negative association with median home value stability.

The other change variables—percent White and dwelling unit density—are grounded in time but are not measured relative to the city. First, tracts with increasing proportions of White individuals have a statistically significant positive association with median home value stability. What is not clear from this is whether this is an issue of race or of homogeneity (i.e. ethnic enclaves)—

another research topic altogether, but it bears worth noting. Second, one should also expect that tracts with increasing dwelling unit density (i.e. new construction) are clearly signals of local private market interest, whether this is capitalizing on existing price levels or developer activity trying to get ahead of the market.

Another set of variables with are static (i.e. fixed in time) data for submarket and form characteristics. Of the three variables that have expected results, the percent of vacant housing units in 2000 has a greater negative association with median home value stability relative to other variables as observed in the standardized coefficients. Having relatively less weight in terms of the dependent variable, percent owner occupied in 2000 (negatively associated) and intersection density (positive association) are both expected. The former is less clear at first pass, but one might expect that tracts with increasing rates of homeownership in 2010 versus 2000 is a signal of stability, whereas flatter rates might indicate either (1) households holding onto properties or (2) exchange of existing owner occupied units as the only new entrants into the market. What is somewhat unexpected is that tracts located further from the CBD are places with higher median home value stability. One could argue that, perhaps, the compression of cap rates within cities resulted in per square foot values rising at a rate faster than less dense areas.

There are interesting observations about the correlation between amenity density and the change in median self-reported home values. Overall, the standardized coefficients indicate that retail has a relatively stronger association with the dependent variable than the other measures for amenity density, and it the negative sign is expected (see footnote). Also meeting expected results are recreation and supermarket densities. However, that the signs for cultural, services, and dining densities are positive, these are unexpected. What this indicates, at least before controlling for intercity variability, is that one should expect tracts further away from tight clusters of cultural amenities and services as well as shorter distances to supermarkets as having greater home value stability in the context of the collapse of the domestic housing market.

With the fixed-effects model, dummy variables for cities are incorporated to the same set of variables. As mentioned previously, this controls for variability among the cities, and one might argue that this results in more robust indicators as the cities' factors might be considered intervening variables.

Table 5.4: Fixed Effects Models for Change in Self-Reported Home Values, 30-City Sample

Dependent: Change in Median Self-Reported Home Values, 2000 Census - 2006-2010 ACS					
N (observations)	5337		R Square	0.544	
Durbin-Watson	1.508				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	330.635	7.902		.000	
Median Home Value, 2000 ($Th)	-.227	.013	-.360	.000	5.035
Cultural Amenities, Mean Distance (qt Mile)	5.318	1.369	.047	.000	1.651
Distance to CBD (Miles)	-3.225	.301	-.156	.000	2.430
Change in Dwelling Units per Acre	.038	.009	.040	.000	1.069
Intersection Density per Square Mile	.077	.018	.053	.000	1.861
Relative Median Household Income	22.224	4.914	.098	.000	5.379
Relative Percent College Attainment	182.472	67.065	.045	.007	3.157
Change in Relative Percent College Attainment	.078	.011	.074	.000	1.217
Relative Percent below Poverty Line	-.262	.025	-.166	.000	2.866
Change in Relative Percent below Poverty Line	-.084	.014	-.058	.000	1.116
Percent White, 2000	16.283	1.771	.121	.000	1.995
Percent Owner Occupied, 2000	-.494	.074	-.107	.000	2.933
Change in Percent Owner Occupied	.023	.008	.027	.007	1.141

With this fixed-effects model, variables were removed in an iterative manner to produce a lean yet robust set of results. And, while this is clearly a well-fitting model with an r-square of 0.544, it is interesting which independent variables were statistically significant and relevant once steps were made to remove unnecessary data. That is, returning to the discussion of amenity density metrics, one might expect to see retail in the model as it carried the highest relative weight among similar metrics. However, of the amenity density metrics, only culture density is statistically significant, though it is weakly associated with the dependent variable based on its standardized coefficient. Even then it has the opposite sign of what is expected, as a positive sign on the coefficient indicates that higher average distances to culture amenities are associated with greater median home value stability. This reversal is surprising, though it may add weight to an earlier stated hypothesis: that, generally speaking, walkability or amenity density is not a universally shared value. The evidence here, at least at the macro level of Census Tracts, is that generally it is not monetized into self-reported home values.

What is important here is that, by controlling for city variability, the model results are well-fit to the dependent variable data *and*, to an extent, reveal generalizable outcomes at the macro level. What is important as well is that the coefficient signs for each of the independent variables, change and fixed, are consistent with hypothesized outcomes. That is, while the amenity density argument fails to pass muster at this scale of analysis, conventional wisdom hold about

the positive association between home values and density (i.e. change in dwelling units per acre and intersection density), relatively higher within cities levels for household income and college attainment, increasing proportions of owner-occupied housing, higher homogeneity, and decreasing relative levels of poverty.

Urban Stability Part II: Household Turnover Rates

The second outcome variable for urban stability is the *percent change of households living in the unit less than 10 years* by Census Tract. Used as a proxy for measuring household length of stay, this identifies the proportion of households that are new entrants to the market. While the initial hypothesis suggested that both demographic and amenity variables would be statistically

Table 5.5: Base Model for Change in Percent of New Households, 30-City Sample

Dependent: Change in Percent of HH <10 Years, 2000 Census - 2006-2010 ACS					
N (observations)	5277		R Square	0.235	
Durbin-Watson	1.715				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
constant	13.151	2.702		.000	
Percent of HH in Area <10 Years	-47.312	4.364	-.215	.000	2.704
Median Home Value, 2000 ($Th)	.000	.002	.000	.992	1.904
Percent Change in Median Home Values	.741	.521	.019	.155	1.179
Cultural Amenities, Mean Distance (qt Mile)	-.144	.580	-.006	.803	4.136
Recreation, Mean Distance (qt Mile)	-1.837	.319	-.112	.000	2.568
Retail, Mean Distance (qt Mile)	1.656	.758	.069	.029	6.798
Services, Mean Distance (qt Mile)	.489	.634	.026	.441	7.726
Dining, Mean Distance (qt Mile)	-1.006	.573	-.056	.079	7.046
Supermarkets, Mean Distance (qt Mile)	.611	.144	.080	.000	2.422
Distance to CBD (Miles)	-.487	.060	-.116	.000	1.381
Dwelling Units per Acre, 2000	.014	.027	.007	.597	1.319
Change in Dwelling Units per Acre	.043	.002	.223	.000	1.091
Intersection Density per Square Mile	-.015	.004	-.049	.001	1.516
Relative Median Household Income	-4.425	1.093	-.096	.000	3.830
Change in Relative Median Household Income	-.101	.012	-.116	.000	1.378
Relative Percent College Attainment	8.882	10.911	.011	.416	1.200
Change in Relative Percent College Attainment	.035	.003	.166	.000	1.411
Relative Percent below Poverty Line	.001	.007	.003	.895	3.095
Change in Relative Percent below Poverty Line	-.008	.004	-.025	.052	1.173
Percent White, 2000	2.509	.522	.091	.000	2.461
Change in Percent White, 2000	.005	.002	.043	.001	1.216
Percent Unemployed Individuals, 2000	.286	.137	.035	.037	1.936
Change in Percent Unemployed Individuals	-.009	.001	-.103	.000	1.501
Percent Owner Occupied, 2000	-.127	.022	-.136	.000	3.786
Percent Vacant Housing Units	.690	.063	.162	.000	1.487

significant, the models did not indicate this was true for the same set of variables included for the first dependent variable, *change in median self-reported home values*.

As with the previous set of models, the grounding variables (i.e. data for 2000 where a change variable for the same category is also present) are not a vital to understanding the model results. Unlike the previous set of models, however, statistical significance is a factor for consideration in this base model—again, the base model testing the underlying theory and related hypotheses.

Taking into consideration the inconsequential nature of statistically insignificant grounding variables, what remains are four data of interest. Beginning with the most statistically insignificant variable, *dwelling units per acre in 2000*, while the sign of the coefficient is in line with the research hypotheses, it is also unsubstantial in terms of its standardized coefficient (i.e. the relative weight of impact on the model given other factors). Another variable of interest—and related to the health of the housing market as well—is *percent change in median home values*. Again, the sign is in line with what one might expect, that as the percent change rises so does the rate at which new households enter (or are attracted to an area). In the context of the underlying theory of the perception of housing as an asset rather than a good, this would lend support to this argument but only for those who would accept statistical significance around the 85% confidence level.

The remaining data that are not statistically significant are *cultural amenities* (β = -.006) and *services* (β = .026). In terms of the former, beta (i.e. standardized coefficient) is so close to zero as to make it insignificant in the context of other factors. *Services* also has a beta close to zero, but the sign is in line with the hypothesis. That is, greater distances from services are associated with higher rates of new households in an area. If this carried a more substantial weight relative to other factors, there could be an argument that services are a pull factor in a neighborhood, or something that contributes to the staying power of place.

Staying with the remaining amenity density metrics, *recreation* (β = -.112) and *dining* (β = -.056) are inconsistent with the underlying hypotheses that amenities have a perceived value in terms of retaining households. This is curious as it suggests that relative proximity to these places of interest within a tract are associated with higher proportions of new residents. A key question here is whether this represents a push- or pull-factor. If viewed in context of the percent change in median home values, where increasing values are associated with greater turnover, one might

look to areas where this is occurring at the same time as evidence of rising pressure in the local housing market.

Retail (β = .069) and *supermarkets* (β = .080) are interesting for similar reasons. On the one hand, one might argue that these are pull factors as greater proximity among these amenities are associated with lower rates of resident turnover. However, without controlling for city variability, it is unclear whether this is a local phenomenon or a general observation across the sample set. Given that there is much room for interpretation, the discussion should turn to the *fixed-effects* models with reduced variable sets.

Table 5.6: Fixed Effects Model for Change in Percent of New Households, 30-City Sample

Dependent: Change in Percent of HH <10 Years, 2000 Census - 2006-2010 ACS					
N (observations)	5277		R Square	0.287	
Durbin-Watson	1.815				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
(Constant)	4.275	2.204		.052	
Percent of HH in Area <10 Years	-68.745	4.673	-.307	.000	3.201
Median Home Value, 2000 ($Th)	.016	.004	.120	.000	5.409
Percent Change in Median Home Values	2.797	.599	.069	.000	1.605
Recreation, Mean Distance (qt Mile)	-1.262	.311	-.075	.000	2.522
Retail, Mean Distance (qt Mile)	.852	.499	.035	.088	3.036
Supermarkets, Mean Distance (qt Mile)	.435	.142	.056	.002	2.422
Change in Dwelling Units per Acre	.045	.002	.227	.000	1.071
Relative Median Household Income	-5.863	1.259	-.125	.000	5.251
Change in Relative Median Household Income	-.097	.012	-.109	.000	1.322
Relative Percent College Attainment	33.966	17.612	.040	.054	3.225
Change in Relative Percent College Attainment	.036	.003	.165	.000	1.292
Percent White, 2000	2.606	.529	.093	.000	2.609
Percent Unemployed Individuals, 2000	.358	.139	.043	.010	2.052
Change in Percent Unemployed Individuals	-.008	.001	-.090	.000	1.550
Percent Owner Occupied, 2000	-.225	.025	-.235	.000	4.860
Percent Vacant Housing Units	.580	.067	.134	.000	1.749

Turning attention to the *fixed-effects* model with a reduced variable set, there are several notable observations about the results. Perhaps the most salient observation that must be made prior to a discussion of the results is that this model does not fit the data particularly well. Specifically, while the independent variables included in this model are statistically significant, they are able to explain only 29% of the variation in the dependent variable. What this suggests is that the model either (1) fails to fully specify the factors associated with household turnover, or (2) it is difficult to

accurately assess the extent to which households decided to migrate in and out of urban areas. The latter is more likely to be the case, as there exists a host of reasons for households to move (i.e. employment opportunities, change in preferences at different life stages, etc.); however, what follows is a discussion of some motivations for household turnover, albeit a weakly associated set of factors.

At this point, the research takes a more definitive position on push- versus pull-factors. Specifically, the underlying hypotheses state that pull-factors are amenities and positive characteristics in terms of demographics and form characteristics. Beginning with a discussion of amenities, *recreation* (β = -.075) indicates that greater proximity to recreational amenities is associated with lower rates of household turnover. What this suggests, perhaps, is that the motivation for households to remain in areas where there is greater accessibility to recreation outweighs the pressure from new households seeking to enter these areas. Conversely, greater relative proximity to *retail* (β = .035) and *supermarkets* (β = .056) are associated with new residents entering residential submarkets. What is interesting about this is the different mechanisms that contribute to these amenities. That is, the provision of recreational amenities is driven by public sector investment, while retail and supermarkets emerge in the areas where there is sufficient demand such that the private market (i.e. development actors) supply them. In the case of the former, this speaks to the efficacy of planning and fiscal policy. Specifically, one might extend this associative relationship such that public investment in recreational amenities contributes to the staying power of place.

Other variables are of keen interest as well. For instance, *change in relative median household income* (β = -.109) suggest that as areas within a city where households are experiencing economic stability overall are more stable, despite the mobility afforded by increasing disposable income. Along a similar vein, *change in percent unemployed individuals* (β = -.090) indicates lower mobility as this is associated with lower rates of new households entering these submarkets. To the extent that these factors are mutually exclusive is not clear from this model, but the relationship between these two sets of data are key for future consideration in exploring household turnover.

Percent owner occupied housing (β = -.235) is the most heavily weighted independent variable in terms of its association with household turnover. One might readily deduce that places with

higher levels of owner occupied housing not only serve as barriers to entry, but it is also likely the case that higher levels of renting households have a shorter length of stay. This is not necessarily a factor that is a product of planning or policy efficacy, but it is an important control that lends greater robustness to other variables within the model.

What remains are a few variables that are not necessarily robust control measures, but are more likely a product of household turnover. Specifically, *percent change in median home values* (β = .120) is an indication of a healthy real estate market with respect to both owner occupied and rental housing. That is, new residents coming into an area signals demand for housing stock in that area, and perceived values are expected to increase accordingly. Similarly, *percent vacant housing units* (β = .134) provides an opportunity for new residents to enter the market, which can be understood in terms of greater availability of housing stock.

What these models suggest is that it is difficult to explain why households enter and exit urban places simply on the basis of administrative data alone. While the first set of models on change in median home values demonstrate strong explanatory power in terms of economic stability, these models suggest that community stability is not strongly associated with this set of demographic and amenity-based variables.

Urban Stability Part III: Age Diversity

The final outcome variable contributing to the urban stability framework is age diversity as a proxy indicator for urban places satisfying individual preferences such that residents may seek to age in place. The dependent variable, based upon the Simpson Diversity Index, represents the degree to which subpopulation groups are well populated—higher index values reflect greater diversity.

The results of a fully-specified model supporting the underlying hypotheses without controls for city variability fails to generate any meaningful outcomes. That is, an r squared value of 0.107 (i.e. accounting for approximately 11% of the variation within the dependent variable) indicates that a random set of variables not specified in this model might have greater explanatory value. To this end, there is little value in examining the relative weights of independent variables in this model, so the research proceeds to a fixed-effects, reduced variable set approach to explore this further.

Table 5.7: Base Model for Change in Age Diversity, 30-City Sample

Dependent: Change in Simpson Diversity Index for Age, 2000 Census - 2006-2010 ACS					
N (observations)	3243		R Square	0.107	
Durbin-Watson	1.556				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	2.766	1.794		.123	
Age Diversity Index, 2000	.000	.034	.000	.989	1.383
Median Home Value, 2000 ($Th)	.288	1.534	.005	.851	2.978
Percent Change in Median Home Values	-1.207	3.524	-.006	.732	1.199
Percent of HH in Area <10 Years	.000	.000	-.007	.712	1.286
Change in Percent of HH in Area <10 Years	-.005	.008	-.024	.474	4.064
Cultural Amenities, Mean Distance (qt Mile)	.001	.002	.015	.411	1.237
Recreation, Mean Distance (qt Mile)	-.278	.299	-.040	.353	6.501
Retail, Mean Distance (qt Mile)	-.019	.014	-.029	.187	1.684
Services, Mean Distance (qt Mile)	-.003	.002	-.046	.126	3.303
Dining, Mean Distance (qt Mile)	.003	.002	.027	.118	1.108
Supermarkets, Mean Distance (qt Mile)	-.079	.048	-.040	.101	2.184
Distance to CBD (Miles)	.002	.001	.035	.088	1.538
Dwelling Units per Acre, 2000	.426	.219	.061	.051	3.566
Change in Dwelling Units per Acre	-.010	.004	-.047	.020	1.480
Intersection Density per Square Mile	.002	.001	.055	.016	1.914
Relative Median Household Income	-.004	.002	-.054	.012	1.661
Change in Relative Median Household Income	-.055	.021	-.054	.010	1.578
Relative Percent College Attainment	.360	.126	.073	.004	2.374
Change in Relative Percent College Attainment	1.301	.390	.111	.001	3.939
Relative Percent below Poverty Line	-.850	.253	-.162	.001	8.386
Change in Relative Percent below Poverty Line	.935	.244	.186	.000	8.465
Percent White, 2000	-4.107	1.047	-.074	.000	1.264
Change in Percent White, 2000	-.709	.181	-.104	.000	2.547
Percent Unemployed Individuals, 2000	.210	.045	.098	.000	1.601
Change in Percent Unemployed Individuals	.115	.021	.108	.000	1.389
Percent Owner Occupied, 2000	1.250	.199	.117	.000	1.256
Percent Vacant Housing Units	.034	.005	.133	.000	1.305

As is clear from the goodness of fit, or r-square (.149), of this model, there is little demonstrable value to the independent variables in terms of their ability to explain variation within the data. There are a few possible answers as to why this model fails to explain age diversity at the Census Tract level. First, the dependent variable may be a poor proxy for age diversity, which is a probable cause as the data is limited to broadly set age groups. However, this measure is based upon the best data available publicly, so it is difficult to ascertain whether the model would be improved with higher resolution data. Second, the model may be poorly specified to the extent that (1) the dependent variable *is a robust measure of age diversity,* but (2) the underlying hypotheses supporting the selection of independent variables is invalid. Third, and what might

Table 5.8: Fixed Effects Model for Age Diversity, 30-City Sample

Dependent: Change in Simpson Diversity Index for Age, 2000 Census - 2006-2010 ACS					
N (observations)	3243		R Square	0.149	
Durbin-Watson	1.638				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	1.520	1.442		.292	
Age Diversity Index, 2000	-3.875	1.023	-.069	.000	1.261
Median Home Value, 2000 ($Th)	.002	.001	.071	.079	6.141
Percent Change in Median Home Values	1.786	.220	.174	.000	1.719
Change in Percent of HH in Area <10 Years	.033	.005	.131	.000	1.293
Recreation, Mean Distance (qt Mile)	.253	.128	.052	.049	2.581
Services, Mean Distance (qt Mile)	-.669	.232	-.128	.004	7.383
Dining, Mean Distance (qt Mile)	.880	.225	.175	.000	7.504
Supermarkets, Mean Distance (qt Mile)	-.102	.048	-.052	.033	2.224
Distance to CBD (Miles)	.210	.027	.197	.000	2.435
Relative Median Household Income	1.660	.435	.141	.000	5.157
Change in Relative Median Household Income	-.011	.004	-.050	.006	1.200
Relative Percent College Attainment	12.134	5.477	.063	.027	3.025
Percent White, 2000	-.857	.162	-.126	.000	2.143
Percent Unemployed Individuals, 2000	.219	.045	.102	.000	1.676
Change in Percent Unemployed Individuals	-.069	.037	-.040	.058	1.703
Percent Owner Occupied, 2000	-.011	.006	-.049	.081	2.938
Percent Vacant Housing Units	-.086	.023	-.085	.000	1.881

ultimately be the case, is that it is difficult, if not impossible, to assess why some urban places satisfy a wide range of age demographics while others do not.

The failure of this model, especially when compared with the robust nature of the models for change in median home values, lead to an important point of discussion. That is, the use of quantitative data as a means of explaining social outcomes may fail to pass muster for a host of reasons. Perhaps most salient to this research is whether one can quantify deeply personal preferences for an individual's connection to place.

Discussion

The research findings lead to several implications for practice and scholarship. There is some evidence supporting the conclusion that proximity or density of amenities is positively associated with stability in median home values. In terms of cultural amenities, there is a statistically significant negative correlation for proximity; for other types of amenities the statistical significance is insufficient to be included in a model that controls for city variability when using

Census Tracts as the unit of analysis. This is an important finding as it is in conflict with other research findings, particularly those using the Walk Score, which suggest that the proximity to a host of amenities types have positive associations with home values. What is not clear is whether this is the result of measurement error for either the spatial methods used in this research or as found in other metrics. Nor is it clear whether aggregation bias is a potential source of error for single-value metrics. What is clear, however, is that the scholarly debate on the economic benefits of amenities remains unfinished.

As suggested in the discussion of the models for percent change in household length of stay, the inability of the models to demonstrate a strong association among a host of demographic and amenity-based explanatory variables raises some very interesting questions. One should acknowledge that the search for generalizable conclusions about the reasons for households entering and exiting urban places may not be possible with a large unit of analysis. Even when controlling for individual cities—which controls for macro-level effects such as employment shifts, provision of local services, tax rates, etc.—the explanatory value of the model is relatively weak. In turn, either the unit of analysis is too large, or there is a host of other variables not included in this analysis that better signal the reasons for in- and out-migration.

A second interesting point to consider is the lack of statistical significance for amenity-based variables for household length of stay. This is especially true for the fixed-effects models, where none of the amenity variables included were statistically significant. What this implies is that amenities, at least at this scale of analysis, do not contribute to the “staying power” of urban places. While this may be attributed to some sort of measurement error—perhaps some issue concerning quality or choice among amenities—there is a lack of evidence pointing to a connection between amenity density and household length of stay. What this may suggest also is that amenities are not valued equally for all types of households. One of the factors not controlled for here, but will be incorporated into subsequent analysis, is whether household composition (particularly age and household size) is associated with different preference sets for amenities.

As this dissertation work transitions to a finer grain of analysis using both quantitative and qualitative methods, the research will investigate the issues raised in this analysis. What will be interesting to see is whether these findings are consistent at a smaller resolution and scale of analysis. In particular, as the demographic variables included in this research have a strong

influence on the robustness of the analytic models, and it will be interesting to examine the extent to which the preferences expressed by different types of households influence the findings of subsequent analysis. In addition, the introduction of variables that isolate and identify built environment characteristics may add explanatory value to this analysis. As has been suggested by many scholarly research projects looking at the success and stability of urban places, the influence of built environment characteristics and qualities may contribute greater meaning to the discourse and praxis of urbanism in the United States.

CHAPTER 6: THE POTENTIAL DETERMINANTS OF HOUSING PRICES

While the previous chapter examined, in part, the stability of housing prices at a macro-scale—both with respect to the unit of analysis as well as the scale of geographies; this phase brings the research to a finer scale of analysis. What is clear, however, from the results of the quantitative models focusing on non-economic outcome variables (i.e. household length of stay and age diversity) is that there is little evidence to suggest that such outcomes can be assessed from a purely quantitative standpoint. As such, this phase of quantitative analysis focuses on the economics of urban real estate economics. And, as will be detailed through this progression, this phase of research examines the revealed preferences within housing markets to identify in terms of price premiums (1) whether there are consistent robust indicators across target cities and across time periods, and/or (2) whether a shift in preferences has occurred—either as a response to the 2006-2008 collapse of the residential real estate market or an emerging trend in terms of broader societal preferences. In terms of the former, one looks for consistency in the results across each city in both 2000 and 2010; in terms of the latter, one is looking for consistency in whether there are changes in the 2010 models for indicators that were not present in 2000 or had a change in association with housing prices.

On the surface, this may appear to be a digression from the stability framework serving as the genesis of this research. However, this approach could be more accurately described as a deep dive into residential transaction data, business type and location data, and external characteristics of housing submarkets related to key indicators for demographics, domestic economics, urban analytics, and vitality of the local real estate market. The overarching goal for this phase of analysis, then, focuses more on homebuyers' decision making factors present in the target cities, and whether there is evidence to support consistency or change between 2000 and 2010. Further, what will emerge from the discussion of the results are key points of interest as they relate to potential policy implications. That is, this phase will identify and discuss potential areas in which urban planners, economic development actors, and policy makers can have an impact on the health of urban residential real estate markets.

This chapter is structured in a sequential approach designed to explore the determinants of housing prices in four cities: Atlanta, Georgia; Philadelphia, Pennsylvania; Salt Lake City, Utah;

and San Francisco, California. The reason for selecting these four cities from the initial sample set of 30 U.S. cities is based largely upon their identity and experience following the 2006-2008 collapse of the residential real estate market. The underlying premise is that these four cities not only are geographically separate, but they embody a different set of experiences.

The following is a brief summary of their characteristics and motivations for analysis within this phase:

Atlanta, Georgia: Atlanta can be characterized as largely auto-dependent despite having a well-established urban core. While the urban core serves as a strong grounding mechanism for development surrounding the city, there is clear evidence that a “favored quarter” exists within its jurisdictional boundaries. In terms of its experience in the housing collapse, there is evidence that the local economy experienced a “double dip” recession because as the initial collapse of housing prices occurred, there was a substantial amount of product in the real estate pipeline. The result was the market was flooded with additional supply well before prices had stabilized, and this oversupply of housing stock placed downward pressures on prices. Understanding that it may take a long time to return to real estate market fundamentals in Atlanta, what is of key interest is whether there was a response in the revealed preferences of homebuyers in 2010.

Philadelphia, Pennsylvania: the City of Philadelphia experienced a prolonged economic decline over the last few decades of the 20th Century. Whereas there had existed previously a strong manufacturing industry, domestic and global competition brought substantial economic hardship to the city and its residents. In turn, over several decades there was a steady erosion of the population base while many of the surrounding counties flourished. However, Philadelphia has arguably entered a period of urban renaissance, bolstered by key industries in higher education and health care. Recent Census measures and ACS estimates have shown that the population has increased in recent years, which provide a foundation upon which to grow the domestic economy. While Philadelphia did not experience a complete collapse of its economy in the context of other cities such as Detroit, Michigan, it is of interest to examine how the urban real estate market fared between 2000 and 2010. Of particular interest is 2010 with its increasing population and growing economic stability.

Salt Lake City, Utah: Salt Lake City is an interesting metropolitan area to examine in the context of its urban real estate market. The city is the central seat of Salt Lake County, which is the

largest of the counties contained within the Wasatch Front, which stretches nearly 80 miles from North to South and is tightly constrained by topography from East to West. The development of this region can be best characterized as suburban in form with several smaller cities located to the North and South of Salt Lake City. The entire region is heavily auto-oriented, which is reinforced further by its large block size—a common comparison is to Portland grid, where nearly nice Portland blocks can fit in a single Salt Lake City block. Of key interest here is whether a network-based measure of amenity accessibility is a factor in housing choice, or whether homebuyers within the market act upon different indicators for choice.

San Francisco: one of the most interesting things about the development form of San Francisco is that it is almost entirely land constrained by surrounding bodies of water. Mark Twain is often credited with the phrase, “buy land, they’re not making it anymore,” and this is very relatable to the nature of development within this city notwithstanding the recent development of Mission Bay in eastern San Francisco. Combining this characteristic with high salary industries such as commercial banking, software development, and internet technologies within the region, there is substantial pressure on land and home values within this region. What will be interesting to see is the extent to which external characteristics, by ways of amenities or demographics, play any role in housing price determinants.

With an understanding of the motivations and focal points for research within these cities, it bears relevance to detail the structure of this chapter and its progression toward generating a fruitful discussion of the research. First, the overarching research questions are defined in the context of specific hypotheses for expected outcomes of the analysis. Second, a brief discussion of the data used in exploring these questions is coupled with the methodological approach to their use—to separate these two areas would miss a key opportunity to discuss the cutting-edge spatial analytics incorporated in this research. The third section examines in depth each of the regression models used in this analysis, with separate models created for each city and each year, and provides some preliminary discussions in the context for the results of each model. A fourth concluding section discusses the results of the analysis from a more broader perspective; specifically, is there evidence suggesting that there is consistency across markets and across time periods in terms of the decisions of individuals and households in the real estate market.

Research Questions and Hypotheses

In the context of the urban stability framework underpinning this research, this phase of analysis provides key linkages between a macro-level analysis of urban stability across a wide variety of cities and a micro-level exploration of local submarkets within the target cities. This seeks to create a bridge between the two using a quantitative method at an extremely fine grain of analysis; specifically, the unit of analysis for this phase is individual housing transactions.

In the first phase of analysis, the results indicated that the economic-side of urban stability (i.e. change in median home values at the Census Tract level) could be explained through a variety of demographic, urban form characteristics, local housing market factors, and amenity data sets. On the other hand, non-economic outcomes for household turnover and age diversity could not be explained to a large extent by quantitative analysis of administrative data at the tract level. To put it simply, this research is unable to provide much insight as to the influential factors related to non-economic outcomes from a "30,000 foot perspective." In light of the strengths and weaknesses of the previous phase, the focus of this phase shifts to an understanding of urban economics, particularly with respect to the factors most clearly associated with housing prices.

What is clear from the analysis of the change in median home values is that metro-level conditions—those conditions being controlled for through a fixed-effects approach—were important with regard to delivering results capable of explaining a significant portion of the variation in median home values. The data on home values, however, is severely constrained in its ability to drill down into differences, not only in terms of its construction as a median value for each tract, but also for internal characteristics such as number of bedrooms and bathrooms, livable square feet, and the age of construction. That is, the results speak only generally to conditions on the ground. In this regard, it is noteworthy to examine this at the individual housing unit level to explore whether preferences for choice can be determined within a single city, and, most importantly, whether there is consistency across these cities over time.

Principal Question for Fine-Grained Quantitative Analysis

While this phase of the research dovetails with the first phase of coarse-grained quantitative analysis, this chapter examines whether housing prices are explained by a host of different variable sets. The principle interest here is whether there are statistically significant factors beyond internal characteristics that have explanatory value for housing prices within each of the

four cities. The main question for examination is “what are the key factors in housing markets that can explain variation in housing prices?”

To construct a general set of hypotheses, the first phase of coarse-grained analysis should inform the basis for developing this set. That is, to ignore the results of the previous phase would suggest that it was not useful or unnecessary. Referring back to the fixed-effects model for change in median home values, several demographic indicators (i.e. relating to individuals below the poverty line, racial homogeneity, median household income, and college attainment) are present and follow conventional wisdom in terms of the positive and negative association with value. A secondary set of variables related to urban form (i.e. distance to the CBD and intersection density) are also significant. Amenities, however, are not presented in the model save for cultural amenity density, and for that greater average distances are positively associated with median home values. While these are informative in terms of developing a baseline of expectations, a key question for a finer-grained analysis is whether (1) these indicators will remain statistically significant and have the same positive or negative association with housing prices, or (2) will an analysis at the individual unit scale using metrics defined at a higher resolution result in a change for some or all of these metrics? Of particular interest, as is stated earlier, is whether there is consistency across cities and time periods, or are there observable differences?

Data and Data Construction Methods

Within the field of quantitative analysis, regression analysis is heavily dependent not only on the quality of data (i.e. accuracy) but also on the consistency of the data (i.e. largely free of errors). A common term within the field is the old adage, “garbage in, garbage out,” which applies to a host of computer driven processes. For this phase of the research, one should readily acknowledge that the data analyzed here represents the best data for given time periods. Or, to put undue pressure on the research itself, if the results are poor, it is likely the case that the research design is poor.

Turning first to the construction of a dependent variable, the CoreLogic data represents, without much doubt, the best data available for home sales data in the United States. CoreLogic sources directly from tax records, providing a complete breakdown of individual properties to the extent that tax jurisdiction records the data properly. For this phase of analysis, the fields used from tax

records are quite simple as the intent is to glean price and basic internal characteristics: sales price (adjusted to $2010 in thousands), date of sale, livable square feet, date of construction, number of bedrooms, and number of bathrooms. Other data of interest included the number and provision of parking spaces, view or locational amenities reported in tax documents, land value, and acres; however, as the data spanned multiple jurisdictions, the documentation of this data was inconsistent and deemed unsuitable for this analysis.

This is not to suggest, however, that the raw data is perfect; in this regard, a second adage is useful: “trust, but verify.” A careful examination of the raw data reveals some key areas for which some observations were not suitable for analysis. In terms of basic causes for removal (i.e. scrubbing the data), some fields had missing values or other data entry errors such as in longitude and latitude coordinates, internal characteristics with no reported values, or internal characteristics where there were clear data entry issues (e.g. multiple instances of 45 bedrooms in a single-family detached home). Some more serious accuracy concerns came in the price fields, where there appeared to be a point in some cities where sales prices were capped over a certain value. Identifying the thresholds for these capped values is achieved by looking at a histogram, which helps to define where such caps exist. Overall, however, well over 95% of the data was suitable despite these concerns.

With the housing transaction data coded by latitude and longitude to six decimal places, the degrees of accuracy and precision are quite incredible. Geocoding these data in ESRI ArcGIS is a relatively simple process provide one knows what one is doing, and an accurate set of geocoded sales transactions allows for the construction of very interesting spatial relationships. Next is a revisit of the data used in the previous phase of analysis with updated expectations for each variable, and following this is a discussion of the network-based calculations for “reach metrics.”

Independent Variables for Internal Characteristics

- *Total square feet* is the livable space for each housing unit reported in the CoreLogic data. With certainty, this will be positively associated with housing prices. Rather than include this directly into the dependent variable (i.e. price per square foot), the analysis incorporates this as a means of controlling variability both among housing types as well as different cities.

- *Number of bedrooms* is the total number of bedrooms reported to the tax assessor's office in each jurisdiction. The expectation is that this will be negatively associated with housing price as a linear regression model is used; that is, expecting there are diminishing marginal returns for bedrooms, there is likely a threshold after which bedrooms have a negative association with price, all other things being equal.

- *Number of bathrooms* is the total calculated number of bathrooms reported to the tax assessor office in each jurisdiction. While some jurisdictions have greater accuracy as to full, three-quarter, and half-bathrooms, there were clear inconsistencies in the reporting of this data across cities. The expectation is that larger number of bathrooms are rare and found at higher price points, and as a result will be a strong, positive indicator for price.

- *Year of construction* is the original date of construction as reported to the tax assessor office in each jurisdiction. The expectation is that this will be positively associated with price as newer construction will command market rates while the price of older construction will have several intervening variables such as quality and condition, location, and scarcity within the market.

Independent Variables for Urban Form

- *Housing density* is measured using the number of dwelling units per acre is represented both by the baseline in 2000 as well as a change variable. The expectation is that there is a positive, statistically significant association with home prices such that additional development is a proxy for housing demand in a particular area. In particular, such a positive relationship will confirm the assumption that the addition of housing units in urban areas is the result of demand pressure for housing, which may be the result of macro-level effects such as city-wide population increases or by micro-level effects such as greater quality or quantity of amenities. However, in cases where there is a substantial increase in housing unit density, this is likely a result of redevelopment that may result in displacement of existing residents and/or rising dissatisfaction by long-term residents.

- *Distance to CBD (central business district)* is an indication of centrality relating each tract to the local municipality's core area. To construct this metric, each municipality's town or city hall was used as the origination point, and each tract's Euclidean distance

is measured in miles relative to the centroid of each tract. Within the housing sales data, each point is related to this centroid to provide an understanding of the centrality of the local submarket. That is, to construct a network-based metric for distance presumes that the CBD is the destination for every homeowner, rather than simply providing a sense of proximity to the downtown. The expectation is that this variable will have a negative association with housing price such that longer distances to the CBD are less desirable.

- *Intersection density per square mile* is a conventional metric for measuring the compactness of urban form. The expectation is that this will have a positive association with each of the dependent variables, one should note also that this research is interested in evidence of human-scale design. As such, highways and vehicular ramps are not included in this analysis; if they were, this might overstate this significance of highway overpasses and interchanges as this calculation in two-dimensions (i.e. read from plan-view via shapefiles) suggests numerous intersections.

Independent Variables for Demographics—Relative to Local Municipality

- *Relative household income and income change*, as measured by 2000 median household income (adjusted to $2010 in thousands) and the percent change in median household income between 2000 and the 2006-2010 ACS. This variable—specifically, the change in median household income—is expected to have a positive association with home price.

- *Relative racial composition*, as measured by the percent of whites in each census tract in 2000 and the change in percent composition between 2000 and the 2006-2010 ACS. The expectation is that these variables will have a positive association with home prices.

- *Relative educational attainment*, as measured by the percent of adults with at least a bachelor's degrees as of 2000 and the change between 2000 and the 2006-2010 ACS. The expectation is that these variables will have a positive association with home prices.

- *Relative poverty levels* are measured using the U.S. Census definition of the percent of individuals below the poverty line in 2000 and the change between 2000 and the 2006-2010 ACS. I expect that these have a negative association with home prices as higher or increasing poverty levels indicate an area that is either falling out of favor or has suffered a substantial localized negative impact. As these are calculated relative to each

municipality, the expectation is that these variables internalize, to a certain extent, macro-level economic conditions.

- *Percent unemployed individuals* as measured as the percent of adults in the labor force that are unemployed in 2000 as well as a change variable for the period between the 2000 Census and the 2006-2010 ACS. The expectation is that these variables will have a negative association with home prices, but they may not be statistically significant as evidence of unemployment is possible an issue of perception based on property upkeep and reinvestment.

Independent Variables for Housing Market Conditions

- *Percent owner-occupied housing units,* as measured by 2000 and change between 2000 and the 2006-2010 ACS, are a potentially important factor in terms of home prices. Based on the first phase results, the expectation is that higher levels of homeownership at the baseline are negatively associated with home prices. In terms of the change variable, however, rising homeownership rates are expected to be positively associated with housing prices as these data are an indication of neighborhood change.

- *Percent of vacant units,* as measured by 2000 and change between 2000 and the 2006-2010 ACS, are also a potentially important factor in this research. In terms of home prices, a strong, negative association is expected as this indicates either (1) local disinvestment by residents, (2) lack of upgrading on the part of the municipality relative to other urban areas, or possibly a combination of these two factors.

Independent Variables for Amenity Reach Metrics

With residential transactions available at the point level, there is considerable value to relate spatially independent variables of interest to these individual points. To this end, there are some options via the standard ESRI ArcGIS toolbox, most of which are based upon an *as the crow flies* approach, or Euclidean distance in more geometric terms. The most basic of these options is using a “nearest neighbor” operation, which relates a reference point (individual sales) to a target point (amenities) on a one-to-one basis. While this provides information on the closest target point, it does not yield information about a collection of target points within a given area. The next best option is to employ a “buffer analysis” approach, where a circular buffer defined by its radius

can capture the number of target points of interest within this defined field. Such areal density metrics (i.e. number of target points per square mile) cannot capture the effects of physical barriers or gaps within a spatial network, nor can it account for the differences between a fine-grained or coarse-grained street grid. While areal metrics are perfectly suitable, an alternative measure that addresses the potential deficiencies of areal measures represents a key opportunity for this research.

The City Form Lab at the Singapore University of Technology & Design, in collaboration with the MIT School of Architecture & Planning, developed a set of open source software tools called the Urban Network Analysis ("UNA") toolbox that integrate with ESRI ArcGIS. Relying upon the network analysis extension within ArcGIS, the UNA is capable of measuring accessibility and centrality of features within spatial networks, which is particularly useful in the context of this research. Specifically, this allows for the construction of *reach metrics* that relate a reference point to a set of target points along a spatial network. Reach, as implied by the name, captures the number of target points along the network according to a distance specified by the user—in this research, 800 meters is used to limit the search distance to roughly a 10 minute walk.

It is important to note that innovative approaches to solving any particular question has their own potential limitations. That is, the early applications of such innovations are designed to do one or few things particularly well, but often there are users who look to adapt these tools for an altogether different purpose than was initially conceived. To a certain extent, this research is one such example. What follows is a somewhat esoteric discussion of the steps used to create these metrics, but the intent is to create value for other researchers who may wish to incorporate this approach in their own research.

One must understand the required inputs necessary for the UNA toolbox to successfully compute these reach metrics. First, a *network dataset* is the foundation upon which all calculations are measured, which in this case requires an accurate street network dataset (as stated in the previous chapter, the TomTom navigation dataset is the source for North American street networks). Second, the UNA toolbox is limited to a single shapefile of features, which is actually quite different from many operations in ArcGIS where one can relate one dataset to another dataset. Overcoming this limitation is not an easy task, as ArcGIS has its own limitations in terms of the size and number of fields that can be merged to form a single shapefile. However, by

reducing each dataset of interest to a few key identifiers (which can be related back to a master dataset later), users of the UNA toolbox can capitalize on an important feature that assigns relative weights to each point within the dataset. In this reach context, the UNA can weigh points based on a target field and create an output measure based upon these weights. As an example, if there are two buildings within a specified network distance, one with 10 people and the other with 20 people, if the number of people are identified as the weight field then the output is *the total number of people* within the spatial network, or 30 people total.

This is where things get interesting in terms of this analysis. In combining residential sales with an altogether different set of amenities, a single feature set would appear to be unable to differentiate between homes, businesses, parks, or recreational areas. However, by assigning each different type of interest point with a binary indicator (e.g. “1” for a building and “0” for not a building), one can use the weight feature of the UNA to search for only those points that have the target weight. In essence, one is asking the tool, “take every point within the dataset and calculate the reach within the given spatial network to only those points for which there is a “1” coded in the target field.” For instance, if retail is the target, every point (i.e. buildings, businesses, parks, and recreation areas) within the dataset will calculate the reach metric only in relation to retail points. From there, one can “back out” of the data the points of interest. In this example, residential sales were pulled out of the data where the output generated only the accessibility to retail points. While this is a time-consuming process in terms of repeated computations (i.e. each city required a separate operation for each amenity point of interest), this is the most accurate representation of destination-oriented walkability possible—especially given that topography was incorporated into the network dataset.

With this explanation of the methods used to calculate reach metrics for different amenities in hand, the following is a brief discussion of each data type and its expected relationship with the dependent variable:

- *Cultural amenities within a 10 minute walk* is number of cultural points that can be reached within 800 meters along the street network from each observed housing sale. As cultural institutions represent both iconic features of cities as well as centers of civic importance, the first phase hypothesis expected a positive association between amenity density and home values; however, based on the results of the first phase, the

expectation for this scale of analysis is that greater numbers of cultural institutions will be negatively associated with sales price.

- *Dining within a 10 minute walk* and *recreation within a 10 minute walk* are both expected to have a positive association with housing values as the former is based on service establishments (i.e. not fast food) while the latter is a public amenity for which few new parks are typically added in any given year, implying potential scarcity within the market.

- *Retail within a 10 minute walk* is expected to have a negative association, but possibly not statistically significant, with housing prices. As noted in the previous chapter, there are no controls for "quality" of these retail establishments short of the types of businesses that are included. That is, the quality of products offered at these establishments are likely to respond to the surrounding conditions, specifically income and household types, and the variability of quality may confound the association of this data relative to the dependent variables.

- *Local services within a 10 minute walk*, while potentially important for the daily-lived experiences of residents, may not necessarily be capitalized into home prices. If this indicator is statistically significant, it is expected to have a negative association with price.

- *Supermarkets within a 10 minute walk* is expected to have a negative association with housing prices due to the form characteristics of big box stores, their associated parking lots, and their complimentary uses. While the literature review demonstrates that previous research indicates that supermarkets are an indicator of walking behavior with some studies using supermarkets as a measure of walkability find correlation with housing prices, the opposite is expected to be true with this research.

Regression Models

The models presented in this section examine the relationship between inflation-adjusted housing sales for 2000 and 2010 in four cities: Atlanta, Georgia; Philadelphia, Pennsylvania; Salt Lake City, Utah; and San Francisco, California. Having conducted hypothesis-testing at the Census Tract level in the previous chapter, this phase of analysis focuses primarily on identifying the robust correlations between housing prices, proximity of amenities, and tract-level characteristics for demographics, housing submarket conditions, and urban form factors. Using a stepwise

regression approach, the models seek to achieve two principle goals: (1) generate a model for each year and each city that reports a lean set of explanatory factors, and (2) identify the most robust indicators using standardized coefficients. In terms of the latter, focusing on the standardized coefficients identifies those factors with the largest relative weight in terms of their association with the dependent variable. This contributes to a greater understanding of the consumptive preferences exhibited by individuals and households in the real estate market. That is, the results indicate what the primary motivations are in terms of housing choice within each city—provided that the models themselves demonstrate high degrees of explanatory value.

At first glance, this may appear to be a departure from the stability narrative that serves as the basis for this dissertation. This should be understood, instead, as a means for obtaining a stronger understanding of the motivational factors within each city's housing market. As was demonstrated in the previous chapter's models on the change in median home values, the fixed-effects approach revealed that controlling for intercity differences had a significant effect on the robustness of the regression models. In simple terms, metropolitan factors play a large role in these models. To explore this in greater detail, this phase of analysis reflects a deep dive into the activities within each market using high resolution data for both housing transactions and type-specific amenities. What this intends to reveal, in turn, is whether the proximity to such amenities has explanatory value in the context of external characteristics such as demographics, housing submarket conditions, and urban form factors.

Atlanta, Georgia (2000)

The Atlanta metropolitan region represents an interesting starting point for this examination. One could characterize Atlanta as having a strong urban job center with many cultural amenities, but a significant proportion of the population lives in areas that are suburban in form character (i.e. low housing densities without a strong gridded network of streets). Outside of the metropolitan core, one's access is greatly enhanced by automobile or transit, and few would call the exurban area *walkable*. What follows is an assessment of whether there is evidence to support these characterizations in terms of revealed preferences within the housing market.

Turning first to the 2000 model, one should note that these results indicate a very strong fit, explaining 61 percent of the variation in housing sales. In addition, the model yields a lean set of robust indicators. This discussion will assess the degree to which these perform in explaining

Table 6.1: OLS Regression (Stepwise) for Atlanta Home Sales, 2000

Dependent: CoreLogic Residential Transactions, 2000					
N (observations)	3039		R Square	0.614	
Durbin-Watson	0.941				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	1166.981	318.024		.000	
Total Square Feet	.157	.007	.522	.000	3.659
Number of Bedrooms	-21.832	5.868	-.069	.000	2.645
Numebr of Bathrooms	55.900	6.774	.188	.000	4.017
Year of Construction	-.733	.162	-.057	.000	1.260
Dwelling Units per Acre, 2000	3.083	1.362	.036	.024	1.956
Relative Median Household Income	72.408	12.532	.148	.000	5.126
Relative Percent below Poverty Line	.565	.127	.089	.000	3.102
Percent White, 2000	69.472	7.291	.229	.000	4.503

the variation in the data by focusing on the standardized coefficients as a means of differentiating among their relative impacts.

Among the variables that did enter the model, *total square feet* (β = .52) has the largest relative weight and is positively associated with housing prices. In the context of other variables that enter into the model, square feet brings a higher premium than demographic factors such as *relative median household income* (β = .15), *percent White* (β = .23), and *relative percent below the poverty line* (β = .09). This suggests that actors within the market place a higher premium on the total size of the home rather than some of surrounding characteristics of the neighborhood or submarket. Looking at this from the perspective of its units, one could state that for every additional 100 square feet of livable space, home sales prices would expect to increase approximately $16,000 keeping other factors constant. This falls in line with the pejorative *McMansionization* perception of the Atlanta housing market, especially considering that indicators for intersection density or distance to the central business district did not enter the model as they were not statistically significant.

The second strongest indicator is *percent White* (β = .23), which suggests that racial composition, either in terms of racial homogeneity or, perhaps unfortunately, “more white” areas are desirable to buyers. In terms of the latter, this is consistent with the perception that Atlanta has a pronounced “favored quarter” as relative median household income is positively associated as well. This could be explained by college attainment as well, however, the relative college attainment variable, while statistically significant, was highly collinear with the percent White

variable and was removed from the analysis.

Another indicator close in relative weight to percent White is *number of bathrooms* (β = .19), and as it is not highly collinear with either total square feet or *number of bedrooms* (β = -.07) this appears to be a robust indicator for prices. One might come to understand this as a key factor in the residential real estate market to the extent that each additional bathroom commands a $56,000 premium keeping other factors constant. Conversely, number of bedrooms are negatively associated with price. To gauge this effect properly, one might expect that this is evidence of decreasing marginal utility for bedrooms to the extent that some housing units with a large number of bedrooms are not commanding the price premiums expected by developers. To the extent that this is true reinforces the notion that market fundamentals were not followed such that homebuyers did not equate extra bedrooms to proportionately greater value.

There are as well some interesting results related to the character of place within Atlanta. Specifically, *year of construction* (β = -.06) suggests that newly constructed housing units are negatively associated with housing prices. The converse of this is that older homes, likely found in older established neighborhoods, commanded a higher price than comparable housing units in other areas. In addition, *dwelling units per acre* (β = .04) indicates a premium for density. However, to the extent that this is a revealed preference for urban living is not supported as distance to the central business district is not statistically significant.

Atlanta, Georgia (2010)

Turning next to the 2010 model for Atlanta, this is where there is potential evidence of a response to the collapse of the housing market. With the model explaining 54 percent of the variation within housing prices, again one finds that *total square feet* (β = .39), *percent White* (β = .29), *number of bedrooms* (β = .21), and *relative median household income* (β = .23) have relatively high weights in the context of other variables—this is consistent with the 2000 model.

There are, however, new factors in this model that are of interest. First, *distance to CBD* (β = -.07) enters the model, and reveals a new preference for proximity to the downtown. To put this in perspective, an additional mile from the city center is associated with an $11,500 decrease in sales price. If this is a response to the recession in terms of a return to urban economic fundamentals, it is a remarkable market correction. That is, to have proximity to the urban

Table 6.2: OLS Regression (Stepwise) for Atlanta Home Sales, 2010

Dependent: CoreLogic Residential Transactions, 2000					
N (observations)	3997		R Square	0.540	
Durbin-Watson	1.368				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	990.367	272.928		.000	
Total Square Feet	.126	.006	.385	.000	3.086
Numebr of Bathrooms	62.305	5.517	.214	.000	3.102
Year of Construction	-.627	.140	-.055	.000	1.290
Cultural Amenities within 10 Min Walk	-10.313	4.934	-.026	.037	1.381
Dining within 10 Min Walk	5.318	1.472	.049	.000	1.569
Distance to CBD (Miles)	-11.530	2.534	-.068	.000	1.960
Relative Median Household Income	41.327	11.655	.085	.000	4.973
Percent White, 2000	92.199	6.212	.293	.000	3.382

core emerge as a statistically significant variable in a metropolitan area that can be readily characterized as auto-oriented is a remarkable finding.

Along a similar vein, second emerging indicator, *dining within a 10 minute walk* (β = .05), signals a preference for proximity to this type of amenity. To quantify this effect, an additional dining establishment within a 10 minute walk commands a $5,000 price premium—no small effect when considering that dining establishments may collocated within exurban retail centers. Again, when considering that this is potentially a new revealed preference within the Atlanta metropolitan area says something very interesting about the changing consumption patterns of homebuyers. It may, in turn, also have relevance to the efficacy of planning to the extent that this is an active policy goal for the metro area.

What is surprising in the context of these two indicators is *cultural amenities within a 10 minute walk* (β = -.03), which indicates that proximity to these types of amenities is negatively associated with price all things being equal. Perhaps, given the large collection of cultural amenities located in the downtown core, this is evidence of offsetting the preference for proximity to the city center. That is, while homebuyers are expressing a preference for proximity to the downtown, the swing of the pendulum of housing choice is not so drastic as to result in a complete acceptance of downtown living. However, the case may be that this represents a shift in momentum away from auto-oriented living as some contemporary scholars and practitioners argue.

Philadelphia, Pennsylvania (2000)

The model for Philadelphia housing sales in 2000 fits the data well in explaining 50 percent of the variation in the dependent variable. Even with the use of a stepwise regression, however, the number of variables that enter the model are quite substantial. Observing as well that the indicators are not highly collinear with each other, one cannot readily argue that these variables are proxies for each other, but by clustering these indicators by general categories a set of revealed preferences within this market may be obtainable.

Consistent with the models for Atlanta, *total square feet* (β = .44) is positively associated with housing price. As this is a consistent feature among the models presented throughout this chapter, it would be hard to argue against the notion that this is a common feature of residential real estate markets. And although this seems like an obvious point, it is reassuring in some regard to see a demonstrable consistency across the various metropolitan areas. One should note, however, that livable square feet carries a lower premium within this market (i.e. $7,000 for an additional 100 square feet), which may reflect the highly urban nature of residential living in Philadelphia in comparison with Atlanta. Another significant positive internal characteristic, *number of bathrooms* (β = .10), is of interest, particularly as the number of bedrooms is not

Table 6.3: OLS Regression (Stepwise) for Philadelphia Home Sales, 2000

Dependent: CoreLogic Residential Transactions, 2000

N (observations)	6258		R Square	0.501	
Durbin-Watson	0.767				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	-914.897	64.276		.000	
Total Square Feet	.068	.002	.441	.000	1.373
Numebr of Bathrooms	17.901	1.825	.102	.000	1.358
Year of Construction	.483	.033	.167	.000	1.630
Dining within 10 Min Walk	.764	.057	.252	.000	4.475
Recreation within 10 Min Walk	3.050	.369	.103	.000	1.930
Services within 10 Min Walk	-.598	.054	-.176	.000	3.117
Supermarkets within 10 Min Walk	-2.475	.754	-.031	.001	1.089
Distance to CBD (Miles)	-.965	.350	-.046	.006	3.507
Dwelling Units per Acre, 2000	.500	.081	.075	.000	1.885
Intersection Density per Square Mile	-.108	.009	-.183	.000	2.914
Relative Median Household Income	-17.719	3.069	-.120	.000	5.391
Relative Percent College Attainment	2051.991	132.329	.224	.000	2.604
Relative Percent below Poverty Line	-.101	.017	-.109	.000	4.278
Percent Unemployed Individuals, 2000	-5.624	.373	-.159	.000	1.384
Percent Vacant Housing Units	1.646	.150	.163	.000	2.729

statistically significant. As Philadelphia has a relatively large proportion of older housing stock, one might recognize that having a few or several bathrooms is a relatively new luxury, and this point may be reinforced further by *year of construction* (β = .17), which may be an indication of overall preference for newer construction.

Turning the discussion to urban character, there is clear evidence that these types of indicators play a role in the Philadelphia housing market. First, however, it bears relevance to note that *distance to CBD* (β = -.05), while not having a large weight relative to other factors, is negatively associated with housing prices. Similarly, *intersection density per square mile* (β = -.18) shows that high levels of compactness—as found in the oldest parts of the city—are not valued highly in terms of price. However, *dwelling units per acre* (β = .08) is positively associated with price, which might explain high values placed on condominiums versus lower density rowhome areas. This may imply that there is a premium placed on homes located closer to the urban core, which is where one would find the greatest clustering of amenities, but not to the degree that one is in the oldest parts of the city where overall unit density is lower than high-rise/high-value parts.

In this context one might understand better the influence of amenities, the most notable is *dining within a 10 minute walk* (β = .25), carries the second largest weight in the model relative to other factors, and it is positively associated with housing prices. To be direct, dining establishments are capitalized into home and condominium sales. One might argue that a similar rationale is true for *recreation within a 10 minute walk* (β = .10) such that parks and other recreation areas are perceived to transfer value to residential land and housing structures. Whether this is evidence of a different set of preferences on the part of Philadelphia homebuyers or the prevalence of such amenities throughout the metro area is not made clear by the model. However, someone with intimate knowledge of Philadelphia might readily recognize that places of high demand (and price) are those with ample access to its civic squares or regional park amenities.

There is evidence as well that not all amenities are necessarily capitalized into land and home values. Both *services within a 10 minute walk* (β = -.18) and *supermarkets within a 10 minute walk* (β = -.03) have statistically significant negative associations with housing prices. Examples of services include pharmacies, laundromats, hardware stores, miscellaneous retail shops, etc., and, while one might argue that these contribute to the completeness of an urban area, it is clear that buyers within the market place a premium on these—actually, quite the opposite. Proximity

to supermarkets, also negatively correlated with price, may also seem counterintuitive. However, when one tends to think of supermarkets (which, in this data are sized over 10,000 square feet), they are often coupled with large parking lots and other “big box” retail stores. In this context, it seems natural to think that convenience does not necessarily translate to value.

Demographics have a strong presence in this model as well, and the results are in line with expectations. In terms of the largest relative weight within this category, *relative percent college attainment* (β = .22) shows a clear price premium expressed for areas with larger concentrations of individuals with at least a college degree. To an extent, this might be a proxy for proximity to post-secondary campuses where it may not be the population characteristics that are capitalized into prices, but instead a high demand for land on the part of the institutions. To put it simply, homebuyers are competing for the same land resources as higher education institutions, which may be a similar effect as locating near the central business district and competing with potential commercial tenants for land. At the individual or household level, *percent unemployed individuals* (β = -.16) and *relative percent below the poverty line* (β = -.11) indicate a clear preference to for buyers to select areas that are not experiencing high levels of economic hardship. However, *relative median household income* (β = -.12) represents curious activity within the housing market. This might be explained, perhaps, by the state of the metro economy in 2000 when Philadelphia was in the midst of a protracted economic decline. What this data might indicate is that even in areas with high concentrations of wealth relative to other parts of the city, there were downward pressure on prices that were more macro-level factors than micro-level.

Philadelphia, Pennsylvania (2010)

Next, the model for Philadelphia home sales in 2010 fits the data as well as the 2000 model, if only slightly greater with the ability to explain 51 percent of the variation within the dependent variable. What one finds, however, is that despite this shared trait among the two models, the results are different in some very interesting areas. While internal characteristics, demographic, housing submarket, and urban form characteristics are largely in line with the 2000 model, there is some evidence of an emerging trend—not altogether unlike Atlanta. What remains to be seen is whether there is evidence of this shift in preferences across each of the cities—which might signal a shift in domestic priorities, either in response to the housing market collapse or simply the revealed preferences of a new generation of homebuyers.

Table 6.4: OLS Regression (Stepwise) for Philadelphia Home Sales, 2010

Dependent: CoreLogic Residential Transactions, 2000					
N (observations)	6649		R Square	0.514	
Durbin-Watson	0.777				
Model	Unstandardized Coefficients		Standardized Coefficients	Sig.	Collinearity Statistics
	B	Std. Error	Beta		VIF
Constant	-1137.999	82.500		.000	
Total Square Feet	.084	.003	.337	.000	2.185
Number of Bedrooms	-10.426	2.102	-.054	.000	1.643
Numebr of Bathrooms	36.439	2.683	.145	.000	1.548
Year of Construction	.632	.042	.152	.000	1.398
Cultural Amenities within 10 Min Walk	.622	.125	.064	.000	2.275
Dining within 10 Min Walk	2.407	.117	.490	.000	7.724
Retail within 10 Min Walk	-.301	.087	-.077	.001	6.767
Services within 10 Min Walk	-1.177	.086	-.219	.000	3.456
Distance to CBD (Miles)	-4.178	.538	-.121	.000	3.340
Intersection Density per Square Mile	-.107	.012	-.115	.000	2.374
Relative Median Household Income	-20.331	6.050	-.084	.001	8.608
Relative Percent College Attainment	3320.559	313.935	.232	.000	6.538
Change in Relative Percent College Attainment	.028	.010	.025	.007	1.196
Relative Percent below Poverty Line	-.151	.029	-.099	.000	4.851
Change in Relative Percent below Poverty Line	-.087	.019	-.044	.000	1.246
Percent Unemployed Individuals, 2000	-13.664	.641	-.231	.000	1.604
Change in Percent Unemployed Individuals	-.089	.011	-.075	.000	1.246
Percent Owner Occupied, 2000	.220	.097	.035	.023	3.168
Change in Percent Owner Occupied	.633	.087	.077	.000	1.494
Percent Vacant Housing Units	3.249	.225	.212	.000	2.951

Looking first to the internal characteristics for the housing stock, one should begin to understand these as controls within this model, particularly with respect to other variables of interest. *Total square feet* (β = .34), *year of construction* (β = .15), *number of bathrooms* (β = -.12), and *number of bedrooms* (β = -.05) are consistent in terms of statistical significance, relative weight, and coefficient sign as in the 2000 model, and given that this has been examined in the context of that model they are not explored further here.

Focusing on amenities, *dining within a 10 minute walk* (β = .49) has the largest weight on the model relative to other factors. This bears repeating: all else being equal, dining, not total square feet, has the largest relative impact on the results of this model and is positively associated with higher home sales. The rate at which this is capitalized into home prices is not substantial on a per-observation basis, but one should again recall that within a 10 minute walk, or a half-mile journey along a gridded street network, there are often several if not a multitude of dining establishments, especially in the urban core. Another amenity that is capitalized into home prices,

cultural amenities within a 10 minute walk (β = .06), is weaker in terms of its relative weight but still a positively associated indicator with the dependent variable.

On the flipside, both *services within a 10 minute walk* (β = -.22) and *retail within a 10 minute walk* (β = -.08) are negatively correlated with housing prices. As mentioned within the Atlanta discussion, services may not be capitalized into land and housing prices, though they may contribute at a local level to a sense of completeness. Retail requires greater thought as to why dining, a similar non-daily consumptive activity, is positively associated while retail is not. Perhaps, the case is not in the type of amenities themselves, but the quality of amenities. That is, dining does not necessarily control for quality via gross receipts per square foot or average price for menu items (though, these would be excellent data to have), but the variable set is limited to sit-down service establishments (i.e. not fast food or fast casual establishments). On the other hand, retail encompasses a broad spectrum of store types, and even within a specific type of store (e.g. clothing retailers) there can be a significant difference in the perceived quality of a sneaker store to a boutique selling high-priced leather shoes. Again, data on gross receipts per square foot would be great data to have, but it is sufficient to say that, at a general level, retail destinations are not capitalized into land or housing prices in Philadelphia.

Turning next to urban form characteristics, there is some consistency with the 2000 model that follows general expectation for these data. *Distance to CBD* (β = -.12) and *intersection density per square mile* (β = -.12) suggests again that proximity to the downtown commands value, but very compact areas such as those found in the oldest parts of the city do not command high values, all other things being equal. Another set of indicators related to housing submarket conditions, *percent vacant housing units 2000* (β = .21), *change in percent owner occupied* (β = .08), and *percent owner occupied 2000* (β = .03) are interesting data points to consider. Recognizing that the owner occupied data are positively associated with home prices, one might argue that areas with high homeownership translates to stability in the market, particularly with respect to areas where homeownership rates are increasing over time. This leads to an interesting question for the levels of vacant housing units in 2000: does this represent an opportunity for outside investment, particularly in areas where vacancy rates are high? Given that Philadelphia in 2010 was experiencing a modern resurgence and modest growth in population, such an opportunity for investment—whether this occurs in the upgrading of existing units or new construction—this may help to explain how homes sales in areas with higher levels of vacancy in

2000 were higher than in areas where vacancies were low, all other things being equal.

Lastly, the demographic variables that enter this model are consistent with the 2000 model, though one does find that some change variables enter the model as well: *change in percent unemployed individuals* (β = -.08), *change in relative percent below the poverty line* (β = -.04), and *change in relative college attainment* (β = .03). That these indicators enter the model is not in and of itself surprising, as it suggests that areas that are improving (i.e. increasing in the relative proportion of individuals with at least a college degree) are positively associated with price while areas continue to experience economic hardship (i.e. increasing rates of unemployment or households below the poverty line) are negatively associated with price. Understanding this in terms of policy implications, one might readily argue that economic development programs designed to address unemployment and poverty rates in such areas could potentially have a positive impact on home prices and a means for generating wealth (at least, economic stability) for homeowners in these areas.

San Francisco, California (2000)

Turning attention to San Francisco in 2000, the data fits well in explaining 48 percent of the variation in home sale prices. What one finds, however, is that despite these shared traits among the previous two models, the results for San Francisco find similar variables entering the model but having different associations with prices. A little context provides a backdrop against which the decisions within the housing market add value to the interpretation of the results.

Table 6.5: OLS Regression (Stepwise) for San Francisco Home Sales, 2000

Dependent: CoreLogic Residential Transactions, 2000					
N (observations)	1472		R Square	0.483	
Durbin-Watson	1.323				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	3175.729	948.131		.001	
Total Square Feet	.422	.023	.604	.000	3.047
Number of Bedrooms	-71.429	14.924	-.147	.000	2.679
Numebr of Bathrooms	-22.016	9.359	-.057	.019	1.648
Year of Construction	-1.742	.487	-.073	.000	1.178
Cultural Amenities within 10 Min Walk	-6.271	2.513	-.091	.013	3.763
Dining within 10 Min Walk	-3.440	.872	-.204	.000	7.569
Retail within 10 Min Walk	4.106	.727	.273	.000	6.621
Relative Median Household Income	751.175	56.255	.309	.000	1.516
Percent Owner Occupied, 2000	-7.642	.947	-.230	.000	2.303
Percent Vacant Housing Units	27.056	9.147	.085	.003	2.339

In the late 1990s and through 2001, a technology-driven bubble (i.e. the “dot-com bubble”) was emerging, and the San Francisco/Bay Area/San Jose region was a focal point of investment during this period. The results of this model—which is altogether different from the results of the 2010 model—suggest a departure from a broad set of preferences within the market towards a narrowly-defined set of decision points. What follows is a discussion of this smaller set of statistically significant indicators.

First, in terms of the internal characteristics of the housing stock, one finds that *total square feet* (β = .60) carries the largest relative weight—as it does in other models. However, when expressed in price premiums, the results indicate that a 100 square foot increase in unit size is associated with a $42,000 increase in price, holding other factors constant. Curiously, however, *number of bedrooms* (β = -.15), *year of construction* (β = -.07), and *number of bedrooms* (β = -.06) are all negatively associated with price. If the strong preference for larger livable areas holds true as these indicators vary, there is a revealed preference for older housing stock. This suggests that one or both of the following factors could be at play: (1) older housing stock in well-established areas was perceived to be a good place for investment, and/or (2) there was insufficient supply in the market to satisfy demand to the extent that new housing starts did not keep pace. Further, that the number of bedrooms and bathrooms were negatively associated with price may suggest that housing units suitable for families were in less demand. If this is true, prices in the housing market were most likely driven by a small subset of the population: young, affluent, and single or newly married without children.

Other indicators within the housing market also contribute to this assertion. The combination of *percent owner occupied 2000* (β = -.23) and *percent vacant housing units* (β = .09) may, in fact, signal evidence of gentrification. Specifically, places with high levels of rental units are associated with higher housing sales, which may have contributed to displacement of renters provided that there was a shortage in available housing stock. At the same time, places with high levels of vacant units are also positively associated with high prices, which suggests that the opportunity to invest in areas otherwise perceived as economically disadvantaged commanded a premium in the market. However, one should be careful in extending this assertion too far, as *relative median household income* (β = .31) trumps all indicators other than livable square feet. Taken as a whole, one might expect that there was strong activity in places traditionally perceived as high-value areas, but there was sufficient demand as to bid-up places that had experienced protracted

periods of low homeownership and property disinvestment.

This brings an obvious question to bear: what, if anything, is significant about the quality of place, particularly with respect to proximity to amenities or the urban core? In terms of the latter, distance to the city center is not statistically significant and *cultural amenities within a 10 minute walk* (β = -.09) is negatively associated with price. As one would expect to find an agglomeration of cultural amenities located near the urban core, the expectation is that prices may have risen faster in the areas surrounding the downtown in comparison to the downtown itself. Similarly, *dining within a 10 minute walk* (β = -.20) versus *retail within a 10 minute walk* (β = .27) suggests that consumptive preferences, at least in terms of housing choice and proximity, focused more on material consumption rather than experiential or cultural consumption (which goes hand-in-hand with the revealed market preferences on cultural amenities). What seems clear from these results, taking into account all the factors discussed here, is that decisions within the residential real estate market were motivated less by location and more by acquisition. To borrow a term from Gertrude Stein, it did not seem to matter that there was a "there there," rather homebuyers were investing *anywhere*.

San Francisco, California (2010)

In the years following the 2006-2008 housing market collapse, San Francisco provides an interesting case study—especially in the context of revealed preferences in the market just 10 years earlier. What the model demonstrates is that there is a strong shift in the preferences of homebuyers within the market. Specifically, there is evidence to suggest that San Francisco continues to be a tight housing market, which may contribute to several indicators that suggest gentrification is a very likely market force.

Providing some consistency, internal characteristics (i.e. total square feet, number of bedrooms, and number of bathrooms) are in line with the results from the 2000 model. What is new, however, is the reverse in sign for *year of construction* (β = .06), which is positively associated with housing price. What this implies is that market preferences shifted away from placing a premium on older housing stock. Bringing external characteristics into this discussion, there is a counterintuitive relationship with density such that *dwelling units per acre, 2000* (β = -.11) and *change in dwelling units per acre* (β = -.06) are negatively associated with price. That is, holding all other things constant, market actors in 2010 are not placing a premium on new construction

Table 6.6: OLS Regression (Stepwise) for San Francisco Home Sales, 2010

Dependent: CoreLogic Residential Transactions, 2000					
N (observations)	2788		R Square	0.552	
Durbin-Watson	0.777				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	-3840.244	961.800		.000	
Total Square Feet	.571	.028	.633	.000	6.106
Number of Bedrooms	-68.776	15.379	-.101	.000	3.171
Numebr of Bathrooms	-164.542	21.081	-.237	.000	5.713
Year of Construction	1.754	.489	.055	.000	1.467
Supermarkets within 10 Min Walk	112.970	17.202	.095	.000	1.292
Dwelling Units per Acre, 2000	-5.491	1.922	-.057	.004	2.482
Change in Dwelling Units per Acre	-5.422	.870	-.114	.000	2.067
Intersection Density per Square Mile	.748	.350	.034	.033	1.531
Relative Median Household Income	1342.454	107.075	.416	.000	6.807
Change in Relative Median Household Income	13.294	.332	.616	.000	1.466
Relative Percent College Attainment	-37635.412	5927.533	-.211	.000	6.805
Change in Relative Percent College Attainment	-4.824	.846	-.086	.000	1.420
Percent Owner Occupied, 2000	-11.560	1.466	-.237	.000	5.586
Change in Percent Owner Occupied	1.474	.319	.072	.000	1.507
Percent Vacant Housing Units	42.658	9.908	.088	.000	2.600
Change in Percent Vacant Housing Units	1.268	.252	.078	.000	1.484

per se; if this were the case, one would expect to see a positive coefficient for change in dwelling units per acre as this would be a signal of new development. There is, however, evidence supporting a preference for urban living in *intersection density per square mile* (β = .03), but just not to the extent that homebuyers seek to be located near new development.

There are two areas in which one finds support for the gentrification argument. The first is that there continues to be a premium attached to areas of high median household income, as indicated by *relative median household income* (β = .42) and *change in relative median household income* (β = .62). Given that these indicators are weighted nearly as high as livable square feet, this is a clear indication that high value areas may have barriers to entry in terms of price. This leads to a second point: there appears to be strong evidence to the notion that market actors see opportunity in economically disadvantaged areas or recently gentrified areas. In terms of the former, *relative percent college attainment* (β = -.21) and *percent vacant units* (β = .09) are strong indicators of this assertion. One might read this as areas with relatively lower levels of college attainment are experiencing higher demands contributing to higher prices; likewise, areas with greater proportions of vacant units are potential opportunities for investment, holding other factors constant. Here, there is ample room for a policy response to protect against displacement.

If there is anything to be surprised about in this model, it is the disappearance of the amenity measures previously specified in the 2000 model, which were either positively or negatively associated with price. That is, save for proximity to supermarkets (*supermarkets within a 10 minute walk,* β = .09), which is the first—and, as a preview, will be the only—time that one finds proximity to supermarkets capitalized into housing prices. To quantify this, having one supermarket within a half-mile network distance is capitalized into an $113,000 price premium, holding other factors constant. A key question emerging from these results is whether the San Francisco market suggests that location preferences are based upon gentrification opportunities rather than amenities or urban form characteristics. Ultimately, the answer to this question may have more to do with the efficacy of planning to the extent that amenities are provided throughout neighborhoods as opposed to being provided along nodes and corridors.

Salt Lake City, Utah (2000)

If there is any model that suggests that location characteristics—at least those specified by the variables contained in this analysis—have little influence over the actions of buyers in the residential market, the 2000 model for Salt Lake City is it. The model explains 60 percent of the variation in housing price, and there are only 4 indicators, 3 of which are internal characteristics, that are statistically significant. The most influential indicator based on standardized coefficients is *total square feet* (β = .71), which far exceeds other relative weights. This is a clear indication that the revealed preferences within this market at this point in time is for larger homes, commanding a $10,000 price premium for an additional 100 square feet, holding other factors constant.

In terms of other internal characteristics, there is some consistency with models for other cities as number of bathrooms (β = .09) is positively associated with price while number of bedrooms (β =

Table 6.7: OLS Regression (Stepwise) for Salt Lake City Home Sales, 2000

Dependent: CoreLogic Residential Transactions, 2000					
N (observations)	761		R Square	0.598	
Durbin-Watson	1.515				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	88.201	15.012		.000	
Total Square Feet	.102	.007	.713	.000	3.889
Number of Bedrooms	-12.762	4.283	-.094	.003	1.854
Numebr of Bathrooms	14.417	6.752	.091	.033	3.443
Percent Unemployed Individuals, 2000	-9.563	2.635	-.092	.000	1.198

-.09) is negatively associated with price. This suggests that, within this market, there is a lack of supply in the housing stock where multiple bathrooms exist. One might extent this argument such that there may be an indication of a trade-off in terms of value for bathrooms versus bedrooms—both the standardized and unstandardized coefficients are very close in terms of scale and have opposite signs.

In terms of locational characteristics, the only statistically significant factor in this model is *percent unemployed individuals* (β = -.09), which may be a catch-all or proxy that identifies areas that are experiencing protracted periods of economic hardship. This does not mean to say that potential homebuyers are capable of screening potential neighbors as to their employment status, but there may be a perceivable effect resulting from high levels of unemployment, such as the lack of property upkeep or improvement. Or, as the case may be, there are areas where housing price is a barrier to entry for individuals and households who cannot afford to buy into a particular area. What is a likely outcome of this, particularly with regard to the stability framework underlying this research, is that spatial sorting of households is likely to be quite strong along income brackets. Presuming this is true, one might expect that relative median household income would be statistically significant, but it may be the case that the percent of unemployed individuals is a proxy for this and a more robust indicator at the submarket level.

Salt Lake City, 2010

With the final model on housing prices, the results for Salt Lake City in 2010 contain some interesting findings in the context of the collapse of the residential real estate market. Again, this is a very well fit model in terms of the data, explaining 58 percent of the variation in housing price; and, again, internal characteristics have a significant and consistent influence over the model. What emerges that is of interest, however, are indications that amenities and demographics begin to inform decisions within the residential market.

First, to confirm the influence of internal characteristic indicators, these follow the results of the 2000 model. *Total square feet* (β = .74) remains the most influential variable relative to other indicators, which suggests that space is the key driver within this market. And, again, there are indications of a trade-off between *number of bedrooms* (β = -.16) and *number of bathrooms* (β = .08), which are negatively and positively associated with price, respectively. However, in this case, the number of bedrooms trumps bathrooms, which may lead to an understanding that there

Table 6.8: OLS Regression (Stepwise) for Salt Lake City Home Sales, 2010

Dependent: CoreLogic Residential Transactions, 2000

N (observations)	1268		R Square	0.576	
Durbin-Watson	1.237				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	54.706	20.890		.009	
Total Square Feet	.134	.006	.740	.000	3.575
Number of Bedrooms	-23.480	3.660	-.162	.000	1.884
Numebr of Bathrooms	14.432	6.093	.077	.018	3.102
Cultural Amenities within 10 Min Walk	4.967	.788	.138	.000	1.416
Recreation within 10 Min Walk	7.608	3.160	.050	.016	1.260
Intersection Density per Square Mile	-.270	.097	-.057	.005	1.251
Relative Median Household Income	38.366	7.659	.099	.000	1.162
Percent Unemployed Individuals, 2010	-10.926	1.989	-.118	.000	1.378

is some softening in terms of the demand for additional bathrooms.

Turning next to amenities, it is interesting to find that there are two amenity types that are associated with locational preferences capitalizing into home prices. The first, and more influential, is *cultural amenities within a 10 minute walk* (β = .14) followed by *recreation within a 10 minute walk* (β = .05). That these types of indicators enter the model—as opposed to dining, retail, services, or supermarkets—demonstrates that the revealed preferences for amenities have more to do with an experiential quality of life rather than a consumption-driven set of preferences. This is particularly interesting from a policy standpoint as it highlights a difference between what the public and institutional sectors provide versus that which is provided by the private market. The implications for policy in this regard is that an emphasis on public realm and cultural amenities are directly capitalized into home prices. To the extent that this is a viable opportunity for Salt Lake City, this could be a suitable means for economic development in there is a goal to increase the value of private property in otherwise economically disadvantaged areas.

This is reinforced further by two additional indicators, *percent unemployed individuals* (β = -.12) and *relative median household income* (β = .10). As discussed in the 2000 model, the negative association with price for areas with higher rates of unemployment suggests a clear decision criterion on the part of homebuyers to invest in areas where there is evidence of unemployment outcomes (i.e. lack of upkeep or property reinvestment). However, the addition of relative median household income in this model is an indication of a pull-factor: there is a revealed preference for potential homebuyers to bid-up areas where there is a sense of established wealth. If there is

a policy implication that could be drawn from these results, it is that there could be an argument for incentivizing housing affordability in areas where there is a concentration of wealth. That is, from a social justice perspective, such an approach might help to reduce the bifurcation of society along wealth vectors. Whether this is achievable in the context of community pushback is a key question for Salt Lake City in terms of the efficacy of planning and policy response aimed at addressing these issues.

Discussion

As this chapter has covered a lot of ground in terms of the use of high-resolution proprietary data, innovative methods for network-based metrics, and regression models for housing market transactions across four cities in two time periods, it is important to reflect on the results of these models and their implications in terms of this research as a whole. To assist in summarizing these outcomes, two visuals depictions are included to provide perspective on the association between the dependent variable, housing prices, with the independent variables that entered the multitude of models.

Table 6.9: Association with Housing Prices, 2000

		ATL	PHL	SF	SLC
Internal Characteristics	Total Square Feet	+	+	+	+
	Number of Bedrooms	-		-	-
	Number of Bathrooms	+	+	-	+
	Year of Construction	-	+	-	
Amenity Reach Metrics	Cultural Amenities within 10 Min Walk			-	
	Dining within 10 Min Walk		+	-	
	Recreation within 10 Min Walk		+		
	Retail within 10 Min Walk			+	
	Services within 10 Min Walk		-		
	Supermarkets within 10 Min Walk		-		
Urban Characteristics	Distance to CBD (Miles)		-		
	Dwelling Units per Acre, 2000	+	+		
	Change in Dwelling Units per Acre				
	Intersection Density per Square Mile		-		
Demographics	Relative Median Household Income	+	-	+	
	Change in Relative Median Household Income				
	Relative Percent College Attainment		+		
	Change in Relative Percent College Attainment				
	Relative Percent below Poverty Line	+	-		
	Change in Relative Percent below Poverty Line				
	Percent White, 2000	+			
	Percent Unemployed Individuals, 2000		-		-
	Change in Percent Unemployed Individuals				
External Characteristics	Percent Owner Occupied, 2000			-	
	Change in Percent Owner Occupied				
	Percent Vacant Housing Units		+	+	
	Change in Percent Vacant Housing Units				

Turning first to the results for the models for 2000, there is little evidence to support consistency in terms of the data that appears to play a role in the decision making process for homebuyers across the four markets studied. That is, there is some agreement across these markets in terms of internal characteristics, but beyond that the variables that entered these models appear to be strongly localized in nature. This is not disappointing by any means, rather it seems clear that preferences within each market were determined less by locational attributes and more in terms of physical space. As a commentary on the nature of housing markets before the events occurring between 2006 and 2008, this is an important starting point in comparison to what emerges in the models for 2010.

Table 6.10: Association with Housing Prices, 2010

		ATL	PHL	SF	SLC
Internal Characteristics	Total Square Feet	+	+	+	+
	Number of Bedrooms		-	-	-
	Number of Bathrooms	+	+	-	+
	Year of Construction	-	+	+	
Amenity Reach Metrics	Cultural Amenities within 10 Min Walk	-	+		+
	Dining within 10 Min Walk	+	+		
	Recreation within 10 Min Walk		+		+
	Retail within 10 Min Walk		-		
	Services within 10 Min Walk		-		
	Supermarkets within 10 Min Walk			+	
Urban Characteristics	Distance to CBD (Miles)	-	-		
	Dwelling Units per Acre, 2000			-	
	Change in Dwelling Units per Acre			-	
	Intersection Density per Square Mile		-	+	-
Demographics	Relative Median Household Income	+	-	+	+
	Change in Relative Median Household Income			+	
	Relative Percent College Attainment		+	-	
	Change in Relative Percent College Attainment		+	-	
	Relative Percent below Poverty Line		-		
	Change in Relative Percent below Poverty Line		-		
	Percent White, 2000	+			
	Percent Unemployed Individuals, 2000		-		-
	Change in Percent Unemployed Individuals		-		
External Characteristics	Percent Owner Occupied, 2000		+	-	
	Change in Percent Owner Occupied		+	+	
	Percent Vacant Housing Units		+	+	
	Change in Percent Vacant Housing Units			+	

What the models for 2010 suggest is that there is greater attention paid to local characteristics, be it locational attributes related to amenities, demographics, or market conditions. With regard to amenities, one should note that there is a general lack of consistency across markets in terms of one particular amenity type that trumps all others. However, what is notable about these

results is that one begins to see a statistically significant relationship between amenities and housing prices. That these associations are not all positive suggests that, in the context of a rising conversation about the general desire for walkable neighborhoods, the evidence is lacking to support that this is as widespread as advocates suggest—at least across four very different cities. To some extent, that these cities are themselves different means that this is not a strict comparison of apples to apples. Some cities may lack a sufficient supply of specific amenities such that these amenities factor into potential homebuyers' decision making processes that contribute to a market-wide association with price. However, each of the cities is of regional importance, so one might readily assume that there should be an adequate number of amenities for there to be an opportunity for consideration on the part of potential homebuyers. As each of these amenities enters the models for at least one city, there is evidence to suggest that a shift in preferences may be occurring over the decade between these models.

Another point to consider is that, in some markets more than others, local demographics and submarket conditions are indicators for housing prices. This is not consistent across each city, but there is an observable difference between Atlanta and Salt Lake City versus Philadelphia and San Francisco. That is, the potential determinants of housing prices in Atlanta and Salt Lake City are far less populated in terms of variables that enter the models in comparison to Philadelphia and San Francisco. If there are some similarities among these two sets of cities is could be this: Atlanta and Salt Lake City are very auto-oriented urban areas, whereas Philadelphia and San Francisco are perceived to have a stronger pedestrian character that is reinforced by a compact urban grid of streets. To put it simply, perhaps local characteristics are less influential in housing markets for areas where the primary mode of transportation is the automobile.

In the context of this research and subsequent chapter on case studies, it bears relevance to consider how the perception of local characteristics may be correlated strongly with an auto-oriented environment versus a more diverse set of transportation modes. The next chapter will examine this in depth, taking into account not only the results of the quantitative phases of analysis, but also incorporating a grounded approach to understanding the nature and character of stability places within each city.

CHAPTER 7: CASE STUDIES OF NEIGHBORHOOD STABILITY

This chapter of the dissertation marks a transition from quantitative methods to qualitative methods by means of case study analysis for neighborhoods located with the four cities focused upon in Chapter 6. In part, this reflects a transition from an urban economics perspective towards grounded research methods related to city planning and urban design character. While the quantitative phases identified to some extent the key indicators of economic outcomes, there remains a gap in addressing the non-economic outcomes related to neighborhood stability. This scale of analysis provides valuable insight about urbanism and policy efficacy to the extent that indicators of neighborhood are revealed.

The overarching purpose of the third phase of research is to assess the less tangible qualities of urban stability—specifically with respect to that which cannot be readily measured or understood using administrative or proprietary data alone. Ascertaining the extent to which there exists a relationship between neighborhood character and stability outcomes is the key focus of this third phase. As such, two key questions emerge. The primary question is what extent is it possible to understand the influential factors related to stability that are not specified in the models from Chapters 5 and 6; that is, how one might explain places of high that do not necessarily conform to the models' explanatory value. A secondary and important set of questions is whether city planning efficacy is evident and whether urban character is associated effective with respect to greater stability outcome measures.

What is clear from the quantitative analysis, beyond an inability to model the influential variables associated with non-economic outcomes, is two pronged: first, cities matter to the extent that the introduction of city-level controls within the quantitative models enhanced the explanatory value of each model; second, from the fine-grained analysis in Chapter 6, it is possible to differentiate between the significance of indicators present in auto-oriented cities (i.e. Atlanta and Salt Lake City) versus cities that strike a balance among mode choices (i.e. Philadelphia and San Francisco). In simple terms, there are observable differences in terms of factors for housing choice in less-walkable cities compared with more-walkable cities. The case study approach provides greater insight as to the degree of difference both within each city as well as across these two types of cities.

The structure of this chapter first details the methods of investigation, including the process for identifying target neighborhoods within each city as well as the qualitative methods employed in the case study approach. The second part of the chapter discusses each city separately and takes a deep dive approach to each neighborhood. Lastly, the discussion section provides context to the individual case study neighborhood by examining patterns within individual cities as well as across cities.

Neighborhood Selection

The first step in generating a set of case study neighborhoods is to establish specific controls. The use of matched-set analysis (a subset of multi-case study methods) of each city features two neighborhoods, each exhibiting high economic and non-economic stability factors relative to other units within each city. This approach is helpful in addressing the secondary question about the efficacy of planning; that is, the research can control for planning capacity and activism by identifying two neighborhoods from the same city.

It should be noted that there are several ways in which one can approach the case study methods. Prior to the selections of cases, for example, one must reach a determination as to whether to engage in preliminary research, analysis, or other forms of scoping. Central to the decision making process is the question as to whether the researcher should know anything about the potential cases to be studied prior to the actual investigation. This type of blind-identification creates the potential for randomized collections of case studies, which has its benefits and potential drawbacks. In terms of the former, the primary benefit is this does inherently involve any source of bias—either on the part of the researcher or the data collection methods. That the cases are random suggests a need to develop a broad set of evaluation criteria as well, since there are no baselines of comparison or means of controlling for variability or intervening variables. This does not, however, reduce the potential for observer bias, particularly in instances where it is necessary to have multiple observers or the conditions in which the observations are conducted change—in the case of neighborhood research, time of day, day of the week, and weather conditions can have significant impacts on both the observer and that which is being observed. In terms of the latter, however, there are potential drawbacks. One specific such example is that the type of research design and set of hypotheses may require a substantial number of randomized case studies in order to generate internal validity around a

particular topic. Along this vein, it follows that research questions and related hypotheses that are very specific and target a narrow set of outcomes may not be well-served by the randomized selection approach if the measurement tools and processes are not capable of providing sufficient data for analysis.

In the context of this research, the case study selection process is at the opposite end of the spectrum as is described above. The process, however, is not as sequential as the phase numbers might suggest. While Phase I (i.e. tract level analysis) helps to set the stage for what to focus upon in subsequent phases of analysis, the results from Phase I are highly informative with respect to the staging and sequencing of research. As is detailed in Chapter 5 (Urban Stability at 30,000 Feet), the regression models specified for the economic and non-economic outcome variables clearly indicate that the former is well-explained by the models while the latter outcome variables are not well-explained by these models—even when controlling for inter-city variability. While these outcomes were highly informative in terms of the research process for fine-grained analysis, it provides a strong foundation upon which to conduct case studies at the neighborhood scale. Specifically, in the absence of having regression models that are capable of explaining the variation in the non-economic outcome variables specified, this suggests one of two things: either (1) the underlying theory supporting these models' construction and specification of independent variables is wrong, or (2) these outcomes have the potential to be understood through observational studies as opposed to a purely-quantitative focus.

With the decision to conduct preliminary analysis that informs the means for case selection, there is a second set of choices; namely, whether the case selection should include counter-factual cases or not. If counter-factual cases are included, it can serve as a "control group" and provide a basis for comparison to the cases of interest. This may be particularly well-suited for exploratory cases in which it is possible to observe or control for intervening variables (to an extent). In the context of this research, however, there is a level of specificity about such intervening variables that may not be possible. Specifically, because this research involves different cities, each of which contains its own macro-level intervening variables, it would be difficult to determine whether a counter-factual case would be a product of the variables of interest or a response to a different set of conditions occurring at the municipal level. As there is the potential to draw conclusions from comparable sets of neighborhoods across cities, this may not be a good approach as the counter-factual would have to apply to each case uniformly. In addition, the need to focus upon a

set of cases that are ultimately not important to the outcomes of this research shifts the attention from generalizable observations across study areas (i.e. similarities) to a focus upon differences.

One must first identify those places of interest that have the ability to serve well not only with respect to single-case observations but also help to address the larger set of research questions overall. That is, the intent is to generate knowledge across the cases that provide a deeper and richer understanding of urban stability at the neighborhood level. Developing the criteria for identifying these neighborhoods is based upon the dependent variables used in the first phase of quantitative analysis: (1) change in median self-reported home values, (2) change in percent of households living in each tract less than 10 years as a proxy for household turnover, and (3) age diversity, constructed using the Simpson Diversity Index.

If any of these are taken separately to identify neighborhoods, they lead to an exploration of questions that are particularly well-suited for the sole criterion, but this may fail to advance any knowledge about the other outcome variables of interest. To overcome this perceived obstacle, each the data for each of the outcome variables at the tract level was ranked against every other tract within the study cities. This rank-order approach provides a basis for comparison within specific indicators. To generate a comprehensive understanding of urban stability, however, requires some cross-comparison of outcomes. To this end, a mean rank-order score was generated for each tract, and the lowest mean scores (i.e. those ranking the highest in terms of order) helped to identify potential areas of interest. Then, by examining the variation within the mean scores, the research identified those tracts for which there were indications of some consistency across outcome measures.

It is important to note that there are other means by which the research could select cases in a “pre-evaluative” manner. What is described above is a simple means for selecting cases, but it does not include and pre-selection controls for demographics or urban characteristics, for example. The position of this research is that this creates a potential source of bias as it precludes an examination of evidence outside of such restrictions. A more salient point, at least in the context of this research, is that the subset of cities selected for fine-grained analysis are not comparable in many respects, and to apply a set of pre-conditions to reduce the set of potential cases could have significant unintended consequences.

What became readily apparent through this process was that there were few tracts for which

the rank-order scores were highly correlated among the highest overall ranking tracts. For example, tracts that experienced significant increases in terms of median home values were often associated with large resident turnover (i.e. possible gentrification) or increasing rates of age diversity (i.e. related to resident turnover, but aligned not only with income accessibility but also with individual household preferences). In this example, it is relatively easy to understand that rational homeowners, perceiving increasing value in the housing market, may capitalize on this by monetizing their investment; one might also expect that some households are not solely motivated by capital interests, and perhaps those households' original intent was to buy into a place that was "on the rise." In either event, this is not a disappointing outcome for this research; rather, it relates well to the complexity of housing choice within competitive markets.

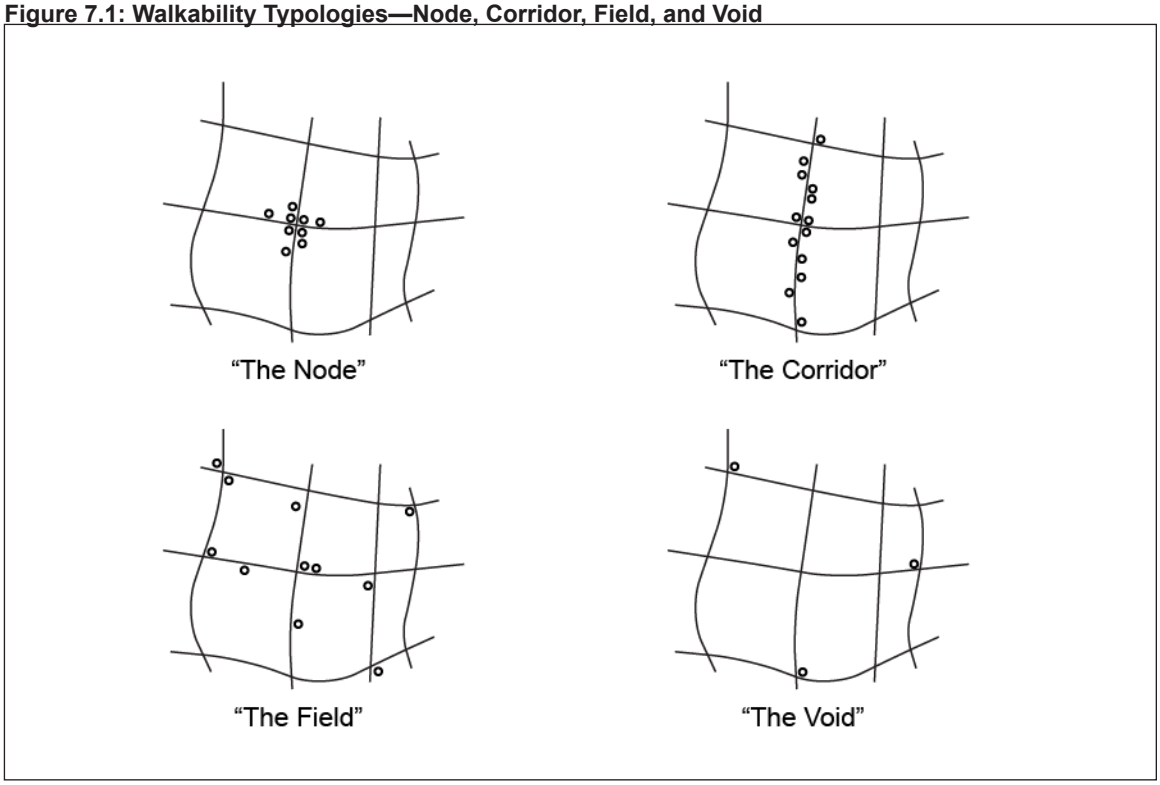
Overall, this approach to case selection provides the basis to conduct observational studies that have the potential to inform broadly in two ways: first, there is the potential to understand the neighborhood stability through an economic and non-economic lens within each cities; second, and perhaps more importantly, it is may be possible to make inter-city comparisons if there are patterns in demographics or urban form that reveal potential matched sets within the cases. To put this succinctly, there is an inductive question to be explored through this process: are there observable commonalities among case neighborhoods that appear to reinforce or bolster their economic and/or social outcomes? To the extent that this can be understood both within each city but across cities as well will be particularly informative for the research outcomes.

Criteria for Assessing Walkability

A distinct advantage of the case study approach is the ability to understand data using methods that extend beyond the limitations of quantitative methods. One area of methods that is particularly useful with respect to the assessment of walkability is spatial observation and analysis. To define what this is, it helps to define what it is not; quantitative spatial analytic tools are exceptional for providing accurate measurements of quantities, especially with respect to the spatial density of quantities. However, such tools are not particularly useful for delimiting between types of spatial configurations, at least not to the extent that is employed here in assessing walkability.

While other methods of observation in the following case studies will assess the degree to which walkable environments are comfortable, safe, and interesting, this method focusing on the

Figure 7.1: Walkability Typologies—Node, Corridor, Field, and Void



spatial configuration of amenities provides a meaningful description of the usefulness of a walk. Specifically, there are four typologies of spatial configurations that are original contributions from this research: the node, the corridor, the field, and the void.

These typologies of spatial configurations provide a meaningful interpretation of the use of a walk within each of the study areas. With the node, there is a focal point that can serve as the destination for a walk, or (in the case of multiple nodes) there are terminal or anchor points that one might choose to walk between or towards. With the corridor, regardless of where one is located within the area, the shortest distance to the points of interest is the perpendicular distance to the corridor along which these points are aligned. One is able to then maximize the usefulness of the walk by first reaching the corridor and then traveling along it. It is important to note as well that the corridor can exist at the periphery or bisect the neighborhood, and there may be more than one that provides context to urban form. In the field there is an overall lack of centrality insofar that one can travel in almost any direction to reach a potential destination point. To this end, the experiential quality of the field is one that is more akin to discovery than oriented towards a singular destination. The void is the antithesis of all others—as the name implies, there is a sufficient lack of amenities as to convey the perception of a void within an otherwise

defined neighborhood space. One should note as well that, with each of these spatial types, one should note that they are not mutually exclusive. That is, one might find combinations of this configurations—a “field” bordered or intersected by a “corridor,” or a “field” populated by a number of “nodes.” To an extent, such combinations may imply greater flexibility within zoning regulations as well as possible evidence of adaptive reuse occurring over time.

Fieldwork Protocols

The case study fieldwork occurred between June 9, 2014 and June 20, 2014 in each of the four cities studied. Providing consistency to the observation periods, the hours of 9 AM to 4 PM during weekdays were spent in the neighborhoods—for each neighborhood, the research allocated one day. By observing the neighborhoods during midweek days, this offers the perspective of the neighborhood as it exists during the typical workweek.

There are several advantages to this approach and one key disadvantage. Turning first to the advantages, an important observation that can be ascertained through this approach is determining how the neighborhood functions during the typical workday. Specifically, a key question is whether there is pedestrian activity—particularly with respect to businesses and other amenities—that occurs during the workday. On the one hand, if there is evidence of pedestrian activity, this would suggest that the area may be a destination for visitors from outside of the community; on the other hand, a lack of pedestrian activity would suggest that residents are the primary users of the area. Second, this provides an opportunity to observe the extent to which these areas are served by transit as this is the primary means for accessing these areas for observational study. A third observation point is an assessment of the vehicular traffic moving through the area during the workday, which provides an understanding of whether the area serves more than resident uses.

There are some disadvantages to this approach, which are detailed here. First, there is some difficulty in measuring community as might be observed through the social interaction of residents. This acknowledges that it is unlikely to reveal all forms of interpersonal relationships as the observations are conducted during traditional full-time employment hours. What is not clear, however, is when the most appropriate time to explore evidence of these interactions. As a control for this, preliminary research of each neighborhood for community organizations did not reveal any considerable web presence for such organizations within any of the neighborhoods.

On-the-ground fieldwork examines this in greater depth, seeking evidence of community-based organizations during the observation periods.

In terms of the fieldwork itself, the observational study of each neighborhood combines three methods. In addition to these on-the-ground fieldwork methods, two preliminary research tools were generated: first, the data points for neighborhood stability (i.e. those used to score and rank each neighborhood relative to others within the city) were summarized as a means for providing advance indications of the quantitative data; second, maps with amenity destinations were prepared for orientation as well as for managing the walking protocols. The first on-the-ground method is the walking tour of the neighborhood. These walking studies begin and end at the same transit node and the walk is directed to follow along roads towards potential destination points (i.e. business nodes or public recreation amenities) while also paying attention to evidence of a street design hierarchy. In the discussion of each neighborhood case study, there is a graphic providing a map illustrating the walking path through the neighborhood as well as the amenities that were noted in the analysis. The second method is photographic documentation of urban design elements, which include typical street scenes, notable public amenities such as parks or iconic wayfinding signage, as well as evidence of resident-initiated improvements that exist either on private property or within the public realm. The third method is the physical inventory of urban design elements, which is based upon the Irvine-Minnesota Inventory framework for cataloging the physical elements of the neighborhood space. This method is particularly informative as it provides a clear consistent structure in terms of what is being observed as well as how the perceived value of these observations can be standardized for comparison across neighborhood case studies.

Methods of Investigation

Turning next to the case study methods, there are three principal means by which these studies were conducted. First, a brief examination of the history of each city provides a means for framing the context through which one understands each neighborhood with regard to the city as a whole. Second, an assessment of each neighborhoods demographic profile provides for a data-oriented way of looking at the neighborhood—how one synthesizes this information yields clues as to it composition and basis for community interaction. Third, an observational study of visual characteristics, urban framework, and human activity within the space helps to generate

a foundation upon which to understand how the neighborhood fosters or engenders a sense of community among residents. To this end, the methods of observation reflect notions of *the objective observer*, who is neither part of nor completely removed from the physical experience of space. The value of this approach should not be understated in terms of evaluating planning and design success, such that one follows that:

> *"…observation as a primary method of inquiry and analysis has lost favor with urban planning professionals in recent years. It is thought to be too subjective as a basis for serious action compared to more quantifiable, statistically oriented methods. We may say there is 'no substitute for a first-hand look,' but it is not always clear that we believe it, especially when so much information is available from secondary sources like the census and it is so easy to manipulate. Professionals and academics are often uncomfortable with findings based on observation rather than on 'hard data,' and yet so much of what they speak of concerns what they have seen." (Jacobs 1985, 7)*

Noting this, one should also have an appreciation for the challenges of becoming the objective observer, to the extent that:

> *"Probably the most important variables are the values observers bring with them and everything that makes up their personal experience. People do not observe with a blank mind; they come with certain expectations, based on their values and past experiences." (Jacobs 1985, 11)*

In providing sufficient detail to the methods of investigation that each case study employs, the following subsections highlight the ways in which these studies are conducted in a consistent and objective manner.

A Short History of Place: this is a fact-filled examination of the social, cultural, and economic history of each city and its neighborhoods. Since World War II, a host of issues and events have emerged that have had an impact on the social and physical conditions of urban places. Of particular interest is how the city has responded to periods of urban succession, urban renewal, as well as events related to macro- and micro-economic shocks. The study of place also examines the history of physical development, diversity of household income and wealth, and classification of urban form patterns using contemporary definitions (i.e. organic, traditional gridded, planning-era gridded cities, etc.).

Demographic Profile: following an exploration of the history of place, understanding demographic composition yields important clues in terms of understanding each neighborhood in context with

the city as well as its peer neighborhood. Here, a key question is whether some areas more diverse in terms of income or race, or if they provide evidence of homogeneity or otherwise insular urban identities. In this analysis, several key data points are examined including: median age composition, racial diversity, median income, household composition (i.e. size and family structure), household tenure, individuals experiencing poverty conditions, and unemployment. Most of these data are calculated using percentages for comparison among the case studies.

Urban Design Analysis: there are two methods that used to document urban design and public realm characteristics of each neighborhood:

- Primary source data collection: there are some scholarly efforts that provide the basis to conduct this analysis. A starting point for this analysis is outlined in Walk This Way (Leinberger and Alfonzo, 2012) which incorporates the Irvine-Minnesota Inventory, an urban design physical assessment tool developed in 2006 (Boarnet et al., 2006, Day et al., 2006). Reid Ewing and Susan Handy (2009) have explored this subject and have attempted to "quantify" urban design qualities and characteristics as well. While there are a breadth of potential data points, this analysis is limited to a select number of variables, including: characteristics of the pedestrian environment (sidewalks, street crossings, curb cuts at crossings, accessibility issues, etc.), public realm characteristics (landscaped public spaces, parks, and natural features), residential land uses (diversity of housing stock, consistency in street wall, vacancies and apparent blight), and physical barriers (elevated highways, gated communities, water bodies, roads with 6 or more lanes).

- Morphological analysis: figure-ground studies (see Jacobs, 1993, Rowe and Koetter, 1978) of urban form illustrate connectivity density. These help to define space usage (i.e. the percent of public rights-of-way versus private domain, percent of pedestrian space, etc.) and scale comparisons. In addition, a key contribution for the field is the classification of urban form patterns in terms of its amenities density: "the field" (amenities spread throughout the neighborhood), "the node" (a central point of focus within the neighborhood), and "the corridor" (a string of nodes connected along a linear street).

The Efficacy of Planning: addressing the secondary question on the efficacy of planning in terms of promoting stability and/or walkability is a significant challenge for this research. A potential

outcome is that these case studies may yield additional questions about the efficacy of planning, particularly for neighborhoods that existed prior to the emergence of the city planning profession. In terms of providing closure to these case studies, this research focuses on outcomes that can be operationalized in other neighborhoods and cities, while at the same time acknowledging that there are potential unresolved issues where (a) planning has either been largely ineffective in addressing, or (b) planning has missed or has yet to address key opportunities within each of these neighborhoods.

Atlanta, Georgia

The physical expression of Atlanta today is a product of struggle and change in response to historic events and the advent of new technology and forms of transportation. As it emerged from the devastation of the Civil War, a vast amount of Atlanta was witness to reconstruction efforts, which brought a new identity for the city. While once a well-integrated part of the Old South, the new Atlanta was a place of entrepreneurship and open discourse (Reed 1889). Prior to the Civil War, there was only one railroad upon which residents and businesses relied heavily for the transportation of goods and services to this otherwise isolated region. Over time, however, new railroad spurs connected Atlanta to nearly every major center across the South, which brought new opportunities and ideas to bear upon a city that had already experienced a rebirth.

During the middle of the 20th Century, two events were highly influential in informing a legacy of development that remains present in Atlanta today. First, the end of World War II brought about a substantial shortage in housing supply as veterans returned to Atlanta, only to find that the city had reduced or otherwise removed a significant portion of the housing stock (Kruse 2005). While this gave rise to an emerging voice speaking out against injustice and prejudice, it was met with equal force by advocates of the status quo. To some, there was a perception of encroachment on the part of African Americans into White neighborhoods (2005, 43), and there were concerted efforts on the part of organizations as well as a political structure that aimed to maintain segregation throughout Atlanta. These activities did not, however, operate in a vacuum, as the Civil Rights Movement followed in addressing the legal and social rights of individuals and communities throughout the South. Whether the Civil Rights Movement had any early impact on the desegregation of Atlanta is of some question, and there is evidence to indicate that Atlanta retains a lack of diversity throughout many of its communities today.

Table 7.1: Demographic Profile, Atlanta and Target Neighborhoods

Place	Westwood	Peoplestown	Atlanta
Census Tract	81.01	55.01	
Land area in square miles, 2010	0.35	0.46	133.15
Population per square mile, 2010	2,802	5,010	3,156
Population Characteristics			
Population estimates, 2009-2013	1,243	2,588	447,841
Population estimates base, 2010	977	2,307	420,279
Persons under 18 years, percent, 2010	20.2	29.1	19.4
Persons 18 to 24 years, percent, 2010	8.0	12.0	14.3
Persons 25 to 44 years, percent, 2010	19.9	34.5	34.6
Persons 45 to 64 years, percent, 2010	25.2	18.4	21.9
Persons 65 years and over, percent, 2010	26.7	6.0	9.8
White alone, percent, 2010	0.9	13.2	38.4
Black or African American alone, percent, 2010	96.6	80.8	54.0
American Indian and Alaska Native alone, percent, 2010	0.5	0.0	0.2
Asian alone, percent, 2010	0.4	2.3	3.1
percent, 2010	0.0	0.1	-
Two or More Races, percent, 2010	1.6	3.3	2.0
Hispanic or Latino, percent, 2010	0.7	2.4	5.2
High school graduate or higher, percent of persons age 25 years+, 2009-2013	80.1	75.7	88.0
Bachelor's degree or higher, percent of persons age 25 years+, 2009-2013	14.7	20.0	46.8
In civilian labor force, total, percent of population age 16 years+, 2009-2013	48.0	56.0	64.9
Unemployment rate, percent of population age 16 years+, 2009-2013	26.7	24.7	13.3
Median household income ($2013), 2009-2013	$29,178	$20,150	$46,631
Per capita income in past 12 months ($2013), 2009-2013	$12,381	$16,139	$35,890
Persons in poverty, percent, 2009-2013	31.3	42.8	25.0
Neighborhood Characteristics			
Housing units, April 1, 2010	463	1,234	224,573
Households, 2009-2013	399	949	179,459
Persons per household, 2009-2013	3.12	2.73	2.24
Owner-occupied housing unit rate, 2009-2013	69.4	35.0	45.4
Median value of owner-occupied housing units, 2009-2013	$75,000	$163,000	$210,000
Median gross rent, 2009-2013	$1,153	$843	$948

Sources: 2010 Census tables QT-P1, QT-P3; ACS 2009-2013 tables S1501, S1701, S2301, S2501, B11012, B19013, B19301, B25077, DP03

Turning to the rise of neighborhood identity, there is strong evidence to suggest that early streetcar networks and the railroads were highly informative in terms of delimiting residential areas. In particular, the streetcar networks provided connectivity between communities and

employment—particularly industrial districts—which helped to stimulate growth in areas accessible to working class individuals (Kuhn, Joye, and West 1990). On the other hand, the well-established network of railroad lines created physical divisions throughout the city, specifically between the north and south as well as the downtown from the west side. The impacts of these divisions are still palpable today, as growth and affluent households have focused principally on the areas to the north of the downtown. However, in the context of urban stability, one finds greater evidence of stability to the housing collapse to the southwest and southeast of the downtown in primarily African American communities.

As a general note on Atlanta, the selection of target neighborhoods was not an easy task, primarily because the three outcome dependent variables from the first phase of quantitative research do not align well with each other. That is to say, in terms of housing price stability the highest-ranking areas relative to other parts of the city did not rank as high in terms of resident turnover and age diversity. Likewise, the converse is true as well. Here, the mean scoring approach across the three outcome measures provided some options from which to select the target neighborhoods.

In the context of the city-level demographic profile for Atlanta, the Westwood and Peoplestown neighborhoods are distinctive in several areas—not only with regards to Atlanta, but to each other as well. It makes sense, then, to discuss them not solely in terms of their similarities and contrasts with the surrounding city, but more specifically how they contribute a different perspectives on stability in an urban setting. Westwood could be best characterized as low-to-moderate income where most residents own their home, almost entirely Black or African American alone, larger-than-average households, and a similarly large proportion of persons aged 65 years and over. This last piece of the demographics likely provides some insight as to why resident turnover rates may be so low: significant older populations (1) may be less likely to move out of comfortable surroundings, or (2) some older residents may be living with other family members, which might explain the higher rates for persons per household.

Peoplestown is a different neighborhood entirely when viewed through these filters for demographics and housing characteristics. Summarizing the key indicators, the neighborhood is low-income with over 40 percent of the population experiencing poverty conditions between 2009 and 2013; most residents (approximately 80 percent) are Black or African alone, followed by

White individuals at 13 percent; household sizes are larger than the average for Atlanta, but not to the extent found in Westwood; and the majority of households (65 percent) are renters. In terms of age distribution, one finds that nearly 30 percent of the population is under the age of 18, and only 6 percent of residents are aged 65 and older. Aside from the proportion of renters (who have not explicitly bought into this neighborhood), these indicators suggest the potential for a lack of mobility. However, in the context that home values rose 120 percent between 2000 and 2010, this lack of mobility does not appear to translate to displacement by means of gentrification.

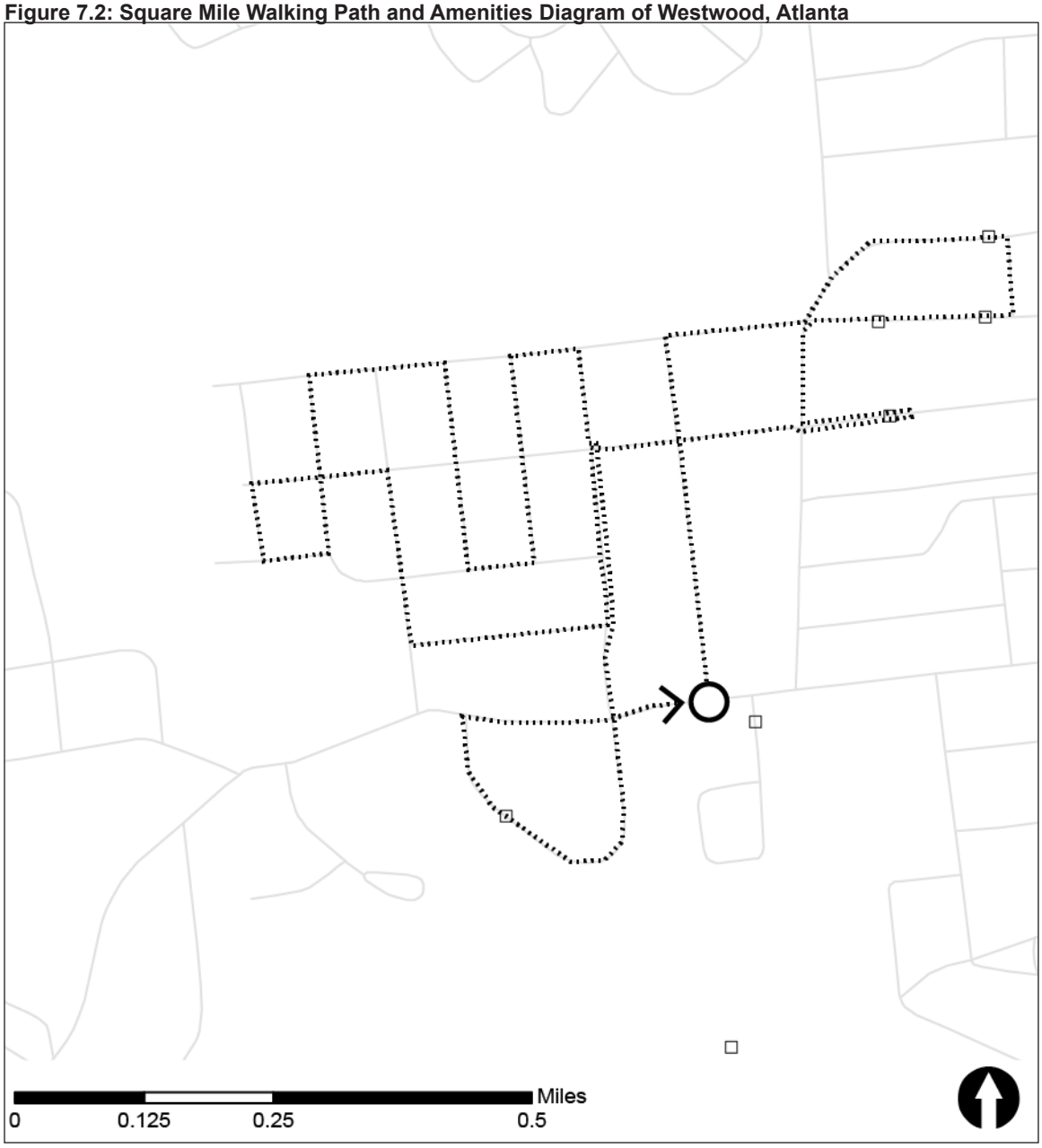
There is a common feature shared by these neighborhoods that cannot be captured in these data: both are connected directly to the Atlanta Beltline. The Beltline is arguably one of the greatest urban design achievements in terms of a regional strategy for economic development through an integrated parks system. Whether the implementation of the Beltline can be linked to urban stability outcomes is not well specified in the quantitative models, and this case study approach may help to reveal some linkage in this regard.

Atlanta Case Study: Westwood

Home Value Stability	++
Household Turnover	+++++
Age Diversity	++++

The outcome measures for neighborhood stability reveal some interesting attributes of the Westwood neighborhood. There was moderate positive growth in the median home values in this area, but less than that of other areas in the city. That is, this is not an area in decline, rather it is one that does not indicate strong external pressures for growth and change. It follows, then, that the household turnover rate is significantly less than that of other parts of Atlanta—this is an indication of community stability over time. What is interesting as well is the age diversity of this area, which is based upon a large proportion of the population over the age of 45 (see Table 7.1). This suggests that this neighborhood may be a suitable for later-life stage residents, and the large household size may be an indication of intergenerational living as opposed to residents simply aging in place.

Figure 7.2: Square Mile Walking Path and Amenities Diagram of Westwood, Atlanta



Walkability

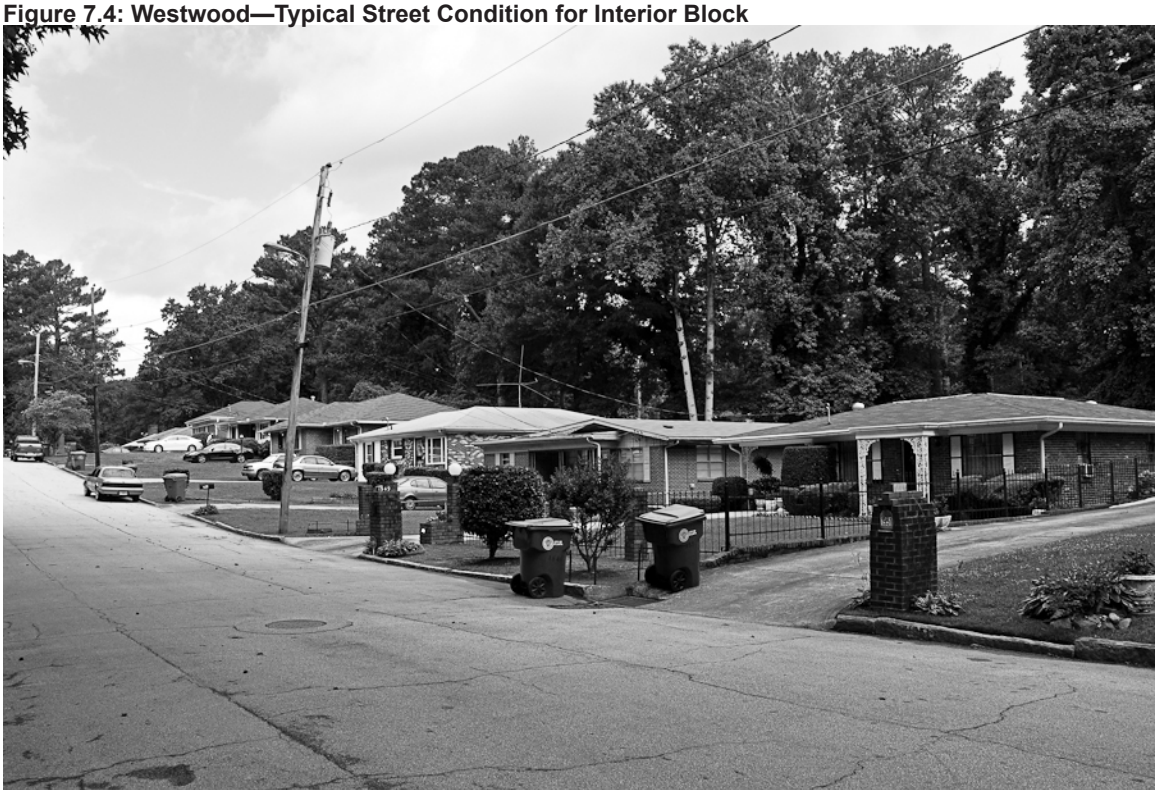
The physical and amenity characteristics of this neighborhood highlight two key findings. First, there is a lack of pedestrian infrastructure that clearly delimits vehicle and pedestrian space. At the same time, however, this is one of the few cases where there are traffic calming features, which suggests that despite the lack of pedestrian infrastructure there is a clear reinforcement of the perception of safety from vehicular traffic. A second key finding is that there is a lack of business amenities throughout this area (see the accompanying graphic). Taken together, the

Figure 7.3: Square Mile Figure-ground Diagram of Westwood, Atlanta

lack of pedestrian infrastructure and few private amenities suggest that pedestrian activity is limited by both; that is, there is little to walk to and few spaces upon which to walk.

A visit to the Westwood neighborhood, located to the southwest of Morehouse College, is one of the places of surprise that Jacobs (1985) alludes to in terms of the attribution of the observer's values to a place. A brief review of its location and demographic profile seemingly convinces one of a reality that simply is not present. That is, one might presume that Westwood is a forgotten community, pushed up against a wilderness boundary, lost against the emptiness of its

Figure 7.4: Westwood—Typical Street Condition for Interior Block



surrounding context. What one finds, almost immediately, is that this place is connected to one of the great urban design interventions in Atlanta, the Atlanta Beltline, which contributes to a sense of connectivity and access to a broader set of public amenities.

In terms of the structure of the space, there are no major barriers that limit its extents, but a hierarchy of streets ranging from a surround network of collector roads border an inner network of local roads. There is no posted speed limit, but cars take care as they travel through the neighborhood—presumably, all traffic is local and conducted by residents. At most, a few streets have a well-maintained sidewalk on one side, but rarely does one find a sidewalk on both sides of the streets. This forces an observer to walk in the public right-of-way, and drivers slow down to inspect the person walking throughout the area. Contributing to the slow pace of vehicles, most streets have speed bumps at regular intervals, and each intersection is marked by stop signs at 3-point intersections. Occasionally, a yield sign allows drivers to visually inspect for pedestrians, but this is an atypical condition.

Depending on how one enters the neighborhood, there are several examples of neighborhood markers that are almost certainly designed and constructed by residents. Hand painted signs—

Figure 7.5: Westwood—Western Spur of the Atlanta Beltline

not the type typically constructed or approved through a municipal signage and wayfinding project—communicate to the observer that one is entering a space where there is a deep, personal connection shared among the residents. Well-populated and maintained flowerbeds accompany each individual sign, which communicates that is some shared responsibility for their upkeep.

Visually, the interior portion of the neighborhood has the hallmarks of an exclusively residential area. Homes are set back from the street, each has a driveway, and most have a detached garage—though none are a predominant feature of the property. The dominant housing type is single-family detached, but there are a few examples of low-rise apartment complexes with between 4 to 6 units per building. In terms of architectural expression, most units per block face appear to be designed and constructed around the same time period as evidenced by consistency in architectural style and building materials. While consistency in form is apparent, there is a clear effort on the part of residents to personalize their space. Some attempts are well-restrained, though there are a few examples of properties that are adorned with an over-saturation of lawn ornaments. Overall, however, each lawn is well manicured, and there were several residents mowing their lawns during the middle of the week.

Despite the lack of sidewalk space or homes pushed up against the street, there is a clear sense of character and enclosure from well-developed street trees. Street lighting appears to be sufficient to illuminate the street for cars at night, but it is not to the extent that one would feel particularly safe walking alone in the dark. The composition of buildings does not lend itself to a particularly strong sense of density. Most buildings throughout the neighborhood are single-story, but there are a few examples of 2 and 3 story single-family detached and small-scale apartment complexes. A visual estimate of density suggests that each lot is approximately a quarter acre in size, leaving considerable gaps between buildings, which as mentioned earlier are set back from the street, with a typical condition at approximately 20 feet.

At the extents of the neighborhood, there are several collections of commercial or institutional uses. At the southern border of the neighborhood, there is a large community park and public tennis center—at the time of observation, a large group of grade-school age children were taking lessons with several instructors. At major intersections, there are one or a few commercial establishments, typically convenience or service-oriented in function, which suggests that these uses are primarily local serving in nature and not a particular destination for visitors. There is one elementary school, and there are otherwise few institutional uses save for one well-maintained church.

Overall, the sense that one gets from a walk throughout this neighborhood is that there is a strong sense of community evidenced by small public art installations and neighborhood signage. There is a perception of safety from traffic despite the lack of sidewalks or other places of refuge.

Atlanta Case Study: Peoplestown

Home Value Stability	+++++
Household Turnover	++++
Age Diversity	+++

The Peoplestown neighborhood scores high with regard to home value stability, which suggest that this is a neighborhood that is undergoing physical change. There is evidence of new housing starts throughout the area, but the community remains somewhat stable as there is a relatively small change in household turnover. This suggests that, while home prices are likely on the rise, the market is slow to respond in capitalizing on rising home values. This may be a product of the

Figure 7.6: Square Mile Walking Path and Amenities Diagram of Peoplestown, Atlanta

relatively low homeownership rate in the area (see Table 7.1), which further reinforces the notion that potential new residents have yet to see real value in investing in this area.

Walkability

The walkability characteristics of this neighborhood indicate two key findings. First, the physical arrangement of amenities can be loosely characterized as “the field,” yet there is little amenity density in comparison to other cases with similar spatial configurations. This may be a product of

Figure 7.7: Square Mile Figure-ground Diagram of Peoplestown, Atlanta

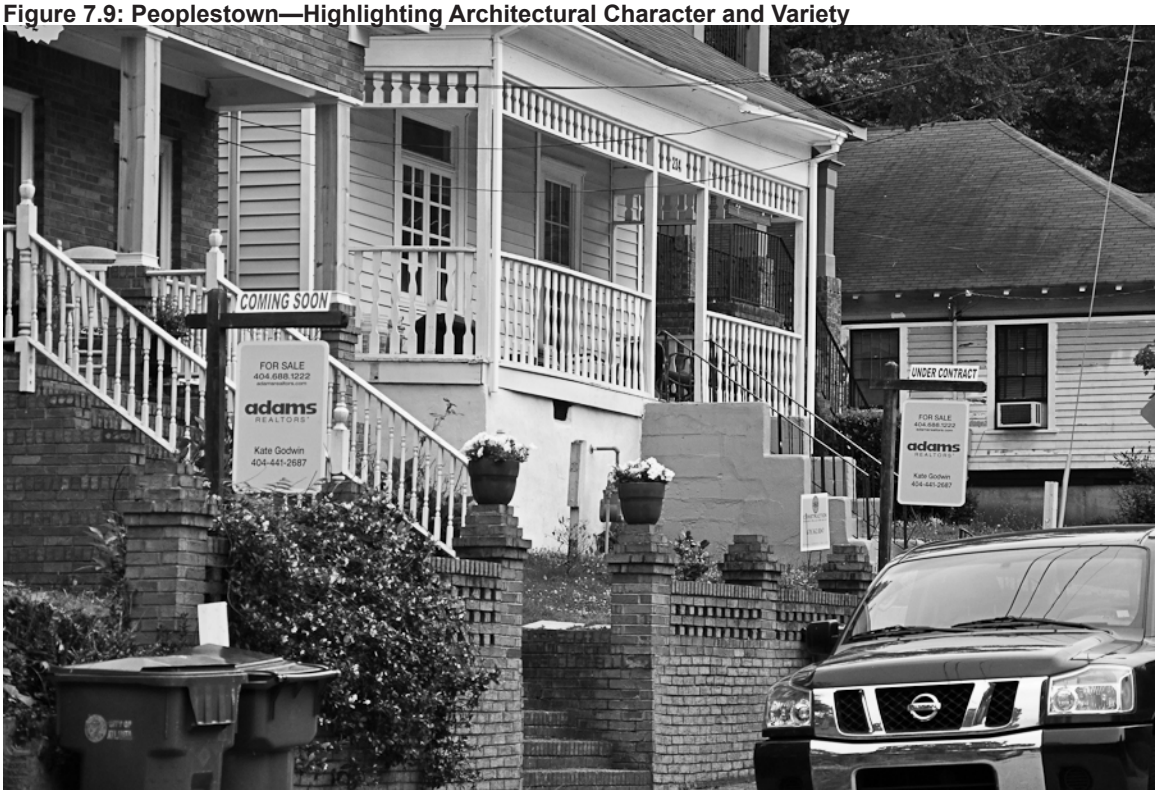
local zoning regulation, but it may also be the case that the private market is waiting to develop new amenities on an increase in new residents, particularly homeowners. Second, the physical attributes of the pedestrian space are aesthetically pleasing with a strong sense of enclosure (i.e. both with respect to ample street trees and a strong relationship between the public realm and residential buildings) and well-maintained pedestrian infrastructure. However, despite the lack of private amenities located in this area, there are ample public recreational amenities, which are discussed in detail below.

Figure 7.8: Peoplestown—Typical Street Condition for Interior Block

The Peoplestown neighborhood to the southeast of the old Atlanta Braves baseball stadium is a place in transition. Several residents expressed a deep concern for the implications of the lack of outside visits stemming from the move of the baseball team to the suburbs, but there were clear indications that two community groups were well mobilized to address this and other concerns. Most notably, this low-lying area is often prone to flooding, and there is a general perception that the provision of city services addressing this issue was unsustainable. Despite these concerns, residents expressed a clear satisfaction with their neighborhood, and no one was surprised to hear that an outsider would consider this a place of urban stability.

In comparison with the other Atlanta neighborhood studies as part of this exploration, the character of this neighborhood communicates a stronger sense of density. This is a both a product of smaller lot sizes—approximately a tenth of an acre—as well as more verticality for single-family detached homes. There are very few prominent barriers, but the extents of the neighborhood are well-defined by a clear street hierarchy surrounding the area. At the periphery, there are several higher speed collector roads, and the inner network of streets is a misaligned grid of tight, local streets.

Figure 7.9: Peoplestown—Highlighting Architectural Character and Variety



Along the local streets, both sides feature well-maintained sidewalks with a landscape buffer and street trees. These features contribute both to a sense of character and enclosure. Character is well-reinforced by neighborhood banners and markers typical of a municipal-level signage and wayfinding project. These banners communicate a sense of community-identity as opposed to a municipal-level focus. Perhaps, however, these installations were added to the neighborhood during the Braves' tenure, as several residents noted "it used to be a place where people parked for baseball games." Parking is provided primarily along the street, as few homes have driveways and garages. For those that do, the structures are incorporated into the residential unit, but it is not a pronounced architectural feature and blends well with the context.

Throughout the neighborhood, there is a significant amount of vehicular traffic that suggests that this is a place that people visit and pass through. Providing a sense of safety, the public right-of-way is striped with dividing lines demarcating one lane of traffic in either direction, and pedestrian crossings are defined by curb cuts and well-marked. While the posted speed limit is 30 miles per hour, most vehicles appear to be driving well in excess of the posted limit, but the physical buffer between the sidewalk and street provides a perception of physical safety.

The architectural character conveyed by the buildings suggests that this neighborhood has experienced several periods of reinvestment. While there remains some undeveloped lots, there were many examples of newly-constructed single-family detached homes, and many of the newer units are for sale while older units are clearly occupied and well-maintained. Despite the fact that there are older homes throughout the area, none seemed particularly historic in character. However, the relationship between the private and public realms were very complimentary, suggesting some evidence of management of urban character.

To the extent that the management of the public realm was beyond that of other communities within Atlanta was unclear, but there was substantial evidence of the provision of large public amenities throughout the neighborhood. In all, there are three large public parks or recreation areas, each with its own character and tangible date of construction. At the northern border of the community, there is a large public high school with recreational fields and a running track. Both were heavily used during the period of observation, but there was no perceivable sense of program to the extent that these activities were organized—people were simply taking advantage of the public amenity. At the southeastern edge of the neighborhood, there is a substantial open area with a newly-constructed playground. At the time of observation, there was a group of approximately 20 children supervised by a few adults, which is most likely an indication of a service provider operating a summer activity group during the summer months.

In terms of the non-residential offerings within this community, most appear to be local serving in nature. There are several community-sized markets (i.e. a few thousand square feet of leasable area) that are well-maintained and feature fresh produce. Other than the primary and secondary educational institutions in the neighborhood, there is an absence of other institutional uses aside from two churches—one of which appeared to serve as a community resource for adult education during the day. Along a central corridor running from east to west, there is a collection of small coffee shops, bookstores, and miscellaneous retail shops. These contribute to a sense of centrality for the neighborhood, and several patrons were frequenting these amenities during the period of observation.

Within the neighborhood, and in relative close proximity to the playground at the southeastern edge, there is a perceptible area of concern. Along one of the major collector streets, there is a liquor store with several low-rise apartment complexes across the street. During the period of

observation, there was heavy police activity focusing on these complexes. Six police cruisers, four of which were racing around the neighborhood with lights on, were addressing some issue of significance. In this area, there were a large number (approximately 15-20) individuals milling about in these complexes, but these individuals appeared to be observers of the activity as opposed to active participants or persons of interest. Despite this locus of concern, the general perception of the neighborhood conveys a strong sense of community.

Salt Lake City, Utah

The arrival the early pioneers from The Church of Latter-day Saints in 1847 signaled the beginning of a new era for the Salt Lake Valley. Long before their arrival the valley was occupied by several Native American tribes, but the first permanent settlements were founded within days of the arrival of the Mormon pioneers. Though many scattered cities emerged throughout the valley, Salt Lake City was the central city around which all other settlements were organized (Hamilton 1995). With the establishment of the Salt Lake Temple, the “Mormon Grid” created the framework of streets and platting based on an orthogonal grid. One’s location within the grid is determined by the location of the Temple, which provides centrality to the city and the region as a whole (Olson 2002).

While based upon notions of a traditional gridded network of streets, the Mormon Grid is based upon a block structure that measures 660 feet along each side. The replication of this grid has been replicated throughout the region, spanning approximately 360 cities and towns across the Intermountain West and Canada. Variations in terms of its size and scale have contributed to some irregular developments over time, occurring both with the central city as well as historic agricultural areas that were developed later into residential districts (Schuster 1967; Case Scheer 2003). Early guidance for residents instructed the community to live in the city, which promoted a certain sense of a compact organization of people and uses that advanced an ideal urban characteristic in terms of social and civic structure (Galli 2005).

Although originally formed on the basis of agricultural production, Salt Lake City emerged as the primary commercial center with a focused urban built form. Over time, various infrastructure projects have reinforced the visual perception of the central city beginning with the introduction of the Interstate Highway System, and Interstate 15 provided a strong axial relationship between city and its suburbs throughout the Salt Lake Valley. Later developments, especially those leading

Table 7.2: Demographic Profile, Salt Lake City and Target Neighborhoods

Place	Rose Park	Liberty Wells	Salt Lake City
Census Tract	1005	1031	
Land area in square miles, 2010	0.73	0.50	111.11
Population per square mile, 2010	8,717	8,259	1,678
Population Characteristics			
Population estimates, 2009-2013	6,286	4,344	191,180
Population estimates base, 2010	6,379	4,163	186,443
Persons under 18 years, percent, 2010	30.4	21.8	22.5
Persons 18 to 24 years, percent, 2010	11.1	10.7	12.2
Persons 25 to 44 years, percent, 2010	32.8	40.1	35.4
Persons 45 to 64 years, percent, 2010	16.7	21.6	20.5
Persons 65 years and over, percent, 2010	9.0	5.8	9.4
White alone, percent, 2010	61.6	75.5	75.1
Black or African American alone, percent, 2010	4.7	3.2	2.7
American Indian and Alaska Native alone, percent, 2010	1.7	2.5	1.2
Asian alone, percent, 2010	3.5	3.2	4.4
percent, 2010	2.2	0.7	2.0
Two or More Races, percent, 2010	5.0	4.5	3.7
Hispanic or Latino, percent, 2010	45.0	22.1	22.3
High school graduate or higher, percent of persons age 25 years+, 2009-2013	76.3	83.4	86.3
Bachelor's degree or higher, percent of persons age 25 years+, 2009-2013	18.7	29.8	41.2
In civilian labor force, total, percent of population age 16 years+, 2009-2013	64.1	73.6	70.4
Unemployment rate, percent of population age 16 years+, 2009-2013	9.7	8.4	8.5
Median household income ($2013), 2009-2013	$45,471	$40,659	$45,862
Per capita income in past 12 months ($2013), 2009-2013	$15,687	$21,231	$28,137
Persons in poverty, percent, 2009-2013	16.5	23.7	19.9
Neighborhood Characteristics			
Housing units, April 1, 2010	2,283	1,874	80,724
Households, 2009-2013	2,043	1,709	73,642
Persons per household, 2009-2013	3.08	2.54	2.49
Owner-occupied housing unit rate, 2009-2013	68.9	52.1	49.5
Median value of owner-occupied housing units, 2009-2013	$147,700	$202,400	$236,600
Median gross rent, 2009-2013	$760	$774	$783

Sources: 2010 Census tables QT-P1, QT-P3; ACS 2009-2013 tables S1501, S1701, S2301, S2501, B11012, B19013, B19301, B25077, DP03

up to and immediately following the 2002 Winter Olympics, contributed strong demand pressures within the city. In particular, the construction of a light-rail line (TRAX) in 1999 connected the city with Sandy, one of the principal suburban areas located to the south of the city. Over time, lines

expanded to the west and southwest, connecting West Valley City and Jordon, respectively. This new means of connectivity brought not only added growth to the city, but it also helped solidify a set of regional commercial entities that contributed to widespread growth throughout the Valley.

The city today does not aptly reflect its agricultural foundations. An early focus on culture and the arts—foundational pillars of the city's contemporary expression—helped to distinguish Salt Lake City from its surrounding communities (Galli 2005). In addition, residential development enveloped the agricultural areas at the periphery of the central city, which has contributed significantly to a strong sense of neighborhood identity today. Each residential district, however, conveys a sense of character that is informed by its principal date of development. Some areas still retain the overarching structure of the Mormon Grid, while other areas have developed in a more organic fashion in response to topography or aesthetic ideals of their time of construction.

The two Salt Lake City neighborhoods studies through observation, Rose Park and Liberty Wells, are distinctive from each other in several ways. First, one should acknowledge that there are some indications that these neighborhoods emulate the conditions of Salt Lake City as a whole: both feature median household incomes that are in line with the city, and their relative employment levels are roughly the same when taking into account labor force participation rates. The similarities to the city and each other appear to end there.

In comparison to the city and the Liberty Wells neighborhood, the demographic profile for Rose Park indicates a significant proportion of persons ages 18 and below (approximately 30 percent), which relates well with the large household average household size throughout the area. In addition, 45 percent of residents are Hispanic or Latino (approximately twice that of the city and Liberty Wells), which is a large proportion given that Salt Lake City is predominantly White. What is interesting from this data as well is that there are relatively low educational attainment levels, while at the same time unemployment and poverty rates do not appear to be well correlated with educational attainment. There is also a high rate of owner-occupied housing units (nearly 70 percent), which is well correlated with the fact that, among all Salt Lake City tracts, Rose Park had the greatest decrease in household turnover between 2000 and 2010. The data alone suggests that this is a very stable community, and, while not particularly diverse in terms of age, this is an interesting place for observation.

Liberty Wells, in contrast, is a neighborhood that closely mirrors the citywide demographic profile

in terms of population characteristics. The sole departure from mean city data is educational attainment for a 4-year college degree, which is approximately three-quarters that of the average city levels. What is not revealed in this demographic profile is the strong appreciation of home values between 2000 and 2010: the increase by 57 percent over a decade is second in the city, whereas the highest area for increase in median home values featured a high increase in the household turnover rate during the same decade.

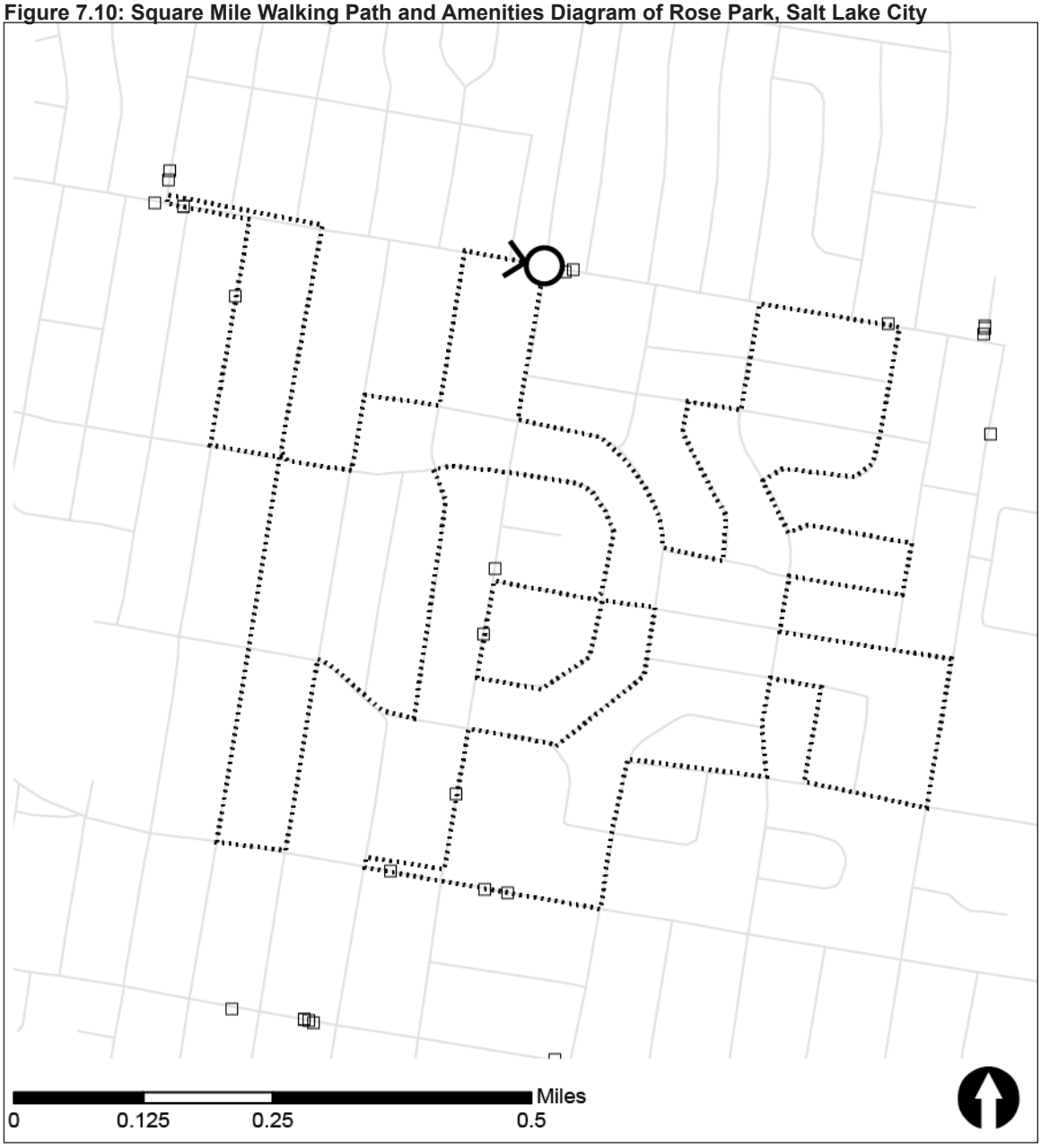
What will be interesting for observation is to examine the key differences between these two neighborhoods. Rose Park appears to be the community of stability while Liberty Wells is a community experiencing high demand pressures in the face of rising home values. In terms of the latter specifically, it is interesting to note that between 2000 and 2010 there was a decrease in the rate of household turnover. This may be an indication of a neighborhood that is become stable in terms of households within the community, but it will be interesting to follow this neighborhood in the future to determine whether changes will occur if home values continue to rise.

Salt Lake City Case Study: Rose Park

Home Value Stability	+++
Household Turnover	+++++
Age Diversity	++++

The outcome measures for neighborhood stability reveal two interesting findings for Rose Park. The first is the relatively low increase in median home values over time in the context of other parts of the city; although positive, this suggests that there is relatively low demand pressures within the residential market. This is likely a contributing factor to the relatively high stability outcome for household turnover as this area has not experience a significant amount of change in this regard. A second point of observation is for age diversity outcomes, which is likely an outcome of the large household size. In particular, one age group that is significantly larger than other parts of the city is the number of children under the age of 18, which in the context of the large household size in this area relative to the city suggests that this area is particularly desirable and well-suited for the needs of families with children.

Figure 7.10: Square Mile Walking Path and Amenities Diagram of Rose Park, Salt Lake City



Walkability

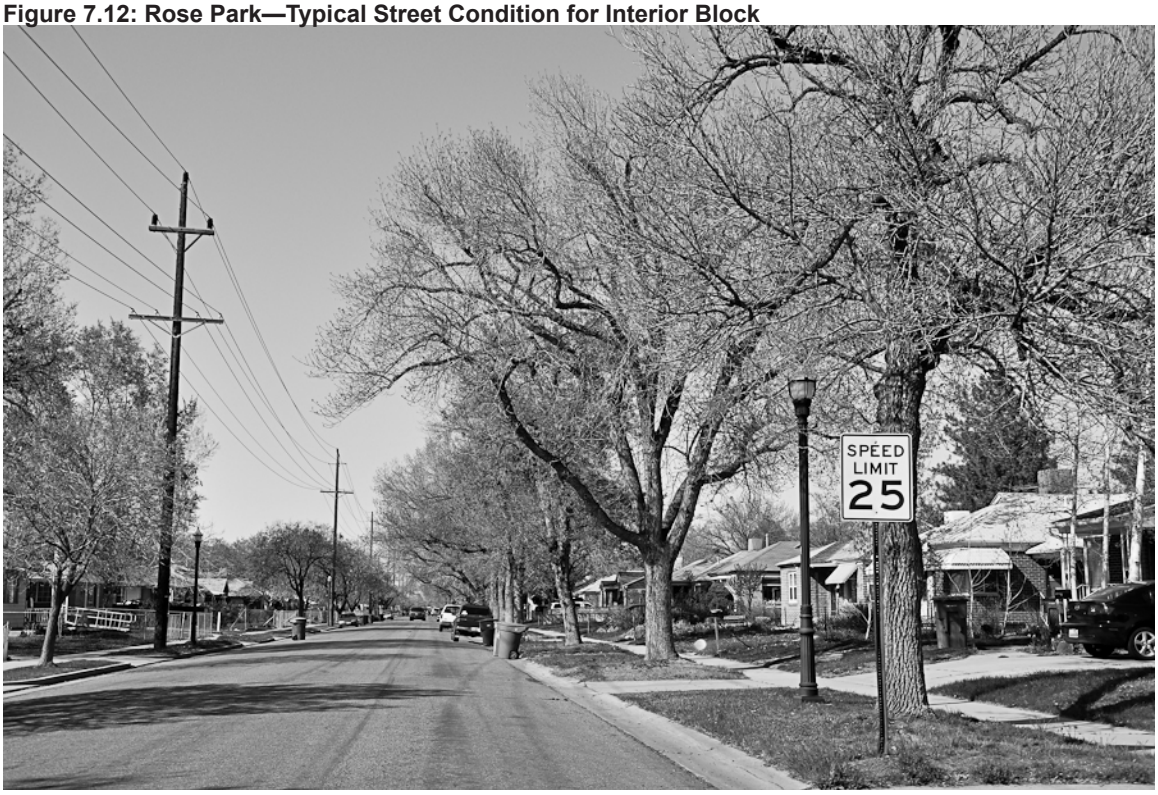
The physical and amenity characteristics of this area indicate two findings. The first is that the spatial configuration is the void, although there is some evidence of nodal development at the northern and southern points of the neighborhood boundary. These nodes, however, are not dense with respect to the number of amenities; rather, the amenities are a large grocery store to the south and an elementary school to the north. A second point is the urban design attributes of this area, which contribute to the comfort and safety elements of the pedestrian experience.

Figure 7.11: Square Mile Walking Path and Amenities Diagram of Rose Park, Salt Lake City

There is a well-maintained pedestrian infrastructure, which is complimented by ample street trees providing a sense of enclosure and safety from vehicular traffic. In addition, the streets themselves are small in width, which is uncharacteristic in comparison to Salt Lake City as a whole—this is examined in greater depth below.

The Rose Park neighborhood, located on the west side of Salt Lake City and north of the downtown, has a distinctive character that is unique to several neighborhoods on the “West Side.” As the figure-ground analysis above indicates, there is a fine-grained character within the

Figure 7.12: Rose Park—Typical Street Condition for Interior Block



neighborhood, which is centralized around a large building complex. As found in many Salt Lake City neighborhoods, this complex is the Stake Center, which is the center for multiple LDS Wards within a small but related jurisdiction. This creates a real sense of centrality for the neighborhood as it is a place of gathering and recreation.

With a physical expression similar to Perry's suburban Neighborhood Unit, the street hierarchy is clearly organized around the Stake Center. For the streets immediately surrounding the Center, there is a compactness to the vehicular space that is not typical of most Salt Lake City streets. This compactness, while operating in the same public right-of-way dimensions as other streets within this community, allows for the provision of wide landscape buffers featuring mature street trees. These trees provide ample shade along the sidewalks, which is a vital public amenity during summer months.

There is clear sense of safety throughout this community, both with regard to the pedestrian's perception of safety from vehicles as well as a perceived safety from potential crime. With regard to the former, the 25 mile per hour posted speed limit almost seems like a maximum suggested speed as the tightly constrained vehicle space—greatly reinforced when cars are parked along the street—appears to dissuade automobiles from reaching high speeds. Combined with the

notion that most if not all traffic originates locally, it appears that drivers take great care when passing through the neighborhood. For the latter, the perceived safety from crime, there is evidence of positive effects of the urban environment. There are clear sightlines throughout the neighborhood, and the modest set back from homes appears to allow for residents to consider both the public frontage and private backyard space as usable social spaces. During the period of observation, there were several sets of children moving around the neighborhood on bikes and scooters as well as a couple sets of residents walking dogs in tandem. Overall, one finds a very pleasant experience walking through this community.

Adding to the pleasantness of the walk, the urban design of the street is well-organized. In addition to landscaped buffers with street trees, there are sidewalks on either side of the street that are suitably sized for a moderate level of foot traffic. The sidewalks are well-maintained, and at each intersection there are curb letdowns and well-demarcated pedestrian crossings. In terms of physical features, the gas-lamp style street lighting convey a sense of character as there is a quality that suggests something more than a basic level light feature. While nearly every home has a driveway, which in other places might interrupt the sightlines in a neighborhood, the residential setbacks are not too great as to provide a sense of distance from the street while providing also sufficient room for cars in driveways that do not have attached or unattached garages.

Turning next to the visual character of buildings, the predominant type of residential uses are single-family detached homes constructed in brick. These homes seem moderately sized and are most likely around 1,000 to 1,200 square feet above grade with 2 or 3 bedrooms. There are modest homes that are well suited for families with children, which aligns well with the fact that approximately 30 percent of the population is under the age of 18. There are some examples of low-rise apartment complexes, and these are located towards the periphery of the neighborhood along the southern and eastern borders.

At the periphery of the neighborhood is where one finds supporting private amenities located along higher speed collector roads—there are no evidence of services provided within the neighborhood itself. At the northern border of the neighborhood is a large elementary school, which appears to be constructed within the last couple of decades. There is very little about the visual character of the school that suggests that it is in an urban area: there are no fences,

Figure 7.13: Rose Park—Highlighting Character of the Residential Public Realm

it features large playgrounds and active recreation fields, and there is a large amount of well-landscaped surface parking. At the southern border of the neighborhood, there is a commercial node featuring a large supermarket, a smaller Hispanic grocery, a bank, and an automobile repair station. While there is insufficient density within this neighborhood alone to support a supermarket of this size, the Rose Park residents almost certainly benefit from its proximity to their homes.

There are several “Third Place” amenities that do not appear in this neighborhood, and it bears relevance to examine why this might be. Specifically, there are no bars or coffee shops, which are generally perceived to be social gathering spaces outside of one’s home space. However, this is most likely related to a combination of planning regulations and market demands. In terms of the latter, Salt Lake City regulations prohibit the siting of drinking establishments near schools or churches, and only in recent years did new zoning regulations advance that allow for drinking establishments within specific residential areas. Even then, the provision of such establishments requires not only a sufficient demand within the market as well as obtaining a bar or club license through the State regulatory board—the provision of such licenses is tied to statewide population growth. Notwithstanding, the organization of the neighborhood around the Stake Center suggests that this is the primary place of community gathering such that individuals choosing to live

in this area perceive that as a pull factor, rather than perceiving the lack of other Third Place destinations as a push factor.

Salt Lake City Case Study: Liberty Wells

Home Value Stability	+++++
Household Turnover	++++
Age Diversity	+++

The outcome measures for neighborhood stability in the Liberty Wells neighborhood highlight two key findings for this area. First, the increase in median home values over time relative to other parts of the city reflect an area that is desirable to the extent that it is experiencing demand pressures. At the same time, however, the rate of household change is lower than many other parts of the city, which suggest that there is some stability in terms of resident community. A second observation is that the age diversity outcome measure indicates that this area may not have great diversity at first glance, but it is fairly in line with the age composition of the city as a whole. What is observed, however, is that there is a large number of children under the age of 18 (see Table 7.2), which suggests that this is an area well-suited for families with children.

Walkability

The physical and amenity attributes of this neighborhood reflect two key observations. The first is that the spatial configuration of amenities is characterized as a “corridor at the periphery.” This suggests that residents close to the corridor have strong access to businesses and other amenities, while residents further away (i.e. to the east) have fewer private amenities that are in close proximity. On the other hand, however, residents further from the corridor are in greater proximity to Liberty Park, which contains a large number of public amenities not captured other than the single data point for the park itself. As is described later, this park features cultural and recreational amenities such as swimming pools, play grounds, tennis courts, and water features, which likely contribute to the presence of a large number of families with children in this area. A second key finding, which is described in detail below, is that the urban design attributes of this area are very positive. There is well-maintained pedestrian infrastructure throughout the area, which is reinforced by mature street trees along nearly every interior street. This provides not only a sense of enclosure throughout the area, but a sense of human comfort as well.

Figure 7.14: Square Mile Walking Path and Amenities Diagram of Liberty Wells, Salt Lake City

The Liberty Wells area in Salt Lake City is an amalgamation of sorts. That is, there is a strong perceivable difference between its physical expression throughout the majority of the community in comparison with its western border. Within the residential area itself, there is increasing evidence of a band of rising housing prices moving from east to west over the past several years, which is a trend that extends far beyond its eastern border. Notwithstanding, the rate of resident turnover is quite low, which contributes to a strong sense of community through readily apparent residential interactions observed during the period of study. Throughout the neighborhood, there

Figure 7.15: Square Mile Figure-ground Diagram of Liberty Wells, Salt Lake City

were individuals talking on front lawns, interacting as they passed each other while walking their dogs, or generally just appeared to be engaged with others in their surroundings.

This perceivable sense of individual interactions is perhaps reinforced by the proximity to Liberty Park, which is one of the largest and most social parks in Salt Lake City. It is not the type of park that simply provides open space; rather, it is very heavily programmed. There is the Tracy Aviary (funded by Salt Lake County), a public pool and recreation area, a summer camp with rides for small children, a public tennis center that provides low-cost instruction, a large

pond with boats available for rent, an artistic water feature, the county horticultural center, two playgrounds, a jogging track, and a large convening area where there appears to be a large event every weekend. The southern gateway to this park runs is at the northeastern border of the neighborhood, and at any given point one sees people walking in the street almost as freely as bicycles travel, and most are headed in the direction of the park. It seems, in this instance, that this park provides not only a useful amenity, but it contributes to a culture of use exhibited by residents and visitors alike.

Turning next to the street structure, this neighborhood highlights structural characteristics that are fairly common in Salt Lake City. While the city is organized along an aligned grid of large blocks, when one gets into the residential areas outside of the city core these blocks are broken up into square subunits with two rectangular blocks contained within each square unit. The orientation of these blocks alternates in rotating 90 degrees such that the grid is disrupted, but this disruption creates smaller collections of residential areas reinforce a sense of home space. The result of which is that, unless one walks along the major organizing streets, there is a meandering quality throughout the neighborhood when one enters the subunit structure. While there is no real visual

Figure 7.16: Liberty Wells—Typical Street Condition for Interior Block

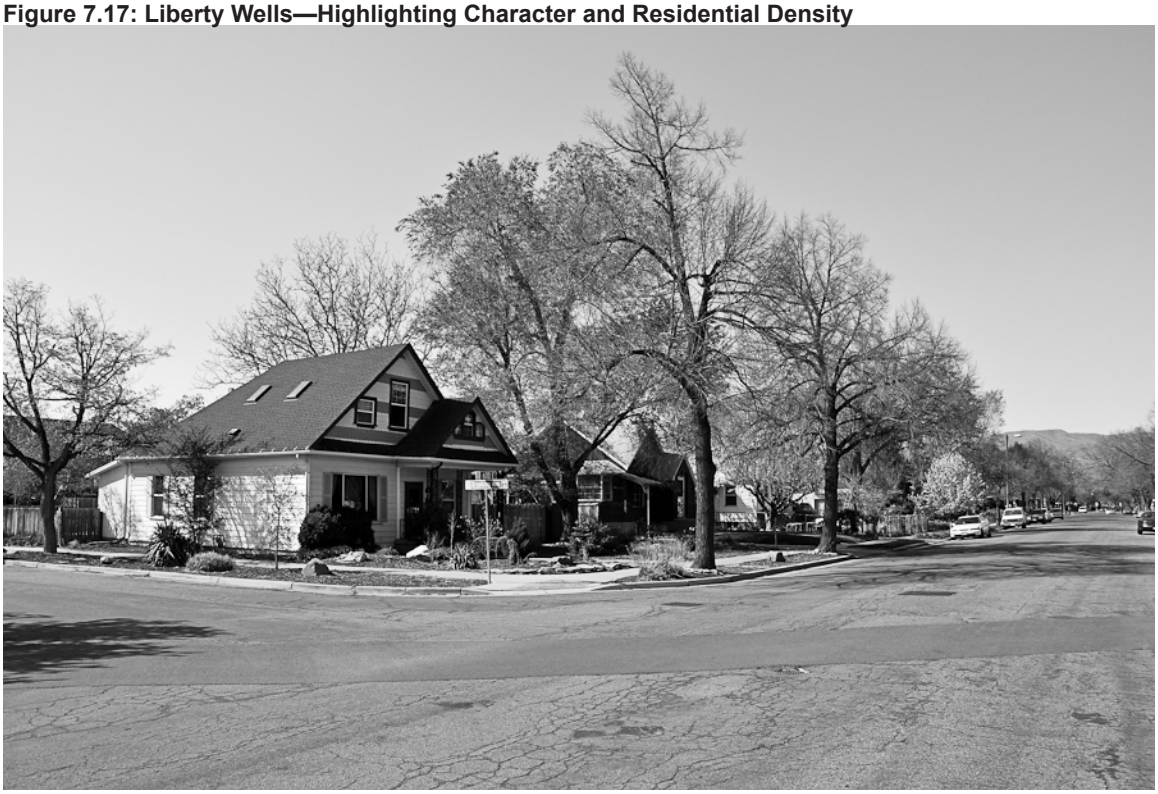
terminus within these areas, the alternating orientation of these subunits reinforces a perception of small-scale residential enclaves despite the presence of a larger organizing block structure that dominates the city.

One should not ignore, however, that there are very large, heavily trafficked vehicular streets that act a perceptible barriers along the eastern and western borders of this area. To the east, there is a large arterial street with four lanes of traffic in either direction. In terms of the overall speeds one can achieve within the city limits, this is one of the faster places one can find. Along this eastern arterial, there is a mix of residences and small service commercial (i.e. boutique retail shops, dry cleaners, and hardware shops), but the commercial uses are clearly oriented towards vehicular access as they are fronted by parking lots. There is also considerable noise emanating from the traffic, which dissuades one from walking in that direction. Conversely, there is a sense of refuge within the interior blocks, which suggests that the hierarchy of streets is quite effective in establishing areas for expediency while preserving a pedestrian feel and character within the interior.

In terms of the perception of safety from vehicular traffic, one might readily recognize that, despite the perception of the street as shared space, there is room for improvement. While the posted speed limit is the same as the Rose Park neighborhood, there are a couple of factors that highlight contrasts when one's experience with vehicles is considered. First, not every intersection has a stop sign where streets terminate, and very often cars roll through these intersections as if there were a yield sign. This seems to be a common trait among the driving characteristics of the city itself, as this is noticeable elsewhere. Second, there is considerably more width dedicated to vehicular travel lanes, which has some trade-offs: in one sense, this provides less visual impairment for drivers, who in turn feel more comfortable with higher speeds; in a second sense, this provides sufficient room for these streets to be shared space. That this space appears to be considered shared spaces suggests that there are few reported conflicts between drivers, pedestrians, and bicycles. However, there is little evidence to suggest that this is the result of planning or urban design efficacy; rather, the shared space concept may be more a product of respect for one another within this community.

Turning next to the visual character of the urban environment, there is a greater mix of housing types and styles throughout this neighborhood. While the predominant type of residential uses

Figure 7.17: Liberty Wells—Highlighting Character and Residential Density



are single-family detached homes, there is variation in date and style within each subunit, and construction material palettes range from brick to clapboard to occasionally asbestos shingled homes. At most, there are three units of the same type and style in a row, which suggests that this neighborhood was built out slowly over time. There are as well low-rise apartment complexes—most are several decades old and constructed in brick—and it appears as if there is at least one on every block. That is, there is a fine-grained mix of housing types, styles, and sizes throughout the neighborhood, which is likely to satisfy the needs and preferences of individuals and households at various life stages.

As with several other neighborhoods studied during this period of observation, there are very few private amenities located within this area. This solidifies one's perception of the interior spaces as predominantly residential—even the local Stake Center and other domination's churches are located to the periphery of this area. This does not mean, however, that this area is devoid of businesses; rather, from the center of the area one has to walk at least three-quarters of a mile to get to any one particular destination. If there are lessons to be gleaned from this with respect to notions of urban stability, it seems that in this neighborhood there is more to find in terms of the culture of practice than a culture of consumption.

Philadelphia, Pennsylvania

Long before the city was founded by William Penn, early Dutch traders (1615) and Swedish immigrants (1638) established permanent settlements along the Delaware River. While these settlements do not inform the large, traditional grid established by Penn and his surveyors in 1861 Siegel (1975). While much of the development patterns of the city today can be traced to this grid, it was also the strong influx of immigrants during the early 18th Century that really drove the demand for housing and the development of working class neighborhoods throughout South Philadelphia. Several years before the start of the American Revolution, Philadelphia emerged as the largest commercial center in English America; with a liberal policy towards immigration, the population rose from a mere 2,200 in 1700 to 30,000 by the start of the Revolutionary War (Nash 2002). There is evidence that this rapid growth in population was not met by poor economic conditions, rather one finds that Philadelphia was widely regarded as an emerging cultural center, a significant seaport for trade, both of which contributed to its rise as a center of commerce.

During the years following the Revolutionary War, the newly formed United States government chose Philadelphia as its temporary capital through 1800. While the withdrawal of the federal government brought about change in the city's daily functions, it remained a center of culture and commerce well into the 20th Century. However, as trading and manufacturing declined during the latter part of the 20th Century, this brought about a new reality for the city: how to re-brand and recover from its industrial and manufacturing heritage. To a large extent, there was no easy answer to this, but the rise to national prominence in both the health and education sectors have helped create a new foundation upon which the city continues to build.

Contributing to a strong sense of urban identity, William Penn's plan for five public squares (one of which is City Hall today) resonates today to the extent that the provision of public parks, large and small, can be found throughout Philadelphia's neighborhoods (Weigley, Wainwright, and Wolf 1982). It seems almost as if it is ingrained in the ethos of place, and one can derive many visual cues about the character of the surrounding neighborhood just by observing and comparing the quality of its parks and open spaces. In the urban parts of Philadelphia, particularly those areas surrounding the four remaining squares, there is a clear balance struck between a density and the provision of usable public space at regular intervals. This balance is difficult to replicate, as is evidence by the failure of other urban cities in providing a sufficient amount of similar spaces for residents. In Philadelphia, however, it just seems to be second nature.

Table 7.3: Demographic Profile, Philadelphia and Target Neighborhoods

Place	Fairhill	Queen Village	Philadelphia
Census Tract	362.01	16	
Land area in square miles, 2010	0.40	0.08	134.10
Population per square mile, 2010	11,734	28,909	11,380
Population Characteristics			
Population estimates, 2009-2013	5,006	1,960	1,553,165
Population estimates base, 2010	4,744	2,192	1,526,006
Persons under 18 years, percent, 2010	20.4	11.8	22.5
Persons 18 to 24 years, percent, 2010	7.8	25.1	13.4
Persons 25 to 44 years, percent, 2010	27.9	34.3	28.5
Persons 45 to 64 years, percent, 2010	26.9	21.4	23.5
Persons 65 years and over, percent, 2010	17.0	7.4	12.1
White alone, percent, 2010	88.7	85.4	41.0
Black or African American alone, percent, 2010	4.1	5.2	43.4
American Indian and Alaska Native alone, percent, 2010	0.4	0.1	0.5
Asian alone, percent, 2010	2.5	4.3	6.3
percent, 2010	0.0	0.1	-
Two or More Races, percent, 2010	2.5	3.6	2.8
Hispanic or Latino, percent, 2010	6.0	5.5	12.3
High school graduate or higher, percent of persons age 25 years+, 2009-2013	85.1	95.8	81.2
Bachelor's degree or higher, percent of persons age 25 years+, 2009-2013	14.9	69.3	23.9
In civilian labor force, total, percent of population age 16 years+, 2009-2013	65.3	85.5	59.2
Unemployment rate, percent of population age 16 years+, 2009-2013	10.9	10.3	15.1
Median household income ($2013), 2009-2013	$53,863	$63,341	$37,192
Per capita income in past 12 months ($2013), 2009-2013	$26,295	$54,238	$22,279
Persons in poverty, percent, 2009-2013	6.4	10.7	26.5
Neighborhood Characteristics			
Housing units, April 1, 2010	2,043	1,235	670,171
Households, 2009-2013	1,935	1,046	580,017
Persons per household, 2009-2013	2.59	1.87	2.56
Owner-occupied housing unit rate, 2009-2013	70.3	43.6	53.3
Median value of owner-occupied housing units, 2009-2013	$196,300	$395,600	$142,500
Median gross rent, 2009-2013	$1,138	$1,103	$893

Sources: 2010 Census tables QT-P1, QT-P3; ACS 2009-2013 tables S1501, S1701, S2301, S2501, B11012, B19013, B19301, B25077, DP03

Philadelphia today is a prime example of a city with broad variations both in terms of demographics and the physical characteristics of neighborhoods. In terms of the latter, Philadelphia contains dense, urban areas—some of which have experienced strong growth

pressures while others struggle to find economic stability—and there are a host of areas that, if not for being contained within a city, could be described aptly as suburban in character. In terms of the former, the wide spectrum of population characteristics found across this city create some difficulty in terms of comparisons with its physical subunits or neighborhoods. Of the two neighborhoods examined in these case studies, both are areas that have experienced the benefits of growth pressures, which each responding differently.

The Fairhill neighborhood is far less dense than its counterpart, Queen Village, but this density is actually close aligned with the city overall. While the age composition is in line with the city, its racial composition is extensively White (nearly 90 percent versus 41 percent across the city). It is an area of moderate income, and the educational attainment of individuals within this area are similar to the city as well. However, it has a high owner-occupied rate, and homes values are moderate with respect to median household income. What stands out in particular is the low level of poverty experienced between 2009 and 2013; coupling this with low level of racial diversity, this area might be best characterized as a homogeneous enclave. It is interesting, then, to discover that across all tracts, Fairhill scored the highest in terms of mean rank relative to the rest of the city in terms of economic and non-economic change indicators.

Queen Village is, by all intents and purposes, a place of tremendous economic change. Among all tracts, it has witnessed the greatest growth in median home values between 2000 and 2010—approximately 400 percent—and the result is that falls in the middle of all tracts in terms of household turnover. While the rate at which household turnover has occurred has decreased over time, this has resulted as well in a large increase in the age diversity of the neighborhood over the same period. One finds that the roughly 60 percent of the population is between the ages of 18 and 44, which may be a leading indicator for evidence of gentrification—especially viewed in context of the pronounced rise in home values. Adding to this are significantly higher levels of educational attainment at both the high school and college thresholds, which is especially interesting given that this urban neighborhood is located far from any of the major universities in the city.

Philadelphia Case Study: Fairhill

Home Value Stability	++++
Household Turnover	+++++
Age Diversity	+++++

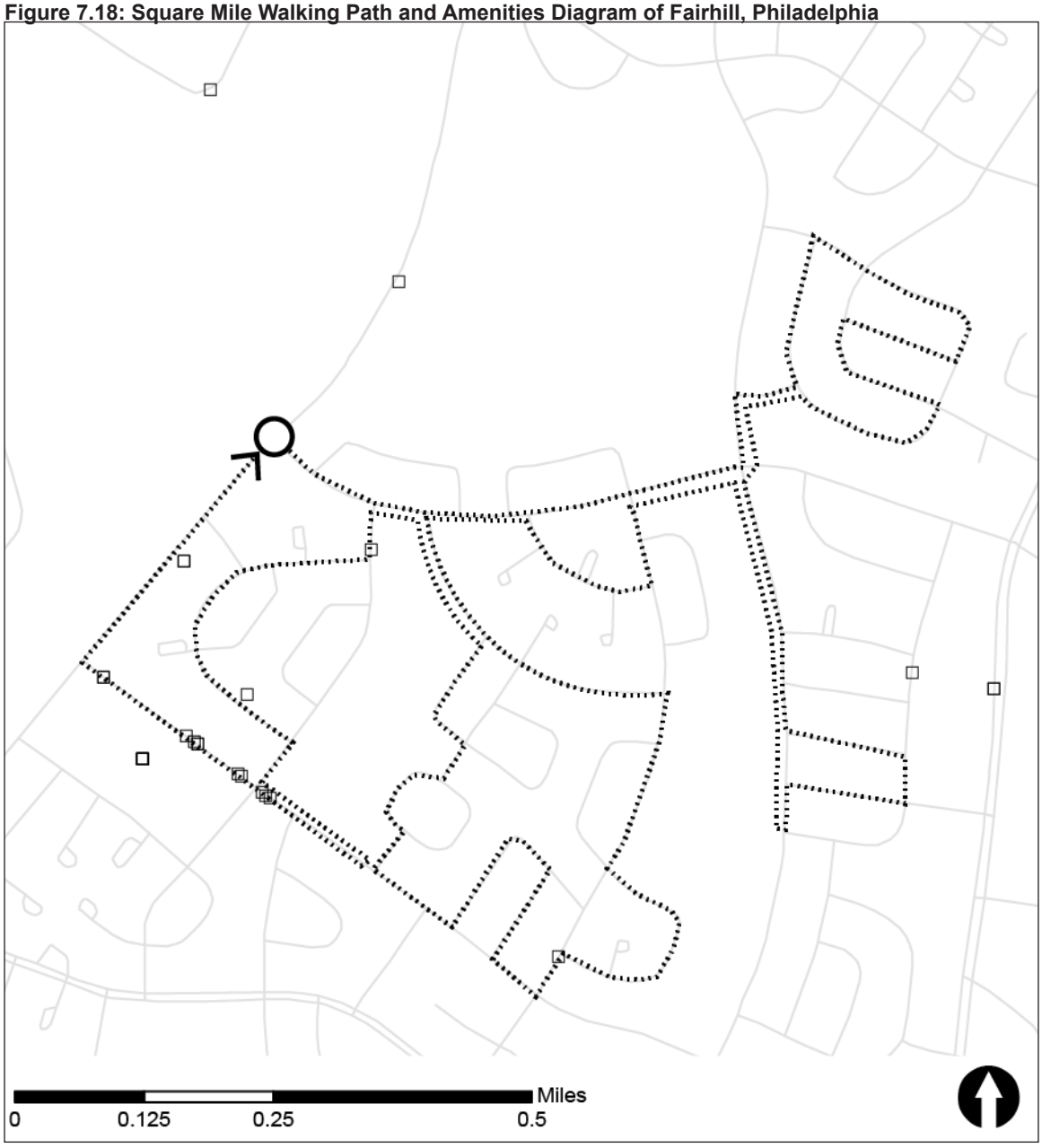
The outcome measures for neighborhood stability in the Fairhill area reflect stability both with respect to home values as well as community stability. As indicated in Table 7.3, this is an area of higher median household income relative to other areas in the city, which suggests that residents have mobility choices. Despite having such choices, there is relatively low household turnover in this area as well as indications of age diversity within the population. That there is a relatively small proportion of the population that is traditionally college-aged (i.e. 18 to 24 years old) indicates that this is an area that is particularly desirable for families with children and residents in later-life stages.

Walkability

The physical and amenity characteristics of this neighborhood reflect an area that is largely suburban in form pattern despite its location within urban boundary. While there is sufficient pedestrian infrastructure (i.e. sidewalks) throughout this area, there is an overwhelming lack of street trees or other pedestrian amenities. This detracts from the comfort aspects of walking as well as a sense of enclosure for pedestrians. Combined with the lack of amenities within the neighborhood—the provision of amenities are located along corridors at the periphery—one would not be surprised to find that there is little pedestrian activity throughout this area. That is, vehicular travel appears to dominate this area, though that travel appears to be exclusively locally-oriented as one would not find it convenient to travel through this neighborhood given the lack of a traditional street grid network.

Set far outside the central core of Philadelphia, the Fairhill neighborhood communicates a lack of distinctive character from other comparable suburban-style developments within the city's limits. That does not mean to imply that the community does not have an identity, nor should one interpret this as residents lacking a personal connection with the neighborhood space. However, this lack of communicable identify does not contribute to a defined neighborhood space.

Figure 7.18: Square Mile Walking Path and Amenities Diagram of Fairhill, Philadelphia



If there is to be a defined set of physical boundaries to the neighborhood, these are informed by the hierarchy of streets throughout this area. From an aerial perspective, the neighborhood is close replica of Perry's suburban version of the Neighborhood Unit, right down to the triangular form pattern. At the periphery there is a set of higher speed collector roads with at least two lanes of vehicular travel in either direction. Combined with these high speeds, the lack of a center turn lane makes entering the neighborhood with a left turn in a car quite difficult as there are few traffic lights along the perimeter save for corner intersections (which do not permit entry into the

Figure 7.19: Square Mile Figure-ground Diagram of Fairhill, Philadelphia

neighborhood). To some extent, this creates some barrier to entry, although for residents it is likely less of a challenge.

To some extent, this street hierarchy may reinforce a certain insularity that continues within the neighborhood itself. Although most homes are nestled close to the street and joined by a shared party wall, there are two common features of homes: first, the main entryway is elevated but is not a socially-welcoming space as is found with homes that are fronted by porches; second, not only are there driveways filled with cars that delineate a sense of spatial ownership, but a substantial

Figure 7.20: Fairhill—Typical Street Condition for Interior Block

proportion of homes have wrought iron fences (which are largely decorative) while some have privacy fences (which appear odd in such context). And, while there are areas for informal gathering or passive recreation (i.e. public park space), these areas were not in used during the period of observation. As there were many cars parked at individual homes and throughout the neighborhood, it was not clear as to *where the people were*.

Perhaps, as is made clearer from an aerial perspective, there is ample private backyard space, which may be a primary locus of residential activity. To the extent that such places are considered communal or shared among residents and can contribute to a sense of community is unclear from the observation period. That is, sightlines do not permit visitors to see within these private spaces, and this lack of openness communicates to the visitor a strong sense of outsiderness.

In terms of the basic visual character of the buildings, there is lack of imageability that is unique and could be directly attributed to this place. Instead, there is a lack of contextual grounding—that is, even if one recognizes this as a place in Philadelphia, it is not clear where this places is necessarily. The architectural expression of the place speaks to a fairly uniform vernacular, materiality, and date of construction. Most buildings are constructed in brick, and many feature

Figure 7.21: Fairhill—Highlighting Uniform Height and Density

a bay window that extents the façade and provides visual interest. However, none of the houses are particularly ornate or over-ornamented. This does not imply, however, that the buildings are not presentable, but they are certainly not interesting to the extent that one feels particularly informed about the character or history of the place.

Perhaps what contributes most to the visual character of this neighborhood is the surrounding context. As mentioned earlier, at the periphery of the neighborhood there are a set of high speed collector roads, and their visual character could be best described as embodying a suburban strip mall physicality. In terms of coding the physical inventory of amenities, the periphery is where one finds commercial uses ranging from small scale, nondescript strip mall retail uses to big-box offerings such as a supermarket and auto services center. That is, while the neighborhood is central located among these uses, these uses convey as well some centrality in terms of sub-regional importance. Residents could clearly benefit from the services provided at the periphery, but there is a clear sense as well that these uses serve the surrounding areas, drawing visitors from other communities. To this end, the residents of this neighborhood benefit from the convenience of its central location relative to such uses, but they are not fully integrated into the neighborhood and thus do not disrupt the small-scale nature of the individual's experience.

One potential drawback of the surrounding context is that the neighborhood feels physically isolated from other communities. This is a “potential drawback” as it could actually contribute to an individual’s sense of belonging as one’s home territory is well-defined by perceived barriers—both with respect to auto-oriented streets as well as a commercial expression that is largely incompatible with neighborhood-scale living. Overall, this reinforces a character that is seemingly inward-focused as opposed to iconic and imageable.

Philadelphia Case Study: Queen Village

Home Value Stability	+++++
Household Turnover	++
Age Diversity	+++++

The outcome measures for neighborhood stability reveal the duality that occurs when home values increase rapidly over time. There is strong evidence of household turnover within this area, while at the same time there is a strong increase in the age diversity of this area. This reflects a positive nature of change with respect to the response to the desirability of place. However, at the same time, one must also consider that it may be some time before there is stability in terms of a place-based community. That is, as new residents enter the market, a key question is whether they will remain such that there is the possibility of creating community in this area.

Walkability

Of each of the cases studied, Queen Village is by far the most amenity dense. The spatial configuration of amenities indicates both a corridor and field alignment, which in simple terms means that there are amenities throughout the neighborhood. It follows that residents have many choices in terms of the usefulness aspect of walking, and this observation is reinforced by strong evidence of pedestrian activity throughout the daytime during the middle of the week. In terms of the pedestrian infrastructure itself, which is discussed in detail below, there is sufficient space for pedestrian movement as well as an ample provision of street trees that contribute to a sense of enclosure and comfort.

The Queen Village neighborhood in southeastern Philadelphia is one of the oldest expressions of urbanism found within the city. Swedish settlers nestled along the shoreline well before the arrival of William Penn and other early English settlers, and the physical character of the neighborhood

Figure 7.22: Square Mile Walking Path and Amenities Diagram of Queen Village, Philadelphia

speaks to an age long ago passed. Complementing its historic character, there are contemporary expressions of urban design such as historic markers, banners, and art installations that signal to the observer that this is a place where history and contemporary living converge. While there are few clear physical delineations that differentiate this neighborhood along its western border—its eastern border is well-defined by a large arterial street—the northern and southern borders appear to be well-defined by collector streets running from east-to-west. The street hierarchy that dominates this neighborhood is a series of one-way, local serving roads where the right-of-way is not only narrow, and on-street parking provided on both sides as well.

Figure 7.23: Square Mile Figure-ground Diagram of Queen Village, Philadelphia

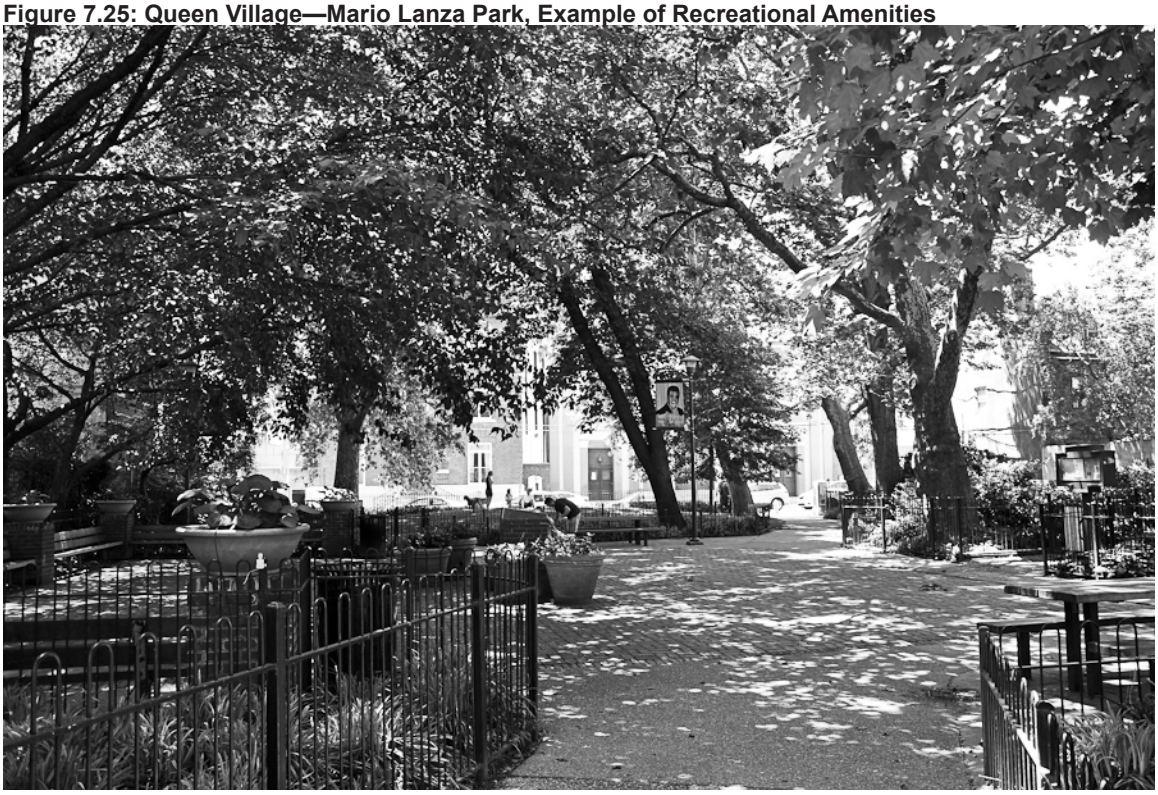
Reinforcing the tight-knit nature of the urban fabric, rowhomes and low-rise attached apartment buildings are a key feature throughout the neighborhood. The construction type is predominantly brick, which is a material that is present largely in the sidewalks throughout the neighborhood. In terms of the buildings, their brick facades are well-maintained and convey a strong, historic character. There is a uniformity to their physical expression that contributes positively to the imageability of the neighborhood. In addition, the attached dwelling units provide a complete street wall, which reinforces one's sense of enclosure.

Figure 7.24: Queen Village—Typical Street Condition and Architectural Variety

The street features are a strong contributing factor to the imageability of the neighborhood as well. Most sidewalks are paved concrete, but there are a few areas of particularly historic character where not only are the sidewalks composed of bricks, but the streets are cobblestones well-worn with age. Not everything, however, is perfectly composed about the street features. The sidewalks are narrow and allow individuals to pass by in close proximity, almost brushing by one another where large street trees are present. The street trees themselves, which contribute to a sense of enclosure, were not well planned for in terms of the upkeep and maintenance of the sidewalks. The age and size of the trees create substantial undulations in the surface of concrete and make an almost complete mess of brick passageways. Such irregularities in the surface of the walkways are a focal point for pedestrians, which almost detracts for the positive visual elements of the neighborhood—that is, one must take care on one's walk.

Despite these potential negative physical cues, there is an ample amount of pedestrian traffic throughout the neighborhood. This could be attributed to the need for residents to walk as parking is clearly at a premium—the number of cars parked along the streets appears well correlated to the density of the area. However, there are also a large number of retail and restaurant amenities within the neighborhood, and these are largely dispersed instead of collocated in a critical mass

Figure 7.25: Queen Village—Mario Lanza Park, Example of Recreational Amenities



of uses. This contributes to one's sense that there are a number of routes along which to travel, as there is no clear centrality to the neighborhood save for a couple of small, pocket-scale parks throughout the area.

The parks are a clear positive amenity for this neighborhood. Not only are these parks well-maintained—some lawn areas were fenced off temporarily to protect the grass during the period of observation—but they are well populated by a variety of trees and ground coverings. This extends beyond a simple sense of enclosure and provides, instead, a sense of privacy and refuge. These are clearly attractive features for residents and visitors, as the parks were well frequented during the middle of the day with individuals and groups eating lunch and generally milling about. What is particularly notable about this observation is that without a dispersed set of restaurant and convenience-oriented corner stores, one might imagine that these would not be as well populated by individuals spending time during lunch hours. This synergy of uses, to the extent that they are products of planning interventions or adaptation of buildings over time, is not entirely clear. However, that the adaptation of buildings for commercial mixed-uses throughout this area is permitted is evidence to some extent of the efficacy of planning.

In comparison to the previous neighborhoods examined during these observations, Queen

Village is the first of the truly dense, urban neighborhoods that demonstrate economic and non-economic stability. What is remarkably different is that this neighborhood seems far less isolated than its lower density counterparts to the extent that there are people outside on the streets and populating its public spaces.

San Francisco, California

To summarize and synthesize the history of San Francisco is a challenging exercise as much of its legacy in urban form, development patterns, and racial composition is linked to periodic episodes drawing back to the late 16th Century. During that time, exploration and the claiming of land was a key opportunity for explorers, with Portuguese, Spanish, and English ships all having made initial landfall around the Bay Area between 1542 and 1584 (Mayer 1974). It was not until the 1775 when the land was given the name San Francisco (though it was called *Yerba Buena* by early Spanish settlers)—which transferred *La Bahia de San Francisco* from Sir Francis Drakes Bay—and a year later the construction of the early elements of the Presidio represented the first permanent settlement (1974, 2). With Mexico achieving independence from Spain in 1821, San Francisco and the rest of California came under a new form of governance, thought it was not until 1834 that the California legislative body brought about the first formal government, which was an early form of mayor-council government. Over the next decade, increasing tensions between the Mexican and American governments eventually led to the 1846 Bear Flag Revolt and the declaration of the war by President Polk and the United States Congress. In July of the same year, the United States raised its flag in Yerba Buena, and the Bear Flag remains its symbolism today with elements included on the current State Flag of California.

While the cultural ties to the past are well established in its settlement history, there are several events that have contributed to the city's urban form and identity today. First, the Gold Rush between 1848 and 1960 brought tremendous growth; in 1848 the population of San Francisco was 900 people, and by the start of 1850 the population had increased to 35,000 (1974, 12). While this surge of growth informed the pace and scale at which the city emerged, an early set of devastating fires in late 1848 gave rise to a new type of building: a narrow, two- to three-story brick houses with iron shutters that could secure the buildings against fire and vandalism at night. A few decades later, the 1906 earthquake laid waste to much of the city, and the resulting construction boom spurred innovation in building regulation and an enhanced attention paid

to city emergency services. By 1920, the population reached nearly 507,000 residents, which signaled a strong recovery from the events of 1906.

Transportation has also contributed much to the urban form and visual expression of the city. In 1943, the street brought elevated rail cars from New York City to address a growing transportation shortage. At the time, the five counties surrounding the San Francisco Bay employed a significant number of residents, which was exacerbated by the Bay Area's key location as a major west coast shipping port during the Pacific Campaign of World War II. The war did not bring destruction to the Bay Area; rather, it brought substantial war supply contracts, and San Francisco began to emerge as the second largest banking center in the United States, and five years after the war's end the population was over 775,000 people.

In the decades following World War II, there was an era of social and cultural change across the United States. Perhaps few places are more emblematic of the social and cultural history of 1960s than the Haight in San Francisco. At the time of this cultural revolution, the Haight offered a place of refuge for the Beatniks and other individuals celebrating the rise of a counterculture movement (Wiley 2000). To this day, the legacy of artistic and cultural expression can be found throughout the Haight, and one might argue that this provides a foundation for self-expression and cultural identity through the city today.

There are few cities that are comparable to San Francisco with respect to its desirability and associated growth pressures. As a result, the profile of the city overall indicates high levels for educational attainment, median household incomes, and median home values. Whether there is an affordability challenge is without little doubt, and the discussion on its neighborhoods is careful to recognize this key facet. In addition to being very diverse with respect to racial composition, San Francisco is well-regarded as a culturally diverse regional center. What is of key interest, then, is that the two neighborhoods featured in the following case studies are distinctive with respect to each another.

The Excelsior neighborhood might be best described as an ethnic enclave located to the periphery of the city's borders. Asians represent 43 percent of the population, and Hispanics and Latinos constitute 39 percent of the population. The median household income could be described as moderate but for the affordability of housing: both median home values and median gross rents are high relative to income. One should also note that there are large households

Table 7.4: Demographic Profile, San Francisco and Target Neighborhoods

Place	Excelsior	Haight	San Francisco
Census Tract	260.03	167	
Land area in square miles, 2010	0.15	0.19	46.87
Population per square mile, 2010	31,826	24,554	17,180
Population Characteristics			
Population estimates, 2009-2013	5,042	4,895	837,442
Population estimates base, 2010	4,908	4,652	805,235
Persons under 18 years, percent, 2010	19.4	7.7	13.4
Persons 18 to 24 years, percent, 2010	8.6	9.6	9.6
Persons 25 to 44 years, percent, 2010	29.0	57.2	37.5
Persons 45 to 64 years, percent, 2010	27.6	20.5	25.9
Persons 65 years and over, percent, 2010	15.4	5.0	13.6
White alone, percent, 2010	29.1	76.2	48.5
Black or African American alone, percent, 2010	2.7	5.7	6.1
American Indian and Alaska Native alone, percent, 2010	1.6	0.5	0.5
Asian alone, percent, 2010	43.1	9.2	33.3
percent, 2010	0.5	0.3	0.5
Two or More Races, percent, 2010	4.8	5.7	4.1
Hispanic or Latino, percent, 2010	38.9	10.0	15.3
High school graduate or higher, percent of persons age 25 years+, 2009-2013	72.9	98.4	86.3
Bachelor's degree or higher, percent of persons age 25 years+, 2009-2013	19.4	77.4	52.4
In civilian labor force, total, percent of population age 16 years+, 2009-2013	67.4	87.5	69.2
Unemployment rate, percent of population age 16 years+, 2009-2013	9.7	6.3	8.3
Median household income ($2013), 2009-2013	$57,461	$117,761	$75,604
Per capita income in past 12 months ($2013), 2009-2013	$23,503	$71,083	$48,486
Persons in poverty, percent, 2009-2013	9.0	10.1	14.9
Neighborhood Characteristics			
Housing units, April 1, 2010	1,429	2,499	376,942
Households, 2009-2013	1,389	2,312	345,344
Persons per household, 2009-2013	3.63	2.12	2.31
Owner-occupied housing unit rate, 2009-2013	65.4	27.8	36.6
Median value of owner-occupied housing units, 2009-2013	$558,700	>$1,000,000	$744,600
Median gross rent, 2009-2013	$1,581	$1,790	$1,488

Sources: 2010 Census tables QT-P1, QT-P3; ACS 2009-2013 tables S1501, S1701, S2301, S2501, B11012, B19013, B19301, B25077, DP03

(on average, 3.6 people per household), and the age composition of this area may reflect either a bifurcation of household types or intergenerational living. It bears noting that there is a large proportion of persons under the age of 18 as well as a large percentage of individuals over the

age of 65. In terms of educational attainment, a majority of adults have a high school degree, but the percent of adults with at least a college degree is significantly less that of the city overall. Housing tenure is also an indicator of interest as 65 percent of unit are owner-occupied. In the context of these indicators, the population overall might not be considered mobile, nor might there be a desire to become mobile given some homogeneity in key racial demographics.

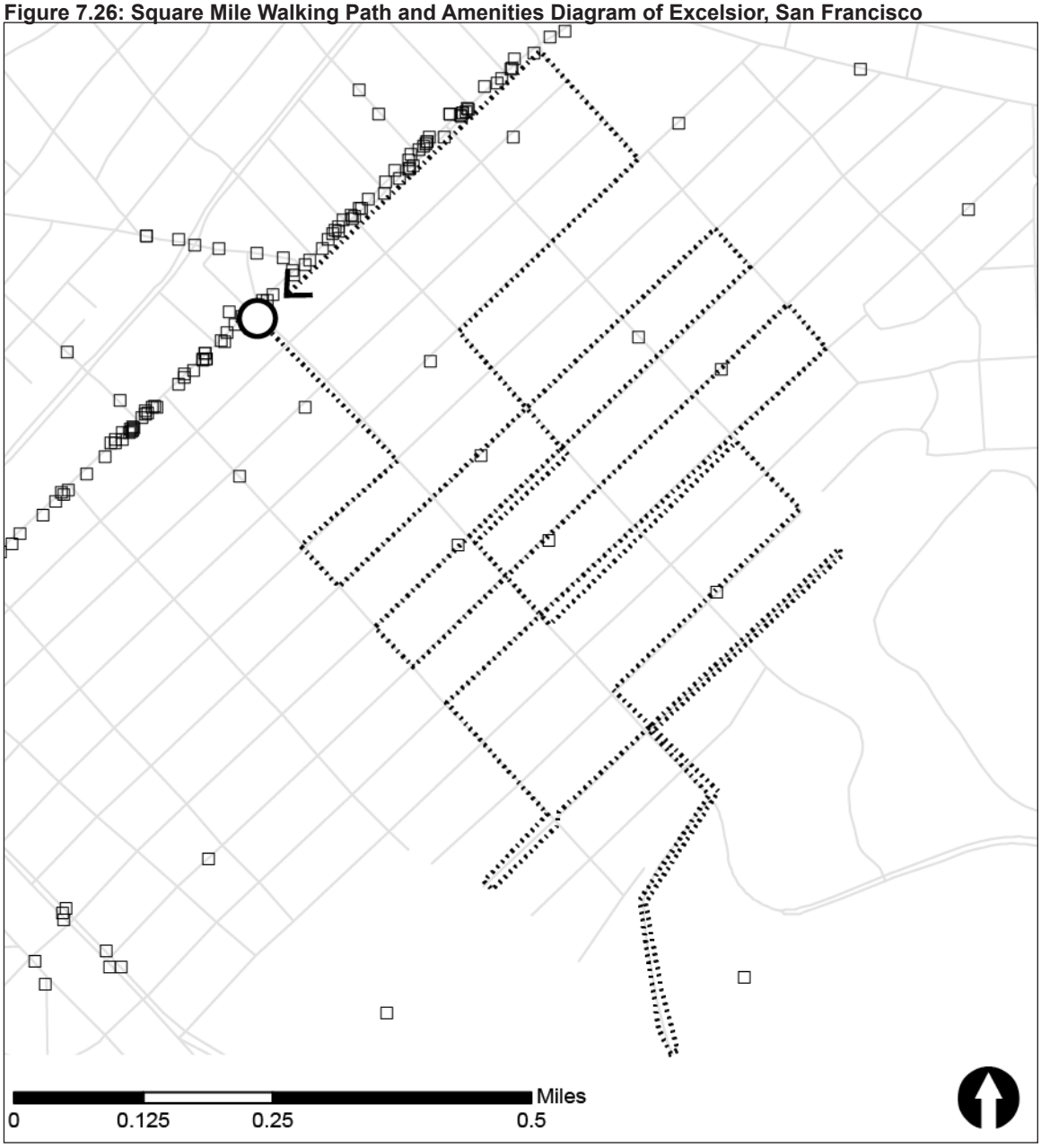
The Haight is an altogether different neighborhood with very high levels of income matched by very high median home values, but there are indicators beyond these that are of key interest. First, one should observe that there is a relatively small percentage of persons under the age of 18, which is strongly correlated by a relatively low number of persons per household. Perhaps this is best explained by the age composition, where 57 percent are between the ages of 25 and 44 and another 21 percent between the ages of 45 and 64—just over three-quarters of the population as a whole. These are typically considered the strongest earning years of one's career, which aligns well with the high income and home values in this area. What is curious, however, is to find that homeownership is quite low for this area (28 percent), which suggests that, even at higher income levels, it may be difficult to afford owning one's home in this area. This does not seem to be reflected in some sense of impermanence as this area has experienced a significant decline in household turnover rates between 2000 and 2010. In this context, what is of interest is the debate between place-based communities being highly correlated with homeownership, or if there are a set of neighborhood characteristics that contribute to stability within a large rental population.

San Francisco Case Study: Excelsior

Home Value Stability	+++++
Household Turnover	+++++
Age Diversity	++++

The outcome measures for stability in the Excelsior neighborhood indicate that this is a place with strong home value stability and community stability. In terms of home values, this area has experienced strong growth over time relative to other parts of the city. This has not come, however, at the consequence of a large turnover rate in households during the same time period. Given the data on median household income and educational attainment, one might characterize this as a working- to middle-class neighborhood, and the large household size and significant

Figure 7.26: Square Mile Walking Path and Amenities Diagram of Excelsior, San Francisco

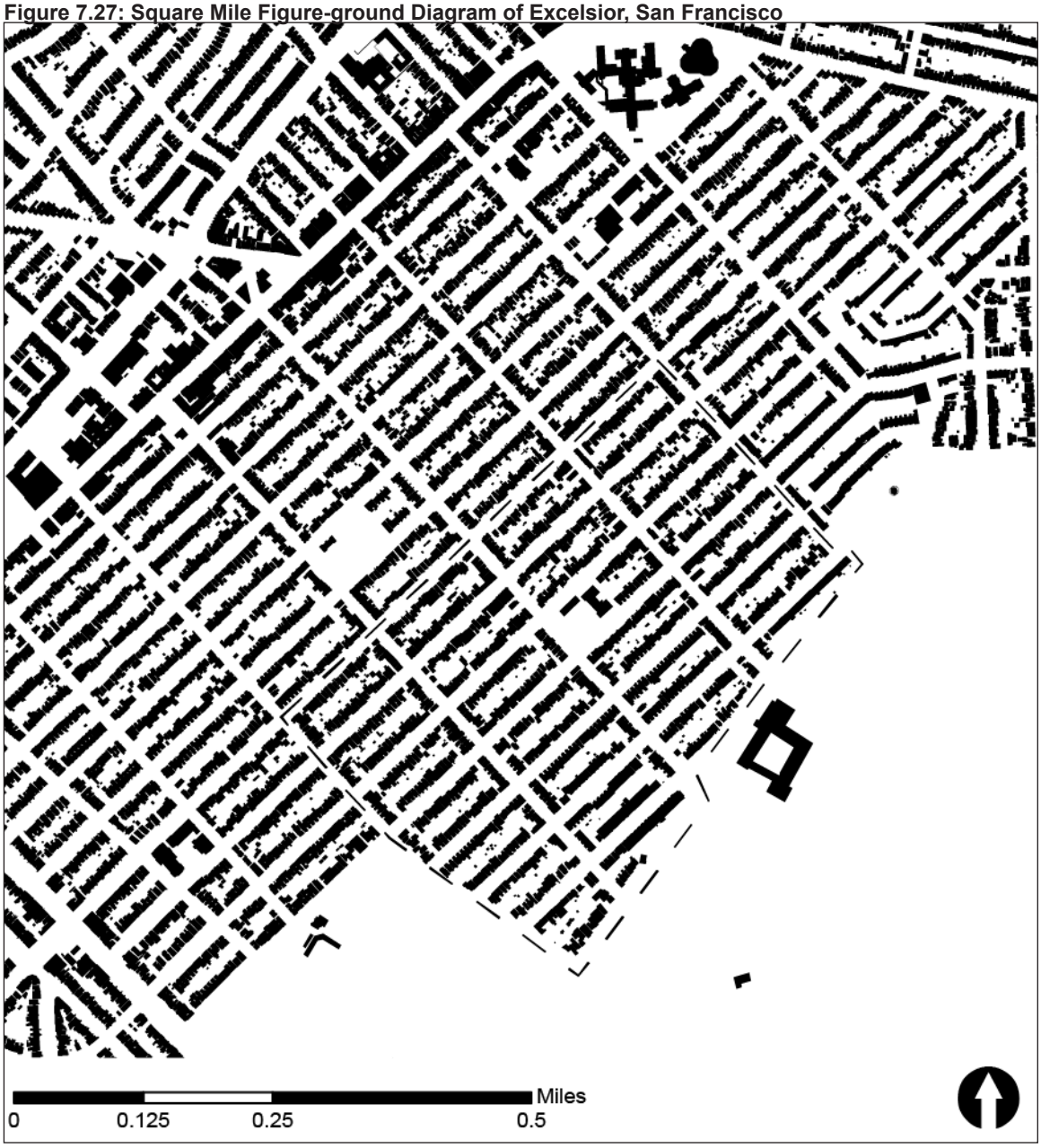


proportion of children under the age of 18 suggests as well that this area is particularly desirable for families. At the same time, there are a large number of residents at later-life stages, which also suggests that this area meets the needs for a broad range of household preferences and types.

Walkability

In describing the walkability attributes of this area, one must first acknowledge that there is a

Figure 7.27: Square Mile Figure-ground Diagram of Excelsior, San Francisco



duality of experiences within this area. That is, the pedestrian experience along the primary commercial corridor is significantly different than the residential areas in the hills. First, the commercial corridor is highly urban in character with a large number of businesses and an active streetlife. This is very different from the residential areas above, where there is an observable lack of pedestrian activity. One might readily conclude that, while the corridor is accessible by walking, there is little usefulness to the walk within the residential area itself. That is, without the corridor at the periphery, this area is largely characterized as the void elsewhere in the neighborhood.

Figure 7.28: Excelsior—Typical Residential Street Conditions in the Hills

Excelsior, the first of two San Francisco neighborhoods studied during the observation period, is an interesting place to the extent that different uses are largely separated from each other relative to other areas of study. That is, taken as a whole, the neighborhood contains features and amenities that are comparable to other areas of study, but there are not interspersed such that there is an overall sense of connectedness. To this end, there are three parts to discuss: the residential area, the commercial corridor, and the natural preserve.

The residential area is a compilation of different housing types and scale located throughout an interrupted street network. The residential street network, which appears to be determined largely by topography as a key barrier element, has no distinctive (i.e. pleasurable) urban design character. There is no clear sense of hierarchy or connectivity, and it is relatively easy to find oneself at a dead end. The term “dead end” is especially appropriate in this case, as there is no clear reason for a terminal point other than a distinct change in topography. While the views from these terminal points are remarkable as they overlook the city beyond, one must really look beyond the areas below to find any particular point of reference.

The character of the residential environment is defined in terms of both the street network as well as the residential buildings fronting the streets. The streets are highly auto-oriented as the

pedestrian space appears almost as if an afterthought. While there are well-maintained sidewalks on both sides of the street, they are not accompanied by street trees that provide shade or a sense of enclosure. Large masses of overhead wires are the only feature that provides any sense of enclosure, and these do not lend themselves to a pleasurable walk or a strong urban identity. As a pedestrian, there is a low perception of safety with regard to vehicular traffic, as there is a basic lack of clear pedestrian crossing points or regular installations of stop signs or traffic signals, and the steepness of grade provides no clear sightlines as to whether there is traffic approaching.

The residential buildings, many single-family detached dwellings oriented towards the street, express anything but a relationship to the street network. While there is a substantial amount of on-street parking, most homes have a driveway and some have garages that are integrated into the building form—but not to the extent that they are hidden from view. On the positive side, the buildings themselves are well maintained, and there is a clear effort on the part of residents to personalize the outward appearance their homes. This personalization, however, seems more aligned with communicating a personal style of expression rather than a place for gathering, as few residents have outdoor seating or shade devices to negate the otherwise unfriendly nature of the street. It is relatively easy to see that there are private spaces to the rear of the homes where residents enjoy privacy, but to the extent that these spaces are used socially is unclear and not expected. Overall, to the outside observer, the residential area is hilly and unfriendly; to residents, perhaps, it is a place of private refuge from the city below. As one might expect, there was no observable pedestrian activity save for residents moving between their cars and their homes.

The commercial corridor at the base of the hillside is where the real activity is. During midday, there is a large amount of pedestrian activity along the sidewalks, which are sized adequately to accommodate a substantial amount of foot traffic. The collection of commercial uses ranges from convenience retail uses, local services, restaurants, and small-scale grocers. Above the commercial uses, there are a few stories of apartments and, in some cases, offices. The vehicular portion of the public right-of-way features two lanes in either direction with a left-turn lane at intersections.

The width of the corridor and the speed of vehicular traffic requires that there are well-defined pedestrian crossings with striping and signalization, but there is a lack of convenience for

Figure 7.29: Excelsior—Street Character off the Main Commercial Corridor

pedestrian crossings that could be enhanced by bump-outs at the intersections. While there is on-street parking provided on both sides of the street, there is a bus lane that moves towards the sidewalk at intersections, which negates any perceivable buffer between the pedestrian and vehicular spaces. To cross the street, then, requires some commitment and a purposeful destination as the urban environment does not lend itself to a sense of meandering.

If there is anything remarkably positive about this area in terms of urban amenities, it is the substantial park and nature preserve at the periphery of the neighborhood. To say that this is part of the neighborhood would be a stretch, however, as its use is heavily dependent on vehicular or bus access. But, if distance is not a factor of choice in this area, it is a tremendous benefit to the residents as it provides ample opportunities for recreation and respite. Along the backside of the hill, which is located further away from the residential or commercial areas, there is a large community recreation center and day care center that were in heavy use during the late afternoon. However, the lack of centrality of the park or these amenities to the study neighborhood suggests that this is a shared space to the extent that it does not belong to any one area in particular. If anything, the recreation center and day care are in greater proximity to another community on the southern side of the hill, which was more suburban in form

characteristics and did not score highly in any of the economic or non-economic outcomes scored for each area.

San Francisco Case Study: The Haight

Home Value Stability	+++
Household Turnover	+++++
Age Diversity	+++

The outcome measures for community stability reveal two compelling findings for this neighborhood. First, that the positive change in median home values is lower relative to other parts of the city must be taken in context with the high home values of the area. That is, one should not expect to see a rapid increase in home values over time as they are already significantly higher than the city as a whole. Second, there is a strong indication of community stability with respect to the low rate of household turnover. What this might suggest is that the desirability of this area contributes to its "staying power." In light of the high median income levels (see Table 7.4), residents have a clear ability to be mobile; however, this mobility might ultimately be what has brought these residents to the area. That is, it is desirable, and the stability of household turnover indicates that this is a place where people wish to remain.

Walkability

The walkability attributes of this neighborhood are quite strong as evidenced by two key findings. First, the spatial organization of amenities within this area is both corridor- and field-based. There are many destinations for which pedestrians can capitalize on the usefulness of the walk, which is visually reinforced by the significant number of pedestrians observed in the area during the middle of the mid-week day. Second, there is a substantial density of private business amenities, which is related in part to the overall density of this area. However, combined with the observation that there is substantial midday foot traffic, one should readily conclude that this is as much a destination for visitors as it is a complete neighborhood for residents.

The Haight is well-recognized as a primary locus for social change during the 1960s as it was a central place for the emergence and rise of a counterculture movement. That said, the Haight of yesteryears is not the Haight of today. Whereas it was once a gathering place dominated by individuals seeking to challenge the establishment, "the establishment" appears to have a strong

Figure 7.30: Square Mile Walking Path and Amenities Diagram of The Haight, San Francisco

foothold in this neighborhood today. In the context of the demographic profile discussed earlier in this chapter, a significant portion of the residents of the Haight are affluent and capable of affording the high rental contract rates commanded in this area. Despite these observations, there are also some indications that such affluence is not universal as there remains a portion of the population that lives below the poverty line. To the extent that this is a product of efficacy in planning with regard to the provision of affordable housing is not entirely clear, but it is reassuring to an extent that this is not as an exclusive community as other neighborhoods throughout San Francisco.

Figure 7.31: Square Mile Figure-ground Diagram of The Haight, San Francisco

Forming a sense of the urban context can be achieved in several parts. First, there is a tremendous place legibility that is conveyed by not only the street network, but more so by the urban design interactions between the public and private realms. In terms of the public realm, there is a demonstrable attention paid to the composition of the public realm. At a basic level, the majority of streets are simple: narrow vehicular lanes with one lane of travel in either direction, bicycle lanes striped within the travelways, and metered or permitted on-street parking on either side of the street. While the on-street parking is necessary to support the density of this area—off-street parking is a clear premium reserved for large, single-family townhomes—it provides

Figure 7.32: The Haight—Architectural Variety in Style and Materials

a strong benefit in terms of creating a sense of separation between vehicular and pedestrian spaces. There is no clear sense of a street hierarchy save for a few clear connector streets, which contributes to an overall sense that this is a well-integrated district that is welcoming to a host of modes of movement.

The pedestrian space is very pleasant for walking. While there is some narrowness to the sidewalk, this is a product of having no clear delineation between walking space and planting space. Mature trees provide a substantial amount of shade and contribute to a sense of enclosure. Street furniture, where present, provides a sense that this district is a destination unto itself: one is not asked to go, rather one is invited to stay. The majority of commercial and retail amenities are located along major axial streets, but within areas that are more heavily dominated by residential uses there are still some examples of small, ground floor shops are services. The majority of these amenities located within the residential areas are small businesses, ranging from independent offices to coffee shops and bookstores. That is, one could spend an entire day visiting these amenities along a single street without ever stepping foot into the residential enclaves. This conveys a sense that this is not just a place to visit, but it is also a place to which one is encouraged to return. There is a lesson here for policy makers and planners: the

Figure 7.33: The Haight—Duboce Park, a Grounding Feature of The Haight

success of this place is not based solely on its perception as a destination, rather it seems to be a place for discovery. These elements contribute to a perception of a pedestrian lifestyle—it is the walkable urbanism that so many contemporary advocates suggest is ideal for urban environments.

Another key feature within this neighborhood is Duboce Park, located at the center of the study area (pictured above). While its size is anything but substantial in comparison to other city parks, it contains many of the elements that satisfy a variety of individual needs: there are two connected playgrounds, one for small children and another for larger children; there is space dedicated for dogs to be let off the leash (though the entire park was co-opted for this use); there are seating areas and small shaded plazas where people were eating their lunch, reading books, or socializing with others; and there is a large community center with the words of Harvey Milk emblazoned across its façade, “the American Dream starts with the neighborhoods…” The park is a remarkable urban design achievement for small-scale urban parks. One could envision losing track of time in this seemingly urban oasis.

While this narrative has painted a clear picture of an ideal urban environment, this neighborhood has some distinctive pecuniary barriers to entry. The median home values submitted to the

Census are so high that the results report simply that the median is “over $1,000,000.” However, just over a quarter of the units are owner-occupied compared to 37 percent across the city, which suggests a potential impermanence about this community. Whether this is in fact the case or whether renters have longer terms of stay than on average is not immediately discernible. But one could envision that this is a place where there is high demand and a constrained supply, meaning that when units become available it is likely a very competitive market.

What is clear from these observations in the context of providing policy insight is that this area appears to have strong resistance to redevelopment. The historic character of the housing stock is readily apparent, and, despite the high land values evidenced by high median home values and rental contract rates, there appears to be a balance between historic preservation and an implicit desire to keep things the way that they are. Perhaps, to this end, it is a blend of planning efficacy and deeply collective community values.

Discussion

Through this case study examination of the outcome indicators associated with the concept of urban stability, there is bifurcation with respect to the results from the two auto-oriented cities, Atlanta and Salt Lake City, and the denser, mixed-modal urban areas of Philadelphia and San Francisco. To an extent this divergence is illustrated in the quantitative models focusing on housing prices in Chapter 6, but this is reinforced further to some extent within these case studies.

Turning first to the auto-oriented cities, within Atlanta and Salt Lake City there were two types of urban patterns the research identified in their respective neighborhoods. The first set, Westwood in Atlanta and Rose Park in Salt Lake City, reflect urban form patterns that could be described as inner-city suburban enclaves. To a certain extent, their form patterns represent Perry’s Neighborhood Unit with respect to a well-established hierarchy of streets and some provision of public and private amenities located towards each neighborhood’s boundaries. Both neighborhoods scored high in terms of decreasing rates of household turnover but were witness to far less appreciation of median home values over the 10-year study period. Within the case study approach, there is more evidence to support these outcomes with respect to the former and less so for the latter. The stability of community—with decreasing rates of household turnover as a proxy—might be directly linked to the pleasant physical attributes of each neighborhood

despite the fact that neither provides much in terms of convenience for accessing amenities. That is, there is a lack of privately provided Third Place institutions, but both feature a core set of institutional gather spaces: specifically, churches, schools, and community centers. To what extent any of these contribute to households' desire to age in place is a key question, but from a cross-comparison perspective there seems to be value in exploring causality through a deeper, sociological approach.

The second set of neighborhoods, Peoplestown in Atlanta and Liberty Wells in Salt Lake City, are more urban in physical expression, the hierarchy of streets network, and a more complete set of amenities located within and to the extents of the neighborhood, respectively. As there is consistency across these four neighborhoods with respect to the appearance of a hierarchy of streets, the main perceivable different is in the number, breadth, and location of private amenities. Noting that, during the 10-year study period, these neighborhoods witness significant increases in median home values relative to their respective cities, there is an argument to be made that the provision of amenities, combined with a pleasant neighborhood environment, might be a leading indicator for neighborhoods undergoing positive change. The potential downside, however, is that this notion of positive change may affect the composition and structure of the community at large—not necessarily to the extent that gentrification occurs, but it is possible that such external pressures might contribute to some level of resident change over time.

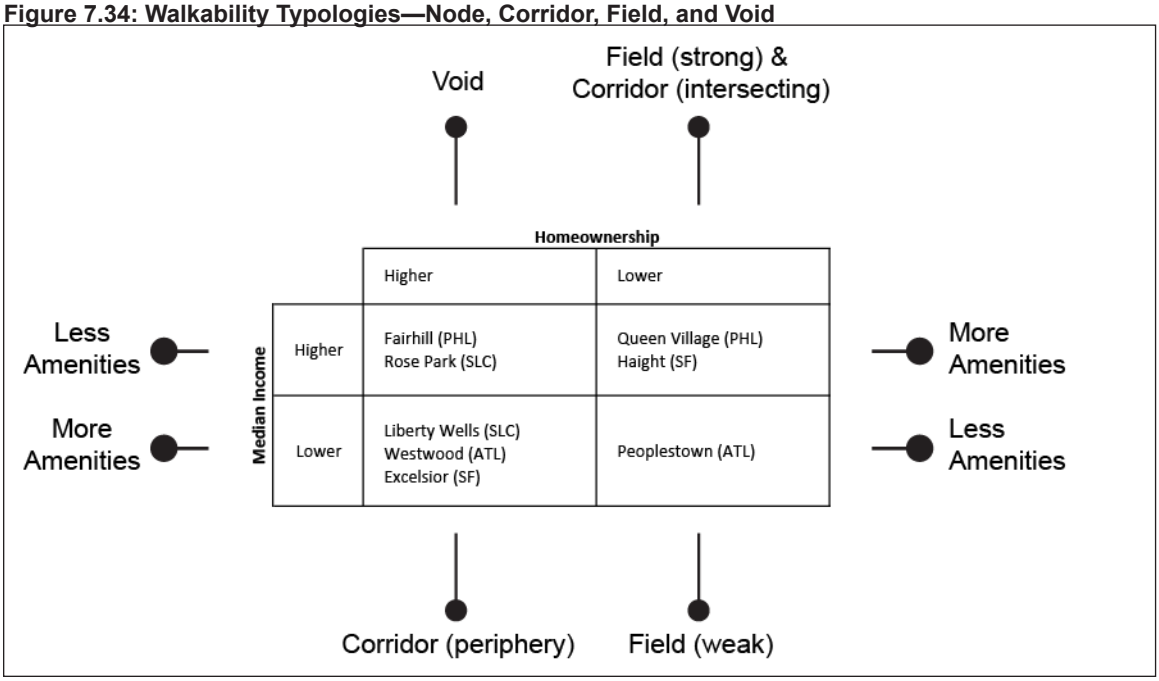
Turning next to the denser, mixed-modal cities, there are again two distinctive sets of neighborhoods for comparison: the first features high homeownership and moderate incomes relative to the city median; and the second are denser, historic areas with high relative incomes and an integrated set of amenities appear to be not only local-serving but are also capable of drawing residents from other parts of the city. The first set, Fairhill in Philadelphia and Excelsior in San Francisco, are two neighborhoods located to the periphery of each city. While their form characteristics are urban in physical character and street hierarchy, the provision of amenities is anything but integrated throughout the neighborhood. Both places are relatively unwelcoming in terms of one's physical comfort and pleasure of a walk, and this is reinforced further by the perception that there are no real destinations to travel to once one is engaged in walking. However, one must employ some caution here as the outcome indicators suggest that, not only are these places of community stability, the appreciate of home values during the 10-year study period are well above the mean for their respective cities. This suggests that despite some of their

lesser qualities in terms of the observer's expectations, one would likely find other areas within each city that are experiencing far greater challenges in terms of their physical condition.

The final set of neighborhoods, Queen Village in Philadelphia and the Haight in San Francisco, offer a different set of outcomes in comparison the neighborhoods in Atlanta and Salt Lake City that are more urban in character (i.e. Peoplestown and Liberty Wells, respectively). In comparing these sets, there are two primary distinctive characteristics upon which to focus: first, there is the overall different in the auto- versus pedestrian-oriented nature of these cities; second, median home values in this set of neighborhoods are significantly higher than other parts of each city. To call these neighborhoods outliers would be a stretch, but there is evidence to suggest that they are becoming or are already reasonably exclusive neighborhoods. A leading indicator for each is the low resident turnover relative to other parts of the city; however, a key question is whether price is a barrier to entry, or if residents are not motivated to move elsewhere given a perception that "this is as good as it gets" in terms of urban living.

As a means for comparing neighborhoods across cities, the research differentiates between the cases along two characteristics: homeownership and household income, with both measured relative to the city overall (see figure below). A key point to note is that Rose Park in Salt Lake City is at the border of median income as it is less than 1% below the city as a whole. In terms of accuracy, it should be placed with others in the "lower income & lower homeownership";

Figure 7.34: Walkability Typologies—Node, Corridor, Field, and Void



however, in terms of the walkability characteristics of neighborhood it is more similar to Fairhill in Philadelphia.

Higher Income & Higher Ownership

These two neighborhoods are best characterized as the void in terms of the spatial configuration of amenities. It follows that, of the cases studied in this research, both neighborhoods convey a suburban character despite their location within each city's limits. Both feature a central organization around an institutional use: for Rose Park it is the church, and in Fairhill it is a school. What is consistent also between these two neighborhoods is that they feature larger households than other parts of their respective cities. What is not consistent, however, is the age composition of these areas—Rose Park in particular indicates strong evidence of large families with children. That both are located further from the central core of the city is an interesting observation as well—for these cases, one might conclude that the personal calculus of neighborhood choice is influenced strongly by a desire to be physically separated from urban living.

Higher Income & Lower Ownership

For the neighborhoods with higher incomes and low rates of homeownership, both feature substantial amounts of private amenities in comparison to other neighborhood cases. Another commonality that differentiates these cases from others is that they are very dense in both urban form patterns as well as physical development. This offers the conclusion that the walkable urbanism argument has merit insofar that it is limited to households that have relatively high incomes. In plain language, lots of amenities are desirable so long as households can afford those areas. There also appears to be a trade-off with respect to household size and the number of families with children. In both neighborhoods, there is evidence that there are fewer families with children relative to their respective cities. This serves as a larger question for future study: are there cases that confirm this more broadly, or are there cases where one can find substantial amenities where affordability concerns are not present and families are present? To put it simply, do the needs of families with children trump the desirability of amenities in terms of neighborhood choice? These findings suggest that there is evidence of this in terms of the selected cases.

Lower Income & Higher Ownership

A key commonality among these cases is the relatively large household size, which raises the question why did these households choose to locate here? In comparison to the Rose Park and Fairhill neighborhoods, it appears that there is some choice between a suburban form type with few amenities, or, as with these cases, a more urban form type with amenities located at the periphery of the neighborhood. One possible answer to this question is that these households, with lower incomes relative to other parts of their respective cities, may not have the opportunity to buy into neighborhoods with greater amenities. Another possible answer is that the opportunity exists, but that there is a trade-off between the space that one can acquire in areas with greater amenities versus these identified neighborhoods. It appears that this reinforces the notion that the personal calculus of neighborhood choice is to located in areas where amenities are accessible at the periphery, but particularly for areas where there are sufficient public amenities. For these neighborhoods of stability, there appears to be evidence supporting the willingness to pay for direct access to public amenities (i.e. large parks) over proximity to private amenities.

Lower Income & Lower Ownership

In terms of the role of city planning and public policy, this is the area of highest need. While the Peoplestown neighborhood has experienced strong positive growth in terms of home values over time, the private market has been slow to respond. What is evident from this case is that there are several opportunities upon which to make progress. First and foremost are the efforts to stabilize this community—to an extent, the public sector has made some effort in this regard with the provision and upgrading of public amenities such as parks and playgrounds (possibly a contributing factor in terms of rising home values). A second critical need area is with regard to catalyzing private market investment, particularly with respect to the provision of business amenities. In the context of the other cases, there is evidence that “too many” amenities might trigger changes that result in resident displacement when a tipping point is reached such that affluent households are attracted to the area. However, learning from the “lower income and higher homeownership” cases, there may exist a combination of strategies, ranging from place-based initiatives promoting homeownership to corridor-based local business growth, that would promote a steady but not rapid increase in neighborhood stability.

Overall, these cases point to an obvious question: what has been learned here that could be of

use to urban planners and policy makers? The concluding chapter looks to resolve this question by triangulating the findings of these three phases of research, and ultimately provide some insight as to where the field of practice should focus attention.

CHAPTER 8. CONCLUSIONS AND IMPLICATIONS—LESSONS ON URBAN STABILITY

This dissertation set out to explore the stability of urban places in the context of the collapse of the residential housing market across the United States during the period between 2006 and 2008. At the genesis of this research, there was a lack of consensus within the field of city and regional planning as to what constitutes neighborhood stability. The adaptation of resilience by scholars and practitioners within the field of city and regional planning ranges from a framework based on ecological and other physical disasters to the economic health and vitality of regions. While different approaches within the field use the term resilience in response to a defined set of shocks or disturbances, the specific focus of this dissertation focused on the collapse of the United States housing market between 2006 and 2008 as an opportunity area with which the field ought to engage critically.

At a fundamental level, this dissertation examines why some urban places have thrived while others have struggled to rebound from the collapse of the residential market as well as the resulting impacts on local and regional economies. A very basic examination of this collapse would focus solely on the recovery of the domestic housing market in cities and regions across the United States. What this approach would ignore, however, is the related impacts on place-based communities, particularly with respect to the stability of communities as well as the ability for individuals to age in place. Simply put, it is possible to understand why people choose to stay in spite of having every reason to go? To this end, the research identified three principal measurable outcomes that serve as the foundation for a concept of urban stability; a fourth criterion was less measurable with regard to quantitative data and was a focal point for qualitative methods in a case study approach.

1. *Housing market stability and recovery*—as measured by two methods. First, by the change in median self-reported home values reported by the United States Census Bureau; second, by individual housing price transactions in 2000 and 2010.

2. *Place stickiness*—measured in terms of household turnover within submarkets using the proportion of new households within these areas as a measurement proxy.

3. *Age diversity*—measured in terms of a diversity index for different age groups as a signal

for intergenerational living or the ability for individuals to age in place.

4. *Planning and design efficacy*—based upon the observable efficacy of regulation and the response from design and physical development actors, this focal point examined submarkets in the context of environmental and material contexts.

The general theoretical knowledge underpinning this stability of urban places, particularly at the neighborhood level, lacks consensus as to what constitutes resiliency at the community scale. Summarizing the scholarly research that relates to this topic, there are four key themes to consider (1) notions of "the good neighborhood," which satisfies the economic and social needs of place-based communities; (2) the relativistic constructs of neighborhood space, defined by physical, emotional, and environmental factors; (3) the sense of place, ranging from an individual's perspective on place identity and character to a community's shared set of values and self-reinforcing social norms; and (4) the social life of places, on which many scholars have concerns for the perpetual decline of civic life. Each of these themes, independent of each other, is interesting when considering the daily-lived experience of urban residents. Woven together, however, they become important mechanisms through which one can begin to understand the potential for urban stability. Yet despite these general themes, the field has yet to solidify its response in terms of advancing the stability of urban places.

Herein lies the impetus for this research: are walkability advocates correct in their assertion that public and private amenities—which are the basis for contemporary metrics measuring walkability—are a clear signal of stable urban places? This question provided the overarching framework for exploration within this context, and to this end this dissertation examined three questions:

1. Have walkable, or amenity-dense, urban areas retained economic stability and housing values more so than places without such amenities?

2. Are all public and private amenities positively associated with the economic and non-economic components of urban stability in local housing markets, or do the types of amenities matter?

3. Do households remain longer in their communities where amenities are dense as opposed to areas where there are fewer amenities?

In response to these questions, the dissertation established a set of hypotheses that were grounded in the foundational literature and contemporary discourse, while at the same time acknowledging some divergence with regard to exploratory analysis linking these concepts conducted prior to the dissertation. First, on *the value of amenities in terms of the stability of home values* the expectation was that the density of and proximity to public and private amenities would be positively associated with the stability of home values. Second, on *the types of amenities* this research stated that all amenity types examined in this research would be positively associated with both the economic and non-economic components of urban stability. Lastly, on *the durability of place-based communities with regard to amenities* the expectation was that greater concentrations of amenities of all types would be positively associated with community stability.

Restating what this dissertation aimed to achieve, the intent was to reveal the indicators that signal the ability for urban places to rebound and thrive in the context of a substantial shock—in this case, the collapse of the residential housing market across the United States. To the extent that this was achieved is discussed in the following section. Following that section is a discussion of the significance of the dissertation findings, the contribution to the scholarly field, implications for city planners and policy makers, and recommendations for future research.

Empirical Findings

This research used a mixed-methods approach to identify and assess the dynamics of neighborhood stability, measured in terms of economic and non-economic outcomes at a variety of scales. In the first phase of research (Chapter 5), the research used quantitative methods to identify stability within cities and used regression analysis to examine areas within these cities that demonstrated neighborhood stability. The second phase (Chapter 6) focused specifically on the association between housing prices, the proximity to public and private amenities, and internal and external characteristics; specifically, this assessed the extent to which spatial relationships were statistically significant. The third phase of research (Chapter 7) employed qualitative methods, using case study research and environmental psychology to triangulate data.

The main empirical findings are specific to each analytic chapter and were summarized within: *Urban Stability at 30,000 Feet, The Potential Determinants of Housing Prices,* and *Case Studies of Neighborhood Stability.* Before providing an assessment of the research findings as a whole,

the following reviews in brief the results from each phase.

Phase I: Quantitative Analysis at the Tract Level for 30-Cities

As the starting point for the analytic sections of this research, the tract-level analysis focused on testing three different outcomes between 2000 and 2010: first, the change in median self-reported home values; second, the percent change in household turnover as measured by the number of new residents between time periods; and third, the change in age diversity as measured by the Simpson Diversity Index. For the analysis of 30 cities across the U.S. the research controlled for variability within each city by using indicator variables relative to the city as a whole (e.g. was an increase in median income in one tract larger than the increase in median income for the city overall) as well as variability across cities using a fixed-effects approach within the final models.

Overall, the models revealed that quantitative methods are particularly well suited for descriptive models explaining the variation in economic outcomes, but are less applicable for non-economic outcomes such as household turnover and age diversity. The key differences between the models are best expressed by their r-squared values (i.e. the goodness of fit indicators): for change in median home values, the final model could explain 55 percent of the variation in the data; for household turnover and age diversity, the final models were able to explain 29 percent and 15 percent, respectively. In light of these results, exploring the factors associated with age diversity became a key focus for the case study analysis.

In terms of answering the question what is important for the change in median home values, demographics and urban form characteristics provided the basis for explaining variation in the dependent variable. Specifically, distance to the central city, poverty levels, racial homogeneity, and relative median household income were more heavily weighted within these models. Interestingly, however, was the fact that only cultural amenity density was statistically significant, but its sign indicated a negative correlation between proximity and home value stability.

Answering the same question for the non-economic outcomes must be taken with the caveat that these models did not explain a substantial portion of the variation within the data. In terms of household turnover, residential market pressure (as measured by the change in dwelling unit density) and the percent of owner-occupied housing were highly weighted with respect to the explanatory value of the model. In this case, one also finds evidence that proximity to recreational

areas contributes to the staying power of place, while retail and supermarket density measures appear to be pull-factors in terms of attracting new residents.

Phase II: Quantitative Analysis for Housing Sales in Four Cities

The second part of the analytic phases of this research intended to serve as the key linkage between the tract-level quantitative analysis and the case studies of neighborhood stability. What had not been expected at the outset of the research was the extent to which significant differences across markets would emerge in terms of the factors influencing home values. This unanticipated outcome of the first phase was revealed and explained by the analysis of different markets in different years. From this analysis, two overall observations emerged: first, there are perceivable differences in factors present between 2000 and 2010, which one might interpret as a shift in preferences in response to the housing market collapse; second, there are notable differences in terms of the factors present in auto-oriented cities (i.e. Atlanta and Salt Lake City) versus denser pedestrian-friendly cities (i.e. Philadelphia and San Francisco).

Turning first to the shift in factors present in 2010 that were not present in 2000, this is a particularly remarkable finding for this research. Not only did each city's model become more complex in terms of the number of statistically significant variables, but the relationship between these indicators and housing prices followed the expectations of the research. Specifically, dining became a positive factor in Atlanta, while cultural and recreational amenities emerged as positive factors in Salt Lake City. In Philadelphia, cultural, dining, and recreational amenities were positive factors as well—although dining and recreation were present in the 2000 model as well. San Francisco, however, was the only market in which supermarkets were a positive factor in terms of housing prices, which is an interesting finding considering the considerable weight and attention supermarkets are given in the contemporary discourse.

Phase III: Case Studies of Neighborhood Stability

In addition to providing value in terms of understanding that which can not be measured or described by quantitative data, the case studies were envisioned also as a means for addressing areas in which the quantitative analyses failed to provide insight on neighborhood stability. Two clear opportunities emerged from the quantitative phases: first, the extent to which one could find evidence explaining non-economic outcomes such as household turnover and age diversity;

second, in the absence of the statistical significance answering the walking to what question, a new question about the spatial configuration of amenities emerged.

With respect to non-economic outcomes such as household stability and age diversity, the organizing of case studies in terms of relative income and homeownership rates revealed interesting findings. First, those neighborhoods with high homeownership levels—regardless of relative income levels—are well populated by families with children but do not have a significant number of amenities. This suggests the possibility of two things: (1) families with children are expressing a willingness to pay for parks and recreation over retail and other private amenities; and (2) the housing market may not be providing spaces suitable for families with children areas where there are lots of amenities. This second point is reinforced by the higher income & lower ownership neighborhoods where household sizes and the number of children under the age of 18 were significantly lower than city levels.

Examining the spatial configuration of amenities in the context of neighborhood stability, there is a strong difference among the types of neighborhood cases. For higher income neighborhoods, fewer amenities (i.e. “the void”) is associated with higher homeownership while more amenities (i.e. combined “field” and “corridor”) is correlated to lower homeownership (but higher home values). For lower-income neighborhoods, one finds evidence of the opposite in terms of the number of amenities: more amenities is correlated with higher homeownership, but these amenities are located at the periphery of the neighborhood; conversely, fewer amenities configured in a “weak field” are associated with lower homeownership (and lower home values as well). These cases, particularly with respect to the examination of the spatial configuration of amenities, were particularly revealing in terms of the personal calculus of neighborhood choice.

In light of this summary of each phase, the following section synthesizes these findings in the context of the overarching research questions.

Question 1: Have walkable, or amenity-dense, urban areas retained economic stability and housing values more so than places without such amenities?

1.1. *Not all amenities are created equal*—without controlling for variations among cities, the analysis at the tract level yielded mixed results in terms of the positive or negative association with home values; while statistically significant, the density of recreation,

retail, and supermarkets were positively associated with home values, but the density of cultural, services, and dining amenities were negatively associated with home values. These results were also viewed with suspicion, as the model that did not control for variation among cities explained a small portion of the variation in the data.

1.2. *Cities matter, but generally amenities do not*—when variation among 30 cities were controlled for in the tract-level analysis, only the density of cultural amenities was statistically significant and it was negatively correlated with home values.

1.3. *Cities matter, scale matters, but results may vary*—when the relationship between individual housing prices and amenities was examined, there was little agreement in terms of the influence of proximity across cities and across time periods.

Questions 2 and 3: Are all public and private amenities positively associated with the economic and non-economic components of urban stability in local housing markets, or do the types of amenities matter? And do households remain longer in their communities where amenities are dense as opposed to areas where there are fewer amenities? Readers should note that this does not restate the findings from the previous list.

1.4. *Generally, recreation and supermarkets might not make for stable communities*—without controlling for variation among cities at the tract level, only the density of recreation and supermarkets were statistically significant, though they were positively associated with increasing rates of household turnover. These results were also viewed with suspicion as the model did not explain a significant portion of the variation within the data.

1.5. *If cities matter, so does recreation in terms of community stability*—when variations among cities were controlled for at the tract level analysis, the density of recreational amenities was statistically significant and positively associated with lower rates of household turnover; on the other hand, the density of retail and supermarkets were positively associated with higher rates of resident turnover. However, again the results did not explain a significant portion of the variation of the data despite controlling for a host of conventional demographic and physical environment indicators.

1.6. *Generally, age diversity cannot be explained by quantitative data*—even when controlling for variation among cities as well as for a host of demographic, physical environment,

and amenity density indicators, the rate at which age diversity increases or decreases cannot be explained by quantitative data.

In the context of the research hypotheses, none proved to be particularly applicable to a multi-city, multi-scalar discussion relating walkability or amenity density to urban stability. What is clear, however, is that the unit of analysis, the resolution of data, and city context are all very important with regard to demonstrating that there exists a relationship between amenities and urban stability outcomes. Specifically, in the fine-grained analysis from *The Potential Determinants of Housing Prices*, there is evidence that certain amenities influence homebuyers' actions within a given market, but the significance of these amenities varies from market to market. This offers a counter-argument to the conventional wisdom about walkability and desirability, which is discussed in the following section.

In developing an understanding about why some urban places have thrived versus those which have struggled to rebound from collapse, this research has demonstrated that, at least in terms of economic outcomes (i.e. perceived home values and the exchange values within the market), there is value in this contribution. That is, if one is less interested in advocating for walkable urbanism than for *good urbanism*, this dissertation provides some evidence from which to derive generalizable conclusions about the economic stability of urban places. To understand the non-economic components of stability requires further study, and perhaps new means for measuring social- and cultural-oriented inputs and outcomes.

Significance of the Findings and Contribution to Scholarship

This dissertation sought to a gap in knowledge about why some urban places have thrived in response to the collapse of domestic housing market. To this end, this research contributes several notable findings that add depth and breadth in terms of understanding the relationship between amenities, walkability, and neighborhood stability. A key finding that is evident throughout a variety of scales and methodological approaches is that walkability—in terms of the contemporary discourse—needs a serious reevaluation by the field. This research demonstrates that not only is there variability across cities in terms of the relationship between walkability and economic and non-economic stability, but also that not all component of conventional walkability metrics are significant. The value of this contribution should not be understated, nor should it be ignored. There is evidence that "walkability is good," but the field should advance a research

agenda that examines further the conditions and contexts in which amenity-based walkability measures are associated clearly with economic and non-economic outcomes.

Specifically, this research demonstrates that the field should return to debating this issue critically and generate research from a larger pool. That is, the theoretical findings derived from contemporary research on walkability ought to be reexamined by the field before any further assertions about generalizable conclusions are made. In the context of this research, there is little merit in suggesting that what appears to be “signal” in one city or region is anything more than “noise” in another. As the adage goes, this is a hard pill to swallow. However, readers should readily accept that this dissertation has employed the best data available and cutting edge spatial methods—to this end, the field should accept this research as new entrant in what is to become a robust debate about the future of cities, and where the efforts of city planners and policy makers should train their focus.

In terms of the lessons for city planners, there is strong evidence supporting the value—both with respect to housing prices and community stability—of publicly funded amenities and comforting, pleasurable urban design. First, with respect to publicly funded amenities, recreational amenities have a strong, positive relationship with neighborhood stability. This point should be understood not as “open space is good,” rather that well-programmed and well-scaled parks are great, positive amenities. A limitation of this research, however, is that the relationship between capital investment and public parks is not well-understood—only that a well-programmed park is better than a park without programmatic elements. Second, cultural amenities appear to be positively associated with neighborhood stability (particularly with respect to housing prices) in some cities and neighborhoods. This does not imply, however, that cultural amenities are necessarily important for all cities, but that a careful contextual examination in one’s local city should reveal whether a cultural-oriented strategy is appropriate. Finally, that urban design attributes promoting comfort, safety, and visual interest were consistent features across the positive cases on neighborhood stability is not as much a “big lesson” for planners—that is, the field has a strong appreciation for urban design values—but it is a big lesson for policy makers. Specifically, with evidence that positive urban design attributes are associated with neighborhood stability, strategies for place-based interventions that improve urban design outcomes are part and parcel with greater neighborhood and community outcomes.

Recommendation for Future Research

This dissertation serves as a strong foundation for future research efforts that seek to enhance society's understanding of urban stability. De-constructing the positive values emanating from this research, these contribute to two new research agenda.

Return to the sense that place matters—whether from a 30,000 foot view, at the level of individual housing transactions, or the case study of neighborhoods, one cannot separate the research results from the city context. Perhaps, similar research endeavors should shift focus from city-to-city comparisons towards a city-and-region framework. While this introduces a new set of intervening variables with which to engage (e.g. taxation, fiscal administration, public policy, industry agglomeration, and the efficacy of local schools), this research has found sufficient evidence to support such an approach.

Develop the means for understanding the lived experience of individuals—the fact cannot be avoided that administrative data fails to quantify or explain why residents move or chose to age in place. Perhaps, this is advocating an exercise in futility as it presumes that people are rational decision makers in matters that are deeply personal and relate to one's connectedness to place. However, with economic development and public policy agents seeking to find that rising tide that lifts all boats, one has to ensure that people are all using the same boat. This metaphor is relevant in the context of an increasing emphasis on data-driven solutions within government. The field of city and regional planning is poised to take a leadership role in this regard, but a failure to fill the knowledge gap will provide the field with an inability to solve the wicked problems faced by society.

Conclusion

This dissertation highlights several key findings that contribute value to the scholarly discourse and help guide the practice of city planning. One cannot understate the significance of its findings; specifically, there is strong evidence that public sector agents of change—city planners, urban designers, and policy makers—have the potential to enact great positive change in our cities and neighborhoods. Prioritizing public sector investments such as well-programmed parks and cultural amenities may ultimately be a better use of scarce public funds, an approach that is reinforced and supported by this data-driven endeavor.

APPENDIX 1: PHASE I MODELS WITH WALK SCORE COMPARISONS

TABLES BEGIN ON THE FOLLOWING PAGE

Table 5.3: Base Model for Change in Self-Reported Home Values, 30-City Sample

Dependent: Change in Median Self-Reported Home Values, 2000 Census - 2006-2010 ACS					
N (observations)	5337		R Square	0.215	
Durbin-Watson	1.148				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	177.809	9.244		.000	
Median Home Value, 2000 ($Th)	.152	.010	.241	.000	1.242
Cultural Amenities, Mean Distance (qt Mile)	9.217	2.826	.081	.000	1.333
Recreation, Mean Distance (qt Mile)	-2.870	1.563	-.036	.000	1.340
Retail, Mean Distance (qt Mile)	-14.246	3.636	-.124	.000	1.257
Services, Mean Distance (qt Mile)	7.816	3.106	.085	.000	1.262
Dining, Mean Distance (qt Mile)	5.673	2.777	.065	.000	1.441
Supermarkets, Mean Distance (qt Mile)	-3.839	.710	-.102	.000	1.925
Distance to CBD (Miles)	2.967	.293	.144	.000	2.483
Dwelling Units per Acre, 2000	-.094	.133	-.010	.000	1.053
Change in Dwelling Units per Acre	.055	.012	.058	.016	1.936
Intersection Density per Square Mile	.171	.021	.118	.000	5.393
Relative Median Household Income	-36.612	5.329	-.162	.000	2.109
Relative Percent College Attainment	-252.032	52.286	-.062	.000	2.907
Change in Relative Percent College Attainment	.066	.014	.062	.000	1.116
Relative Percent below Poverty Line	-.213	.033	-.135	.000	3.169
Change in Relative Percent below Poverty Line	-.099	.019	-.067	.004	1.142
Percent White, 2000	-2.837	2.250	-.021	.007	3.172
Change in Percent White, 2000	.011	.007	.020	.000	1.218
Percent Owner Occupied, 2000	-.802	.084	-.174	.000	5.034
Percent Vacant Housing Units	-4.956	.300	-.239	.029	2.582

Table 5.4: Fixed-Effects Model for Change in Self-Reported Home Values, 30-City Sample

Dependent: Change in Median Self-Reported Home Values, 2000 Census - 2006-2010 ACS					
N (observations)	5337		R Square	0.544	
Durbin-Watson	1.508				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	330.635	7.902		.000	
Median Home Value, 2000 ($Th)	-.227	.013	-.360	.000	5.035
Cultural Amenities, Mean Distance (qt Mile)	5.318	1.369	.047	.000	1.651
Distance to CBD (Miles)	-3.225	.301	-.156	.000	2.430
Change in Dwelling Units per Acre	.038	.009	.040	.000	1.069
Intersection Density per Square Mile	.077	.018	.053	.000	1.861
Relative Median Household Income	22.224	4.914	.098	.000	5.379
Relative Percent College Attainment	182.472	67.065	.045	.007	3.157
Change in Relative Percent College Attainment	.078	.011	.074	.000	1.217
Relative Percent below Poverty Line	-.262	.025	-.166	.000	2.866
Change in Relative Percent below Poverty Line	-.084	.014	-.058	.000	1.116
Percent White, 2000	16.283	1.771	.121	.000	1.995
Percent Owner Occupied, 2000	-.494	.074	-.107	.000	2.933
Change in Percent Owner Occupied	.023	.008	.027	.007	1.141

App1: Fixed-Effects Model for Change in Self-Reported Home Values with Walk Score, 30-City Sample

Dependent: Change in Median Self-Reported Home Values, 2000 Census - 2006-2010 ACS					
N (observations)	5337		R Square	0.544	
Durbin-Watson	1.508				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
(Constant)	317.091	9.806		.000	
cdbDistMi	-2.740	.303	-.133	.000	2.483
pchg_duAC	.048	.010	.048	.000	1.053
iDenSqMi	.045	.019	.031	.016	1.936
mIncTh00R	24.220	4.886	.107	.000	5.393
pWht00R	15.807	1.827	.117	.000	2.109
pCol00R	180.127	67.080	.045	.007	3.172
chgPColR	.076	.011	.073	.000	1.218
pPov00R	-.244	.025	-.156	.000	2.907
chgPPovR	-.083	.014	-.057	.000	1.116
pOwn00	-.440	.076	-.096	.000	3.169
chgPOwn	.024	.008	.029	.004	1.142
srhvTh00	-.222	.013	-.353	.000	5.034
ws_val	.167	.077	.033	.029	2.582

Table 5.5: Base Model for Change in Percent of New Households, 30-City Sample

Dependent: Change in Percent of HH <10 Years, 2000 Census - 2006-2010 ACS					
N (observations)	5277		R Square	0.235	
Durbin-Watson	1.715				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
constant	13.151	2.702		.000	
Percent of HH in Area <10 Years	-47.312	4.364	-.215	.000	2.704
Median Home Value, 2000 ($Th)	.000	.002	.000	.992	1.904
Percent Change in Median Home Values	.741	.521	.019	.155	1.179
Cultural Amenities, Mean Distance (qt Mile)	-.144	.580	-.006	.803	4.136
Recreation, Mean Distance (qt Mile)	-1.837	.319	-.112	.000	2.568
Retail, Mean Distance (qt Mile)	1.656	.758	.069	.029	6.798
Services, Mean Distance (qt Mile)	.489	.634	.026	.441	7.726
Dining, Mean Distance (qt Mile)	-1.006	.573	-.056	.079	7.046
Supermarkets, Mean Distance (qt Mile)	.611	.144	.080	.000	2.422
Distance to CBD (Miles)	-.487	.060	-.116	.000	1.381
Dwelling Units per Acre, 2000	.014	.027	.007	.597	1.319
Change in Dwelling Units per Acre	.043	.002	.223	.000	1.091
Intersection Density per Square Mile	-.015	.004	-.049	.001	1.516
Relative Median Household Income	-4.425	1.093	-.096	.000	3.830
Change in Relative Median Household Income	-.101	.012	-.116	.000	1.378
Relative Percent College Attainment	8.882	10.911	.011	.416	1.200
Change in Relative Percent College Attainment	.035	.003	.166	.000	1.411
Relative Percent below Poverty Line	.001	.007	.003	.895	3.095
Change in Relative Percent below Poverty Line	-.008	.004	-.025	.052	1.173
Percent White, 2000	2.509	.522	.091	.000	2.461
Change in Percent White, 2000	.005	.002	.043	.001	1.216
Percent Unemployed Individuals, 2000	.286	.137	.035	.037	1.936
Change in Percent Unemployed Individuals	-.009	.001	-.103	.000	1.501
Percent Owner Occupied, 2000	-.127	.022	-.136	.000	3.786
Percent Vacant Housing Units	.690	.063	.162	.000	1.487

Table 5.6: Fixed Effects Model for Change in Percent of New Households, 30-City Sample

Dependent: Change in Percent of HH <10 Years, 2000 Census - 2006-2010 ACS					
N (observations)	5277		R Square	0.287	
Durbin-Watson	1.815				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
(Constant)	4.275	2.204		.052	
Percent of HH in Area <10 Years	-68.745	4.673	-.307	.000	3.201
Median Home Value, 2000 ($Th)	.016	.004	.120	.000	5.409
Percent Change in Median Home Values	2.797	.599	.069	.000	1.605
Recreation, Mean Distance (qt Mile)	-1.262	.311	-.075	.000	2.522
Retail, Mean Distance (qt Mile)	.852	.499	.035	.088	3.036
Supermarkets, Mean Distance (qt Mile)	.435	.142	.056	.002	2.422
Change in Dwelling Units per Acre	.045	.002	.227	.000	1.071
Relative Median Household Income	-5.863	1.259	-.125	.000	5.251
Change in Relative Median Household Income	-.097	.012	-.109	.000	1.322
Relative Percent College Attainment	33.966	17.612	.040	.054	3.225
Change in Relative Percent College Attainment	.036	.003	.165	.000	1.292
Percent White, 2000	2.606	.529	.093	.000	2.609
Percent Unemployed Individuals, 2000	.358	.139	.043	.010	2.052
Change in Percent Unemployed Individuals	-.008	.001	-.090	.000	1.550
Percent Owner Occupied, 2000	-.225	.025	-.235	.000	4.860
Percent Vacant Housing Units	.580	.067	.134	.000	1.749

App2: Fixed Effects Model for Change in Percent of New Households with Walk Score, 30-City Sample

Dependent: Change in Percent of HH <10 Years, 2000 Census - 2006-2010 ACS					
N (observations)	5277		R Square	0.287	
Durbin-Watson	1.815				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
(Constant)	3.764	2.373		.113	
p10Yrs	-71.827	4.685	-.321	.000	3.192
ws_val	.045	.018	.043	.012	2.086
d1SRHVpchg	2.034	.577	.050	.000	1.485
pUnemp00	.296	.140	.036	.034	2.052
pUnempChg	-.008	.001	-.093	.000	1.549
pchg_duAC	.048	.002	.229	.000	1.058
mIncTh00R	-1.917	.971	-.041	.048	3.115
chgMedIncR	-.088	.012	-.100	.000	1.279
pWht00R	2.913	.523	.104	.000	2.543
pCol00R	32.214	17.689	.038	.069	3.229
chgPColR	.036	.003	.166	.000	1.293
pOwn00	-.252	.023	-.264	.000	4.310
pVac00	.636	.067	.146	.000	1.707

Table 5.7: Base Model for Change in Age Diversity, 30-City Sample

Dependent: Change in Simpson Diversity Index for Age, 2000 Census - 2006-2010 ACS					
N (observations)	3243		R Square	0.107	
Durbin-Watson	1.556				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	2.766	1.794		.123	
Age Diversity Index, 2000	.000	.034	.000	.989	1.383
Median Home Value, 2000 ($Th)	.288	1.534	.005	.851	2.978
Percent Change in Median Home Values	-1.207	3.524	-.006	.732	1.199
Percent of HH in Area <10 Years	.000	.000	-.007	.712	1.286
Change in Percent of HH in Area <10 Years	-.005	.008	-.024	.474	4.064
Cultural Amenities, Mean Distance (qt Mile)	.001	.002	.015	.411	1.237
Recreation, Mean Distance (qt Mile)	-.278	.299	-.040	.353	6.501
Retail, Mean Distance (qt Mile)	-.019	.014	-.029	.187	1.684
Services, Mean Distance (qt Mile)	-.003	.002	-.046	.126	3.303
Dining, Mean Distance (qt Mile)	.003	.002	.027	.118	1.108
Supermarkets, Mean Distance (qt Mile)	-.079	.048	-.040	.101	2.184
Distance to CBD (Miles)	.002	.001	.035	.088	1.538
Dwelling Units per Acre, 2000	.426	.219	.061	.051	3.566
Change in Dwelling Units per Acre	-.010	.004	-.047	.020	1.480
Intersection Density per Square Mile	.002	.001	.055	.016	1.914
Relative Median Household Income	-.004	.002	-.054	.012	1.661
Change in Relative Median Household Income	-.055	.021	-.054	.010	1.578
Relative Percent College Attainment	.360	.126	.073	.004	2.374
Change in Relative Percent College Attainment	1.301	.390	.111	.001	3.939
Relative Percent below Poverty Line	-.850	.253	-.162	.001	8.386
Change in Relative Percent below Poverty Line	.935	.244	.186	.000	8.465
Percent White, 2000	-4.107	1.047	-.074	.000	1.264
Change in Percent White, 2000	-.709	.181	-.104	.000	2.547
Percent Unemployed Individuals, 2000	.210	.045	.098	.000	1.601
Change in Percent Unemployed Individuals	.115	.021	.108	.000	1.389
Percent Owner Occupied, 2000	1.250	.199	.117	.000	1.256
Percent Vacant Housing Units	.034	.005	.133	.000	1.305

Table 5.8: Fixed Effects Model for Age Diversity, 30-City Sample

Dependent: Change in Simpson Diversity Index for Age, 2000 Census - 2006-2010 ACS					
N (observations)	3243		R Square	0.149	
Durbin-Watson	1.638				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
Constant	1.520	1.442		.292	
Age Diversity Index, 2000	-3.875	1.023	-.069	.000	1.261
Median Home Value, 2000 ($Th)	.002	.001	.071	.079	6.141
Percent Change in Median Home Values	1.786	.220	.174	.000	1.719
Change in Percent of HH in Area <10 Years	.033	.005	.131	.000	1.293
Recreation, Mean Distance (qt Mile)	.253	.128	.052	.049	2.581
Services, Mean Distance (qt Mile)	-.669	.232	-.128	.004	7.383
Dining, Mean Distance (qt Mile)	.880	.225	.175	.000	7.504
Supermarkets, Mean Distance (qt Mile)	-.102	.048	-.052	.033	2.224
Distance to CBD (Miles)	.210	.027	.197	.000	2.435
Relative Median Household Income	1.660	.435	.141	.000	5.157
Change in Relative Median Household Income	-.011	.004	-.050	.006	1.200
Relative Percent College Attainment	12.134	5.477	.063	.027	3.025
Percent White, 2000	-.857	.162	-.126	.000	2.143
Percent Unemployed Individuals, 2000	.219	.045	.102	.000	1.676
Change in Percent Unemployed Individuals	-.069	.037	-.040	.058	1.703
Percent Owner Occupied, 2000	-.011	.006	-.049	.081	2.938
Percent Vacant Housing Units	-.086	.023	-.085	.000	1.881

Table 5.8: Fixed Effects Model for Age Diversity, 30-City Sample

Dependent: Change in Simpson Diversity Index for Age, 2000 Census - 2006-2010 ACS					
N (observations)	3243		R Square	0.155	
Durbin-Watson	1.644				
	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics
Model	B	Std. Error	Beta	Sig.	VIF
(Constant)	6.319	1.604		.000	
divAge00	-4.518	1.024	-.081	.000	1.272
ws_val	-.046	.007	-.177	.000	2.434
cdbDistMi	.166	.028	.156	.000	2.546
srhvTh00	.002	.001	.075	.063	6.133
d1SRHVpchg	1.826	.219	.178	.000	1.720
d2P10YrsPchg	.033	.005	.129	.000	1.286
mIncTh00R	1.675	.433	.143	.000	5.147
chgMedIncR	-.010	.004	-.047	.008	1.195
pWht00R	-.711	.164	-.105	.000	2.195
pCol00R	11.557	5.448	.060	.034	3.013
pOwn00	-.018	.006	-.082	.004	3.041
pVac00	-.094	.023	-.094	.000	1.882
pUnemp00	.219	.045	.102	.000	1.669
pUnempChg	-.064	.036	-.038	.076	1.696

APPENDIX 2: IRVINE-MINNESOTA INVENTORY FOR NEIGHBORHOOD CASE STUDIES

TABLES BEGIN ON THE FOLLOWING PAGE

		Atlanta Westwood	Peoplestown
	Accessibility	19	31
	Pleasurability	49	55
	Perceived Safety: Crime	5	12
	Perceived Safety: Traffic	16	43
Neighborhood Identification			
1. Are there monuments or markers including neighborhood entry signs that indicate that one is entering a special district or area?	yes = 1; no = 0	1	1
7. Does the segment have banners that identify the neighborhood?	some/a lot = 3; few = 2; none = 0	0	2
Barriers			
17. Are the following barriers present on this segment. Check all that apply, and whether barrier can be overcome e.g. there's a pedestrian bridge.			
Highway (elevated or below ground)	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	3
Railroad track	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Impassable land use (e.g., gated community, major industrial complex, etc.)	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
River	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Drainage ditches	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	1	0
Road with 6 or more lanes	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Other	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Freeways			
42. Is there a freeway overpass/underpass connected to this segment?	under a freeway overpass =3; next to freeway = 2; IS a freeway overpass = 1; none of the above = 0	0	2
Traffic Features			
43. What is the posted speed limit on this segment? Only include those on the segment itself.	use number; not posted =8	8	30
44. Are there measures on this segment that could slow down traffic? Mark all that			
Speed bump/speed hump/raised crosswalk; or dips (that are intended to slow down traffic)	yes = 1; no = 0	1	0

		Atlanta Westwood	Peoplestown
Rumble strips or bumps (includes dots, reflectors, raised concrete strips, etc.)	yes = 1; no = 0	1	0
Curb bulb out/curb extension	yes = 1; no = 0	0	0
Traffic circle/roundabout	yes = 1; no = 0	0	0
Median	yes = 1; no = 0	0	0
Angled/ On-street parking (that runs along most or the entire segment - does not have to be on both sides of segment)	yes = 1; no = 0	1	1
45a. Is there a cul-de-sac or permanent street closing on this segment?	yes = 1; no = 0	1	0
45b. Is there a pedestrian access point or cut through point that allows pedestrians to go from one segment to another (even though vehicular traffic may not be able to)?	yes = 1; no = 0; don't know = 7	1	1
Other Features of the Neighborhood			
49. How many street vendors or stalls are on this segment? (do not count newspaper racks; there must be a person vending)	some/a lot = 3; few = 2; none = 0	0	0
50. Is there public art that is visible on this segment?	yes = 1; no = 0	1	1
51. Are there billboards present on this segment?	some/a lot = 3; few = 2; none = 0	0	2
People			
52. How safe do you feel walking on this segment?	pretty/very safe = 1; not very safe/unsafe = 0	1	1
Dogs			
53. Are there any loose/unsupervised/barking dogs on this segment that seem menacing?	yes = 1; no = 0	0	0
Olfactory Character			
54. Is the dominant smell unpleasant?	yes = 1; no = 0	0	0
Sidewalks			
18a. How many sides of the street have sidewalks?	count 1 or 2	1	2
18b. Is the sidewalk complete on one or both sides?	yes = 1; no = 0; 8 = NA	1	1
18c. What is the condition or maintenance of the sidewalk?	under repair = 2; moderate or good = 1; poor = 0	2	2
18d. Is there a decorative or unique paving that covers most or all of the sidewalk on the segment? (e.g., bricks, tile, etc.)	yes = 1; no = 0	0	0
18e. Determine how much of the sidewalk is covered by these features that provide			
Arcades	some/ much of s'walk covered = 1; no/little covered = 0	0	0

		Atlanta Westwood	Peoplestown
Awnings	some/ much of s'walk covered = 1; no/little covered = 0	0	0
Other	some/ much of s'walk covered = 1; no/little covered = 0	0	0
18f. Is there is a buffer (for example, parked cars, landscaped “buffer” strip, etc.) between sidewalk or street.	yes = 1; no = 0; NA = 8	0	1
19. Are there sidewalks/greenbelts/trails/paths other than sidewalks along street?	yes = 1; no = 0	1	1
Street Crossing & Characteristics			
2a. Consider the places on the segment that are intended for pedestrians to cross the street. Are these places marked for pedestrian crossing?	all = 3; some = 2; none = 0; NA = 8	0	2
2b. What type of marking do the crosswalks have? Mark all that apply.			
White painted lines	yes = 1; no = 0	0	1
Colored painted lines	yes = 1; no = 0	0	0
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	yes = 1; no = 0	0	0
Other	yes = 1; no = 0	0	0
3. Are there curb cuts at all places where crossing is expected to occur?	all = 3; some = 2; none = 0; NA = 8	2	3
4. What type of traffic/pedestrian signal(s)/system(s) is/are provided? Mark all that			
Traffic signal	yes = 1; no = 0	0	1
Stop sign	yes = 1; no = 0	1	1
Yield sign	yes = 1; no = 0	1	0
Pedestrian activated signal	yes = 1; no = 0	0	0
Pedestrian crossing sign	yes = 1; no = 0	0	1
Pedestrian overpass/underpass/bridge	yes = 1; no = 0	0	0
5. For an individual who is on this segment, how safe (traffic wise) do you think it is to cross the street from this segment?	pretty safe =1; not very safe / unsafe = 0; cul de sac = 8	1	1
6. For an individual who is on this segment, how convenient (traffic wise) do you think it is to cross the street from this segment?	pretty/very inconvenient = 1; not very/inconvenient = 0; cul de sac = 8	1	0
8a. Is this a pedestrianized street?	yes = 1; no = 0	0	0
10. How many vehicle lanes are there for cars? (Include turning lanes).	six or more = 6; five = 5; four = 4; three = 3; two = 2; one = 1; NA (no lanes for car travel) = 8	0	2
Bicycle Lanes			
20a. Are there bicycle lanes on the segment?	yes = 1; no = 0	0	0
20b. How are the bicycle lanes demarcated?	on road, painted line/reflectors=3; on road physical separation = 2; off road = 1	0	0
Mid Block Crossing			
21a. Is there a marked mid-block crosswalk for pedestrians?	yes = 1; no = 0	0	0

		Atlanta Westwood	Peoplestown
21b. What type of marking does the crosswalk have? Mark all that apply			
White painted lines	yes = 1; no = 0	0	0
Colored painted lines	yes = 1; no = 0	0	0
Zebra striping	yes = 1; no = 0	0	0
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	yes = 1; no = 0	0	0
Other	yes = 1; no = 0	0	0
Steepness			
22. How steep or hilly is this segment? Mark all that apply.	steep slope = 2; moderate slope = 1; flat or gentle slope = 0	0	0
Buildings			
27. How many stories are most buildings on the segment?	5 or more = 3; 3-4 stories = 2; 1-2 stories = 1; heights vary, no predominant height = 0; NA (no buildings) = 8	1	2
28. Are there abandoned buildings or lots on this segment?	some/a lot = 3; few = 2; none = 0; NA=8	0	2
29. Does at least 50% of the segment have buildings?	yes = 1; no = 0	0	1
Windows			
30. How many buildings on this segment have windows with bars? (proportion)	some/a lot = 3; few = 2; none = 0; NA = 8	0	0
Other Features of Buildings			
31. How many buildings on this segment have front porches? (porches you can sit on)	some/a lot = 3; few = 2; none = 0; NA = 8	2	3
32. How much of the segment has blank walls or buildings with blank walls?	some/a lot = 3; few = 2; none = 0; NA = 8	0	0
Garages			
33a. How many buildings have garage doors facing the street?	some/a lot = 3; few = 2; none = 0; NA = 8	2	2
33b. How prominent are most garage doors when looking at the front of the buildings?	very = 3; somewhat = 2; not very/not visible = 0	2	2
Parking			
34a. Is there a parking structure visible on this segment (do not include parking structures that are completely underground)?	yes = 1; no = 0	0	0
34b. Looking at the front of the parking structure on the street level floor, what is the predominant use that is visible to you?	parking = 2; varied = 1;not parking other uses = 0	0	0
Driveways			
35. How many driveways are visible on the segment?	some/a lot = 3; few = 2; none = 0	3	2

		Atlanta Westwood	Peoplestown
Maintenance			
36. Describe the general maintenance of the buildings on this segment.	attractive = 3; neutral = 2; unattractive = 1; NA = 8	3	3
37. How much graffiti is apparent on this segment?	some/a lot = 3; little = 2; none = 0	0	0
38. How much litter is apparent on this segment?	some/a lot = 3; little = 2; none = 0	0	2
39. Are there dumpsters visible on this segment?	some/a lot = 3; few = 2; none = 0	0	0
40. Is there visible electrical wiring overhead on the segment?	some/a lot = 3; little = 2; none = 0	3	3
Lighting			
41. Is there outdoor lighting on the segment? (Include lighting that is intended to light public paths and public spaces)	yes = 1; no = 0	1	1
Architecture / Design			
46. Rate the attractiveness of the segment (design + maintenance)	attractive = 3; neutral = 2; unattractive = 1	2	3
47. Does this segment have buildings that appear to be historic? (old + detailed)	yes = 1; no = 0; NA = 8	1	1
48. How interesting is the architecture/urban design of this segment?	interesting = 3; somewhat interesting = 2; uninteresting = 1	1	2
Views			
11a. Is this segment characterized by having a significant open view of an object or scene that is not on the segment? The view must be a prominent one.	yes = 1; no = 0	0	0
11b. How attractive is the open view?	attractive = 3; neutral = 2; unattractive = 1; NA (no views) = 8	2	2
13a. Mark off all types of public space(s) on this area and how attractive it is			
Park/playground	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	3	1
Playing or sport field	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	3	1
Plaza /square /courtyard	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	2	0
Public garden	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	3	1
Beach	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
Other	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
13b. Is it possible for the general public to use the public space(s)?	unclear = 2; yes = 1; no = 0	1	1
Land Use			
12a. What types of land uses are present on this area? Mark all that apply.			
Residential			

		Atlanta Westwood	Peoplestown
Single family home - detached	yes = 1; no = 0	1	1
Single family home/duplex - attached (2 units or fewer)	yes = 1; no = 0	1	1
Town home/condo/apartment housing (3 units or more)	yes = 1; no = 0	1	1
Mobile homes (includes manufactured homes)	yes = 1; no = 0	0	0
Residential, other	yes = 1; no = 0	0	0
School			
Elementary, middle or junior high school	yes = 1; no = 0	1	1
High school	yes = 1; no = 0	0	1
University or college (includes all types of building forms)	yes = 1; no = 0	0	0
School, other	yes = 1; no = 0	1	1
Public Space			
Plaza, square, park, playground, landscaped open space, playing fields, garden	yes = 1; no = 0	1	1
Public space, other	yes = 1; no = 0	1	1
Recreational/leisure/fitness			
Gym/fitness center (also includes yoga/pilates studios, etc.)	yes = 1; no = 0	0	1
Movie theater	yes = 1; no = 0	0	0
Recreational, other	yes = 1; no = 0	1	1
Public/civic building			
Community center or library	yes = 1; no = 0	0	1
Museum, auditorium, concert hall, theater	yes = 1; no = 0	0	0
Post office, police station, courthouse, Department of Motor Vehicles	yes = 1; no = 0	0	0
Public building, other	yes = 1; no = 0	0	1
Institutional			
Religious institution (church, temple, mosque, etc.)	yes = 1; no = 0	1	1
Hospital, medical facility, health clinic	yes = 1; no = 0	0	0
Institutional, other	yes = 1; no = 0	0	0
Commercial			
Retail stores/restaurant	yes = 1; no = 0	1	1
Bank/financial service	yes = 1; no = 0	0	0
Hotel/hospitality	yes = 1; no = 0	0	0
Car dealership	yes = 1; no = 0	0	0
Gas/service station	yes = 1; no = 0	1	1
Commercial, other	yes = 1; no = 0	0	0
Office/service			
Offices	yes = 1; no = 0	0	1
Service facilities (includes insurance offices, funeral homes, dry cleaning, Laundromats, etc.)	yes = 1; no = 0	1	1
Office/service, other	yes = 1; no = 0	0	0
Industrial/manufacturing			
Light industrial (e.g., auto paint and auto body repair shops; i.e. clean industries)	yes = 1; no = 0	0	0

		Atlanta Westwood	Peoplestown
Medium or heavy industrial (e.g. chemical plants, oil wells, etc.)	yes = 1; no = 0	0	0
Industrial, other	yes = 1; no = 0	0	0
Transportation center			
Harbor/marina	yes = 1; no = 0	0	0
Other			
Undeveloped land	yes = 1; no = 0	1	1
Agricultural land, ranch, farming	yes = 1; no = 0	0	0
Nature feature	yes = 1; no = 0	1	0
Other	yes = 1; no = 0	0	0
12b. How many of the buildings in this segment contain vertical-mixed use, that is, the building has different land uses on different floors of the building?	some/a lot = 3; few = 2; none = 0; NA (no buildings>1 story) = 8	0	2
12c. Determine whether any of these distinctive retail types are present (focusing			
Big box shops (includes super stores or warehouse stores)	yes = 1; no = 0	0	0
Shopping mall	yes = 1; no = 0	0	0
Strip mall/row of shops	yes = 1; no = 0	0	1
Drive-thru	yes = 1; no = 0	0	0
Other Land Uses			
14. How many of these land uses are present on this segment?			
Bars/night clubs	some/a lot = 3; few = 2; none = 0	0	0
Adult uses	some/a lot = 3; few = 2; none = 0	0	0
Check cashing stores/pawn shops/bail bond stores	some/a lot = 3; few = 2; none = 0	0	0
Liquor stores	some/a lot = 3; few = 2; none = 0	0	2
15. How many of the following gathering places are on this segment?			
Restaurants	some/a lot = 3; few = 2; none = 0	0	2
Coffee shops	some/a lot = 3; few = 2; none = 0	0	2
Libraries/bookstores	some/a lot = 3; few = 2; none = 0	2	2
“Corner” store	some/a lot = 3; few = 2; none = 0	2	2
Art or craft galleries	some/a lot = 3; few = 2; none = 0	0	0
Farmers market	yes = 1; no = 0	0	0
16. Are these nature features present on this segment?			
Open field/golf course	yes = 1; no = 0	1	1
Lake/pond	yes = 1; no = 0	1	0
Fountain/reflecting pool	yes = 1; no = 0	1	0
Stream/river/canal/creek	yes = 1; no = 0	1	1
Forest or woods	yes = 1; no = 0	1	1
Ocean	yes = 1; no = 0	0	0
Mountain or hills	yes = 1; no = 0	0	0
Desert	yes = 1; no = 0	0	0

Sidewalk Amenities			
23. Are there outdoor dining areas (e.g. cafes, outdoor tables at coffee shops or plazas, etc) located on the segment?	some/a lot = 3; few = 2; none = 0	0	0
24a. Indicate how many of each of the following street furniture/sidewalk amenities			
Benches (not a bus stop), chairs and/or ledges for sitting	some/a lot = 3; few = 2; none = 0	0	2
Bus stops with seating	some/a lot = 3; few = 2; none = 0	0	2

		Atlanta Westwood	Peoplestown
Heat lamps	some/a lot = 3; few = 2; none = 0	0	0
Bike racks	some/a lot = 3; few = 2; none = 0	0	0
25. Are there obvious public restrooms on this segment that are clearly open to the public?	yes = 1; no = 0	0	0

Street Trees			
26a. How many street trees are on this segment? (Do not include trees that are not on the public right of way; street trees are typically between the sidewalk and the street or if there is no sidewalk, trees usually line the street)	some trees/trees along most or entire segment = 1; none/few trees = 0	1	1
26b. Is the sidewalk shaded by trees?	yes/somewhat = 1; no = 0; NA = 8	1	1

		Philadelphia Fairhill	Queen Village
	Accessibility	25	27
	Pleasurability	36	56
	Perceived Safety: Crime	11	13
	Perceived Safety: Traffic	44	43
Neighborhood Identification			
1. Are there monuments or markers including neighborhood entry signs that indicate that one is entering a special district or area?	yes = 1; no = 0	0	1
7. Does the segment have banners that identify the neighborhood?	some/a lot = 3; few = 2; none = 0	0	3
Barriers			
17. Are the following barriers present on this segment. Check all that apply, and whether barrier can be overcome e.g. there's a pedestrian bridge.			
Highway (elevated or below ground)	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Railroad track	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Impassable land use (e.g., gated community, major industrial complex, etc.)	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
River	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Drainage ditches	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Road with 6 or more lanes	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Other	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Freeways			
42. Is there a freeway overpass/underpass connected to this segment?	under a freeway overpass =3; next to freeway = 2; IS a freeway overpass = 1; none of the above = 0	0	0
Traffic Features			
43. What is the posted speed limit on this segment? Only include those on the segment itself.	use number; not posted =8	30	30
44. Are there measures on this segment that could slow down traffic? Mark all that			
Speed bump/speed hump/raised crosswalk; or dips (that are intended to slow down traffic)	yes = 1; no = 0	0	0

		Philadelphia Fairhill	Queen Village
Rumble strips or bumps (includes dots, reflectors, raised concrete strips, etc.)	yes = 1; no = 0	0	0
Curb bulb out/curb extension	yes = 1; no = 0	0	0
Traffic circle/roundabout	yes = 1; no = 0	0	0
Median	yes = 1; no = 0	0	0
Angled/ On-street parking (that runs along most or the entire segment - does not have to be on both sides of segment)	yes = 1; no = 0	1	1
45a. Is there a cul-de-sac or permanent street closing on this segment?	yes = 1; no = 0	0	0
45b. Is there a pedestrian access point or cut through point that allows pedestrians to go from one segment to another (even though vehicular traffic may not be able to)?	yes = 1; no = 0; don't know = 7	0	0
Other Features of the Neighborhood			
49. How many street vendors or stalls are on this segment? (do not count newspaper racks; there must be a person vending)	some/a lot = 3; few = 2; none = 0	0	0
50. Is there public art that is visible on this segment?	yes = 1; no = 0	0	1
51. Are there billboards present on this segment?	some/a lot = 3; few = 2; none = 0	0	0
People			
52. How safe do you feel walking on this segment?	pretty/very safe = 1; not very safe/unsafe = 0	1	1
Dogs			
53. Are there any loose/unsupervised/barking dogs on this segment that seem menacing?	yes = 1; no = 0	0	0
Olfactory Character			
54. Is the dominant smell unpleasant?	yes = 1; no = 0	0	0
Sidewalks			
18a. How many sides of the street have sidewalks?	count 1 or 2	2	2
18b. Is the sidewalk complete on one or both sides?	yes = 1; no = 0; 8 = NA	1	1
18c. What is the condition or maintenance of the sidewalk?	under repair = 2; moderate or good = 1; poor = 0	2	1
18d. Is there a decorative or unique paving that covers most or all of the sidewalk on the segment? (e.g., bricks, tile, etc.)	yes = 1; no = 0	0	1
18e. Determine how much of the sidewalk is covered by these features that provide			
Arcades	some/ much of s'walk covered = 1; no/little covered = 0	0	0

		Philadelphia Fairhill	Queen Village
Awnings	some/ much of s'walk covered = 1; no/little covered = 0	0	0
Other	some/ much of s'walk covered = 1; no/little covered = 0	0	0
18f. Is there is a buffer (for example, parked cars, landscaped “buffer” strip, etc.) between sidewalk or street.	yes = 1; no = 0; NA = 8	1	1
19. Are there sidewalks/greenbelts/trails/paths other than sidewalks along street?	yes = 1; no = 0	0	0
Street Crossing & Characteristics			
2a. Consider the places on the segment that are intended for pedestrians to cross the street. Are these places marked for pedestrian crossing?	all = 3; some = 2; none = 0; NA = 8	2	3
2b. What type of marking do the crosswalks have? Mark all that apply.			
White painted lines	yes = 1; no = 0	1	1
Colored painted lines	yes = 1; no = 0	0	0
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	yes = 1; no = 0	0	1
Other	yes = 1; no = 0	0	0
3. Are there curb cuts at all places where crossing is expected to occur?	all = 3; some = 2; none = 0; NA = 8	3	3
4. What type of traffic/pedestrian signal(s)/system(s) is/are provided? Mark all that			
Traffic signal	yes = 1; no = 0	1	0
Stop sign	yes = 1; no = 0	1	1
Yield sign	yes = 1; no = 0	1	0
Pedestrian activated signal	yes = 1; no = 0	0	0
Pedestrian crossing sign	yes = 1; no = 0	1	0
Pedestrian overpass/underpass/bridge	yes = 1; no = 0	0	0
5. For an individual who is on this segment, how safe (traffic wise) do you think it is to cross the street from this segment?	pretty safe =1; not very safe / unsafe = 0; cul de sac = 8	1	1
6. For an individual who is on this segment, how convenient (traffic wise) do you think it is to cross the street from this segment?	pretty/very inconvenient = 1; not very/inconvenient = 0; cul de sac = 8	0	0
8a. Is this a pedestrianized street?	yes = 1; no = 0	0	0
10. How many vehicle lanes are there for cars? (Include turning lanes).	six or more = 6; five = 5; four = 4; three = 3; two = 2; one = 1; NA (no lanes for car travel) = 8	2	1
Bicycle Lanes			
20a. Are there bicycle lanes on the segment?	yes = 1; no = 0	0	1
20b. How are the bicycle lanes demarcated?	on road, painted line/reflectors=3; on road physical separation = 2; off road = 1	0	0
Mid Block Crossing			
21a. Is there a marked mid-block crosswalk for pedestrians?	yes = 1; no = 0	0	0

		Philadelphia Fairhill	Queen Village
21b. What type of marking does the crosswalk have? Mark all that apply			
White painted lines	yes = 1; no = 0	0	0
Colored painted lines	yes = 1; no = 0	0	0
Zebra striping	yes = 1; no = 0	0	0
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	yes = 1; no = 0	0	0
Other	yes = 1; no = 0	0	0
Steepness			
22. How steep or hilly is this segment? Mark all that apply.	steep slope = 2; moderate slope = 1; flat or gentle slope = 0	0	0
Buildings			
27. How many stories are most buildings on the segment?	5 or more = 3; 3-4 stories = 2; 1-2 stories = 1; heights vary, no predominant height = 0; NA (no buildings) = 8	1	2
28. Are there abandoned buildings or lots on this segment?	some/a lot = 3; few = 2; none = 0; NA=8	0	2
29. Does at least 50% of the segment have buildings?	yes = 1; no = 0	1	1
Windows			
30. How many buildings on this segment have windows with bars? (proportion)	some/a lot = 3; few = 2; none = 0; NA = 8	2	0
Other Features of Buildings			
31. How many buildings on this segment have front porches? (porches you can sit on)	some/a lot = 3; few = 2; none = 0; NA = 8	2	0
32. How much of the segment has blank walls or buildings with blank walls?	some/a lot = 3; few = 2; none = 0; NA = 8	0	0
Garages			
33a. How many buildings have garage doors facing the street?	some/a lot = 3; few = 2; none = 0; NA = 8	3	2
33b. How prominent are most garage doors when looking at the front of the buildings?	very = 3; somewhat = 2; not very/not visible = 0	3	2
Parking			
34a. Is there a parking structure visible on this segment (do not include parking structures that are completely underground)?	yes = 1; no = 0	0	1
34b. Looking at the front of the parking structure on the street level floor, what is the predominant use that is visible to you?	parking = 2; varied = 1;not parking other uses = 0	0	0
Driveways			
35. How many driveways are visible on the segment?	some/a lot = 3; few = 2; none = 0	3	2

		Philadelphia Fairhill	Queen Village
Maintenance			
36. Describe the general maintenance of the buildings on this segment.	attractive = 3; neutral = 2; unattractive = 1; NA = 8	3	3
37. How much graffiti is apparent on this segment?	some/a lot = 3; little = 2; none = 0	0	2
38. How much litter is apparent on this segment?	some/a lot = 3; little = 2; none = 0	0	2
39. Are there dumpsters visible on this segment?	some/a lot = 3; few = 2; none = 0	0	0
40. Is there visible electrical wiring overhead on the segment?	some/a lot = 3; little = 2; none = 0	0	3
Lighting			
41. Is there outdoor lighting on the segment? (Include lighting that is intended to light public paths and public spaces)	yes = 1; no = 0	1	1
Architecture / Design			
46. Rate the attractiveness of the segment (design + maintenance)	attractive = 3; neutral = 2; unattractive = 1	2	3
47. Does this segment have buildings that appear to be historic? (old + detailed)	yes = 1; no = 0; NA = 8	0	1
48. How interesting is the architecture/urban design of this segment?	interesting = 3; somewhat interesting = 2; uninteresting = 1	1	3
Views			
11a. Is this segment characterized by having a significant open view of an object or scene that is not on the segment? The view must be a prominent one.	yes = 1; no = 0	0	0
11b. How attractive is the open view?	attractive = 3; neutral = 2; unattractive = 1; NA (no views) = 8	2	2
13a. Mark off all types of public space(s) on this area and how attractive it is			
Park/playground	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	1
Playing or sport field	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	0
Plaza /square /courtyard	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	1
Public garden	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	1
Beach	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
Other	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
13b. Is it possible for the general public to use the public space(s)?	unclear = 2; yes = 1; no = 0	1	1
Land Use			
12a. What types of land uses are present on this area? Mark all that apply.			
Residential			

		Philadelphia Fairhill	Queen Village
Single family home - detached	yes = 1; no = 0	1	0
Single family home/duplex - attached (2 units or fewer)	yes = 1; no = 0	1	1
Town home/condo/apartment housing (3 units or more)	yes = 1; no = 0	1	1
Mobile homes (includes manufactured homes)	yes = 1; no = 0	0	0
Residential, other	yes = 1; no = 0	0	0
School			
Elementary, middle or junior high school	yes = 1; no = 0	1	1
High school	yes = 1; no = 0	1	0
University or college (includes all types of building forms)	yes = 1; no = 0	0	0
School, other	yes = 1; no = 0	0	0
Public Space			
Plaza, square, park, playground, landscaped open space, playing fields, garden	yes = 1; no = 0	1	1
Public space, other	yes = 1; no = 0	1	1
Recreational/leisure/fitness			
Gym/fitness center (also includes yoga/pilates studios, etc.)	yes = 1; no = 0	0	1
Movie theater	yes = 1; no = 0	0	1
Recreational, other	yes = 1; no = 0	1	1
Public/civic building			
Community center or library	yes = 1; no = 0	1	1
Museum, auditorium, concert hall, theater	yes = 1; no = 0	0	0
Post office, police station, courthouse, Department of Motor Vehicles	yes = 1; no = 0	0	0
Public building, other	yes = 1; no = 0	1	1
Institutional			
Religious institution (church, temple, mosque, etc.)	yes = 1; no = 0	1	1
Hospital, medical facility, health clinic	yes = 1; no = 0	0	0
Institutional, other	yes = 1; no = 0	0	0
Commercial			
Retail stores/restaurant	yes = 1; no = 0	1	1
Bank/financial service	yes = 1; no = 0	1	1
Hotel/hospitality	yes = 1; no = 0	0	0
Car dealership	yes = 1; no = 0	0	0
Gas/service station	yes = 1; no = 0	1	1
Commercial, other	yes = 1; no = 0	1	1
Office/service			
Offices	yes = 1; no = 0	1	1
Service facilities (includes insurance offices, funeral homes, dry cleaning, Laundromats, etc.)	yes = 1; no = 0	1	1
Office/service, other	yes = 1; no = 0	0	1
Industrial/manufacturing			
Light industrial (e.g., auto paint and auto body repair shops; i.e. clean industries)	yes = 1; no = 0	1	1

		Philadelphia Fairhill	Queen Village
Medium or heavy industrial (e.g. chemical plants, oil wells, etc.)	yes = 1; no = 0	0	0
Industrial, other	yes = 1; no = 0	0	0
Transportation center			
Harbor/marina	yes = 1; no = 0	0	0
Other			
Undeveloped land	yes = 1; no = 0	0	0
Agricultural land, ranch, farming	yes = 1; no = 0	0	0
Nature feature	yes = 1; no = 0	0	0
Other	yes = 1; no = 0	0	0
12b. How many of the buildings in this segment contain vertical-mixed use, that is, the building has different land uses on different floors of the building?	some/a lot = 3; few = 2; none = 0; NA (no buildings>1 story) = 8	0	3
12c. Determine whether any of these distinctive retail types are present (focusing			
Big box shops (includes super stores or warehouse stores)	yes = 1; no = 0	1	0
Shopping mall	yes = 1; no = 0	1	0
Strip mall/row of shops	yes = 1; no = 0	1	1
Drive-thru	yes = 1; no = 0	1	0
Other Land Uses			
14. How many of these land uses are present on this segment?			
Bars/night clubs	some/a lot = 3; few = 2; none = 0	0	1
Adult uses	some/a lot = 3; few = 2; none = 0	0	0
Check cashing stores/pawn shops/bail bond stores	some/a lot = 3; few = 2; none = 0	1	0
Liquor stores	some/a lot = 3; few = 2; none = 0	2	0
15. How many of the following gathering places are on this segment?			
Restaurants	some/a lot = 3; few = 2; none = 0	2	2
Coffee shops	some/a lot = 3; few = 2; none = 0	2	2
Libraries/bookstores	some/a lot = 3; few = 2; none = 0	2	2
“Corner” store	some/a lot = 3; few = 2; none = 0	2	2
Art or craft galleries	some/a lot = 3; few = 2; none = 0	0	2
Farmers market	yes = 1; no = 0	0	1
16. Are these nature features present on this segment?			
Open field/golf course	yes = 1; no = 0	0	0
Lake/pond	yes = 1; no = 0	0	0
Fountain/reflecting pool	yes = 1; no = 0	0	1
Stream/river/canal/creek	yes = 1; no = 0	0	0
Forest or woods	yes = 1; no = 0	0	0
Ocean	yes = 1; no = 0	0	0
Mountain or hills	yes = 1; no = 0	0	0
Desert	yes = 1; no = 0	0	0

Sidewalk Amenities			
23. Are there outdoor dining areas (e.g. cafes, outdoor tables at coffee shops or plazas, etc) located on the segment?	some/a lot = 3; few = 2; none = 0	0	2
24a. Indicate how many of each of the following street furniture/sidewalk amenities			
Benches (not a bus stop), chairs and/or ledges for sitting	some/a lot = 3; few = 2; none = 0	0	2
Bus stops with seating	some/a lot = 3; few = 2; none = 0	0	0

		Philadelphia Fairhill	Queen Village
Heat lamps	some/a lot = 3; few = 2; none = 0	0	0
Bike racks	some/a lot = 3; few = 2; none = 0	0	2
25. Are there obvious public restrooms on this segment that are clearly open to the public?	yes = 1; no = 0	0	0

Street Trees			
26a. How many street trees are on this segment? (Do not include trees that are not on the public right of way; street trees are typically between the sidewalk and the street or if there is no sidewalk, trees usually line the street)	some trees/trees along most or entire segment = 1; none/few trees = 0	0	1
26b. Is the sidewalk shaded by trees?	yes/somewhat = 1; no = 0; NA = 8	0	1

		Salt Lake City Liberty Wells	Rose Park
	Accessibility	19	20
	Pleasurability	47	33
	Perceived Safety: Crime	6	4
	Perceived Safety: Traffic	42	38
Neighborhood Identification			
1. Are there monuments or markers including neighborhood entry signs that indicate that one is entering a special district or area?	yes = 1; no = 0	0	1
7. Does the segment have banners that identify the neighborhood?	some/a lot = 3; few = 2; none = 0	0	0
Barriers			
17. Are the following barriers present on this segment. Check all that apply, and whether barrier can be overcome e.g. there's a pedestrian bridge.			
Highway (elevated or below ground)	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	1	1
Railroad track	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Impassable land use (e.g., gated community, major industrial complex, etc.)	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
River	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Drainage ditches	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Road with 6 or more lanes	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	1	0
Other	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Freeways			
42. Is there a freeway overpass/underpass connected to this segment?	under a freeway overpass =3; next to freeway = 2; IS a freeway overpass = 1; none of the above = 0	2	0
Traffic Features			
43. What is the posted speed limit on this segment? Only include those on the segment itself.	use number; not posted =8	25	25
44. Are there measures on this segment that could slow down traffic? Mark all that			
Speed bump/speed hump/raised crosswalk; or dips (that are intended to slow down traffic)	yes = 1; no = 0	0	0

		Salt Lake City Liberty Wells	Rose Park
Rumble strips or bumps (includes dots, reflectors, raised concrete strips, etc.)	yes = 1; no = 0	0	0
Curb bulb out/curb extension	yes = 1; no = 0	0	0
Traffic circle/roundabout	yes = 1; no = 0	0	0
Median	yes = 1; no = 0	0	0
Angled/ On-street parking (that runs along most or the entire segment - does not have to be on both sides of segment)	yes = 1; no = 0	1	1
45a. Is there a cul-de-sac or permanent street closing on this segment?	yes = 1; no = 0	0	0
45b. Is there a pedestrian access point or cut through point that allows pedestrians to go from one segment to another (even though vehicular traffic may not be able to)?	yes = 1; no = 0; don't know = 7	0	1
Other Features of the Neighborhood			
49. How many street vendors or stalls are on this segment? (do not count newspaper racks; there must be a person vending)	some/a lot = 3; few = 2; none = 0	0	0
50. Is there public art that is visible on this segment?	yes = 1; no = 0	0	1
51. Are there billboards present on this segment?	some/a lot = 3; few = 2; none = 0	2	1
People			
52. How safe do you feel walking on this segment?	pretty/very safe = 1; not very safe/unsafe = 0	1	1
Dogs			
53. Are there any loose/unsupervised/barking dogs on this segment that seem menacing?	yes = 1; no = 0	1	0
Olfactory Character			
54. Is the dominant smell unpleasant?	yes = 1; no = 0	0	0
Sidewalks			
18a. How many sides of the street have sidewalks?	count 1 or 2	2	2
18b. Is the sidewalk complete on one or both sides?	yes = 1; no = 0; 8 = NA	1	1
18c. What is the condition or maintenance of the sidewalk?	under repair = 2; moderate or good = 1; poor = 0	2	2
18d. Is there a decorative or unique paving that covers most or all of the sidewalk on the segment? (e.g., bricks, tile, etc.)	yes = 1; no = 0	0	0
18e. Determine how much of the sidewalk is covered by these features that provide			
Arcades	some/ much of s'walk covered = 1; no/little covered = 0	0	0

		Salt Lake City Liberty Wells	Rose Park
Awnings	some/ much of s'walk covered = 1; no/little covered = 0	0	0
Other	some/ much of s'walk covered = 1; no/little covered = 0	0	0
18f. Is there is a buffer (for example, parked cars, landscaped “buffer” strip, etc.) between sidewalk or street.	yes = 1; no = 0; NA = 8	1	1
19. Are there sidewalks/greenbelts/trails/paths other than sidewalks along street?	yes = 1; no = 0	0	1
Street Crossing & Characteristics			
2a. Consider the places on the segment that are intended for pedestrians to cross the street. Are these places marked for pedestrian crossing?	all = 3; some = 2; none = 0; NA = 8	2	2
2b. What type of marking do the crosswalks have? Mark all that apply.			
White painted lines	yes = 1; no = 0	1	1
Colored painted lines	yes = 1; no = 0	0	0
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	yes = 1; no = 0	1	0
Other	yes = 1; no = 0	0	0
3. Are there curb cuts at all places where crossing is expected to occur?	all = 3; some = 2; none = 0; NA = 8	3	3
4. What type of traffic/pedestrian signal(s)/system(s) is/are provided? Mark all that			
Traffic signal	yes = 1; no = 0	1	1
Stop sign	yes = 1; no = 0	1	1
Yield sign	yes = 1; no = 0	1	0
Pedestrian activated signal	yes = 1; no = 0	1	0
Pedestrian crossing sign	yes = 1; no = 0	1	0
Pedestrian overpass/underpass/bridge	yes = 1; no = 0	0	0
5. For an individual who is on this segment, how safe (traffic wise) do you think it is to cross the street from this segment?	pretty safe =1; not very safe / unsafe = 0; cul de sac = 8	1	1
6. For an individual who is on this segment, how convenient (traffic wise) do you think it is to cross the street from this segment?	pretty/very inconvenient = 1; not very/inconvenient = 0; cul de sac = 8	0	0
8a. Is this a pedestrianized street?	yes = 1; no = 0	0	0
10. How many vehicle lanes are there for cars? (Include turning lanes).	six or more = 6; five = 5; four = 4; three = 3; two = 2; one = 1; NA (no lanes for car travel) = 8	2	2
Bicycle Lanes			
20a. Are there bicycle lanes on the segment?	yes = 1; no = 0	1	0
20b. How are the bicycle lanes demarcated?	on road, painted line/reflectors=3; on road physical separation = 2; off road = 1	0	0
Mid Block Crossing			
21a. Is there a marked mid-block crosswalk for pedestrians?	yes = 1; no = 0	0	0

		Salt Lake City Liberty Wells	Rose Park
21b. What type of marking does the crosswalk have? Mark all that apply			
White painted lines	yes = 1; no = 0	0	0
Colored painted lines	yes = 1; no = 0	0	0
Zebra striping	yes = 1; no = 0	0	0
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	yes = 1; no = 0	0	0
Other	yes = 1; no = 0	0	0
Steepness			
22. How steep or hilly is this segment? Mark all that apply.	steep slope = 2; moderate slope = 1; flat or gentle slope = 0	0	0
Buildings			
27. How many stories are most buildings on the segment?	5 or more = 3; 3-4 stories = 2; 1-2 stories = 1; heights vary, no predominant height = 0; NA (no buildings) = 8	1	1
28. Are there abandoned buildings or lots on this segment?	some/a lot = 3; few = 2; none = 0; NA=8	0	0
29. Does at least 50% of the segment have buildings?	yes = 1; no = 0	0	0
Windows			
30. How many buildings on this segment have windows with bars? (proporition)	some/a lot = 3; few = 2; none = 0; NA = 8	0	0
Other Features of Buildings			
31. How many buildings on this segment have front porches? (porches you can sit on)	some/a lot = 3; few = 2; none = 0; NA = 8	2	2
32. How much of the segment has blank walls or buildings with blank walls?	some/a lot = 3; few = 2; none = 0; NA = 8	0	0
Garages			
33a. How many buildings have garage doors facing the street?	some/a lot = 3; few = 2; none = 0; NA = 8	2	2
33b. How prominent are most garage doors when looking at the front of the buildings?	very = 3; somewhat = 2; not very/not visible = 0	0	2
Parking			
34a. Is there a parking structure visible on this segment (do not include parking structures that are completely underground)?	yes = 1; no = 0	0	0
34b. Looking at the front of the parking structure on the street level floor, what is the predominant use that is visible to you?	parking = 2; varied = 1;not parking other uses = 0	0	0
Driveways			
35. How many driveways are visible on the segment?	some/a lot = 3; few = 2; none = 0	3	3

		Salt Lake City Liberty Wells	Rose Park
Maintenance			
36. Describe the general maintenance of the buildings on this segment.	attractive = 3; neutral = 2; unattractive = 1; NA = 8	3	2
37. How much graffiti is apparent on this segment?	some/a lot = 3; little = 2; none = 0	0	0
38. How much litter is apparent on this segment?	some/a lot = 3; little = 2; none = 0	0	0
39. Are there dumpsters visible on this segment?	some/a lot = 3; few = 2; none = 0	0	0
40. Is there visible electrical wiring overhead on the segment?	some/a lot = 3; little = 2; none = 0	2	3
Lighting			
41. Is there outdoor lighting on the segment? (Include lighting that is intended to light public paths and public spaces)	yes = 1; no = 0	1	1
Architecture / Design			
46. Rate the attractiveness of the segment (design + maintenance)	attractive = 3; neutral = 2; unattractive = 1	3	2
47. Does this segment have buildings that appear to be historic? (old + detailed)	yes = 1; no = 0; NA = 8	1	0
48. How interesting is the architecture/urban design of this segment?	interesting = 3; somewhat interesting = 2; uninteresting = 1	2	2
Views			
11a. Is this segment characterized by having a significant open view of an object or scene that is not on the segment? The view must be a prominent one.	yes = 1; no = 0	1	0
11b. How attractive is the open view?	attractive = 3; neutral = 2; unattractive = 1; NA (no views) = 8	3	2
13a. Mark off all types of public space(s) on this area and how attractive it is			
Park/playground	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	1
Playing or sport field	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	1
Plaza /square /courtyard	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	0
Public garden	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
Beach	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
Other	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	0
13b. Is it possible for the general public to use the public space(s)?	unclear = 2; yes = 1; no = 0	1	1
Land Use			
12a. What types of land uses are present on this area? Mark all that apply.			
Residential			

		Salt Lake City Liberty Wells	Rose Park
Single family home - detached	yes = 1; no = 0	1	1
Single family home/duplex - attached (2 units or fewer)	yes = 1; no = 0	1	1
Town home/condo/apartment housing (3 units or more)	yes = 1; no = 0	1	1
Mobile homes (includes manufactured homes)	yes = 1; no = 0	0	0
Residential, other	yes = 1; no = 0	0	0
School			
Elementary, middle or junior high school	yes = 1; no = 0	1	1
High school	yes = 1; no = 0	0	0
University or college (includes all types of building forms)	yes = 1; no = 0	0	0
School, other	yes = 1; no = 0	0	0
Public Space			
Plaza, square, park, playground, landscaped open space, playing fields, garden	yes = 1; no = 0	1	1
Public space, other	yes = 1; no = 0	1	1
Recreational/leisure/fitness			
Gym/fitness center (also includes yoga/pilates studios, etc.)	yes = 1; no = 0	0	0
Movie theater	yes = 1; no = 0	0	0
Recreational, other	yes = 1; no = 0	0	0
Public/civic building			
Community center or library	yes = 1; no = 0	0	0
Museum, auditorium, concert hall, theater	yes = 1; no = 0	0	0
Post office, police station, courthouse, Department of Motor Vehicles	yes = 1; no = 0	0	0
Public building, other	yes = 1; no = 0	0	0
Institutional			
Religious institution (church, temple, mosque, etc.)	yes = 1; no = 0	1	1
Hospital, medical facility, health clinic	yes = 1; no = 0	0	0
Institutional, other	yes = 1; no = 0	0	0
Commercial			
Retail stores/restaurant	yes = 1; no = 0	1	1
Bank/financial service	yes = 1; no = 0	0	0
Hotel/hospitality	yes = 1; no = 0	0	0
Car dealership	yes = 1; no = 0	0	0
Gas/service station	yes = 1; no = 0	1	1
Commercial, other	yes = 1; no = 0	0	1
Office/service			
Offices	yes = 1; no = 0	0	0
Service facilities (includes insurance offices, funeral homes, dry cleaning, Laundromats, etc.)	yes = 1; no = 0	1	1
Office/service, other	yes = 1; no = 0	0	0
Industrial/manufacturing			
Light industrial (e.g., auto paint and auto body repair shops; i.e. clean industries)	yes = 1; no = 0	0	1

		Salt Lake City Liberty Wells	Rose Park
Medium or heavy industrial (e.g. chemical plants, oil wells, etc.)	yes = 1; no = 0	0	0
Industrial, other	yes = 1; no = 0	0	0
Transportation center			
Harbor/marina	yes = 1; no = 0	0	0
Other			
Undeveloped land	yes = 1; no = 0	0	1
Agricultural land, ranch, farming	yes = 1; no = 0	0	0
Nature feature	yes = 1; no = 0	1	0
Other	yes = 1; no = 0	0	0
12b. How many of the buildings in this segment contain vertical-mixed use, that is, the building has different land uses on different floors of the building?	some/a lot = 3; few = 2; none = 0; NA (no buildings>1 story) = 8	0	0
12c. Determine whether any of these distinctive retail types are present (focusing			
Big box shops (includes super stores or warehouse stores)	yes = 1; no = 0	0	1
Shopping mall	yes = 1; no = 0	0	0
Strip mall/row of shops	yes = 1; no = 0	0	0
Drive-thru	yes = 1; no = 0	0	0
Other Land Uses			
14. How many of these land uses are present on this segment?			
Bars/night clubs	some/a lot = 3; few = 2; none = 0	0	0
Adult uses	some/a lot = 3; few = 2; none = 0	0	0
Check cashing stores/pawn shops/bail bond stores	some/a lot = 3; few = 2; none = 0	0	0
Liquor stores	some/a lot = 3; few = 2; none = 0	0	0
15. How many of the following gathering places are on this segment?			
Restaurants	some/a lot = 3; few = 2; none = 0	2	0
Coffee shops	some/a lot = 3; few = 2; none = 0	0	0
Libraries/bookstores	some/a lot = 3; few = 2; none = 0	0	0
“Corner” store	some/a lot = 3; few = 2; none = 0	2	1
Art or craft galleries	some/a lot = 3; few = 2; none = 0	2	0
Farmers market	yes = 1; no = 0	0	0
16. Are these nature features present on this segment?			
Open field/golf course	yes = 1; no = 0	1	0
Lake/pond	yes = 1; no = 0	1	0
Fountain/reflecting pool	yes = 1; no = 0	1	0
Stream/river/canal/creek	yes = 1; no = 0	0	0
Forest or woods	yes = 1; no = 0	0	0
Ocean	yes = 1; no = 0	0	0
Mountain or hills	yes = 1; no = 0	0	0
Desert	yes = 1; no = 0	0	0

Sidewalk Amenities			
23. Are there outdoor dining areas (e.g. cafes, outdoor tables at coffee shops or plazas, etc) located on the segment?	some/a lot = 3; few = 2; none = 0	2	0
24a. Indicate how many of each of the following street furniture/sidewalk amenities			
Benches (not a bus stop), chairs and/or ledges for sitting	some/a lot = 3; few = 2; none = 0	0	0
Bus stops with seating	some/a lot = 3; few = 2; none = 0	0	0

		Salt Lake City Liberty Wells	Rose Park
Heat lamps	some/a lot = 3; few = 2; none = 0	0	0
Bike racks	some/a lot = 3; few = 2; none = 0	0	0
25. Are there obvious public restrooms on this segment that are clearly open to the public?	yes = 1; no = 0	1	0

Street Trees			
26a. How many street trees are on this segment? (Do not include trees that are not on the public right of way; street trees are typically between the sidewalk and the street or if there is no sidewalk, trees usually line the street)	some trees/trees along most or entire segment = 1; none/few trees = 0	1	1
26b. Is the sidewalk shaded by trees?	yes/somewhat = 1; no = 0; NA = 8	1	1

		San Francisco Excelsior	Haight
	Accessibility	28	28
	Pleasurability	48	64
	Perceived Safety: Crime	9	14
	Perceived Safety: Traffic	22	50
Neighborhood Identification			
1. Are there monuments or markers including neighborhood entry signs that indicate that one is entering a special district or area?	yes = 1; no = 0	0	1
7. Does the segment have banners that identify the neighborhood?	some/a lot = 3; few = 2; none = 0	0	3
Barriers			
17. Are the following barriers present on this segment. Check all that apply, and whether barrier can be overcome e.g. there's a pedestrian bridge.			
Highway (elevated or below ground)	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Railroad track	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Impassable land use (e.g., gated community, major industrial complex, etc.)	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
River	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Drainage ditches	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Road with 6 or more lanes	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Other	no barrier = 0; can be overcome = 1; can be somewhat overcome = 2; can not be overcome = 3	0	0
Freeways			
42. Is there a freeway overpass/underpass connected to this segment?	under a freeway overpass =3; next to freeway = 2; IS a freeway overpass = 1; none of the above = 0	0	0
Traffic Features			
43. What is the posted speed limit on this segment? Only include those on the segment itself.	use number; not posted =8	8	30
44. Are there measures on this segment that could slow down traffic? Mark all that			
Speed bump/speed hump/raised crosswalk; or dips (that are intended to slow down traffic)	yes = 1; no = 0	0	1

		San Francisco Excelsior	Haight
Rumble strips or bumps (includes dots, reflectors, raised concrete strips, etc.)	yes = 1; no = 0	0	0
Curb bulb out/curb extension	yes = 1; no = 0	1	1
Traffic circle/roundabout	yes = 1; no = 0	0	0
Median	yes = 1; no = 0	0	0
Angled/ On-street parking (that runs along most or the entire segment - does not have to be on both sides of segment)	yes = 1; no = 0	1	1
45a. Is there a cul-de-sac or permanent street closing on this segment?	yes = 1; no = 0	0	0
45b. Is there a pedestrian access point or cut through point that allows pedestrians to go from one segment to another (even though vehicular traffic may not be able to)?	yes = 1; no = 0; don't know = 7	0	1
Other Features of the Neighborhood			
49. How many street vendors or stalls are on this segment? (do not count newspaper racks; there must be a person vending)	some/a lot = 3; few = 2; none = 0	0	0
50. Is there public art that is visible on this segment?	yes = 1; no = 0	0	1
51. Are there billboards present on this segment?	some/a lot = 3; few = 2; none = 0	2	0
People			
52. How safe do you feel walking on this segment?	pretty/very safe = 1; not very safe/unsafe = 0	1	1
Dogs			
53. Are there any loose/unsupervised/barking dogs on this segment that seem menacing?	yes = 1; no = 0	0	0
Olfactory Character			
54. Is the dominant smell unpleasant?	yes = 1; no = 0	0	0
Sidewalks			
18a. How many sides of the street have sidewalks?	count 1 or 2	2	2
18b. Is the sidewalk complete on one or both sides?	yes = 1; no = 0; 8 = NA	1	1
18c. What is the condition or maintenance of the sidewalk?	under repair = 2; moderate or good = 1; poor = 0	2	2
18d. Is there a decorative or unique paving that covers most or all of the sidewalk on the segment? (e.g., bricks, tile, etc.)	yes = 1; no = 0	0	0
18e. Determine how much of the sidewalk is covered by these features that provide			
Arcades	some/ much of s'walk covered = 1; no/little covered = 0	0	0

		San Francisco Excelsior	Haight
Awnings	some/ much of s'walk covered = 1; no/little covered = 0	0	1
Other	some/ much of s'walk covered = 1; no/little covered = 0	0	0
18f. Is there is a buffer (for example, parked cars, landscaped “buffer” strip, etc.) between sidewalk or street.	yes = 1; no = 0; NA = 8	1	1
19. Are there sidewalks/greenbelts/trails/paths other than sidewalks along street?	yes = 1; no = 0	0	0
Street Crossing & Characteristics			
2a. Consider the places on the segment that are intended for pedestrians to cross the street. Are these places marked for pedestrian crossing?	all = 3; some = 2; none = 0; NA = 8	2	3
2b. What type of marking do the crosswalks have? Mark all that apply.			
White painted lines	yes = 1; no = 0	1	1
Colored painted lines	yes = 1; no = 0	0	0
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	yes = 1; no = 0	0	0
Other	yes = 1; no = 0	0	0
3. Are there curb cuts at all places where crossing is expected to occur?	all = 3; some = 2; none = 0; NA = 8	3	3
4. What type of traffic/pedestrian signal(s)/system(s) is/are provided? Mark all that			
Traffic signal	yes = 1; no = 0	1	1
Stop sign	yes = 1; no = 0	1	1
Yield sign	yes = 1; no = 0	1	0
Pedestrian activated signal	yes = 1; no = 0	0	0
Pedestrian crossing sign	yes = 1; no = 0	0	1
Pedestrian overpass/underpass/bridge	yes = 1; no = 0	0	0
5. For an individual who is on this segment, how safe (traffic wise) do you think it is to cross the street from this segment?	pretty safe =1; not very safe / unsafe = 0; cul de sac = 8	1	1
6. For an individual who is on this segment, how convenient (traffic wise) do you think it is to cross the street from this segment?	pretty/very inconvenient = 1; not very/inconvenient = 0; cul de sac = 8	0	0
8a. Is this a pedestrianized street?	yes = 1; no = 0	0	0
10. How many vehicle lanes are there for cars? (Include turning lanes).	six or more = 6; five = 5; four = 4; three = 3; two = 2; one = 1; NA (no lanes for car travel) = 8	2	2
Bicycle Lanes			
20a. Are there bicycle lanes on the segment?	yes = 1; no = 0	0	1
20b. How are the bicycle lanes demarcated?	on road, painted line/reflectors=3; on road physical separation = 2; off road = 1	0	3
Mid Block Crossing			
21a. Is there a marked mid-block crosswalk for pedestrians?	yes = 1; no = 0	0	0

		San Francisco Excelsior	Haight
21b. What type of marking does the crosswalk have? Mark all that apply			
White painted lines	yes = 1; no = 0	0	0
Colored painted lines	yes = 1; no = 0	0	0
Zebra striping	yes = 1; no = 0	0	0
Different road surface or paving (e.g. tiles, colored concrete, marble, etc)	yes = 1; no = 0	0	0
Other	yes = 1; no = 0	0	0
Steepness			
22. How steep or hilly is this segment? Mark all that apply.	steep slope = 2; moderate slope = 1; flat or gentle slope = 0	2	1
Buildings			
27. How many stories are most buildings on the segment?	5 or more = 3; 3-4 stories = 2; 1-2 stories = 1; heights vary, no predominant height = 0; NA (no buildings) = 8	2	2
28. Are there abandoned buildings or lots on this segment?	some/a lot = 3; few = 2; none = 0; NA=8	0	0
29. Does at least 50% of the segment have buildings?	yes = 1; no = 0	1	1
Windows			
30. How many buildings on this segment have windows with bars? (proportion)	some/a lot = 3; few = 2; none = 0; NA = 8	0	2
Other Features of Buildings			
31. How many buildings on this segment have front porches? (porches you can sit on)	some/a lot = 3; few = 2; none = 0; NA = 8	0	2
32. How much of the segment has blank walls or buildings with blank walls?	some/a lot = 3; few = 2; none = 0; NA = 8	0	0
Garages			
33a. How many buildings have garage doors facing the street?	some/a lot = 3; few = 2; none = 0; NA = 8	2	2
33b. How prominent are most garage doors when looking at the front of the buildings?	very = 3; somewhat = 2; not very/not visible = 0	0	0
Parking			
34a. Is there a parking structure visible on this segment (do not include parking structures that are completely underground)?	yes = 1; no = 0	0	0
34b. Looking at the front of the parking structure on the street level floor, what is the predominant use that is visible to you?	parking = 2; varied = 1;not parking other uses = 0	0	0
Driveways			
35. How many driveways are visible on the segment?	some/a lot = 3; few = 2; none = 0	2	2

		San Francisco Excelsior	Haight
Maintenance			
36. Describe the general maintenance of the buildings on this segment.	attractive = 3; neutral = 2; unattractive = 1; NA = 8	3	3
37. How much graffiti is apparent on this segment?	some/a lot = 3; little = 2; none = 0	0	0
38. How much litter is apparent on this segment?	some/a lot = 3; little = 2; none = 0	2	0
39. Are there dumpsters visible on this segment?	some/a lot = 3; few = 2; none = 0	0	0
40. Is there visible electrical wiring overhead on the segment?	some/a lot = 3; little = 2; none = 0	3	2
Lighting			
41. Is there outdoor lighting on the segment? (Include lighting that is intended to light public paths and public spaces)	yes = 1; no = 0	0	1
Architecture / Design			
46. Rate the attractiveness of the segment (design + maintenance)	attractive = 3; neutral = 2; unattractive = 1	2	3
47. Does this segment have buildings that appear to be historic? (old + detailed)	yes = 1; no = 0; NA = 8	0	1
48. How interesting is the architecture/urban design of this segment?	interesting = 3; somewhat interesting = 2; uninteresting = 1	2	3
Views			
11a. Is this segment characterized by having a significant open view of an object or scene that is not on the segment? The view must be a prominent one.	yes = 1; no = 0	1	1
11b. How attractive is the open view?	attractive = 3; neutral = 2; unattractive = 1; NA (no views) = 8	3	3
13a. Mark off all types of public space(s) on this area and how attractive it is			
Park/playground	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	1
Playing or sport field	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	1	1
Plaza /square /courtyard	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	1
Public garden	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
Beach	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
Other	attractive = 3; neutral = 2; unattractive = 1; 0 = no space;	0	0
13b. Is it possible for the general public to use the public space(s)?	unclear = 2; yes = 1; no = 0	1	1
Land Use			
12a. What types of land uses are present on this area? Mark all that apply.			
Residential			

		San Francisco Excelsior	Haight
Single family home - detached	yes = 1; no = 0	1	1
Single family home/duplex - attached (2 units or fewer)	yes = 1; no = 0	1	1
Town home/condo/apartment housing (3 units or more)	yes = 1; no = 0	1	1
Mobile homes (includes manufactured homes)	yes = 1; no = 0	0	0
Residential, other	yes = 1; no = 0	0	0
School			
Elementary, middle or junior high school	yes = 1; no = 0	1	1
High school	yes = 1; no = 0	1	0
University or college (includes all types of building forms)	yes = 1; no = 0	0	0
School, other	yes = 1; no = 0	0	0
Public Space			
Plaza, square, park, playground, landscaped open space, playing fields, garden	yes = 1; no = 0	1	1
Public space, other	yes = 1; no = 0	1	1
Recreational/leisure/fitness			
Gym/fitness center (also includes yoga/pilates studios, etc.)	yes = 1; no = 0	1	1
Movie theater	yes = 1; no = 0	0	0
Recreational, other	yes = 1; no = 0	1	1
Public/civic building			
Community center or library	yes = 1; no = 0	1	1
Museum, auditorium, concert hall, theater	yes = 1; no = 0	0	0
Post office, police station, courthouse, Department of Motor Vehicles	yes = 1; no = 0	1	1
Public building, other	yes = 1; no = 0	1	1
Institutional			
Religious institution (church, temple, mosque, etc.)	yes = 1; no = 0	1	1
Hospital, medical facility, health clinic	yes = 1; no = 0	0	0
Institutional, other	yes = 1; no = 0	0	0
Commercial			
Retail stores/restaurant	yes = 1; no = 0	1	1
Bank/financial service	yes = 1; no = 0	1	1
Hotel/hospitality	yes = 1; no = 0	0	0
Car dealership	yes = 1; no = 0	0	0
Gas/service station	yes = 1; no = 0	1	0
Commercial, other	yes = 1; no = 0	0	1
Office/service			
Offices	yes = 1; no = 0	1	1
Service facilities (includes insurance offices, funeral homes, dry cleaning, Laundromats, etc.)	yes = 1; no = 0	1	1
Office/service, other	yes = 1; no = 0	1	0
Industrial/manufacturing			
Light industrial (e.g., auto paint and auto body repair shops; i.e. clean industries)	yes = 1; no = 0	1	0

		San Francisco Excelsior	Haight
Medium or heavy industrial (e.g. chemical plants, oil wells, etc.)	yes = 1; no = 0	0	0
Industrial, other	yes = 1; no = 0	0	0
Transportation center			
Harbor/marina	yes = 1; no = 0	0	0
Other			
Undeveloped land	yes = 1; no = 0	0	0
Agricultural land, ranch, farming	yes = 1; no = 0	0	0
Nature feature	yes = 1; no = 0	1	0
Other	yes = 1; no = 0	0	0
12b. How many of the buildings in this segment contain vertical-mixed use, that is, the building has different land uses on different floors of the building?	some/a lot = 3; few = 2; none = 0; NA (no buildings>1 story) = 8	3	3
12c. Determine whether any of these distinctive retail types are present (focusing			
Big box shops (includes super stores or warehouse stores)	yes = 1; no = 0	0	0
Shopping mall	yes = 1; no = 0	0	0
Strip mall/row of shops	yes = 1; no = 0	1	0
Drive-thru	yes = 1; no = 0	0	0
Other Land Uses			
14. How many of these land uses are present on this segment?			
Bars/night clubs	some/a lot = 3; few = 2; none = 0	1	2
Adult uses	some/a lot = 3; few = 2; none = 0	0	2
Check cashing stores/pawn shops/bail bond stores	some/a lot = 3; few = 2; none = 0	0	0
Liquor stores	some/a lot = 3; few = 2; none = 0	1	2
15. How many of the following gathering places are on this segment?			
Restaurants	some/a lot = 3; few = 2; none = 0	3	3
Coffee shops	some/a lot = 3; few = 2; none = 0	2	3
Libraries/bookstores	some/a lot = 3; few = 2; none = 0	2	2
“Corner” store	some/a lot = 3; few = 2; none = 0	2	2
Art or craft galleries	some/a lot = 3; few = 2; none = 0	2	3
Farmers market	yes = 1; no = 0	0	0
16. Are these nature features present on this segment?			
Open field/golf course	yes = 1; no = 0	1	1
Lake/pond	yes = 1; no = 0	0	0
Fountain/reflecting pool	yes = 1; no = 0	0	0
Stream/river/canal/creek	yes = 1; no = 0	0	0
Forest or woods	yes = 1; no = 0	1	0
Ocean	yes = 1; no = 0	0	0
Mountain or hills	yes = 1; no = 0	1	1
Desert	yes = 1; no = 0	0	0

Sidewalk Amenities			
23. Are there outdoor dining areas (e.g. cafes, outdoor tables at coffee shops or plazas, etc) located on the segment?	some/a lot = 3; few = 2; none = 0	2	2
24a. Indicate how many of each of the following street furniture/sidewalk amenities			
Benches (not a bus stop), chairs and/or ledges for sitting	some/a lot = 3; few = 2; none = 0	0	2
Bus stops with seating	some/a lot = 3; few = 2; none = 0	2	2

		San Francisco Excelsior	Haight
Heat lamps	some/a lot = 3; few = 2; none = 0	0	0
Bike racks	some/a lot = 3; few = 2; none = 0	0	2
25. Are there obvious public restrooms on this segment that are clearly open to the public?	yes = 1; no = 0	0	1

Street Trees			
26a. How many street trees are on this segment? (Do not include trees that are not on the public right of way; street trees are typically between the sidewalk and the street or if there is no sidewalk, trees usually line the street)	some trees/trees along most or entire segment = 1; none/few trees = 0	0	1
26b. Is the sidewalk shaded by trees?	yes/somewhat = 1; no = 0; NA = 8	0	1

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