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Does walkability matter? An examination of walkability's impact on housing values, foreclosures and crime

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ABSTRACT

In this study, researchers examined 170 neighborhoods in a medium-sized city to see whether walkability influences neighborhood sustainability. Until 2008, there had not been a reliable measure of the social, health, and economic impact of walkable neighborhoods. This dramatically changed when scholars were able to quantify walkability with tools such as Walkscore™; which measures how accessible daily living activities are by foot. The researchers investigated how walkability impacts the quality and sustainability of a neighborhood. They developed models that evaluated the correlation between an area's Walkscore™ and four broad measures of urban sustainability: neighborhood housing valuation; foreclosures; and crime. Our analysis shows a positive impact not only on neighborhood housing valuation but also on neighborhood crime and foreclosure. These results provide policy opportunities for planners and citizen groups to pursue strategies to encourage the development of more walkable and sustainable neighborhoods.

Introduction

In *The Death and Life of Great American Cities*, the world's most famous urban planner, Jane Jacobs (1961), argues that the ideal neighborhood is designed to facilitate walkability. Jacobs used language that highlighted the features that make a neighborhood well suited to pedestrianism with some specific benefits, including crime reduction and the creation of social capital. In the introduction to the Modern Library edition of the book, she explains that there are "foot people" and "car people," and that her book is written for foot people. She is not necessarily saying that neighborhoods or cities designed for cars are inferior, but rather that there are benefits to allowing the development of neighborhoods that allow for the choice of walking—what modern planners call 'multi-modal' access or complete streets.

Given this language, we frame our work in a new era in which urban thinkers began to quantify and assess neighborhood walkability. We use the term 'walkability' as a way to measure the lives of "foot people," evaluating the questions of whether walkability impacts crime, foreclosures and housing values in neighborhoods. Where Jacobs used qualitative evaluation, the development of walkability measurement tools has enabled planners and academics to measure the social and economic impacts of walkability on a more empirical level—comparing places where daily living activities can be accomplished by foot and one might not need a car to other areas that require inhabitants to be more car-dependent.

In general, inner-city neighborhoods built before the mass production of cars are more walkable than sprawling suburban neighborhoods; however, walkability does not inevitably eradicate car dependency. People may live in walkable neighborhoods in which they can walk to the grocery store or their gym, but they may still need a car to get to work or other places. Walkability is an important emerging topic in the growing dialogue concerning neighborhood sustainability in the sense of community resilience from foreclosures, the decline in housing prices, crime and even environmental justice (Gilderbloom and Meares, 2012; Gilderbloom, Meares, & Riggs, 2014). Many US neighborhoods built in the early 20th century had walkable features, such as local stores and shops, and streetcars that served the need for transportation between housing and jobs. Other neighborhoods were designed for automobiles with little connectivity; thus, the ease of moving via walking or cycling to destinations such as schools, stores, and work places was limited (Sallis, Frank, Saelens, & Kraft, 2004). A dependence on automobiles has been correlated with reduced physical activity and an increased likelihood of obesity (Ewing, Brownson, & Berrigan, 2006; Ewing, Schmid,

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Killingsworth, Zlot, & Raudenbush, 2003; Frank, Andresen, & Schmid, 2004).

Literature review

The 'Great Recession' from December 2007 to June 2009 (NBER.org, 2012) offers an opportunity to discover which neighborhoods are economically resilient. Many neighborhoods have suffered from a glut of foreclosures for which the only solution is to find creative strategies for demolition (Saito, 2011). Although the literature has shown that rent-to-own and neighborhood stabilization programs may help decrease foreclosures, it also indicates that communities with dense and walkable urban environments have seen fewer foreclosures and fewer declines in prices (Ball, 2012; Joice, 2011; Lacko, McKernan, & Hastak, 2002; Towe & Lawley, 2010). This paper assesses the relationship between walkability, housing values, foreclosures and crime in Louisville, Kentucky. The context is the idea that walkability is an important economic and social resource.

Definition of walkability

Because many individuals define walkability using different terms (e.g., proximity, accessibility, and suitability), it is important to establish an operational definition for the purpose of this study. Walkability is often associated with suitability factors such as street width, the number of lanes, safe speeds, crossing improvements, the presence of trees, and other pedestrian level-of-service and suitability factors (Dowling et al., 2008). Others cite the perception of safety, such as the fear of crime or heavy traffic (Southworth, 2005). Although these factors are important in the quality of walking trips, the literature would indicate that accessibility-based factors such as destinations for travel, land use and population characteristics are more indicative of walkability and have a stronger pull on walking behavior—that suitability factors are subordinate to the idea of *accessibility* in promoting walking behavior (Ewing & Cervero, 2010). This is underscored by the work of those such as Frank, Leslie and Ewing, who were instrumental in developing Walkscore™ using measureable factors such as including land use entropy, street connectivity and population density. We employ the Walkscore™ measurement tool to build on work by those such as Carr, Duncan, and Lienberger, who have conducted preliminary work that validates the tool as an appropriate proxy for walkability and the propensity for walking behavior on the scale of our research (Carr, Dunsiger, & Marcus, 2011; Duncan, Aldstadt, Whalen, & Melly, 2013; Duncan, Aldstadt, Whalen, Melly, & Gortmaker, 2011; Leinberger & Alfonso, 2012).

Walkability and health

A large body of research has correlated neighborhood walkability with higher density, street intersections, a higher land use mix, and closer access to resources (Frank, Schmid, Sallis, Chapman, & Saelens, 2005; Frank et al., 2004; Moudon et al., 2006). Studies have found that neighborhoods classified as walkable (using walkability-benchmarking tools) have higher levels of incidental walking and a lower incidence of obesity (Frank, Kerr, Chapman, & Sallis, 2007).

One study reported that obesity is responsible for 2.6 million annual deaths worldwide (World Health Organization, 2013). The American Obesity Association (2007) reports that 65% of American adults are overweight and 30.5% are considered obese; in addition, the rate of obesity is expected to double within the next 10 years (U.S. Center for Disease Control). Being overweight or obese increases the risk of developing high blood pressure, high cholesterol, heart disease, stroke, cancer, gall bladder and respiratory disease, joint and bone disease, and diabetes (Pi-Sunyer, 1993).

Studies suggest that obesity is mitigated by increased activity associated with a more walkable environment. Studies have shown that light-to-moderate activity is associated with a substantially reduced risk of developing disease (Hu, Li, Colditz, Willett, & Manson, 2003; (Thompson, Edelsberg, Colditz, Bird, & Oster, 1999). Many urban planning scholars agree that the built environment influences physical activity levels (Ewing, 2005; Handy, Cao, & Mokhtarian, 2005, 2006). Furthermore, environments that are more walkable (Doyle, Kelly-Schwartz, Schlossberg, & Stockard, 2006; Saelens, Sallis, & Frank, 2003) are correlated with a decreased risk of obesity and related illnesses (Frank et al., 2004, 2005).

Walkability, economic value and demand

A growing body of work shows that walkable neighborhoods have intrinsic economic value by encouraging economic transactions and social exchanges (Leinberger & Alfonso, 2012; Litman, 2003, 2011) and bolstering real estate property values (Cortright, 2009; Diao & Ferreira, 2010; Meares, 2014) in addition to promoting health benefits. Research by Matthews and Turnbull (2007) shows that a more grid-like street pattern increases property values in more pedestrian-oriented neighborhoods and decreases property values in automobile-oriented neighborhoods. Other work finds that each incremental increase in walkability, using Walkscore as a metric, can be associated an increase in property values of up to 9 % (Pivo & Fisher, 2011).

Improved walkability can entice consumers to purchase more local goods and promote greater economic resilience (Litman, 2006). The attributes associated with walkability may also have the capacity to improve safety and decrease crime (Foster & Giles-Corti, 2008; Leslie et al., 2005; Troy & Grove, 2008), which have an indirect effect on real estate values. There is also literature suggesting that walkability bolsters real estate values. A recent study showed that a spike in consumer demand for walkable neighborhoods spans socio-economic statuses (Handy, Sallis, Weber, Maibach, & Hollander, 2008). This finding is somewhat at odds with the conventional wisdom that upper-income families (especially Caucasians) prefer large, single-family, single-use suburban homes (Bajari & Kahn, 2005) and racial homogeneity (Farley, Schuman, Bianchi, Colasanto, & Hatchett., 1978; Farley, Fielding, & Krysan, 1997; Krysan & Farley, 2001; Meen & Meen, 2003; Quigley, 1985).

There is limited evidence showing the extent to which walkability factors influence housing purchases; however, a survey of a broad spectrum of real estate professionals showed walkability to be a major amenity (Riggs, 2011). This has been underscored by those such as Dr. Lawrence Frank (2011) of the University of British Columbia, who has stated in lectures that "There is no question of a large unmet demand for walkable neighborhoods. . . which drives price increases in central cities."

Walkability and equity

It is important to emphasize the limitations associated with self-selection and the disproportionate resource choices available to the poor and minorities. Research indicates that the self-selection of housing is often related to income (Nakosteen & Zimmer, 1980) and that neighborhood self-selection shapes behaviors (Handy et al., 2006; Ioannides & Zabel, 2008).

Many minorities remain unable to find adequate housing in cities and cannot afford to purchase nicer housing in the suburbs for a variety of reasons, including predatory lending and insurance practices (Cutler, Glaeser, & Vigdor, 1999). Past studies suggest a

housing markup of approximately 7% for Blacks compared to Whites (Kain & Quigley, 1972). More recent work confirms continued mortgage discrimination, resulting in lower ownership and higher segregation (Ellen, 2008). Work by Kain and Quigley (1975) also notes that there can be a price discount to Blacks if the housing supply is large relative to the demand. Racial price markups only exist where the minority population is constrained to a restricted supply. In many of today's majority–minority aging industrial cities, a surplus supply of housing resulting from white flight has resulted in low values and a racial price discount. This is important because many health problems that might be mitigated through more walkable neighborhoods are focused in areas with a higher proportion of minorities as opposed to the general population (Galea, Freudenberg, & Vlahov, 2005; Geronimus & Thompson, 2004; Williams & Jackson, 2005).

Walkability and foreclosures

Given the possible economic and social-equity stabilization effects that walkable neighborhoods can provide, it is not surprising that recent studies have shown the resilience of these areas in the face of economic crises. Multiple studies show high patterns of foreclosure within the urban core and on the suburban fringe (Leinberger, 2008). Studies have correlated foreclosures with higher transportation costs and longer trips to work (NRDC, 2010) and have shown a disproportionate impact on central city neighborhoods (Immergluck, 2009), which are presumably more walkable but have a high minority population.

Recent studies have associated a reduced foreclosure probability with higher walkability. One such study concluded that the probability of foreclosure varied according to income (Rauterkus, Thrall, & Hangen, 2010). In high-income areas with higher walkability, the probability of foreclosure was lower, whereas foreclosure increased in low-income areas with higher walkability (Rauterkus et al., 2010). This could be due to the preponderance of minorities who have historically lived in the low-income walkable areas of inner cities, which is apparent in preliminary work conducted in Louisville, KY (Gilderbloom et al., 2012). Two reports conducted for Fannie Mae indicated potential correlations; one indicated the potential correlation of reduced risk of mortgage default with aggregated sustainability factors including commuting time, retail mix and the proportion who commute by walking (Pivo, 2013a) and other correlations between increased walkability and the loan-to-value relationship (Pivo, 2013b).

Given the limited publications on the topic and the variability of the results, more research is needed to fully uncover the effects of walkability on neighborhood housing appreciation, the risk of foreclosure and crime. The literature does, however, suggest that the concept of location efficiency[1] and its related policies 'are not dead' (Chatman & Voorhoeve, 2010). The idea of location efficiency could be used to advocate for better mortgage rates and flexibility in walkable areas, which we hypothesize may have a lower foreclosure risk.

Methodology

Sample: 170 census tracts in a mid-sized city

Louisville, KY is characteristic of a typical mid-sized city. With a population of approximately 741,000 spread over 385 square miles along the Ohio River, Louisville provides a model city for study. Louisville is one of 375 metropolitan areas identified by the U.S. Census and ranks as the 47th largest metropolitan area. Unlike the extremes of larger mega-regions on the east and west coasts of the U.S., the Louisville housing market is relatively stable. The city's neighborhood dynamics are representative of smaller metropolitan areas. Louisville, along with 144 other cities (Cincinnati, Indianapolis, Lexington, and Nashville, among others), has been ranked as mid-sized and a good place to study growth dynamics because it has a population over 50,000 persons and not located within 20 miles of a large city (Appelbaum et al., 1976; Appelbaum, 1978; Molotch, 1976).

Louisville has been the subject of several studies that have investigated mid-sized cities (Appelbaum et al., 1976; Ambrosius, Gilderbloom, & Hanka, 2010; Gilderbloom & Appelbaum, 1988; Gilderbloom et al., 2012). The city provides a range of neighborhood types, with a large variation in density and walkability across the region—including examples of both more and less walkable neighborhoods. Louisville has a simple, relatively mono-centric format (as opposed to the poly-centric models of many larger municipal areas) that is ringed by two freeways. It has one central business district (CBD) with approximately 52,000 jobs (13% of a total of approximately 400,000) forming an inner beltway with high-density housing, an in-between area with smaller homes, and an outside beltway in which there has been increased building of larger homes in automobile-dependent areas (Ambrosius et al., 2010).

This dynamic between dense inner neighborhoods and more car-dependent suburban ones is an important distinction to make because the differences in their physical form at the neighborhood level might influence walking behavior. This includes walking for transportation purposes in dense areas and walking for leisure in lower density areas (Forsyth, Oakes, Schmitz, & Hearst, 2007). Although Louisville offers both such environments, the researchers focused on the former: walking for transportation purposes in dense areas.

Another reason for choosing Louisville is the extensive data available from the City. The primary sources of data were the Jefferson County Property Valuation Administrator (JCPVA), the US Census Bureau, the EPA and the Louisville Metro Police Department.

Data

Our unit of observation is the Census tract. The sample contains 170 tracts. We used several dependent variables to measure the impact of walkability on housing: the neighborhood median assessed residential housing value; neighborhood foreclosures; and neighborhood crime. Our first dependent variable was the Median Assessed Residential Housing Value. We operationalized this variable in three different ways: (1) Neighborhood Median Assessed Residential Housing Values in 2000, 2006, 2008, and 2010; and (2) Neighborhood Median Assessed Residential Housing Value Change from 2000 to 2006, 2000 to 2008, and 2000 to 2010. These years reflect changes during both a relatively stable economic period and a period of recession.

For these variables, data on all residentially zoned properties in Louisville Metro for the years 2000 and 2010 were collected from the JCPVA and geo-coded by the Kentucky State Data Center using the Louisville/Jefferson County Information Consortium's (LOJIC) GIS system. While the data compliment the findings of the 2000 census, they are also available to measure changes in neighborhoods in 2006, 2008 and 2010.

Kentucky Revised Statute 134.385 requires that local property assessments be at least 80% of the fair market value and provide for state oversight, in the case of a discrepancy between the assessment and the market value. In previous analyses, we found that assessments are, on average, 86% of sales prices with no large variation among neighborhoods when based on neighborhood

[1] The idea of offering lower mortgage rates in locations where less money has to be spent on automobile-dependency/transportation and more can be spent on housing.

indicators (although there is variation based on employment density) (Gilderbloom, Ambrosius, & Hanka, 2011; see also Pollakowski 1995). Nevertheless, there is the public assumption that assessors undervalue properties.

In Louisville, assessments are undertaken a minimum of every three years. Our analysis spanned 10 years, and a high proportion of properties were assessed once, twice, or three times during our period of analysis. The assessor's office depends not only on its assessments (which can be political) but also on sale prices—whenever a home is sold, the assessor's office takes the sales price as an update for its database. We assumed that assessed values were a good proxy for market values (Clapp & Giaccotto, 1992). Our analysis period ranged from 2000 to 2010, which includes the years when the United States experienced a housing price bubble (Gilderbloom et al., 2012; Shiller 2007). However, during that time, the Louisville metropolitan area experienced a modest increase in housing prices (Lindauer & Hunt 2008).

Walk score

While there have been many methods established that objectively measure the walkable environment, our study takes advantage of the tool established by Walkscore™ in its analysis as the key test variable. Developed by Frontlane in partnership with academics such as Larry Frank and Reid Ewing, Walk Score™ uses a method similar to Frank's SMARTRAQ model, which combines land use mix, density, and street grid density based on geo-location. Researchers used Google to index adjacent amenities as a proxy for land use mix; density comes from U.S. Census figures, and intersections are counted using an algorithm on a street network. The weighted scores are summed and normalized to 100, yielding a score from 0–100, from the least to the most walkable. These methods place the highest priority on land use mix as the leading predictor of walking behavior.

Using the Walk Score™ tool has clear advantages. While many tools employ surveys, self-reporting, audits and observational data measures, the Walk Score™ tool provides a direct and replicable way of assessing geospatial, population and land use characteristics to benchmark walkability (Brownson, Hoehner, Day, Forsyth, & Sallis, 2009; Duncan et al., 2011; Heath et al., 2006). Studies have concluded that the Walk Score™ suffices as a reliable tool for measuring the walkability of an area and may be more accurate than other tools, as Google tends to be reviewed and updated on a more frequent basis than other static databases (Carr, Dunsiger, & Marcus, 2010; Carr et al., 2011).

Although this method provides a simple research solution to determine a location's walkability, it also has limitations. First, the tool is limited because of its reliance on Google Maps for an underlying database with potential flaws in the exact geo-location and classification of use categories (which are often user-contributed). Second, until recently, the tool did not incorporate network characteristics but used straight-line distance calculations that did not take into account street connectivity. Third, the tool does not account for street quality (such as the presence of trees, sidewalk width, etc.), safety (as a result of traffic or crime) and terrain characteristics (slope). Lastly, similar to other metrics, the tool may suffer from aggregation errors based on using a 1/4 buffer as the unit of spatial analysis vs. an individual parcel-based analysis.

In addition to the raw Walk Score™ (with a range of 0–100), we used a dummy variable to isolate the most walkable locations from those in the lower to middle ranges of the index. This variable isolated the top 33 percentile, known as the minimum, to have some amenities within walking distance. Our rationale was that a dummy variable could be used to explore and estimate potential correlations, with only the most walkable areas in regression models. A 66% or higher score means it is suitable for walking. This score indicates that most of the areas in the bottom 66% are car-dependent and that individuals would be disinclined to run most errands on foot without other means of transportation. We operationalized our dummy variable as 1 equals walkable neighborhoods and 0 equals car-dependent. In Louisville, there are 32 walkable neighborhoods.

Louisville is a city with a relatively flat topography and a moderate climate. Savageau and Boyer (1993: 368) rank Louisville in the top fifth of cities in North America with a moderate climate (67 out of 343—with the San Francisco Bay Area ranked number 1): "The Eastern part of the city is residential and consists of rolling hills and plateaus; the western industrial part lies on the river's flood plain." It has a four-season climate with warm humid summers and some snow during winter months.

Fig. 1 is a neighborhood map of walkability in Louisville. As depicted in the map, most walkable areas are found in the oldest areas built prior to the mass production of cars near downtown, which at one time was mostly white. During the white flight in the 1960s, the western part of downtown area became and now remains mostly black (Ambrosius et al., 2010; Gilderbloom, 2008). Most of the less walkable neighborhoods are located far from downtown in the suburbs and exurbs along with several black neighborhoods far from Downtown. Currently, as housing prices fall in the suburbs relative to downtown, blacks are moving out to these suburbs (Ehrenhalt, 2012).

Methods

We developed a series of models to test the relationship between walkability and our dependent variables of (1) median assessed value (MAV), (2) foreclosures and (3) crime. Our regression models use control variables that are regularly used in regression analyses of contemporary neighborhood dynamics to look at neighborhood housing, foreclosures, crime, and health (Ambrosius et al., 2010; Appelbaum, 1978; Gilderbloom et al., 2011; Gilderbloom et al., 2012; Riggs, 2014) With regard to the independent variables, we relied on data provided by (1a) the U.S. Bureau of the Census's 2000 and 2010 Census, (2) the Louisville Metro Police Department (LMPD) for 2004 data, the earliest year for which this type of data was available, and the (3) City of Louisville Health Statistics, PVA.

Table 1 provides a summary list of the variables used and how they were operationalized, along with descriptive statistics. All of these variables are publicly available on websites, sometimes at a small cost. The table also shows the predicted direction of each control variable on the dependent variables. Some control variables no longer proved to be statistically significant in these regression specifications, which is likely due to the power of the test variable—walkability—removing their impact, which is why we conducted a regression analysis instead of a bivariate analysis. We found that several traditional control variables that had been significant in the past are no longer significant.

Model specifications

The rationale for our methodology was based on conventional Hedonic Ordinary Least Squares (OLS) regression models (Ambrosius et al., 2010; Appelbaum, Dolny, Dreier, & Gilderbloom, 1991; Gilderbloom, Appelbaum, Dolny, & Dreier, 1992; Gilderbloom et al., 2012; LaCour-Little & Green, 1998, 302; Rossi, 1980). In these models, we regressed independent variables on our dependent variables, measuring the quality of neighborhood life, adding a test of variable walkability. Our basic dependent variables were tested in sets, starting with assessed value (tested in 11 models), then moving to foreclosure sales between 2004 and 2008, 2007–2008 (tested in 4 models) and crime (including

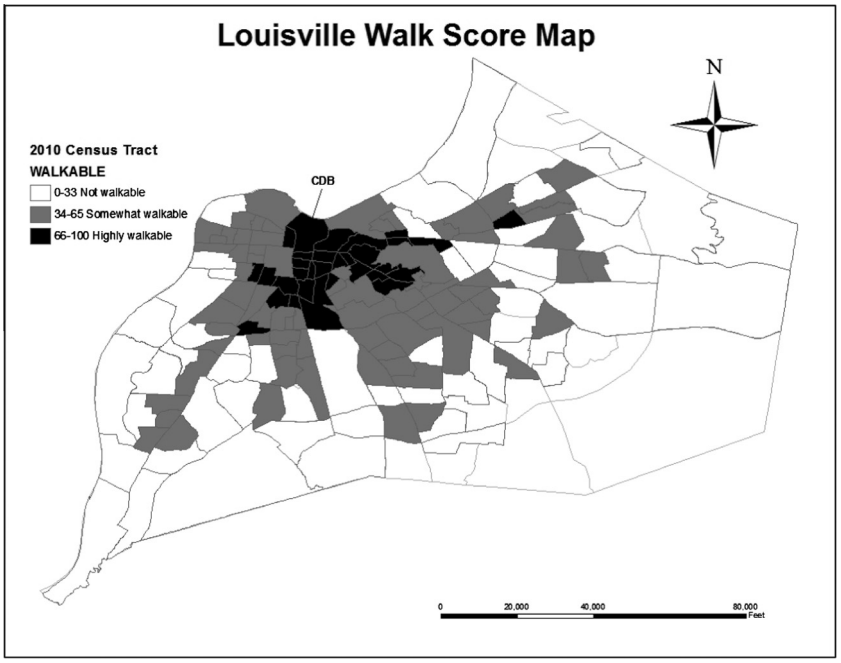

Fig. 1. Louisville walk score map.

Table 1
Descriptive statistics on the impact of walkability.

	Walkscore	Nominal dollar change in MAV	MAV	MAV	MAV	MAV	Median sales price	FS	FS	Property crimes	Violent crimes	Total crimes	Murders
IV/DV	DV	DV	DV	DV	DV	DV	IV	IV	IV	IV	IV	IV/DV	IV
Year	2010	00–06	2000	2006	2008	2010	2006	04–08	07–08	2004	2004	2007	2004
Source	Walk score	JCPVA	JCPVA	JCPVA	JCPVA	JCPVA	JCPVA	JCPVA	JCPVA	LMPD	LMPD	LMPD	LMPD
Measure	#	#	$	$	$	$	$	$	$	# per 100,000 residents	# per 100,000 residents	# per 100,000 residents	# per 100,000 residents
Min	0	8900	4105	8820	32,030	12,943	10,000	0	0	3.2	.2	193.7	.002
Max	97	85,885	255,510	333,765	366,070	455,002	551,625	197	90	14.1	2.5	51216.6	.073
Mean	42.7	28236.0	88594.3	117455.5	125925.7	135789.6	131045.1	54.8	23.6	5.5	.6	6500.3	.012
Std Dev	23.6	16274.5	49071.5	61543.9	66533.4	84493.3	86737.1	44.6	19.4	2.7	.6	5432.8	.017
N	170	167	170	168	168	167	167	170	170	170	170	170	170
Expected Sign	+	+	+	+	+	+	+	–	–	–	–	–	–

	Distance to the central business district (CBD) tract (49) in miles	High-interest loan count	Percent of non-white residents, 2000 (ratio * 100)	Number of housing units, 2000	Median housing age, 2000	Median household income, 1999 (2000 Census)	Walk High	Urban historic preservation district dummy variable (1/0)
IV/DV	IV	IV	IV	IV	IV	IV	DV	IV
Year	2000	2006–2010	2000	2000	2000	2000	2010	2000
Source	Census	JCPVA	Census	Census	Census	Census	Walkscore	Census
Measure	Mile	#	%	#	#	$	#	
Min	0.0	0	1.4	10	2	6086	.0	0
Max	18.6	38	99.4	3358	60	110,472	1.0	1
Mean	7.0	9.9	25.4	1296.4	38.7	40524.5	.2	0
Std Dev	4.0	7.3	29.5	605.0	15.1	19527.8	.4	0
N	170	170	170	170	170	170	162	170
Expected Sign	–	–	+	+	+	+	+	+

Notes: IV= Independent Variable; DV= Dependent Variable; JCPVA= Jefferson County Property Valuation Administrator; LMPD= Louisville Metro Police Department; LMDH= Louisville Metro Department of Health and Wellness; MAV= Median assessed value; AAV= AVG Assessed Value; FS= Foreclosure sales;

total crime, property crime, violent crime, murders, etc. and tested in 12 models). We used relevant control variables to determine under what circumstances walkability affects housing values, crime and foreclosures. The regression analysis allowed us to control for intervening variables that could potentially distort the relationship between walkability and the dependent variables.

Table 2
The impact of walkability (Interval Measure) on Neighborhood Housing Values.

Specification	Model 1: Median assessed value (MAV), 2000, in dollars		Model 2: Median assessed value, 2006, in dollars		Model 3: Median assessed value, 2008, in dollars		Model 4: Median assessed value, 2010, in dollars	
	Unst.	Beta	Unst.	Beta	Unst.	Beta	Unst.	Beta
(Constant)	25509.9^{+}		35933.9^{+}		41416.9^{+}		−9913.193	
Standard error	14651.8		19263.9		22440.1		28193.55	
Num. of housing units 2000	−9.3*	−.114*	−12.5*	−.12*	−9.951^{+}	−.090^{+}	−14.9*	−.101*
Walkscore	175.4*	.084*	343.3**	.13**	269.6*	.095*	172.520	.048
Median housing age 2000	−177.4	−.054	−456.1*	−.11*	−579.1*	−.13*	−191.37	−.034
High-interest loan count	−475.8	−.071	−643.361^{+}	−.076^{+}	−1103.4*	−.12*	−1375.9*	−.114*
Median household income, 1999 (2000 Census)	2.4***	.95***	3.1***	.98***	3.4***	.99***	4.547***	1.051***
Percent of non-white residents, 2000 (ratio * 100)	−163.7*	−.098*	−96.824	−.046	−229.8*	−.101*	−148.781	−.051
Distance to the central business district (CBD) tract (49) in miles	−1324.5^{+}	−.109^{+}	−1921.1*	−.13*	−2997**	−.181**	−2802^{+}	−.134^{+}
Total crimes per 100,000 residents 2007	−.63*	−.07*	−.566	−.039	1.4**	.11**	2.598***	.168***
F	133.5		121.76		103.3		101.8	
R Square	.87		.86		.84		.84	
Adjusted R Square	.86		.85		.83		.83	
N	169		167		167		166	

Notes: Unstandardized coefficients (standardized-Beta).
$^{+}$ P < 0.1.
* p < 0.05.
** p < 0.01.
*** p < 0.001.

Thus, we begin with control variables that have been accepted in mainstream research: variables that have had an impact on dependent variables. We conducted both an OLS regression and an OLS spilt regression analysis (Friedland 1983; Kelly & Adhikari, 2012; Rossi, 1980). We also transformed the test variable into a dummy variable to compare the most walkable neighborhoods (the top 1/3 of scores or those above the 66th percentile). This type of approach was inclusive in the regression procedure and allowed us to tease out the impact of walkability (Appelbaum et al., 1991; Appelbaum, 1978; Rossi, 1980). By using the test variable in two different ways, we also addressed questions and concerns that social scientists might raise about the specification of the walkability variable.[2]

In each of these four tests, we included both significant and non-significant models. This methodological approach was intended to reflect a protocol for variable selection that aligns with Akaike information criterion methods, allowing for the study of several different specifications in established models to see whether the observed significance would be maintained (Burnham, Anderson, & Huyvaert, 2011; Zuur, Ieno, & Elphick, 2010). This offered a hypothesis-generating approach to new questions that can be examined using proven multi-model regression techniques while providing full disclosure to fellow social scientists doing quantitative evaluation. Each of the models proved to have relatively high adjusted R squares, with many of the control variables showing significance in the predicted direction (Ambrosius et al., 2010; Appelbaum et al., 1991). We examined all of the specifications presented in these tables for multicollinearity problems and found the tolerance scores to be within the normally acceptable range (Lewis-Beck, 1980).

Analysis and findings

Researchers tested the relationship between walkability and our dependent variables in the following order: (1) housing value; (2) foreclosures; and (3) crime. In almost every case, we found that walkability has a statistically significant impact on all four dependent variables, which are associated with neighborhood sustainability as measured by foreclosures, housing values and crime.

Neighborhood housing values

Our first model was informed from previous published research that showed household sales prices as a control variable to be highly correlated with household income, causing multi-collinearity problems. Tables 2–4 examine the relationship between walkability and neighborhood housing values. In the case of Table 2, which explores median assessed values, four out of five dependent variables measuring neighborhood housing values showed a significant relationship with walkability. The amount of explained variation from the adjusted R square was significant—above 83% in the equations. The standardized beta coefficient appeared to increase in the monotonic relationship between 2000, 2006 and 2008 in size. However, in 2010, this standardized coefficient was not statistically significant.

Table 3 illustrates the comparable relationship when the interval variable for walkability was substituted for a nominal dummy variable that compares the most walkable neighborhoods (the top 33rd percentile) to more car-dependent neighborhoods. In this model, the dummy variable 'walkability' is significant for 2010 and reveals that properties in walkable neighborhoods were worth $33,443 on average; in 2008, they were valued at $25,871, in 2006, they were worth $22,749, and in 2000, they were worth $11,605. These differing results could be caused by several factors. First, the operationalization of walkability was different. Second, real estate neighborhood prices nearly doubled and tripled in Louisville neighborhoods between 2000 and 2008 and then stagnated in the metropolitan area as a whole. However, prices continued to increase in the walkable neighborhoods, as noted. In Table 5, we conducted an additional run by looking at the percentage change in the neighborhood housing values and found that walkability predicted an increase in property values for the dependent variables for 2000–2006 and 2000–2008; as expected, we did not find statistical significance between 2000 and 2010 because of the housing collapse. Additionally, it is important to note that the standardized

[2] Using the same methods, we also found that walkability also had a positive correlation with life span. These results were presented in the original paper, but one referee felt that the model for this needed to re-specified with different control variables added and called for an additional paper on this subject. This paper is currently in progress.

Table 3
The Impact of Walkability (Nominal Measure) on Neighborhood Housing Values.

Specification	Model 1: Median assessed value (MAV), 2000, in dollars		Model 2: Median assessed value, 2006, in dollars		Model 3: Median assessed value, 2008, in dollars		Model 4: Median assessed value, 2010, in dollars	
	Unst.	Beta	Unst.	Beta	Unst.	Beta	Unst.	Beta
(Constant)	32744.02*		50631.03**		49133.07*		−9566.23	
Standard error	13566.45		17175.31		19305.16		23791.24	
Num. of housing units 2000	−8.95*	−.119*	−12.95**	−.135**	−10.603+	−.103+	−13.19+	−.098+
Walk High Dummy Variable	11605.78**	1.01**	22749.45***	.155***	25871.10***	.165***	33443.52***	.172***
Median housing age 2000	−201.05	−.064	−497.62*	−.128*	−642.01**	−.153**	−335.05	−.064
High-interest loan count	−454.41	−.073	−578.25	−.074	−954.34*	−.113*	−1127.95*	−.104*
Median household income, 1999 (2000 Census)	2.34***	.914***	3.05***	.943***	3.33***	.959***	4.47***	1.04***
% non-white residents, 2000 (ratio * 100)	−166.49*	−.108*	−103.28	−.053	−221.39**	−.105**	−123.32	−.047
Distance to the central business district (CBD) tract (49) in miles	−1273.55+	−.105+	−1,990.07*	−.129*	−2,670.43**	−.162**	−2,275.69+	−.111+
Total crimes per 100,000 residents 2007	−.612+	−.074+	−.519	−.038	1.39*	.123*	2.52***	.181***
F	112.28		118.85		100.93		102.4	
R Square	.85		.86		.84		.85	
Adjusted R Square	.85		.85		.83		.84	
N	161		159		159		158	

Notes: Unstandardized coefficients (standardized Beta).
+ $P < 0.1$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 4
Percentage change in neighborhood housing values.

Specification	Model 1: Nominal dollar change in MAV, 00–06		Model 2: Nominal dollar change in MAV, 00–08		Model 3: Nominal dollar change in MAV, 00–10	
	Unst.	Beta	Unst.	Beta	Unst.	Beta
(Constant)	15466.764		41385.6		−9940.2	
Standardized Error	9156.421		22428.1		28183.5	
Number of housing units, 2000	−1.429	−.052	−9.942	−.090	−14.88*	−.1*
Walkscore	104.881+	.151+	269.401*	.095*	172.3	.048
Distance to the central business district (CBD) tract (49) in miles	−786.271+	−.193+	−2995.499**	−.181**	−2801.2	−.134
Median housing age, 2000	−283.249**	−2.896**	−578.889*	−.132*	−191.2	−.034
High-interest loan count	−291.136	−.129	−1102.782*	−.120*	−1375*	−.1*
Median household income, 1999 (2000 Census)	.675***	.804***	3.371***	.986***	4.55***	1.1***
Percent of non-white residents, 2000 (ratio * 100)	39.482	.08	−229.582*	−.101*	−148.6	−.051
Total Crimes per 100,000 Residents 2007	.179	.046	1.384**	.113**	2.6***	.17***
F	24.8		103.2		101.78	
R Square	.56		.84		.84	
Adjusted R Square	.54		.83		.83	
N	166		167		166	

Notes: Unstandardized coefficients (standardized Beta).
+ $P < 0.1$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

coefficients seemed to decrease with the passage of time but increased if walkability was measured as a dummy variable.

Foreclosures

In our next test set, we examined the effect of walkability and foreclosures and found that more walkable neighborhoods had fewer foreclosures on average (Table 5). Again, the amount of explained variation is significant. We find that when measuring the raw number of foreclosures for 2004–2008 and 2007 and 2008, there were fewer foreclosures in walkable areas. More precisely, a highly walkable neighborhood had 11 fewer total foreclosures for 2004–2008; similarly, there were five fewer foreclosures for 2007–2008 (Table 5).

Crime

The researchers examined the impact of walkability on four measures of crime and found no significance (Table 6). This included four measures of crime: property crime; murder; violence; and the total number of crimes. The amount of explained variation was satisfactory, between .40 and .61. In contrast, upon doing a split regression analysis (Friedland, 1983) by removing Census Tracts that had a majority minority population within them (in the case of Louisville Blacks), we found that walkability deterred property crime, murders and violent crime (see Table 7). When we changed the selection variable more pointedly to examine only neighborhoods that were more than 75% white, we found similar results (See Table 8).

Table 5
Impact of Walkability on Foreclosures.

Specification	Model 1: Foreclosure sales from 2004 to 2008, Interval Variable for Walkability		Model 2: Foreclosure sales from 2007 to 2008, Interval Variable for Walkability		Model 3: Foreclosure sales from 2004 to 2008, Nominal Variable for Walkability		Model 4: Foreclosure sales from 2007 to 2008, Nominal Variable for Walkability	
	Unst.	Beta	Unst.	Beta	Unst.	Beta	Unst.	Beta
(Constant)	−42.12**		−12.75		−56.10		−18.17	
Standard error	16.1		7.79		15.1		7.33	
Distance to the central business district (CBD) tract (49) in miles	2.34**	.212**	.65	.14	2.69**	.224**	.805+	.15+
High-interest loan count	3.022***	.494***	1.57***	.59***	3.03***	.495***	1.55***	.582***
Percent of non-white residents, 2000 (ratio * 100)	.654***	.433***	.23***	.36***	.662***	.437***	.24***	.359***
Number of housing units 2000	.020***	.277***	.33**	.17**	.02***	.294***	.006**	.198**
Median housing age, 2000	.911***	.308***	.005	.25	.86***	.287***	.31***	.232***
Total crimes per 100,000 residents 2007	.001+	.071+	.000*	.07*	.001	.069	.00	.063
Median household income, 1999 (2000 Census)	.000***	−.206***	.000**	−.14**	.000**	−.188**	.00*	−.141*
Walkscore (model 1, 2)/Walk High Dummy Variable (model 3, 4)	−.295**	−.156**	−.13***	−.16***	−11.7*	−.103*	−5.24*	−.106*
F	85.121		64.9		83.5		63.83	
R Square	.81		.76		.81		.77	
Adjusted R Square	.8		.75		.80		.757	
N	169		169		161		161	

Notes: Unstandardized coefficients (standardized Beta).
+ $P < 0.1$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 6
The Impact of Walkability on Crime.

Specification	Model 1: Property crimes per 100,000 residents, 2004, by LMPD district		Model 2: Violent crimes per 100,000 residents, 2004, by LMPD district		Model 3: Total crimes per 100,000 residents 2007		Model 4: Murders per 100,000 residents, 2004, by LMPD district	
	Unst.	Beta	Unst.	Beta	Unst.	Beta	Unst.	Beta
(Constant)	9.391***		295.3*		13594.5***		.030**	
Standard Error	1.618		139.7		3539.19		.01	
Number of housing units, 2000	.000	−.042	.019	.045	−.505	.946	1.395E−6**	−.049
Walkscore	−.003	−.026	−.416	−.039	21.54	22.034	−4.960E−5	−.068
Distance to the central business district (CBD) tract (49) in miles	−.261**	−.394	−3.625	−.058	−222.58	187.81	−.002**	−.427**
Median housing age, 2000	.002	.012	1.113	.066	−53.42	−.148	1.394E−5+	.012+
High-interest loan count	.020	.055	−1.452	−.042	−48.23	74.50	.000	.080
Percent of non-white residents, 2000 (ratio * 100)	−.005	−.051	3.702***	.432***	23.27	17.23	8.830E−5+	.152+
Median household income, 1999 (2000 Census)	−4.653E−5**	−.340	−.004***	−.341***	−.095**	−.029**	−1.462E−7	−.167
F	16.03		23.9		10.67		15.16	
R Square	.41		.508		.56		.40	
Adjusted R Square	.38		.486		.32		.370	
N	169		170		169		169	

Notes: Unstandardized coefficients (standardized Beta).
+ $P < 0.1$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Policy implications

Our research shows that walkability has an impact on neighborhood resilience in urban vs. suburban areas and that there may be more 'value' in the walkable, mixed-use environment of historic downtowns and first-generation suburbs than in homogenized residential suburban development. This confirms some recent suggestions made by those such as Pivo (2013a,b), who look at the risk factors; however, our study is unique in that it looks longitudinally at the actual number of foreclosures. We show that older historic downtown neighborhoods have value, as they were built for active users (bikers and walkers) along with users of mass transit and a mix of purposes that incorporated employment, grocery stores, places of worship, restaurants, schools, medical services, and recreational spaces. These areas contain economically diverse residents in which the poor and working-class live together in the same neighborhoods, with a sprinkling of the higher-income individuals. These areas also remain in high demand, as seen in many of the most recognizably named neighborhoods around the United States: the West Village/Greenwich Village in New York; Beacon Hill in Boston; Shadyside in Pittsburgh; the Highlands in Louisville; West Cleveland/Tremont in Cleveland; Rogers Park in Chicago; the Mission District and Noe Valley in San Francisco, and downtown Ballard in Seattle. However, just how were such valuable places

Table 7
The Impact of Walkability on Crime: Split Regression Analysis. Models 1, 2, 3, 4 below are based only on cases for which Percent of non-white residents, 2000 (ratio * 100) ⩽ 50.00.

Specification	Model 1: Property crimes per 100,000 residents, 2004, by LMPD district (<50)		Model 2: Total crimes per 100,000 residents 2007 (<50)		Model 3: Violent crimes per 100,000 residents, 2004, by LMPD district (<50)		Model 4: Murders per 100,000 residents, 2004, by LMPD district (<50)	
	Unst.	Beta	Unst.	Beta	Unst.	Beta	Unst.	Beta
(Constant)	3.97*		6315.22+		.267		−.001	
Standard Error	1.65		3344.39		.351		.011	
Distance to the central business district (CBD) tract (49) in miles	−.126	−.212	40.50	.04	−.027	−.218	−.001+	−.246+
High-interest loan count	.047	.147	−69.8	−.129	.011	.168	.000	.145
Number of housing units, 2000	−4.712E−5	−.012	.203	.03	4.43E−6	.005	−3.51E−7	−.015
Median household income, 1999 (2000 Census)	−1.820E−5	−.145	−.073**	−.343**	−3.26E−6	−.126	−7.01E−9+	−.009+
Median housing age, 2000	.073***	.479***	67.18+	.261+	.014***	.448***	.000***	.458***
Percent non-white	.055**	.246**	76.93*	.204*	.014***	.304***	.000**	.285**
Walkscore	−.021*	−.216*	−23.47	−.142	−.005**	−.254**	.000*	−.244*
F	18.846		7.3		16.53		12.35	
R Square	.50		.28		.47		.40	
Adjusted R Square	.48		.24		.44		.37	
N	137		137		137		137	

Notes: Unstandardized coefficients (standardized Beta).
+ $P < 0.1$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

retained over the past century as most Americans left neighborhoods near downtown areas for the suburbs?

Many downtown neighborhoods continue to exist as a result of the actions of a generation of activist-citizens. The first advocates of the modern sustainable city stood up against adverse changes to the traditional urban fabric of American cities. In places such as Greenwich Village, a housewife, neighborhood activist, and freelance writer named Jane Jacobs (who was not a professional planner) stopped a freeway from being built through her beloved neighborhood. In Cleveland and San Francisco, individuals such as Norman Krumholz and Catherine Bauer Wurster worked as urban advocates for neighborhood preservation and social equity in the face of pushes to modernize their cities. Wurster was a member of the prominent Telesis group, a research collective that believed in the importance of community in urban planning and in the need for every urban environment to support living, working, and playing there. Jacobs subscribed to many of the same values and became notably prominent in her organizing efforts, which inspired her to write the 'Bible' on urban planning, *The Death and Life of Great American Cities.* The book argued that the ideal neighborhood was one that was walkable with many mixed uses and a diverse community. Jacobs also made the point that neighborhood diversity can become a victim of its own success; when land use can only support the highest rents, the neighborhood will no longer be diverse/walkable.

In this study, we tested the idea of the value of a walkable environment with an OLS regression analysis of 170 Census tracts in Louisville, KY. Our research question was simple: Does walkability

Table 8
The Impact of Walkability on Crime: Split Regression Analysis. Models 5, 6, 7, 8 Selecting only cases for which the Percentage of non-white residents, 2000 (ratio * 100) ⩽ 25.00.

Specification	Model 5: Property crimes per 100,000 residents, 2004, by LMPD district (<25)		Model 6: Total crimes per 100,000 residents 2007 (<25)		Model 7: Violent crimes per 100,000 residents, 2004, by LMPD district (<25)		Model 8: Model 8: Murders per 100,000 residents, 2004, by LMPD district (<25)	
	Unst.	Beta	Unst.	Beta	Unst.	Beta	Unst.	Beta
(Constant)	3.617*		4916.09		.134**		−.005	
Standard Error	1.757		3819.6		.378		.012	
Distance to the central business district (CBD) tract (49) in miles	−.149+	−.262+	12.75	.012	−.027**	−.228	−.001	−.244+
High-int. loans-foreclosure count	.071*	.224*	−32.77	−.057	.013+	.204+	.000	.165
Number of housing units, 2000	.000	−.043	.106	.015	3.23E−5	−.040	−1.35E−6	−.056
Median household income, 1999 (2000 Census)	−1.35E−5	−.114	−.063*	−.295*	−2.24E−6	−.092	1.97E−8	.027
Median housing age, 2000	.071***	.493***	79.1+	.302+	.014**	.469**	.000	.482**
Percent non-white	.107***	.267***	183.9**	.253**	.028***	.336***	.001	.332***
Walkscore	−.203**	−.248**	−32.196+	−.190+	−.005**	−.256**	.000	−.238*
F	15.76		6.05		13.47		10.39	
R Square	.49		.27		.45		.39	
Adjusted R Square	.46		.23		.42		.35	
N	121		121		121		121	

Notes: Unstandardized coefficients (standardized Beta).
+ $P < 0.1$.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

matter? Our results indicate that in regard to neighborhood stability, economic resilience and livability, the aspects that make up a walkable community have value. This may not come as a surprise to many in the planning community; however, until recently, a measure to quantify the social and economic impact of walkable neighborhoods did not exist but trusted the instincts of planners such as Jacobs. With the computational ability to benchmark communities, using a walkability measure, urban planners can now quantify these impacts. Walkability measures currently assist planners and policy makers in gauging how accessible daily living activities are by foot and the likelihood of car dependence. Many inner-city neighborhoods built before the mass production of cars are more walkable than sprawling "residential-only" suburban neighborhoods that are isolated from the basic necessities of everyday life.

The researchers have shown through an array of neighborhood indicators that walkability has a significant net impact on neighborhood resilience. In the four models of housing values, the standardized coefficient for walkability was greater than the standardized coefficient for the percent of non-white residents in two models. Walkability was found to be nearly as important as race in influencing median assessed housing values and foreclosures. Based on this, we suggest that neighborhood hedonic equations should take walkability into consideration. To test this, we developed a hedonic-priced equation that controls for the recognized independent variables that predict our dependent variables, and we add them to our test variable: walkability. We found that walkability is statistically significant in predicting an increase in neighborhood housing values and has a significant negative correlation with foreclosures in the neighborhoods of Louisville. Our initial results showed no association between walkability and crime; however, when we removed neighborhoods whose residents were at least 50% minorities and repeated the regression, we found that walkability was also associated with reduced crime in several measures. Finally, similarly to other studies in the public health area, we showed that, all things considered, those living in less walkable areas are more likely to have shorter lives. This emphasizes the policy importance of strategies to increase walkability not only for fiscal reasons but also for better health.

These types of outcomes have not been extensively documented in hedonic regression analyses of mid-sized cities, and the significant association of walkability in such models indicates specific policy implications for sustainable neighborhood design. The associations suggest that walkability is a value proposition—that more walkable areas have higher housing values, are less prone to foreclosure, and experience lower crime rates. These facts are especially timely when put into the context of the housing collapse of 2008–2009. This implies that neighborhoods designed in the spirit of Jane Jacobs, with safe and connected streets, high levels of density, and varied land uses not only benefit residents though the intrinsic health and environmental benefits of increased walking but also offer owners the possibility of more resilient and stable economic values.

We recognize that the reasons people choose neighborhoods in which to live, work and enjoy is different today than in the past. Soaring gas prices have compelled many Americans to seek housing that is closer to their employment, central city locations, cultural amenities (such as museums and sports complexes) and historic preservation areas (Ambrosius et al., 2010). Gentrification is just one expression of this change in preferences, beginning in New York, London and Paris in the late 1950s and later in San Francisco and Chicago in the 1970s (Ambrosius et al., 2010; Savitch, 1981; Zukin 1982). Gasoline prices may continue to rise as supplies fall and demand increases from other emerging industrialized countries, and this may continue to influence how people get to school, work, stores and places of worship. However, as our models indicate, when individuals weigh neighborhood choices, the ability to walk will be factored into that choice, alongside schools, crime rates, the proximity to jobs and downtown, and so on. The American Automobile Association has stated that, on average, the cost of owning a car is $8293 a year when factoring in depreciation, financing, maintenance, gas and insurance (Bureau of Labor Statistics, 2011). Additionally, because walkability matters and is of increasing importance in housing choices, a clear question arises for policy makers: how can we best promote and create walkable places?

Three policy areas might be used to make neighborhoods more walkable: (1) land use, (2) street design, and (3) affordability. First, with regard to land use, neighborhood walkability is heavily tied to the number and variation of amenities or destinations available within a short walking distance. Unfortunately, many planning and zoning codes, bound by the traditional Euclidian framework, restrict land use variation. Form-based codes that allow for a more mixed-use framework can be one method of moving away from more traditionally isolated land uses while creating suitable urban forms on the street for walking and biking. This can relax zoning and allow for ground-floor commercial or retail conversions, which may encourage transactional uses and improvements on the street that increase neighborhood interactions and walking destinations (even in suburban locations). That said, this is not the only land use tool available (nor the only policy limitation of creating more walkable streets). There are additional opportunities to use things such as parking standards, height and bulk limitations, and setbacks to create more walkable streets.

Investments in streetscape improvements are of parallel importance. Many cities across the U.S. have adopted "complete streets" policies to encourage safer, bike-accessible, and pedestrian-friendly streets. The recognition of both the economic and the health benefits of walkability and policies that support this environment are important. These policies would include providing sidewalks and safety refuges, reducing crossing distances/street widths, installing crosswalks and road markings for pedestrians, planting trees, offering benches, building shelters, and displaying art. These improvements could be funded through neighborhood benefits districts or other forms of self-imposed financing, counteracting the trends of public disinvestment that many cities have seen in the wake of recent economic crises.

There is a need to reinforce affordability and the diversity of these walkable areas, especially as they gain attractiveness and importance during the course of housing decisions. Because simply investing in an area is likely to exacerbate inequities that may already exist, policies are needed to increase affordable housing for those who may face increasing prices as a consequence of on-street public investment. We recognize that the high economic value of walkable areas may present difficulties for renters and minorities who may not be able to capture the economic value of owned housing. Opportunities to counteract this trend might germinate policies that would increase or establish required below market rate (BMR) unit thresholds for new construction or introduce policies that expand density thresholds to increase the number of units available by right—driving down prices by increasing the supply. Simple techniques might involve the conversion of warehouses into housing or the conversion of basements, garages and attics and infilling historic neighborhoods, mixed-use homes and a denser population of individuals that live closer to downtown business centers (Gilderbloom, 2008; Wegmann and Chapple, 2014).

Each of these areas—(1) increasing the number of land uses, (2) increasing investment in the streetscape, and (3) increasing affordability options and standards—are goals that neighborhood organizations may advocate and implement to increase neighborhood walkability. Conducted in parallel, they could provide

neighborhood investment and increase the opportunity for a diverse cross-section of individuals to live and play in areas that are walkable.

Conclusion

The future of urban planning involves creating neighborhoods that are sustainable. Gas prices are continuing to rise, motivating individuals to rethink the neighborhood they choose, and many are choosing walkable neighborhoods close to the necessities of daily life. This demand drives housing prices and results in a reduction of foreclosures. Walkable neighborhoods translate into more "eyes on the street," which lead to less crime. Demand is shifting from unwalkable suburbs to neighborhoods with characteristics such as safety, walkability, gentrification, environmental ethos, mixed uses and the proximity to jobs and school. Relocating to a sustainable neighborhood means a better return on the initial investment, the option of being less dependent on automobiles, and the opportunity to live in denser neighborhoods with greater diversity.

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