

## **Social Capital and Neighborhood Stability: An Empirical Investigation**

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### *Abstract*

There is a growing consensus among urban analysts that inner-city neighborhoods suffer from a lack of social capital. Because these areas do not have a strong social infrastructure in place to support successful revitalization efforts, urban policy recommendations now call for developing social capital in the worst-off parts of our cities. However, this consensus has been reached without any empirical analysis of the effect of social capital on urban neighborhoods. Moreover, there have been few, if any, efforts to show how to measure social capital at a neighborhood level.

This article proposes a social capital model of neighborhood change that measures social capital as a function of two constitutive elements: sociocultural milieu and institutional infrastructure. In addition, we present a theoretical model to show how social capital affects neighborhood stability and an empirical analysis that provides evidence of the positive effect social capital has on neighborhood stability.

**Keywords:** Community; Neighborhood; Preservation

### **Introduction**

The dynamics of neighborhood change have been studied for over 70 years. From the pioneering work of Robert Park (1927) to the contemporary work of numerous economists and sociologists (for example, Berry and Kasarda 1977; Rothenberg et al. 1991), scholars have sought to understand why some neighborhoods thrive and prosper over time and others wither and decay. A variety of factors have been identified as playing a role in neighborhood change, including changing economic and social conditions in the larger metropolitan area, the location of the neighborhood in relation to the central business district (CBD), and the characteristics of the housing (Temkin and Rohe 1996).

Recently, several authors have suggested that the concept of social capital can be fruitfully applied to the study of neighborhood dynamics (Ehrenhalt 1995; Spence 1993; Stegman and Turner 1996).

Social capital is said to be high in areas where civic engagement leads to mutual trust (Putnam 1993, 1995). As applied to the study of neighborhood change, the relative levels of civic engagement and mutual trust may be important predictors of change. Neighborhoods with high levels of social capital might be expected to respond effectively to the forces of change and, in doing so, maintain or even enhance stability. Areas with relatively low levels of social capital might be expected to succumb to the forces of change and experience decline.

Although the application of the social capital concept to neighborhood change is intriguing, to our knowledge there have been few empirical studies to see whether social capital is, indeed, a factor in neighborhood stability. Thus, the purpose of the study reported in this article was to address the following question: Does the level of social capital in a neighborhood have an impact on that neighborhood's ability to effectively adapt to change? If the answer is yes, then building social capital in neighborhoods may be an effective way to stem neighborhood decline. Public, nonprofit, and citizens' organizations might take responsibility for developing or increasing a neighborhood's social capital.

Given recent policy changes, organizations in the best position to develop capital will be neighborhood-based community development corporations (CDCs) (Bratt 1997; Clavel, Pitt, and Lyn 1997; Stoecker 1997; Vidal 1995). In some cases developing social capital will represent a new responsibility for CDCs, expanding their scope beyond housing development and social service provision (Vidal 1995; Walker 1993). Nonetheless, social capital development will need to be addressed as more evidence of the positive effects of social capital on neighborhood stability is found.

The purpose of this article, then, is to begin the process of empirically studying the effects of social capital on neighborhood stability, a task complicated by the many definitions of *social capital* and the lack of a clear consensus on how to measure it. Therefore, the next two sections of this article define *social capital* and describe the measurement issues involved with conducting an empirical study of the concept. We then present a social capital model of neighborhood change that uses two constitutive elements of social capital as explanatory variables. These two elements, sociocultural milieu and institutional infrastructure, are analogous to Putnam's notions of civic engagement and trust and are described in more detail later. An empirical analysis follows our presentation of the social capital model, and we conclude with a discussion of the results and their implications for policy research and community development practice.

## What is social capital?

There is no agreement as to what, specifically, constitutes social capital. Some analysts see the term as a synonym for *community*, whereas others treat it as a unique construct. For example, Kingsley, McNeely, and Gibson's (1997, 23) discussion of community building includes the notion of social capital as an element of community. The difference, according to the authors, is that social capital represents mutually supportive institutions within a neighborhood that residents can turn to "when the going gets rough." Briggs and Mueller (1997, 173) argue that community building is a process whose objective is to create the "familiarity and trust that form the basis for relationships and social participation" that increase a neighborhood's store of social capital. Wilson (1997), however, makes no distinction between building community and social capital and links the concept of social capital to broader discussions of a rising level of individualism and a concomitant decrease in Americans' interest and engagement in civic commitments.

Given this variation of opinion, it is worthwhile to review carefully the definitions of social capital provided by those theorists who have introduced and popularized the concept. Coleman (1988, S95) describes social capital as a bridge between two distinct "intellectual streams" used to describe an individual's social behavior. He contrasts a sociological approach, whereby an actor is thought to be embedded in a particular social context of norms and mores, with an economic approach, whereby an individual makes decisions based on a self-interested principle of utility maximization. Coleman argues that both approaches fall short of providing an integrated explanation of social behavior and calls for a "pastiche" whereby economic choices are placed in the context of social structures. Fundamentally, Coleman (1988, S100) defines social capital as an intangible resource that "exists in the relations among persons." It takes a specific form in terms of the level of trustworthiness within a social environment and the extent to which people feel obligated to one another. In addition, Coleman points out that information channels, as well as norms and sanctions, are important aspects of social capital.

Putnam (1993, 1995) emphasizes two components of social capital: civic engagement and trust. Civic engagement is the degree to which citizens participate in activities that affect the political decision-making process at all levels. Voting is one such activity, but so is membership in special-interest lobbying groups. The second component of social capital, according to Putnam, is the level of trust among citizens. Thus, a society with high levels of social capital is one in which individuals trust, or feel a mutual sense of obligation toward, one another. This feeling of trust, then, creates an

environment wherein people feel comfortable socializing with neighbors and other relative strangers because people expect others to behave in accordance with social norms that encourage mutually beneficial interactions.

The concept of social capital has become more important in the wake of a general consensus that our nation's social health has declined, thereby exacerbating social problems in many urban neighborhoods. Putnam (1993, 1995) and Coleman (1990), in particular, argue that social capital is a necessary condition for economic growth within a society. Indeed, Wilson (1997, 745) notes that the literature about social capital posits that "the lack of, or decline in, social capital lies behind the psychological, spiritual and economic malaise in communities throughout the world." Social capital (or the lack thereof) also has been posited to affect the conditions in public housing (Spence 1993), the ability of cities to provide affordable housing (Keyes et al. 1996), and the conditions of inner-city neighborhoods (Committee for Economic Development 1995; Stegman and Turner 1996).

This link between social capital and neighborhood-level social and economic conditions has not gone unnoticed by community development analysts and practitioners. The Committee for Economic Development (1995), for example, argued that social capital development should be one of the emphases of community development corporations in the future. Indeed, there is general agreement that community development should involve more than housing development. It should include the development of social capital along with other process-related activities (Kingsley, McNeely, and Gibson 1997; Sullivan 1993; Vidal 1997).

## **Measurement issues**

If social capital is to be developed within the context of community development, it needs to be defined and measured. Here we propose a measure that captures some of the most important aspects of social capital. As discussed in the following section, we operationalize the concept of civic engagement in terms of a construct we call institutional infrastructure. This construct not only includes the degree to which neighborhood residents vote, but also the level of residential volunteerism and the presence of a neighborhood organization. Thus, we expand the definition of civic engagement beyond a measure of formal political activity to include a wider range of variables that capture the level of public participation among neighborhood residents.

We do not have an explicit measure of trust between neighborhood residents. Ideally our data would have included a question to residents about the level of trust they had in their neighbors. However, as described in table 1, our sociocultural milieu construct is operationalized with a variety of measures of neighboring activity, including visiting, helping, and borrowing items from one another. In addition, our measure includes questions about whether residents discuss neighborhood problems with other residents. While not measures of trust per se, these activities are more likely to occur in neighborhoods where the level of trust between neighbors is high. The sociocultural milieu construct goes beyond measuring trust, though, and includes measures of the affective sentiments felt by residents toward the neighborhood along with any sense among residents that the neighborhood is a special place within a larger metropolitan area. Thus, our two constructs together act as an operational definition of social capital that includes the notions emphasized by Putnam but also expands the definition of *social capital* to include notions of the sense of community within the neighborhood.

Another complication of analyzing the effects of social capital at the neighborhood level is creating an empirical definition of neighborhood stability. Any number of indicators may be chosen, since neighborhood change may be manifest in changes to any number of social and physical characteristics (Yin 1989, 42). Yin argues that any measure of neighborhood change should accurately measure a specific type of change. We chose to measure neighborhood stability by looking at the changes in a neighborhood's property values relative to the city as a whole. Community development practitioners developing social capital may not specifically have property values in mind when building community. However, neighborhoods with higher levels of social capital should have lower crime rates and provide a healthier social environment for their residents. To the extent these are perceived as amenities, this social environment should be capitalized into the value of housing within the neighborhood.

### **A social capital model of neighborhood change**

Models of neighborhood change can be classified into three major approaches: ecological, subcultural, and political economy (Temkin and Rohe 1996; Varady 1986). These approaches emphasize different factors as the major causes of neighborhood change. Ecological models focus on economic competition for urban locations among various social groups and the inevitable filtering down of older buildings. Subcultural models of neighborhood change provide explanations for neighborhood stability, such as strong neighborhood

*Table 1. Variables Used in Sociocultural Milieu Principal Components Analysis*

Variable	Description
NAME	Percentage of tract residents who indicated the neighborhood has a name
LOYALTY	Percentage of tract residents who feel a greater loyalty to their neighborhood than to the rest of the city
ACTIVITIES	Percentage of tract residents who indicated the neighborhood has activities solely for residents
BOUNDARY	Percentage of tract residents who indicated the neighborhood had definite boundaries
RELATIVES	Percentage of tract residents who have relatives residing in the neighborhood
ATTACHMENT	Percentage of tract residents who feel either strongly or very strongly attached to their neighborhood
RECREATION	Percentage of tract residents who indicated recreational activities are located in the neighborhood
RATING	Percentage of tract residents who rated the neighborhood as either a good or excellent place to live
BORROWING	Percentage of tract residents who sometimes or often borrow things from neighbors
VISITING	Percentage of tract residents who sometimes or often visit with their neighbors
HELPING	Percentage of tract residents who have neighbors that they sometimes or often help with small tasks
WORSHIP	Percentage of tract residents who attend religious services most or all of the time in a neighborhood house of worship
PROBDISCUSS	Percentage of tract residents who have talked to neighbors about a neighborhood condition that bothered them
NETWORKDENSE	Mean percentage of possible relationships between people with whom tract residents discuss personal and neighborhood problems
GROCERYSHOP	Percentage of tract residents who grocery shop in their neighborhood
WORKINNEIGH	Percentage of tract residents who work in their neighborhood
PERCENTFRIENDS	Mean percentage of tract residents' friends who live in the neighborhood

*Source:* Pittsburgh Neighborhood Study

attachment, in the face of economic forces. Finally, political economy models explain the impact of larger economic and social transformations on neighborhoods.

The social capital model of neighborhood change presented in figure 1 combines economic and subcultural approaches to neighborhood change and places those theories within a larger sociopolitical context that can greatly affect a neighborhood's trajectory. In addition, the social capital model suggests that two constitutive components of social capital—sociocultural milieu and institutional infrastructure—are critical in determining the trajectory of neighborhoods. This model of neighborhood change integrates the concept of social capital into an explanatory framework of neighborhood change.

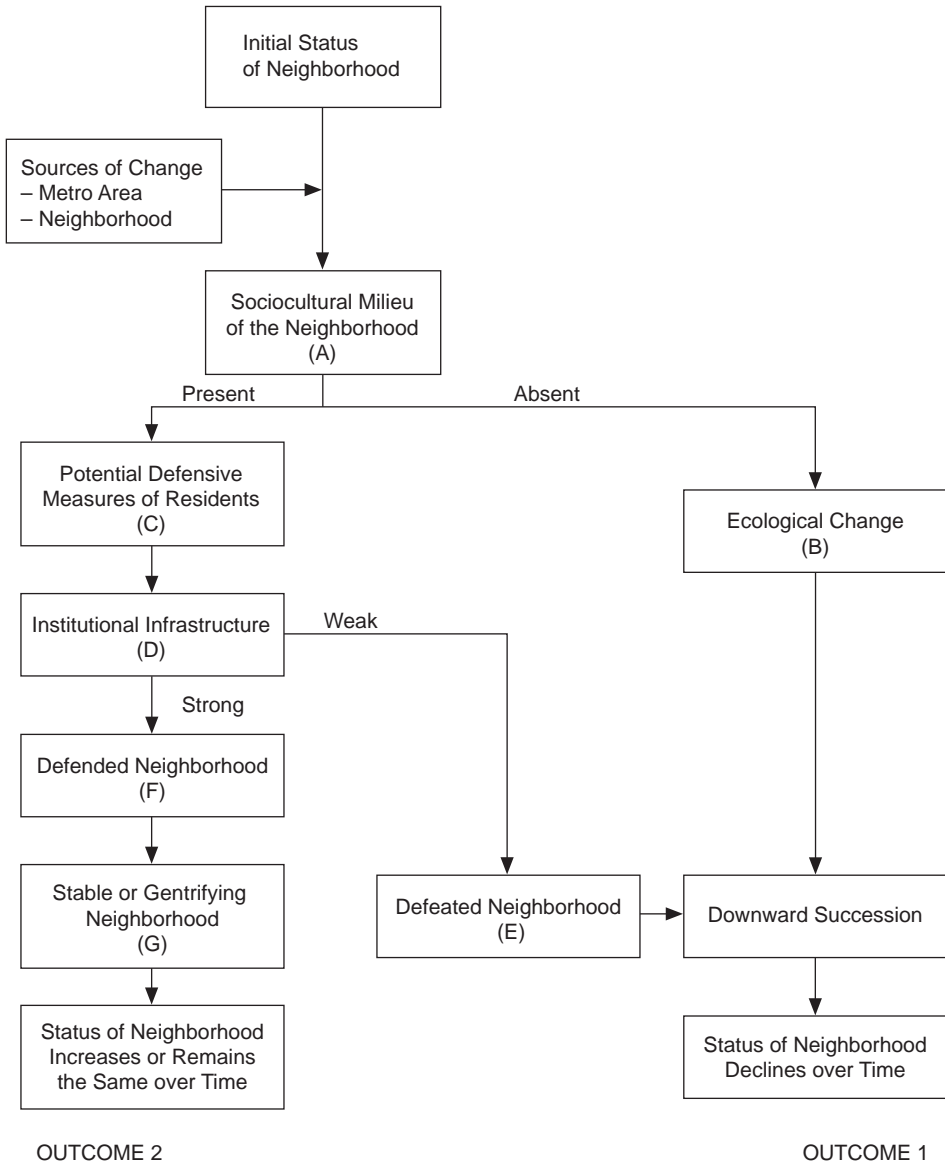
The model in figure 1 starts with the assumption that a neighborhood can be defined as having a particular socioeconomic status—that is, every neighborhood at a given point in time can be categorized into a particular quality level based on the status of the area. Potential causes of change to that status originate from at least two sources. First, broad social trends may alter a region's employment base and social structure. Trends such as the loss of manufacturing jobs or the influx of a new ethnic group may have a general impact on a metropolitan area's economic and demographic characteristics. Second, changes occur within the neighborhood itself. Neighborhood residents age, marry, and experience other transformations as they move through their life cycles. Therefore, even without large-scale structural changes, neighborhoods must cope with internal sources of change.

The forces of change, however, do not affect every neighborhood in the same way. The effect of these forces, we argue, depends on the strength of the social capital in the area. As mentioned earlier, social capital, in our model, contains two key elements: sociocultural milieu and institutional infrastructure. These concepts are defined in more detail in the following discussion.

### *Sociocultural milieu*

The concept of sociocultural milieu plays a key role in our model of neighborhood change (box A in figure 1). This construct subsumes the concepts of social fabric and social structural characteristics of neighborhoods used by Ahlbrandt (1984) and Warren and Warren (1977). Warren and Warren identify three social structural characteristics: identity, interaction, and linkages. Identity is the degree to which residents feel that the neighborhood has an identifiable spatial and symbolic environment within the larger city. Interaction measures the degree to which neighbors visit with one another. Finally, linkages relate to the available channels within the commu-

Figure 1. A Social Capital Model of Neighborhood Change



nity for residents to form social ties with people outside the neighborhood.

The sociocultural milieu construct expands Warren and Warren’s (1977) typology of a neighborhood’s social structural characteristics in an important manner. Their typology does not attempt to mea-

sure the affective attachments residents have to their neighborhood. Therefore, residents may feel that the neighborhood is an identifiable spatial community but may not feel satisfied with its housing and public services. Moreover, residents may not like the reputation of the area. Therefore, a neighborhood with a strong identity does not necessarily mean that residents are satisfied with the area or that they desire to stay.

Another ingredient in a neighborhood's sociocultural milieu is the degree to which it contains opportunities for shopping, recreation, and other social activities. Some areas contain shops, churches, and cultural institutions that help distinguish them spatially from the rest of the city. For example, ethnic restaurants help to create a distinct community identity. In sum, a neighborhood's sociocultural milieu is a construct that attempts to capture both observable behaviors of neighborhood residents and their unobservable affective sentiments toward the area.

Our model suggests that neighborhoods with strong sociocultural milieus would be more likely to begin defensive measures in the face of potential threats. Residents in such neighborhoods will be more likely to view their neighborhoods as unique spatial communities. Using Hirschman's (1970) nomenclature, when faced with potential threats to neighborhood stability, they choose the voice rather than exit option.

In the absence of a strong sociocultural milieu, a neighborhood is more likely to undergo downward succession and decline (outcome 1 as shown in figure 1). In its presence, however, the neighborhood is likely to follow the path toward stability (outcome 2). Note, however, that embarking on the path toward stability in no way guarantees that it will be reached. The key for a neighborhood to remain stable is to leverage the residents' strong sociocultural milieu into effective collective action. In the face of a perceived threat to neighborhood stability (box C in figure 1), residents may begin to form block watch groups or to lobby municipal officials for more police resources. The amount of institutional infrastructure contained within the community (box D in figure 1), however, may determine whether the defensive actions are successful.

### *Institutional infrastructure*

Institutional infrastructure is a concept that measures the level and quality of formal organizations in the neighborhood. Two major factors are encompassed in the concept: (1) the presence of neighborhood organizations and (2) the actual ability of these groups to act on behalf of residents. A neighborhood organization can provide an

effective liaison between neighborhood residents and policy makers who decide how municipal resources are allocated. According to Cunningham and Kotler (1983, 8), “neighborhood organizations are able to wage responsible wars of pressure and advocacy to ensure that a just share of available resources goes to the neighborhood.” The presence of a neighborhood organization, however, isn’t enough to garner the attention of decision makers. Neighborhood groups, acting on behalf of residents, must command the respect of elected officials, bankers, real estate and insurance agents, and other powerful actors whose decisions help shape the future of the neighborhood. One way to increase the visibility of a neighborhood group is to form alliances with organizations outside the neighborhood. In this way, the neighborhood group can enlist individuals and groups to act as advocates on behalf of the neighborhood (Rohe and Mouw 1991). Therefore, the institutional infrastructure relates not only to the presence of community groups but also to the existence of communication links between the neighborhood and the larger city.

A successful neighborhood defense, then, requires an effective pre-existing neighborhood group or a number of residents who can come together and form a group in the face of a potential threat. In either case, the neighborhood must be able to leverage a strong sense of place into a collective movement that is able to form alliances with actors outside the community and influence decisions that affect the neighborhood’s character over time.

Downward succession in neighborhoods with strong sociocultural milieus, according to the model, is more likely to occur in the absence of strong institutional infrastructure. Either the residents in such a neighborhood are not able to form a neighborhood group or the group is not successful in forming the crucial alliances necessary to influence outside actors. Consequently, this is a defeated neighborhood (box E in figure 1), and over time it exhibits characteristics similar to a neighborhood that declined due to a weak sociocultural milieu. It is important to recognize that a neighborhood that undergoes filtering or tipping will be indistinguishable from a defeated neighborhood. However, the social process that leads to the defeated neighborhood is much more complex than that depicted by the ecological process. The converse of a defeated neighborhood is a defended neighborhood (box F in figure 1). If a neighborhood has both a strong sociocultural milieu and an institutional infrastructure, it is likely to be stable or even increase in socioeconomic status over time (box G in figure 1).

The model in figure 1 provides a theoretical explanation for the observed divergence in neighborhood trajectories over time. It is a combination of politics and culture that helps to stabilize neighborhoods. As already discussed, the model combines earlier ecological,

subcultural, and political economy approaches to neighborhood change while avoiding the excesses in any of the three. Perhaps more important, the model contains an operational definition of social capital and uses this definition to explain neighborhood change. The combination of a strong sociocultural milieu and an institutional infrastructure is characteristic of a neighborhood where residents feel a strong sense of community and are able to translate this feeling into effective collective action. The neighborhood consists of people who willingly participate in activities that necessitate reaching out to their neighbors in a way that helps to stabilize their neighborhood.

### **Research design**

To test empirically the social capital model described in figure 1, we analyzed neighborhood change in Pittsburgh between 1980 and 1990 using measures consistent with the two constitutive elements of social capital, as well as other variables that have been used to explain neighborhood change in previous research. Unlike other studies (Briggs and Mueller 1997; Kingsley, McNeely, and Gibson 1997) that have looked at selected neighborhoods within cities, our analysis measures the effect of different levels of social capital across all Pittsburgh neighborhoods. The study site was chosen because of the availability of data measuring both sociocultural milieu and institutional infrastructure at the census tract level as of 1980. The empirical analysis, then, assesses the degree to which the level of social capital in 1980 helps predict neighborhood stability in Pittsburgh between 1980 and 1990.

The data set used in our analysis combined information from three separate sources, each of which contained data about a different component of a neighborhood's social and economic characteristics. First, census data were used to construct the dependent variable as well as to measure demographic and physical characteristics of each of the 179 census tracts in Pittsburgh as of 1980.

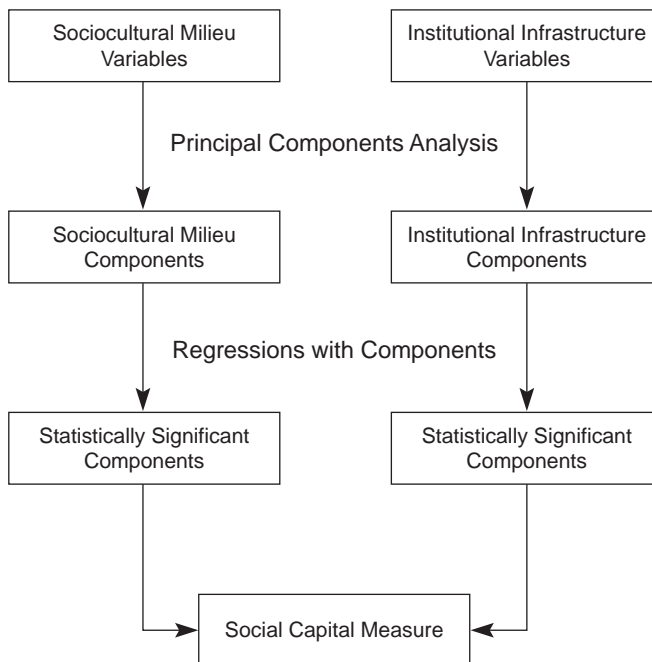
Second, data from the Transaction Master File (TMF) was used to estimate the availability of mortgage credit at the census tract level just prior to the study period. The TMF contains information about every deed transfer in Pittsburgh, including information about the type of property and whether the deed transfer transaction included mortgage financing. Thus, we were able to create a variable that measured the percentage of residential deed transfers that included a mortgage. In an approach similar to that of Wienk's (1992) study of the District of Columbia, this variable was used as a proxy for mortgage credit availability.

Third, data from the Pittsburgh Neighborhood Study, conducted in 1980 by Roger Ahlbrandt (1984), provided most of the information used to measure the two constitutive elements of social capital. That survey of 5,896 Pittsburgh heads of household evaluated the sense of community, social fabric, local facility use, neighborhood satisfaction, neighborhood activities, and other indicators of neighborhood condition in all Pittsburgh neighborhoods. The large sample size and sampling strategy resulted in data that are representative at the census tract level.

The Pittsburgh Neighborhood Study data was used in a principal components analysis to measure the social capital within each Pittsburgh census tract. Variables measuring sociocultural milieu and institutional infrastructure were placed into separate principal component analyses in order to derive component scores for each construct. Figure 2 outlines the strategy used to operationalize the two components of the social capital construct.

As shown in figure 2, the measure of a tract’s social capital is the sum of the component scores of the tract’s sociocultural milieu and institutional infrastructure. The variables used to develop the component scores for each of the two components of social capital are contained in tables 1 and 3.

*Figure 2. Methodology Used to Create Social Capital Measure*



Based on the social capital model of neighborhood change presented above, the sociocultural milieu construct includes variables designed to measure the degree to which Pittsburgh residents (1) feel their neighborhood is a spatially distinct place within the larger metropolitan area; (2) interact with one another by borrowing small items, visiting, discussing local problems, and helping each other with small tasks; (3) work and socialize in the neighborhood; and (4) use neighborhood facilities for worship and grocery shopping.<sup>1</sup> Most of the social capital literature specifically mentions trust as an important constitutive element. Unfortunately, respondents to the Pittsburgh Neighborhood Study were not asked about the extent to which they trusted their neighbors. Presumably, though, neighboring activities, such as borrowing small items and visiting, would occur in environments in which residents trusted one another and might be thought of as a proxy for the level of trust among neighborhood residents.

The results of the sociocultural milieu principal components analysis indicate that the variables that load on component 1 (UNIQUE-SPACE) relate to the social network of the respondents, the spatial distribution of that network, and the degree of loyalty felt by neighborhood residents toward their community (see table 2). In addition, the degree to which residents have discussed local problems with neighbors is contained within component 1. It may be that areas characterized by discussion among neighbors are more likely to have a distinct identity, and so the variable PROBDISCUSS is a function of the other variables loading on component 1.

Component 2 (LOCALE) measures the degree to which the neighborhood is a distinct locale within the city. Variables measuring whether the neighborhood has a distinct name, boundary, and particular activities load on component 2. Component 3 (NEIGHBOR) measures neighboring activity as operationalized by questions relating to visiting with, borrowing from, and helping neighbors.

Component 4 (GOODPLACE), like components 1 and 2, seems to include variables with a causal relationship. Both RECREATION—which is based on questions about the availability of recreation centers, movies, swimming, or bowling in the area—and GROCERY-SHOP measure the availability of commercial services in the area. RATING is a measure of how residents rate the neighborhood as a

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<sup>1</sup> The results of the principal components analyses are used to create a quantitative measure of the construct to be used in the analyses discussed in the next section. The results of the sociocultural milieu principal components analysis, which used a varimax rotation and retained a component as long as its eigenvalue was greater than 1 to arrive at the final pattern, is presented in table 2. The interpretation of the pattern in table 2 used a loading of 0.5 or greater as a criterion. The pattern operationalizes five separate aspects of a neighborhood's sociocultural milieu.

Table 2. Sociocultural Milieu Principal Components Analysis

Variable	Rotated Component Loading Pattern				
	Component 1 UNIQESPACE	Component 2 LOCALE	Component 3 NEIGHBOR	Component 4 GOODPLACE	Component 5 LOYALTY
NAME	-0.04923	0.72430	0.07077	0.05315	-0.04591
LOYALTY	0.53659	0.15444	0.03211	-0.01176	0.53487
ACTIVITIES	0.45063	0.61285	-0.08035	0.16151	0.06898
BOUNDARY	0.11895	0.50829	0.22453	0.11376	-0.14509
RELATIVES	0.83722	0.02126	0.00156	0.02011	-0.06910
ATTACHMENT	0.25978	0.11883	0.10662	0.01946	0.72923
RECREATION	0.25035	0.43412	-0.23659	0.62998	-0.02711
RATING	-0.17100	0.33888	0.44658	0.55918	0.00470
BORROWING	0.67895	0.00236	0.13647	-0.05067	0.23697
VISITING	0.14061	-0.13216	0.72788	0.17369	-0.08846
HELPING	0.04599	0.12841	0.76222	-0.06285	0.20458
WORSHIP	0.45400	0.20630	0.61181	-0.12024	0.05344
GROCERYSHOP	-0.10511	-0.01753	0.09069	0.79529	0.18856
PROBDISCUSS	0.66689	0.04800	0.37800	0.22979	0.02087
PERCENTFRIENDS	-0.03365	0.64744	-0.04542	-0.06712	0.29612
NETWORKDENSE	0.60374	0.05814	0.07190	-0.26839	0.20541
WORKINNEIGH	-0.03252	-0.19296	0.00414	0.40413	0.62893

Note: Shaded cells represent variable loading on a component.

place to live. People in areas with locally available commercial and recreational facilities are more likely to feel that their neighborhood is a good place to live.

A similar pattern is found with component 5 (LOYALTY). Feelings of loyalty and attachment both load on component 5, along with the degree to which residents work within the neighborhood. Again, it may be that working in the area increases the sense of loyalty and attachment to the local community, or that people with a great sense of attachment seek out employment in a spatially circumscribed area.

The second aspect of social capital, the neighborhood's institutional infrastructure, is a measure of the level of political and organizational acumen found among neighborhood residents. Table 3 shows the variables used in a principal components analysis to measure the level of institutional infrastructure within each Pittsburgh census tract.

The institutional infrastructure variables capture the level of voting activity and the visibility and perceived effectiveness of neighbor-

*Table 3. Variables Used in Institutional Infrastructure Principal Components Analysis*

Variable	Description	Source
VOTING	Percentage of tract residents who voted in the last election	Pittsburgh Neighborhood Study
NEIGHORG	Percentage of tract residents who said there was a neighborhood group dealing with local problems	Pittsburgh Neighborhood Study
GOODORG	Percentage of tract residents who said they were very satisfied with the performance of a neighborhood organization in dealing with local problems	Pittsburgh Neighborhood Study
VOLUNTEER	Percentage of tract residents who performed any volunteer work during the previous year	Pittsburgh Neighborhood Study
NVOLUNTEER	Percentage of tract residents who performed most or all of their volunteer work related to the neighborhood	Pittsburgh Neighborhood Study
INSTITUTION	Dummy variable if a census tract was zoned for institutional use	Interviews
FUNDED CDC	Dummy variable if a census tract was in an area covered by a fortunate five CDC	PPND

hood organizations in the area. In addition, there are two dummy variables that measure the neighborhood's institutional infrastructure. The variable FUNDED CDC takes the value of one if a census tract was within an area covered by one of the first five CDCs to be members of the Pittsburgh Partnership for Neighborhood Development (PPND). These "fortunate-five" CDCs began to receive funds from PPND in the early 1980s and were chosen, in part, due to their level of sophistication (Ahlbrandt 1986; Ferman 1996; Sbragia 1989). In addition, the variable INSTITUTION captures the presence or absence of a major institution such as a museum or hospital. This variable measures any effect that major institutions may have on neighborhood stability.

Table 4 contains the rotated pattern of the institutional infrastructure variables using the same rotation pattern and component retention criterion as in the sociocultural milieu analysis. The interpretation of the components in table 4 is relatively straightforward. Component 1 (POLACT) measures the level of formal collective activity in the neighborhood, with variables measuring the presence and quality of neighborhood organizations and voting by area resi-

Table 4. Institutional Infrastructure Principal Components Analysis

	Rotated Component Loading Pattern		
	Component 1 POLACT	Component 2 VOLACT	Component 3 INSTITU
GOODORG	0.86444	0.08816	0.21783
VOTING	0.58133	0.12961	-0.23729
FUNDED CDC	0.10312	-0.04039	0.76111
INSTITUTION	-0.00571	0.01631	0.70075
NEIGHORG	0.89080	0.05053	0.15685
VOLUNTEER	0.06057	0.92950	0.05048
NVOLUNTEER	0.16167	0.91427	-0.08330

Note: Shaded cells represent variable loading on a component.

dents. Component 2 (VOLACT) measures the volunteer work of area residents as well as whether those volunteers are concentrating their efforts on neighborhood issues. Finally, component 3 (INSTITU) could be thought of as a measure of the presence of well-connected institutions in the neighborhood. The variables loading on this component measure whether the neighborhood is in an area covered by one of the fortunate-five CDCs and the presence of large institutions in the area.

## Multivariate analysis

We had no a priori theoretical basis for choosing the components to measure social capital. Thus, individual regressions were run to determine which of the sociocultural milieu and institutional infrastructure components had a significant effect on neighborhood change. In addition, we used control variables that were drawn from the ecological model of neighborhood change (see table 5). Other variables, such as the status of neighborhood residents, age of the housing stock, and distance to the CBD must be controlled for in order to assess the effect of sociocultural milieu on neighborhood change. Many of these ecological variables were highly collinear, so a principal components analysis was conducted to reduce their number. The results of this analysis are presented in table 6.<sup>2</sup>

<sup>2</sup> The loadings present two sharply distinct and theoretically consistent components. The only complicating feature is the complex loading of the PERBLUEC variable. The first component has the loadings of the percentage of owner-occupied units (PEROWN) and the measure of traditional families (FAMIL). This measure seems similar to the familism factor explicated by Berry and Kasarda (1977) and is called FAMILISM. Rather than using a loading of 0.5 as the criterion, choosing 0.69 results in the measure of blue-collar employment loading on the second component, along with the value of housing and mean family income. This component

Table 5. Control Variables

Variable	Description	Source
OLDHOUS	Percentage of a census tract's dwelling units as of 1980 that were constructed before 1939 (LOLDHOUS is the logarithm of OLDHOUS)	U.S. Bureau of the Census
HOMEVALUE	Measure of the value of housing in a census tract, calculated by multiplying the mean contract rent as of 1980 by the percentage of units in a tract that are rentals and adding that number to 16 percent of the mean value of owner-occupied housing multiplied by the percentage of units in a tract that are owner-occupied	U.S. Bureau of the Census
PEROWN	Percentage of units in tract as of 1980 that are owner-occupied	U.S. Bureau of the Census
PERBLUEC	Percentage of tract residents as of 1980 employed in manufacturing	U.S. Bureau of the Census
MEDIANY	Median family income as of 1980	U.S. Bureau of the Census
FAMIL	Percentage of households in a tract as of 1980 that are two-parent families with children	U.S. Bureau of the Census
BL80	Percentage of tract residents as of 1980 that are black	U.S. Bureau of the Census
CBDIST	Distance (in miles) of tract's centroid to Pittsburgh's central business district	U.S. Bureau of the Census, Atlas GIS
PERNOMORT	Percentage of residential deed transfers between 1975 and 1980 that had no mortgage	City of Pittsburgh Transaction Master File
PERVAC	Percentage of rental units vacant and available for rent	U.S. Bureau of the Census

Table 6. Principal Components Analysis for Control Variables

Variable	Rotated Component Loading Pattern	
	Component 1 FAMILISM	Component 2 STATUS
PEROWN	0.94887	0.16017
FAMIL	0.95834	0.12536
PERBLUEC	0.60263	-0.69508
HOMEVALUE	0.14005	0.94795
MEDIANY	0.23210	0.88830

Note: Shaded cells represent variable loading on a component.

Table 7 shows the results of two regressions: one with the subcultural components by themselves and another with the subcultural components and the ecological control variables.<sup>3</sup> The first column in table 7 shows the results of a regression using only the sociocultural milieu components. Note the relatively strong predictive power of the subcultural model of neighborhood change. The five components alone can account for slightly more than a quarter of the variation in the relative change in the reported value of owner-occupied housing in Pittsburgh census tracts between 1980 and 1990. Moreover, three of the components are statistically significant at an alpha of 0.05: GOODPLACE, LOYALTY, and UNIQUE-SPACE. The significance of these components points to their importance in influencing neighborhood change.

The second column in table 7 shows the results of a regression combining the traditional neighborhood-change variables with the sociocultural milieu components. The two components with positive and significant effects are the measures of the overall sense of attachment and loyalty among neighborhood residents and the degree to which residents feel the area is a good place to live. Thus, these two components will be used to construct the final measure of social capital.

A similar analysis was performed on the institutional infrastructure components. The first column of table 8 shows the results of a regression containing the institutional infrastructure component scores alone, and the second column shows institutional infrastructure components in the context of the control variables.

The regression using only the institutional infrastructure components was much less powerful in predicting neighborhood change than was the sociocultural milieu component model. The variation in the dependent variable explained by the model was less than 10 percent, though the level of formal political activity (POLACT) and the presence of major institutions (VISIB) were significant at the 0.05 level. Turning to the regression combining the institutional infrastructure components and the control variables, the component measuring the level of political activity (POLACT) in the tract is positive and significant at the 0.05 level. Thus, this component was combined with the two significant components from the sociocul-

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is a measure of the socioeconomic status of the tract (income, house values, and professional employment) and is referred to as STATUS. Component scores, with a slight modification, were computed for each census tract based on these factor patterns. The logarithm of the scores was used to reduce heteroskedasticity.

<sup>3</sup> Analyses were conducted using other control variables, such as changes in tract crime rates and contiguity to minority neighborhoods. None of these variables had a significant effect.

Table 7. Sociocultural Milieu Regression Results

Variable	Parameter Estimates	
	Sociocultural Milieu Components Only (Standard Error)	Control Variables and Socio- cultural Milieu Components (Standard Error)
INTERCEPT	0.035271** (0.1477610)	- 0.199506** (0.09467078)
LSTATUS		0.265724*** (0.06236375)
LFAMILISM		-0.152432*** (0.04080360)
LOLDHOUS		0.004103 (0.04973403)
BL80		0.018444 (0.05754996)
CBDIST		0.000591 (0.01091058)
PERVAC		1.761246*** (0.24766219)
PERNOMORT		- 0.773133** (0.38804097)
GOODPLACE	0.031188** (0.01466753)	0.045270*** (0.01593043)
LOYALTY	0.080149*** (0.01523135)	0.054615*** (0.01274306)
UNIQUESPACE	- 0.063123*** (0.01553903)	- 0.005841 (0.01806704)
LOCALE	0.000983 (0.01525487)	0.004325 (0.01300752)
NEIGHBOR	- 0.016400 (0.01463509)	- 0.002676 (0.01399638)
N	152	152
F-VALUE	9.767	15.159
PROB > F	0.0001	0.0001
R-SQUARE	0.2507	0.5668
ADJUSTED R-SQUARE	0.2250	0.5295

\*Significance at an alpha of 0.10. \*\*Significance at an alpha of 0.05. \*\*\*Significance at an alpha of 0.01.

Table 8. Institutional Infrastructure Regression Results

Variable	Parameter Estimates	
	Institutional Infrastructure Components (Standard Error)	Control Variables and Institutional Infrastructure Components (Standard Error)
INTERCEPT	0.031451 (0.01629852)**	-0.054427 (0.09575732)
LSTATUS		0.243381*** (0.05783710)
LFAMILSM		-0.215856*** (0.03872381)
LOLDHOUS		0.017621 (0.05307082)
PERNOMORT		-0.767434* (0.4104810)
PERVAC		1.499892*** (0.25392621)
BL80		-0.041674 (0.05192850)
CBDIST		-0.005772 (0.01157109)
POLACT	0.038470** (0.1645639)	0.030508** (0.01319118)
VOLACT	-0.012331 (0.01624076)	0.004604 (0.01291524)
VISIB	0.041104** (0.1683802)	0.006335 (0.01379375)
F VALUE	18.451	13.724
PROB > F	0.0112	0.0001
R-SQUARE	0.0720	0.4932
ADJUSTED R-SQUARE	0.0532	0.4573

\*Significance at an alpha of 0.10. \*\*Significance at an alpha of 0.05. \*\*\*Significance at an alpha of 0.01.

tural milieu regression to form the final measure of social capital. The other two institutional infrastructure factors are not statistically significant in the regression containing the control variables.<sup>4</sup>

<sup>4</sup> That is, the amount of volunteer activity, as well as the visibility of the tract, do not appear to have an effect on the neighborhood's trajectory. Volunteer activity among area residents may be a double-edged sword: People engaged in volunteer efforts outside the neighborhood may not be inclined to devote their time to local issues. The component measuring political visibility (a combination of being in a

## Social capital model analysis

Here we present the results of the social capital model of neighborhood change, which combines the statistically significant components from the sociocultural milieu and the institutional infrastructure constructs. Scores from the components measuring political activity, neighborhood loyalty and attachment, and whether the neighborhood is a good place to live were summed to form our measure of social capital. This variable will be higher in neighborhoods that have strong neighborhood organizations along with a high degree of attached residents who shop and recreate in the neighborhood.

Our measure of social capital was then used to assess the importance of the level of social capital as of 1980 in predicting neighborhood change between 1980 and 1990. The measure of social capital and the control variables discussed above were entered into a regression model where change in housing prices was the dependent variable.

The results reported in table 9 are consistent with the social capital model of neighborhood change presented earlier in this article. The measure of social capital, an additive combination of a neighborhood's sociocultural milieu and institutional infrastructure, has a positive and significant effect on the dependent variable. This means that neighborhoods with relatively large amounts of social capital are less likely to decline when other factors remain constant.<sup>5</sup> The regression containing the social capital variable has an adjusted R-square that is eight percentage points higher than the regression with the control variables alone. In addition, other factors were found to be significant predictors of neighborhood stability. A neighborhood's socioeconomic status as of 1980 had a significant and positive effect on its stability *ceteris paribus*. Interestingly,

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fortunate-five area and in a tract with a large institution) is also not significant. The fortunate-five CDCs were eligible for PPND funds. However, most economic/community development efforts are funded by the city's Urban Redevelopment Authority (URA). Most development projects receive 65 percent of their funds from the URA, 25 percent from banks, and only 10 to 15 percent from the PPND.

<sup>5</sup> Regression diagnostics were done in order to assess the robustness of the results. A condition test showed little multicollinearity. A Breusch-Pagan test, along with regressions of various forms of the estimated error term in the predicted value of the dependent variable, showed little evidence of heteroskedasticity. In addition, diagnostic tests were conducted for both spatially autocorrelated error terms and a spatial specification error. These spatial dependence diagnostics indicated that the error terms were not spatially autocorrelated and that the model did not contain a spatial specification error.

*Table 9. Regression Results of Social Capital Model of Neighborhood Change*

Variable	Parameter Estimates (Standard Errors)
INTERCEPT	-0.124556 (0.086964)
LSTATUS	0.23862*** (0.051976)
LFAMILSM	-0.183349*** (0.03419531)
LOLDHOUS	-0.00443491 (0.049440)
BL80	-0.00318271 (0.04788)
CBDIST	-0.00145812 (0.01079842)
PERVAC	1.65631*** (0.23538194)
PERNOMORT	-0.722628* (0.3879873)
SOCCAP	0.0328686*** (0.00644130)
N	152
F-VALUE	22.206
PROB > f	0.0001
R-SQUARE	0.5540
ADJUSTED R-SQUARE	0.5291

\*Significance at an alpha of 0.10. \*\* Significance at an alpha of 0.05. \*\*\* Significance at an alpha of 0.01.

the presence of mortgage capital availability as of 1980 also had a significant effect on neighborhood stability, underscoring the importance of fair lending initiatives. One counterintuitive result was the positive and significant effect of the vacancy rate on neighborhood stability. Some of this effect was due to changes to the Manchester section of Pittsburgh, which had high vacancy rates in 1980 and experienced higher-than-average property appreciation during the 1980s. However, the relationship between the vacancy rate and neighborhood stability still held, albeit to a lesser degree, when Manchester tracts were removed from the analysis.

If social capital is important, can policy makers use census variables to identify neighborhoods with different levels of social capital? Table 10 presents the means of the ecological variables for

Table 10. ANOVA of Ecological Variables by Social Capital

Variable	Means		
	Low Social Capital	Medium Social Capital	High Social Capital
DEPENDENT VARIABLE	0.9240250	1.0690734	1.1535834
OLDHOUS	0.7861822	0.8057956	0.8353954
HOUSEVALUE	192.99	223.24	298.58
PERVAC	0.0964283	0.0851418	0.0488876
BL80	0.2929775	0.2494672	0.0625763
CBDIST	2.942000	2.9756364	3.2041176
PEROWN	0.5374181	0.4971694	0.5022254
PERBLUEC	0.3018054	0.2777478	0.1986491
MEANY	13,902.00	15,372.60	19,824.91
FAMIL	0.1915894	0.1682760	0.1688697
PERNOMORT	0.0595603	0.0488501	0.0438162
N	25	110	17

Note: Shaded cells are means differences significant at an alpha of <0.05.

tracts that are classified as having low, medium, or high levels of social capital. An analysis of variance (ANOVA) was run to determine if the differences between the group means were statistically significant. The results are presented in table 10.

The difference in the mean value of the dependent variable across the three groups was significant at an alpha of 0.05. This is no surprise, as the parameter estimate in the multiple regression was positive and significant. Only three variables—average monthly rent (HOMEVALUE), median household income (MEANY), and percentage of employed residents working in blue-collar jobs (PER-BLUEC)—showed statistically significant differences across the three groups. Tracts with low amounts of social capital had lower housing values, lower mean family incomes, and a higher percentage of workers employed in blue-collar professions. As discussed earlier, these three variables had a high degree of correlation and also loaded on the status factor derived from the ecological principal component analysis. As a result, higher amounts of social capital are present in higher-status neighborhoods.

None of the other ecological variables has a statistically significant mean difference across the three groups. Of particular note is the tenure mix and level of familism within each group. About half the dwelling units are owner-occupied in tracts with low, medium, or

high amounts of social capital, so tracts with higher percentages of renters do not necessarily have lower amounts of social capital. The other housing-market-related variables—distance to the CBD, vacancy rate, capital availability, and the percentage of units built before 1939—have means that are very similar across the groups. Consequently, the characteristics of a tract's housing stock alone do little to differentiate the tract's trajectory over time.

The ANOVA analysis shows the problem with using ecological variables alone to predict neighborhood change. Except for status, tracts with low levels of social capital appear to be very similar to those with high levels of social capital in terms of the age of housing, vacancy rate, percentage of black residents, tenure mix, percentage of households that are two-parent families, and capital availability. Yet these tracts have very different trajectories during the study period, at least as measured by changes in the value of owner-occupied housing.

## Conclusions

Our analysis suggests that social capital plays an important role in neighborhood dynamics. As described earlier, the two constitutive elements of social capital had positive and significant effects on our measure of neighborhood stability. Thus, neighborhoods with higher levels of social capital, as measured by greater degrees of a socio-cultural milieu and institutional infrastructure, are more likely to remain stable over time. The social capital model of neighborhood change has more explanatory power than other models based on traditional explanatory variables such as the age of the housing stock, distance to the CBD, and mortgage credit availability.

In addition, we have identified three components of social capital that play a role in stabilizing neighborhoods. Two of the significant components relate to the sociocultural milieu of the neighborhood. Both loyalty and attachment to neighborhood are higher in neighborhoods that remain stable over time. Similarly, neighborhoods where a higher proportion of residents believe they live in a good place tend to remain stable.

Surprisingly, neighboring and the spatial distribution of residents' friends and relatives were not significant factors in predicting neighborhood stability. One should not make too much of this result, however, because our measures of social capital represent the average value for all residents within a tract. We are not suggesting that individuals who have a large number of friends and relatives outside the neighborhood have less social capital than individuals who do not. Moreover, it would be incorrect to assume that individ-

uals who live in neighborhoods where there is more neighboring activity (as a result, perhaps, of a greater amount of trust among the residents) do not have access to greater amounts of social capital. However, at an aggregate level, these factors were not significant in predicting neighborhood change.

Neighborhoods with a better-developed institutional infrastructure, as measured by voting and the presence of an effective neighborhood organization, do seem to have added stability, a result consistent with Briggs and Mueller's (1997) finding that neighborhood organizations can have positive effects on an area's social environment. Interestingly, the extent to which neighborhood residents volunteer in neighborhood organizations or other groups did not have a significant effect on neighborhood stability. Again, these results do not suggest that individuals who participate in an array of volunteer activities have no more social capital than individuals who do not. However, it appears that more purposive political activity is more important than volunteer activity.

What are the implications of these results for community development practitioners? As discussed earlier, the responsibility for developing social capital will most likely fall to community development corporations or other community-based organizations (CBOs). Our results suggest that CBOs that undertake comprehensive community development initiatives may be more successful than those that focus narrowly on housing development. This conclusion will not come as a shock to many community development practitioners and analysts. However, there are still a number of CBOs that see their role primarily in terms of housing development. Although housing stock in inner-city neighborhoods clearly needs to be improved and expanded, housing improvement efforts should be included in comprehensive revitalization efforts.

The natural response to the finding that social capital is important is to ask, "How do we build social capital in neighborhoods where it is lacking?" Unfortunately, nobody has a precise handbook for those who want to try, although there have been attempts to assess different approaches. Wilson (1997) argues that practitioners who would develop social capital should draw on a social learning model of professional activity. Therefore, practitioners must adopt the stance that "the ultimate source of power [lies] within the community itself. . . . [This approach] emphasizes the participatory tools for building organizations and institutions that enable citizens/members to solve problems. . . ." (Wilson 1997, 749). This aspect of social capital development is also the theme of Kingsley, McNeely, and Gibson's (1997) primer on community building. In addition to fostering community participation, the authors recommend that community building be based on specific neighborhood conditions and on

preexisting community strengths. It should also be comprehensive in addressing neighborhood problems and result in partnerships with key institutions. Medoff and Sklar (1994) provide an excellent example, through their analysis of the Dudley Street Neighborhood initiative, of how social capital can be developed and how it can complement physical improvement.

There may be limitations, however, in the extent to which community development practitioners can develop social capital within neighborhoods. For example, Briggs and Mueller (1997), in a study of the impact of CDCs on neighborhoods, found that CDCs are relatively unsuccessful in fostering close friendships among neighbors. However, the authors did find that CDCs are able to promote acquaintanceships, thereby increasing the number of informal social interactions within a neighborhood. In addition, Briggs and Mueller report that CDCs could increase the psychological sense of community among neighborhood residents. Therefore, some aspects of social capital may be cultivated using a process outlined by Kingsley, McNeely, and Gibson. We are not suggesting that increasing the level of social capital by itself will help to stabilize all urban neighborhoods. Our results show that other factors, such as access to mortgage credit, are needed for neighborhood stability. Nonetheless, our study does show that social capital plays a role in neighborhood stability and should be included in any analysis of community dynamics and any neighborhood revitalization or stabilization effort.

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