Dynamics of Neighborhood Quality in Chicago

An Analysis of the Interaction among Quality-of-Life Indicators from the New Communities Program Evaluation

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Abstract

The quantitative examination of neighborhood quality of life has traditionally focused on individual indicators and their level of occurrence, such as number of crimes and how much they rise or fall over time. While this approach can help to identify a neighborhood's problems, it does not contribute to an understanding of the way indicators of quality interact with each other and change over time. This paper explores the use of analytic methods that are better suited for assessing neighborhood change, focusing on the *rate* at which changes occur — referred to as "trajectories" in this paper — as opposed to changes in *magnitude*. It seeks both to identify general correlations between indicators and to explore how these relationships are affected by neighborhood contexts and by conditions that originate outside the neighborhood, such as the collapse of the housing market in 2006 and the national recession that followed.

The paper draws on data from an evaluation of the New Communities Program (NCP), an ambitious, 10-year effort to improve conditions in distressed urban neighborhoods of Chicago. Using a longitudinal database, the paper explores analyses of the interactions among quality-of-life indicators in the neighborhoods where NCP is working and in other Chicago neighborhoods. It looks at these interactions over time in three domains of interest to the initiative — safety, housing, and the economic environment — focusing in particular on business cycle fluctuations, the economic downturn, and the association between home foreclosures and crime. The analyses show that very few indicators were strongly or moderately correlated at the same point in time, but many of them had "leading" or "lagging" relationships with others. For instance, completed foreclosures were found to lead, or precede, crime. More completed foreclosures during a year were followed by both an increase in the level of neighborhood crime and a slowing down of the decline in crimes, especially violent crime. The findings suggest the importance of considering the time-sequencing of changes in neighborhood quality-of-life trajectories and using a comprehensive framework that relies on longitudinal data. Given that there are few examples of this type of work in the literature, these exploratory analyses offer important insights for understanding associations between and among neighborhood quality-of-life indicators over time and the methods to study them.

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Introduction

In 2003, the MacArthur Foundation funded the New Communities Program (NCP), an ambitious initiative to improve conditions in distressed urban neighborhoods. A 10-year, $47 million initiative, NCP is a comprehensive effort to engage community-based groups to attack multiple problems simultaneously — in education, workforce development, housing, social services, and public policy. Managed by the Local Initiatives Support Corporation of Chicago (LISC/Chicago), NCP focuses its efforts on 14 neighborhood areas in Chicago with varying challenges.[1] NCP designers believed that community organizations, which too often work in isolation on narrow agendas, would come together through collaborative planning and implementation to solve common problems and improve the quality of life in their communities across a variety of outcomes.

In early 2006, the MacArthur Foundation engaged MDRC, a nonprofit, nonpartisan education and social policy research organization, to evaluate NCP.[2] Development and enrichment of neighborhood networks is considered a key outcome of the intervention and is a central focus of the evaluation; further information about the intervention, the evaluation, and an examination of early NCP implementation processes and projects can be found in the interim evaluation report published in 2010.[3] Also included in the interim report is an overview of neighborhood conditions in the 14 NCP neighborhoods at the beginning of the NCP rollout. The measurement, description, and investigation of community conditions is not intended to draw conclusions about the effect or impact of NCP, but is rather directed toward an understanding of the various contexts in which the program operates. An important consideration in this endeavor is the non-static nature of neighborhoods, which is particularly relevant to the evaluation of a community change initiative such as NCP. Thus, a central concern for the analysis of neighborhood conditions in Chicago before and during the implementation of NCP is consideration of the dynamics of neighborhood quality. To that end, this paper looks at relationships between community conditions — specifically, indicators of quality of life — as they change over time.

In keeping with the comprehensive — or holistic — approach of NCP, the analysis of neighborhood conditions presented here also takes a holistic approach. Specifically, it examines the interaction between quality-of-life indicators over time, seeking both to identify general relationships and to explore how these relationships vary in different contexts and respond to ex-

[1]NCP is often described as serving 16 Chicago communities. However, these communities are located in 14 areas for the purposes of the initiative's planning and implementation. Therefore, for simplicity's sake, this report refers to these areas as NCP's 14 neighborhoods.

[2]MDRC is leading the NCP evaluation with partners at the University of Chicago's Chapin Hall, Metro Chicago Information Center (MCIC), and Wayne State University.

[3]Greenberg, Verma, Dillman, and Chaskin (2010).

ternal forces. The analysis is exploratory, with the intent to broaden knowledge regarding the interactions over time between the factors that determine neighborhood quality and how neighborhood context may affect those interactions.

Quantitative examination of neighborhood dynamics and neighborhood context, particularly in terms of quality of life or place, is a complex endeavor. While increased availability of data and technological advances have enabled development of rich databases of neighborhood indicators, researchers and practitioners have usually relied on these databases to report on the "levels" of conditions in a wide variety of indicators. As is evidenced in the literature, each indicator is usually examined one at a time and given equal weight, with little effort made to relate the indicators to each other beyond grouping them into domains or categories. While this approach is instructive to understand the levels of a particular aspect of neighborhood quality (say, crime rates or completed foreclosure rates) or to identify "problem" conditions for a particular neighborhood, evaluating multiple indicators to assess overall neighborhood quality with no knowledge of how changes in these indicators may relate to each other is problematic for understanding the dynamics of neighborhood quality. Likewise, investigations of neighborhood quality dynamics also require some notion regarding the structure of relationships between multiple indicators, or, ideally, the domains they represent, in order to produce useful and meaningful information about how neighborhood component parts relate to each other. Building such models will be a first step in shedding light on the complex nature of neighborhood quality dynamics and will allow researchers and practitioners to be in a better position to generate forecasts or to develop prospective knowledge regarding trajectories of neighborhood quality in order to guide priorities and goals.

However, building a deeper understanding of neighborhood dynamics calls for some shifts in how quantitative investigations into neighborhood change are conceived and implemented. At a minimum, it calls for an approach that includes a reorientation from the traditional approach of quantitative investigations into neighborhood context, but also the use of analytic methods that are better suited for exploring neighborhood change — specifically, a focus on examining indicator *trajectories,* defined here as the rate of change, as opposed to the more typical focus on indicator trends, which addresses changes in magnitude. For example, a trends analysis of a crime rate would center on the amount and direction of period-to-period changes in the number of crimes, while a trajectory analysis would focus on the rate at which the changes were occurring. The shift in focus to trajectories from trends is necessary for an investigation of *dynamics,* as it allows identification of differences and similarities in the way neighborhoods are changing that may be obscured because of differences in levels. That is, two neighborhoods may be changing in similar ways (that is, they may share trajectories) but the similarities may not be apparent when looking at trends because of the differences in scale between the two neighborhoods; for example, one neighborhood started at a very high level while the second started at a very low level. In addition, as neighborhood and larger context certainly play a combined role in

the dynamics of neighborhood quality, the analyses reported here also examine how quality-of-life dynamics vary among neighborhoods that are classified into different types and how they respond to external forces, specifically economic contractions and expansions.

This paper is organized in four parts. First, some necessary background information for the analyses is provided, including the definition of the geographic units in the city of Chicago that were used in the study and an explanation of the measurement of quality of life. The remaining sections document three related investigations into the dynamics of neighborhood quality of life, examining the interactions between quality-of-life indicators and how forces external to the neighborhood affect both the indicator trajectories and their interactions with each other:

- **Response to the economic downturn.** First, the quality-of-life indicator trajectories are examined in the wake of the "Great Recession" — the economic downturn that started with the collapse of the housing market in 2006.[4] This analysis focuses on characterizing the experience of Chicago neighborhoods and the variation in indicator trajectories associated with differences in neighborhood characteristics. This section of the paper also serves as an introduction to the trajectory-based approach for understanding neighborhood quality.

- **Response to business-cycle fluctuations.** In the next section, the scope of the analysis is broadened, and the paper turns to examining the indicator trajectory response to business-cycle fluctuations from 2000 to 2010 — in other words, are the patterns of response to the Great Recession unusual or different from those observed in the past decade? The longer time span also allows consideration of the relationship between indicator trajectories, including both *simultaneous* relationships between indicators in the same period and *time-shifted* relationships (or "leads" and "lags") over periods of time and how these relationships vary according to neighborhood context. There are few examples of this type of work in the literature, and the NCP data are well suited to support such an investigation.

- **The relationship between foreclosures and crime.** The third analysis is also focused on interactions between quality-of-life indicators, but examines the effect of foreclosures on crime and how the foreclosure-crime relationship varies among neighborhoods with different characteristics.

The paper ends by summarizing the main findings, including their implications for practice, policymaking, and future research.

[4]Changes in the quality-of-life indicator trajectories for the 14 NCP neighborhoods during the Great Recession, as well as additional information updating the analysis of neighborhood conditions from the interim report (Greenberg, Verma, Dillman, and Chaskin, 2010), can be found in Appendix C.

Background

As stated above, understanding neighborhood context, particularly in terms of quality of life or place, is a complex endeavor that is one of the classic problems in community studies, particularly for quantitative research. One level of complexity concerns identification of units: neighborhoods are essentially social constructs that typically lack persistent fixed representation in the material world. While there may be some general consensus about the approximate boundaries of neighborhoods at a single point in time, these boundaries shift and it can be difficult to objectively identify a neighborhood definition that is meaningful for the duration, which is necessary to quantitatively examine neighborhood dynamics. For the analyses presented here, the neighborhood definitions developed for the NCP evaluation are used to identify the units of analysis.

Another level of complexity is the multidimensional nature of neighborhood quality, an abstract concept that is a function of multiple characteristics and conditions. These multiple inputs interact both with each other and with forces operating external to the neighborhood. The lack of a conceptually grounded, well-defined subject, as well as the multiple, interacting parts of the processes under investigation, require careful measurement and statistical methods that can account for factors operating on multiple levels over time. For these analyses, the quality-of-life measurement strategy was centered on the quality-of-life issues that neighborhood residents considered problematic or important, as these issues formed the basis for the quality-of-life plans that were developed and implemented as part of the NCP process.

Further discussion of the strategies that were used to address these two issues — definition of the neighborhood unit and measurement of neighborhood quality — follow. As discussed in more detail below, definition of the unit of analysis — neighborhoods — is partly based on geographical definitions established for NCP activities. Measurement of quality of life also reflects NCP activities, as it is focused on the issues and priorities identified during the NCP planning process. See Appendix A for further discussion of measurement and other methodological issues.

Neighborhood Geographies

This paper draws on the neighborhood geographies developed for the NCP evaluation.[5] At the point MDRC was engaged to evaluate the initiative, roughly three years into the implementation of NCP, the geography of NCP had been determined: 14 planning areas in which the initiative was implemented had been defined and much of the planning process

[5]See Greenberg, Verma, Dillman, and Chaskin (2010) for further discussion of the neighborhood selection process and criteria. See Appendix C for further information regarding the NCP planning areas and quality-of-life conditions in these neighborhoods.

was complete. The boundaries of the planning areas were defined in reference to an existing Chicago geographic division known as Community Areas;[6] some of the NCP planning areas are equivalent to a Chicago Community Area, while others incorporate areas from multiple Chicago Community Areas and still others are a portion of a Chicago Community Area. This divergence from the Chicago Community Areas typology mostly reflects the evolution of the sociodemographic and economic structure of the city since the designation of the Chicago Community Areas in the 1920s. However, it also reinforces the notion that neighborhoods are fluid and, even though it is often necessary to "draw lines" to conduct quantitative investigations such as those presented here, the concrete reality of the unit of analysis is somewhat amorphous, especially when considered over time.

In order to provide a context for understanding quality of life in the 14 NCP planning areas, the remainder of Chicago was subdivided to form, in combination with the NCP planning areas, a set of analysis units (referred to here as neighborhoods) that, as a whole, encompass the totality of the Chicago municipal area. Each of the "non-NCP" areas corresponds to a Chicago Community Area — either the entire area (for those that are completely outside of an NCP planning area) or a portion of the area (for those where part of the Chicago Community Area is part of an NCP planning area). Therefore, a total of 80 neighborhoods are considered here: 14 NCP planning areas, and 66 non-NCP areas.

There is considerable variation among the neighborhoods, representing the considerable diversity of Chicago's population and urban structure. This can prove problematic when analyzing quality-of-life trajectories, as it is necessary to understand the context in which a particular indicator was observed in order to fully evaluate its course. To address this issue, various characteristics of the 80 neighborhoods related to their population and housing were analyzed to determine whether meaningful groupings of neighborhoods could be constructed; this analysis is based on the conditions prior to the implementation of NCP and is (roughly) located in time in the year 2000, several years prior to the start of the initiative.[7]

Five neighborhood groupings (see Box 1) were identified in the analysis.[8] The neighborhood groups are primarily distinguished by the income and race/ethnicity of the neighborhood residents. For example, Chicago neighborhoods where the average (mean) household income is similar to the city average (that is, middle- and working-class neighborhoods) are split

[6]Chicago's Community Areas were defined in the 1920s and continue to be used in city planning and administration; in some cases, the Community Area (or its name) continues to serve as a reference point for city residents.

[7]See Greenberg, Verma, Dillman, and Chaskin (2010) for further details of this analysis.

[8]See Appendix Table B.1 for a listing of the neighborhoods in each group. Appendix Table B.2 contains the average (mean) value for various population and housing characteristics for the neighborhoods in each group just prior to the rollout of NCP.

Box 1

Chicago Neighborhood Groups

Group I	Moderate-income, predominantly black residents; housing is mostly owner-occupied, single-family units.
Group II	Moderate-income, predominantly white residents, about one-fourth of whom are foreign-born, with a mix of single-family and multi-unit, owner-occupied dwellings.
Group III	Moderate-income, with concentrations of Hispanic residents; almost 40 percent are foreign-born; housing is mostly smaller multi-unit dwellings, split between owner-occupied and renters.
Group IV	Low-income; housing is mostly renter-occupied, large multi-unit dwellings.
Group V	High-income; housing is mostly large multi-unit dwellings, with more renters than owners.

by race/ethnicity among three groups. Neighborhoods with predominantly black residents are in Group I; those with predominantly white residents are in Group II; and neighborhoods where a large proportion of the residents are Hispanic are in Group III. The other two groups contain the neighborhoods where the average incomes are below (Group IV) and above (Group V) the city average. The residents of the neighborhoods in Groups IV and V are more racially and ethnically diverse than the first three groups.

The neighborhoods in the five groups also differ in terms of their housing configuration. Two of the moderate income groups — neighborhoods with predominantly black residents (Group I) and those with predominantly white residents (Group II) — consist of mostly owner-occupied housing. Most of the residences in the Group I neighborhoods are single-family dwelling units, while those in Group II are a mix of single-family and large (having five or more units) multi-unit buildings. The other moderate-income group, neighborhoods with a considerable proportion of Hispanic residents (Group III), is split between rental and owner-occupied housing, the majority of which are small (having two to four units) multi-unit buildings. Finally, the low-income (Group IV) and high-income (Group V) neighborhood groups have similar housing configurations — large, multi-unit buildings where the majority of residents are renters.

Each neighborhood group is somewhat spatially contiguous. The high-income neighborhoods (Group V) are clustered around the central business district of the city (known as the Loop); this neighborhood group includes all of central Chicago as well as North Side and West Side neighborhoods that border Chicago's downtown. The low-income neighborhoods (Group IV) are mostly in Chicago's South Side, although a few are in the West Side. The spatial distribution of the moderate-income neighborhood groups reflects the historical population distribution of Chicago, with the neighborhoods having a predominantly white population (Group II) in the North Side, those with predominantly black populations (Group I) in the South Side, and those with a relatively high concentration of Hispanic residents (Group III) in the West Side.

In the analyses reported here, these five groups are used in various ways to provide context for the analysis of quality of life and some basis for generalization of the results. (Appendix C provides more detail on all the NCP communities and their trajectories.) The five groups represent one of many possible divisions of the Chicago neighborhoods rather than some universal classification that is generalizable to all urban environments. However, the combination of characteristics that define each group is most likely not unique to Chicago and thus perhaps provides a means for determining the applicability of these results to other places.

Quality of Life: Domains and Trends

The concept of quality of life (QoL) is complex and hard to define and measure. Scholars in multiple disciplines have debated the definition and measurement of QoL since at least the 1930s, resulting in a variety of proposals and methods but no definitive conclusions.[9] However, there is agreement regarding the dual nature of QoL. To use the terminology of Massam, it is both environmental and psychological: QoL is defined by both the "objective" conditions of the environment and the "subjective" experience of these conditions.[10] For the purpose of development of the NCP QoL measurement, the focus is on the objective aspects of QoL — the physical and socioeconomic conditions of a place that affect residents' perceptions of QoL and their ability to achieve individual QoL, as well as shape the perceptions and decisions of investors, policymakers, and others whose actions in turn can shape neighborhood quality of life.

Community conditions can be captured through a variety of quantifiable neighborhood indicators — property values, crime rates, residential and commercial investments, neighborhood amenities, and so on.[11] The NCP evaluation considered a number of factors in choosing

[9]Sharpe (2000).

[10]Massam (2002).

[11]Many aspects of neighborhood conditions are not readily quantifiable, such as social capital, social participation and trust, and community resilience. While recent scholarship has prioritized the development of qualitative measures of communities, the indicators often require intensive data collection and, as a result, are not immediately amenable to cross-site, longitudinal investigation.

which indicators to track. First, indicators were chosen that reflected shared community change goals across the 14 NCP communities. Second, inasmuch as not all data are available for the longer term or exist at the neighborhood level, indicators that supported longitudinal analysis were given priority in NCP research. In addition to the data's long-term availability, measurement with sufficient frequency, geographic specificity, and sensitivity were prioritized. The result was the creation of an extensive database of neighborhood indicators that reflect three important domains of objective QoL: safety, housing, and economic environment.[12] However, several important domains are not represented in the neighborhood indicator database, namely health, education, and arts/culture, because of the limitations of existing data. As the analyses reported here are primarily exploratory, the "missing" domains of quality of life mainly limit the possible extent of exploration. However, broadening the scope of data collection will be a necessary step to move quantitative investigation of neighborhood quality of life forward.

The resultant neighborhood indicator database is extensive in that there are a number of indicators for each domain and, for most of the indicators, the data series extends from 2009 back to the early or mid-1990s. All three of the domains represented in the neighborhood indicator database are of vital interest to the NCP neighborhoods, as evidenced by the plans and investments made over the course of the program. Each of the domains is considered below, including discussion of the domain's contribution to QoL and its relevance to NCP neighborhoods. Also discussed is measurement of the indicators in each domain, as well as the overall trends in the indicators for the period included in the neighborhood indicator database. Additional information regarding the measurement of the QoL indicators can be found in Appendix A; additional tables and charts of the historical trends in the indicators for Chicago, the neighborhood groups, and the NCP neighborhoods can be found in Appendix C.

Safety

A feeling or perception of safety is a fundamental component in the assessment of a neighborhood's quality of life. The characterization of a neighborhood as "unsafe" can depress its home values, housing market activity, and commercial development. A perceived lack of safety among a neighborhood's residents can also impede the organizational life of the community, weakening its capacity to mobilize — residents who feel unsafe in their neighborhood are sometimes less likely to come together to solve problems.[13] In turn, these factors can contribute to an increase in the perceived lack of safety and/or occurrence of crime in a community.

[12]The set of indicators compiled for the neighborhood indicator database within each domain is not intended to represent comprehensive measurement of the domain, which is why, among other reasons, the analyses focused on the individual indicators rather than on the creation of indexes or scores.

[13]Sampson, Raudenbush, and Earls (1997).

All 14 NCP neighborhoods identified safety as a focus during development of the neighborhood quality-of-life plan. As one respondent from Chicago Lawn described it: "I think if you ask community members, if you went up and down random blocks, 'What's the number-one issue in the community?' they're gonna say, 'Crime and safety. Crime and safety is what I care about.'. . . That's the number-one issue that really gets at people."[14] Many people associated violence and public safety issues with the consequences of the drug trade. NCP plans proposed outreach to gang members, encouraging peace between gangs through recreational activities; the organizing of block associations and other organizations to promote neighborhood watches; efforts to partner with police; and job-training programs for formerly incarcerated individuals.

The comprehensive approach embodied in NCP allowed some projects to serve multiple purposes, with efforts in youth development and the arts providing opportunities for teens to stay off the streets. Additionally, public safety projects were also seen as important components of the strategies in other domains of QoL. As one respondent from Englewood suggested, the "visible elimination of hang-out," where potential investors feel comfortable driving through in the evening, is an important part of the overall economic development strategy for the neighborhood.

As residents' (and others') perceptions of neighborhood safety are difficult and costly to measure longitudinally, actual crime is used here as the indicator of safety. In general, researchers have found that fear of crime is associated with crime rates, but the relationship is not as strong as might be expected.[15] In addition to personal characteristics that contribute to higher levels of fear (for example, women and the elderly tend to report higher levels of fear), perceptions regarding a lack of safety can be driven by secondhand information, deterioration and disorder, the built environment (infrastructure), and group conflict. Each of these factors tends to promote higher levels of fear, possibly resulting in the perception of a high probability of victimization even when actual victimization rates are low. Nonetheless, actual crime events are a major determinant of the perceived safety of a neighborhood.

The neighborhood indicator database includes two measures in the safety QoL domain: property crime counts and violent crime counts. Both are standardized to account for differences in the neighborhood sizes by transformation into rates per 10,000 persons. As can be seen in Figure 1, both property and violent crime have declined in Chicago since the early 1990s, fol-

[14]Qualitative data are drawn primarily from transcribed interviews, which have been coded and analyzed according to predefined themes. To illustrate these themes, representative quotations are presented from staff, implementation partners, or stakeholders external to NCP. Interviews were conducted with the expectation that individuals would not be identifiable. See Greenberg, Verma, Dillman, and Chaskin (2010) for further information.

[15]Skogan (1986).

lowing the national trend.[16] The decline was not uniform across the city's neighborhoods, with generally greater declines in crime for neighborhoods with initially higher levels of crime. Specifically, the crime rates for the neighborhoods with the highest amount of crime declined at a higher rate, relative to other neighborhoods. An exception to this is the moderate-income neighborhoods with a predominantly black population (Group I), who had, on average, crime rates above the city rates. While the difference between the city rates and the neighborhood rates was not as great for the Group I neighborhoods as it was for the other higher crime areas, the rate of decline in the crime rates for the neighborhoods in this group was much slower compared with the other neighborhoods and the city as a whole.

Housing

For an individual, a secure, safe, and well-maintained dwelling place is a fundamental necessity for achieving quality of life. Likewise, a neighborhood's housing stock is a fundamental contributor to its QoL. In a sense, a neighborhood's housing is its face, visual inspection of which provides an initial, if not permanent, impression of the neighborhood's character and quality. While qualitative characteristics such as architectural style and housing type can be important determinants for subjective QoL, housing is an important domain within objective QoL.

Although NCP aimed to broaden local development activity beyond the housing domain, all of the neighborhoods planned to address housing issues in some way. These responses varied, based on local actors' responses to neighborhood conditions, and included not only bricks-and-mortar development but also efforts to preserve affordable housing projects subsidized by the U.S. Department of Housing and Urban Development, to organize with tenants, and to promote inclusionary zoning or housing set-asides. Some proposed projects were quite large, such as a mixed-income development supported by the Local Initiatives Support Corporation of Chicago (LISC/Chicago) in the Woodlawn neighborhood. Others were smaller, including grants to home owners to help renovate. Central to all of these projects was the desire to attract new residents while preserving the fundamental character of the neighborhoods' existing housing and population.

There is a long research tradition in real estate economics that uses home values (usually measured as sales prices) as a primary indicator of neighborhood quality. Specifically, price differentials that remain after accounting for the home's structural features represent capitalization of the entire package of location-specific amenities.[17] A related strategy, commonly used when information regarding individual home characteristics and sales data are unavailable or too cumbersome, regards home sales as an indicator of capital flows into a neighborhood. With

[16]FBI, Uniform Crime Reports; see www.fbi.gov/about-us/cjis/ucr/ucr.
[17]See Kain and Quigly (1970) for a classic example of this approach.

this approach, both the volume of sales and the average purchase price are informative indicators for relative comparisons between neighborhoods. The sum of the purchase prices can be thought of as the total capital flow from in-moving, home-buying residents; increases in this flow represent a higher valuation or desirability for the neighborhood. The average home purchase price can be thought of as a less precise version of the price-differential indicator described above; trends in average prices also illuminate trends in the purchase price sum indicator, allowing assessment of the extent to which the sum trends are caused by an increase in values as opposed to an increase in the number of buyers. Additionally, increasing average prices signal growing capital gains by homeowners, a potentially important source of family wealth.

The NCP measures capture this aspect of neighborhood QoL via indicators constructed from administrative data collected under the auspices of the federal Home Mortgage Disclosure Act (HMDA), which includes information on the location and buyer characteristics of home purchase loan applications and originations reported by certain lending institutions.[18] Using these data, indicators reflecting overall market activity were constructed (that is, number of originated loans, total dollar value of originated loans), using the number of single-family, owner-occupied housing units as the standardization factor. A third indicator constructed from these data, mean home loan dollar amount, provides information comparable to the average sales price or home value described above. For all three indicators, the base loan data are for single-family and small multi-unit dwellings (that is, dwelling units containing one to four units) for the time period from 1992 to 2009.

As can be seen in Figure 2, the number of loan originations and the total loan amounts grew steadily in Chicago over the 1990s until the collapse of the housing market in 2006. The rates of growth and levels of these indicators were much higher among the high-income neighborhoods (Group V) relative to the city and the other neighborhood groups. During the 1990s, the low-income neighborhoods (Group IV) were fairly similar to the city and other neighborhood groups (except for Group V) in terms of the number of total loan amounts, but the trends in these indicators greatly accelerated starting around 2000. The group of moderate-income neighborhoods with a predominantly black population (Group I) had the lowest level of housing market activity, even during the housing market boom that preceded the 2006 collapse.

Chicago's mean home loan amount has grown steadily since the early 1990s (Figure 2), notably not exhibiting the consistent, steady decline seen in the number of loans and total amount of loan trends since 2006. The high-income neighborhood group (Group V) is again the

[18]HMDA data are used instead of sales price data because they offer a relatively longer time series; HMDA data were available starting in 1992 while the sales price data were only available as two, incongruent time series that covered a more limited period. The HMDA and sales price data exhibited the same trends for the times in which overlapping coverage existed. Galster, Hayes, and Johnson (2005) demonstrated the value of HMDA data as a source for constructing neighborhood indicators.

standout, with considerably higher mean loan amounts since the beginning of the time series. Two of the moderate-income groups — those with predominantly white inhabitants (Group II) and those with substantial numbers of Hispanic inhabitants (Group III) — experienced an acceleration of their mean home loan amount trends in the late 1990s and early 2000s, with a slowing of the rate of growth coinciding with the downturn in housing market activity; the other moderate-income neighborhood group (predominantly black residents, Group I) persistently lagged all of the other neighborhood groups on this indicator.

Another housing market indicator relevant to neighborhood QoL is foreclosures. Foreclosures can exert significant costs on the affected families, neighborhoods, and cities.[19] In cases where the instances of foreclosures are rare and the demand for housing is relatively high, an individual foreclosure may not have much lasting effect for the neighborhood. When circumstances differ, such as in areas with relatively less desirability and/or areas experiencing multiple foreclosures, the effect of an individual foreclosure can magnify, leading to a rash of vacant, poorly maintained buildings that serves to further depress housing values and desirability, as well as possibly serving to facilitate a rise in disorder and crime.[20] In addition, foreclosures can disrupt the social fabric of the neighborhood, as home owners tend to be more active in their communities and local affairs.[21]

Typically, foreclosure counts and rates are based on completed foreclosures, as, until recently, foreclosure resolutions other than completion (that is, the lending institution takes possession of the property) were somewhat rare. As a result of a combination of factors (mortgage-based securities, lax record-keeping, enhanced foreclosure prevention programs and regulations, and so on),[22] the congruence between filed and completed foreclosures has lessened in recent years. As one Chicago Lawn respondent described it:

> In our neighborhood, when we were inundated with subprime lenders, what was happening was that somebody would get a bad loan, they would pay it off for a couple of years, they would get in trouble, they would have foreclosure initiated against them, but then the bad lenders would sweep in, give them another loan. It never went to completion.

Thus, the NCP neighborhood indicator database includes indicators of both filed and completed foreclosures. The NCP measures are based on counts of single-family foreclosures, standardized by the number of single-family, owner-occupied dwelling units in the neighborhood. The time period for these indicators is 1998 to 2009.

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[19]Immergluck and Smith (2006); Quercia, Cowan, and Moreno (2005); Moreno (1995).

[20]Immergluck and Smith (2006).

[21]Dietz (2003).

[22]Most of these factors are tied to and/or caused by the collapse of the housing market or the policy response to the collapse, which is discussed in more detail later in this section.

As can be seen in Figure 3, Chicago's rate for both filed and completed foreclosures has changed direction over time, with the last peak occurring during the previous recession in the early 2000s. After falling for several years, the filed foreclosure rate began rising again in 2006; the completed foreclosure rate also began increasing shortly thereafter, but has yet to catch up to the filed foreclosure rate. The low-income neighborhoods (Group IV) have been the hardest hit by foreclosures, both currently and during past upsurges. While the level of foreclosures is not as high, the moderate-income neighborhoods with predominantly black residents (Group I) have also historically been disproportionally affected by foreclosures; in fact, for these neighborhoods, the rate of filed foreclosures did not appreciably decline after the early 2000s recession. The neighborhoods in these two groups, along with the moderate-income neighborhoods with concentrations of Hispanic residents (Group III), have the largest divergence between their filed and completed foreclosures in recent years; this suggests that many of these foreclosures are related to subprime mortgages. Neighborhoods in the other groups (II and V) generally have lower rates of foreclosures, particularly having only very small trend responses to the previous recession. While the filed and completed foreclosure rates in the high-income neighborhoods (Group V) have remained close in both size and trend, the filed foreclosure rate has begun to outpace the completed foreclosure rate in the moderate-income neighborhoods with predominantly white residents (Group II), possibly in response to the duration of the recession following the housing market collapse.

Housing and home owners have long been emphasized in the community development literature that is concerned with quality of life. While the NCP neighborhood indicator database generally follows the field in constructing indicators in the housing domain that are focused on single-family housing and home owners, recall that, as is common in urban environments, a significant proportion of Chicago's residents are renters and a significant proportion live in large, multi-unit dwellings.

Economic Environment

Consideration of the economic environment is not common in QoL studies, but it is of increasing concern within the community development field. While "bedroom" communities can certainly provide a living environment that contributes positively to their residents' subjective QoL, the most successful of these communities are typically in suburban environments, where residential income is moderate to high, and car ownership is fairly common. In an urban environment, a neighborhood with a limited commercial sector is more likely to be indicative of negative forces operating on overall conditions, as many of the same forces that drive residential desirability also act on commercial desirability. In addition, neighborhoods that lack a vibrant commercial sector exert a toll on their residents in terms of the difficulty in purchasing goods and services, particularly in lower-income areas, where reliance on public transportation is common.

During the NCP planning processes, development and sustainment of a thriving, culturally rich set of local businesses were also seen to be a potentially important part of neighborhood stabilization and revitalization. An individual in East Garfield expressed the centrality of retail opportunities among overall efforts at community improvement:

> I just think we gotta get some physical projects open. And I want to see some more stores. I want to see a CVS. I want to see major retailers here. I want to see our vacant lots on a commercial strip filled up and developed. Maybe not all with commercial space, but at least our major intersections should have some commercial space. I want people to feel like this is a vibrant community.

Similarly, another partner in Quad Communities recognized the lost opportunities and economic benefits without local businesses: "We just didn't have anywhere to shop. We did a study, and we determined that there were all these millions of dollars that were actually leaving the community." The strategies planned for promoting and supporting commercial development in the NCP neighborhoods included technical assistance to small business owners, the creation of special business districts with revenue to support them, grants for storefront repair, developing farmers' markets, organizing street festivals, and creating merchant associations.

Commercial development activity is difficult to track. One source that is increasingly used is administrative data on business lending reported by certain lending institutions under the auspices of the federal Community Reinvestment Act (CRA). These data contain information about small business loans — that is, business loans of $1 million or less (not necessarily the same as loans made to small businesses), including the amount of the loan and a few characteristics of the loan recipient — and can be used to gauge, to some limited degree, the flows of commercial capital into the neighborhood. The NCP neighborhood indicator database includes two indicators constructed from these data: the number of loans and the total dollar value of loans; the neighborhoods' commercial land area is used as the standardization factor. The time series is available from 1996 to 2009.

As can be seen in Figure 4, in Chicago the total amount of small business loans peaked around the same time as the peak in the housing market and then declined in a similar fashion.[23] In contrast, the number of small business loans continued to grow for several more years before entering into a decline. Note that, prior to the recession that began after the 2006 housing collapse, the trend for both indicators was steadily positive. The high-income neighborhoods (Group V) have a dramatically different trend for both indicators of small business loans; recall

[23]The observed trend for the number of small business loans for Chicago is similar to the national trend (see www.ffiec.gov/craadweb/national.aspx); it is possible that the continued positive trend in the number of small business loans after 2006 results from a data artifact, such as a change in reporting methods or requirements.

that this neighborhood group contains Chicago's central business district (the Loop). The total amount of small business loans is magnitudes of order larger than the totals for the other neighborhoods, even accounting for the declining trend that started around 2006. In contrast, the number of loans in these neighborhoods at the beginning of the period was not that different from the other groups, but the level of the growth in this indicator (through the late 1990s in particular) produced a very different picture at the end of the period. Among the other neighborhood groups, the moderate-income neighborhoods with predominantly white residents (Group II) had a consistently stronger growth rate (and higher starting level) until the collapse of the credit markets beginning around 2006.

In addition to the concerns noted above, another motivation for examining the commercial development of an urban neighborhood is its role in providing employment for neighborhood residents and others. The number of jobs in a neighborhood indicates not only the degree to which the neighborhood serves as an employment center, but also informs an overall assessment of its commercial sector. (That is, the more workers that are employed in an area, generally the larger number of service/shopping providers that are attracted to the area.) The number of jobs in a neighborhood is also usually related to the employment levels of the neighborhood's residents. While businesses in a neighborhood are obviously free to hire nonresidents, the availability of jobs in the immediate area increases the probability of employment for residents.

While none of these points is particularly novel, indicators of employment and jobs are rarely included in neighborhood analyses of QoL trends because of a lack of data; until recently, this type of data was even rarer than data pertaining to commercial development. However, the Census Bureau Local Employment Dynamics (LED) program has developed and released a data product, "OnTheMap," that includes employment and job counts for very small levels of geography.[24] The NCP measures include two indicators — the number of jobs in the neighborhood and the number of employed residents — constructed from the LED OnTheMap data; both use a working-age population of 10,000 as a standardization factor. The time series is fairly short, ranging from 2002 to 2009.

As can be seen in Figure 5, neither time series displays much change in the period for which data are available. When examining the trend for Chicago as a whole, the number of jobs has increased by a small amount while the number of employed residents has decreased by a small amount. Like more traditional labor statistics measures of jobs and employment, the NCP indicators suggest a fairly stagnant labor market for the city. Comparing the indicators across neighborhood groups reveals the high-income (Group V) neighborhoods' role as employment centers for the city; these are the only neighborhoods where the number of jobs is greater than

[24]LED is also known as the Longitudinal Employer-Household Dynamics (LEHD) program.

the number of working-age residents. These are also the only neighborhoods with a positive employment trend.

Summary

Of the QoL domains that are represented in the NCP indicators database, those domains that were selected to reflect the priorities indicated during the planning process provide information about important aspects of the quality of life in Chicago neighborhoods. While they are not comprehensive, the indicators are measured over a relatively long time span, which supports investigation of trajectories.

For the most part, the QoL indicators representing domains that are relevant to the NCP participants suggest fairly widespread improving conditions in the years prior to the start of NCP in 2000. However, there was variation in the indicator levels and trends among the five neighborhood groups, most notably for the indicators reflecting the economic environment. This reflects a possible mediation effect of neighborhood context in the neighborhood-level response to external forces, which is explored further in the next section, where the trajectories of the QoL indicators during the onset of the "Great Recession" are examined.

The Great Recession and Neighborhood Quality of Life

In 2006, just as the rollout of NCP was wrapping up, the housing market collapsed, bursting the speculative bubble that had been growing since the turn of the century. While debates rage on regarding the reasons for the bubble and its collapse, its effects are clear and widespread. One of the effects of particular concern to community development is the rapid rise in the foreclosure rate. The initial rise in foreclosures was concentrated among subprime mortgage holders whose inability to negotiate better terms (the usual course for subprime loans) led them to begin to default on their mortgage loans.[25] As the recession deepened, the upward trend in foreclosures was reinforced when borrowers with more traditional mortgages found that they were unable to meet their financial obligations because of job loss and other effects of the recession.[26] A related issue was the growing prevalence of "underwater" homeowners — those who were able to continue to make their payments, but whose property values had declined to the point where they owed more on their home than it was worth; anecdotal reports suggest that at least some of these homeowners began to default as well.

[25]Mortgage holders' inability to negotiate better terms was a result of tightening credit markets caused by the decline in value of the mortgage-backed securities.

[26]This led to even further tightening of credit markets, as "regular" mortgages were also securitized.

These and other trends that were characteristics of the "Great Recession" have the potential for devastating effects on neighborhoods, especially those with residents already suffering from economic duress at the beginning of the cycle. Research investigating the effects of previous recessions indicates that the negative effects are more pronounced in economically disadvantaged neighborhoods.[27] In addition, these same neighborhoods are more likely to have experienced a slower recovery from the previous recession at the beginning of the decade, particularly in terms of income and employment.[28] While the Great Recession officially ended in June 2009,[29] the extent of its effects — other than anemic job growth and slowly increasing output — are still under examination. However, early reports suggest differential effects for racial/ethnic minorities, partially because of their higher level of participation in subprime lending, as well as more substantial effects for middle- and upper-income households, which are traditionally somewhat insulated from business-cycle fluctuations.

Reports from respondents in the NCP neighborhoods consistently identify increases in the number of foreclosures as a major consequence of the Great Recession. The challenge is not only the increase in the number of neighborhood residents dealing with the fallout of the collapse of the housing bubble, but also the problems arising from the additional foreclosures. As one interviewee from Humboldt Park stated:

> I mean, this is the reality and so we're seeing staff attrition. We're seeing organizational vulnerability, and we're seeing many more community residents sort of bearing the burden of all of that and facing unemployment, facing lack of services, going from a position of relative stability to a real risk of great instability.

Others pointed to the loss of momentum caused by the Great Recession, like this respondent from the Quad Communities NCP effort: "It was like someone turned off a light switch. We went from going a hundred miles an hour with everything falling into place, projects moving, discussions about developments, to almost a screeching halt."

As shown in Table 1, the effects of the Great Recession on Chicago overall were concentrated among the indicators most closely connected to the credit markets. For the city as a whole, the trajectory of the total amount of home purchase loans, which reflects the capital flowing into Chicago neighborhoods, dramatically changed direction from an annual average increase of 18.3 percent in the three years prior to the Great Recession (from 2003 to 2005) to an average annual decline of 29.1 percent in the years following the collapse of the housing bubble (from 2006 to 2009). Completed foreclosures exhibited a similar dramatic change, going from an annual average decline of 28.4 percent in the period from 2003 to 2005 to an annual

[27]Ong et al. (2003); Hackworth (2001).
[28]Doussard, Peck, and Theodor (2009).
[29]See www.nber.org/cycles.html.

average increase of 24.5 percent in the years from 2006 to 2009. Turning to the commercial credit market, the decline in the amount of small business loans intensified after the beginning of the Great Recession; the annual average decline increased from 5.7 percent in the period from 2003 to 2005 to 15.4 percent in the period from 2006 to 2009. Interestingly, the trajectory of the mean home loan amount indicator, which reflects the value of residential real estate, was positive in the years following the onset of the Great Recession (2006 to 2009). Since the level of home lending activity was declining during this period (as indicated by the negative trajectory for total amount of home purchase loans), the positive trajectory for the mean home purchase loan amount indicator most likely reflects the population of borrowers who were able to secure credit during this period. (That is, only those borrowers with excellent credit ratings and relatively substantial assets were able to secure loans.)

Comparing the indicator trajectories across neighborhood groups suggests that the effect of the Great Recession varied, sometimes in a somewhat unexpected manner. For example, all of the neighborhood groups experienced the dramatic directional change for the total home purchase loan amount indicator; after two periods of increasingly positive trajectories for this indicator, in the period from 2006 to 2009 it was universally declining. However, the poorest neighborhoods (Group IV) and the moderate-income neighborhoods with substantial minority populations (Group I and Group III) had more intense declines in this indicator, experiencing an annual average decline of over 40 percent compared with the overall city trajectory (−29.1 percent) and the trajectory seen for the other neighborhood groups. This result is consistent with the expectation that less advantaged neighborhoods and/or those with larger populations of racial/ethnic minorities would suffer disproportionally during an economic downturn. In contrast, the variation among neighborhood groups in the completed foreclosures indicator trajectory is not consistent with this expectation. The change in direction for this indicator (from negative in the period from 2003 to 2005 to positive in the period from 2006 to 2009) was universal, but of the three neighborhood groups whose increase in the rate of foreclosures was far above the city rate, only one consisted of neighborhoods with a substantial minority population (Group III).

Overall, the most profound effect of the recent economic downturn is seen on the indicators that reflect the credit markets: lending activity in both the housing and commercial markets declined substantially in all neighborhoods. This decline was less pronounced in higher-income neighborhoods and more pronounced in lower-income neighborhoods; some moderate-income neighborhoods also experienced a more pronounced decline, particularly those with predominantly nonwhite populations. Generally, the decline in the housing market was accompanied by an increase in mean home purchase loan amounts; the increase was modest in most areas of the city, but a few neighborhoods experienced significant growth in this indicator. The decline in commercial lending activity was, overall, accompanied by fairly stagnant trends in job growth and employment. However, there was considerable variation among the city's neighborhoods on both indicators.

Community Change Dynamics

The previous section described the experiences of the Chicago neighborhoods across several domains of quality of life during a period marked by the collapse of the housing market and overall recessionary or stagnant economic conditions. This analysis, like the similar analysis in the NCP interim report,[30] mirrors analyses produced in other communities with strong and long-lasting "indicator projects" such as Baltimore or New Orleans.[31] In particular, descriptive analysis of trends in neighborhood indicators addresses questions retrospectively and so is useful in understanding how a community or set of communities fared during a particular time period or for identifying current challenges facing a neighborhood and/or its residents. While these are important questions, there is a vital need for prospective information to guide policymakers, planners, and others involved in neighborhood development or improvement. Specifically, prospective information could allow identification of leverage points for interventions by identifying areas or domains where allocation of scarce resources could have the most impact. Prospective information could also enable recognition of early warning signs of neighborhood decline, helping earlier interventions to slow or halt the negative trend.

Prospective information is generally difficult to come by; generating reliable forecasts requires comprehensive knowledge of the system that produces the phenomena of interest, which implies both identification of its component parts and understanding of the interactions between them. For the case of neighborhood quality of life, development of the knowledge base that is necessary to support forecasting is in its infancy. Partly, this is because of the difficulty associated with measurement of the system's component parts; availability of data to construct measures of various indicators of neighborhood quality of life is a relatively recent development.[32] Now that neighborhood indicator time series of sufficient duration are available, examinations of interactions between component parts of the neighborhood system are possible, allowing both testing of conceptual ideas and exploration of interactions between the component parts.

The focus here is the latter, specifically examining how the set of neighborhood indicators compiled as part of the NCP evaluation interact over time.[33] The analysis concentrates on an examination of indicator trajectories — *the rates of change* — rather than on trends in the levels of the indicators. Reflecting the need for a greater understanding of the neighborhood

[30]Greenberg, Verma, Dillman, and Chaskin (2010).

[31]See www.bniajfi.org for information on the Baltimore project, and www.gnocdc.org for information on the New Orleans project.

[32]There are still some domains of neighborhood quality of life where measurement remains difficult, particularly those that are less concrete such as cultural or social ties.

[33]The analyses presented in this section use a reduced set of indicators to reduce redundancy and to facilitate presentation of the results.

system generating QoL, the analysis includes consideration of the interaction between indicator trajectories, examining both simultaneous relationships (that is, indicators that change together, in the same time period) and asynchronous or time-shifted relationships (that is, when changes in one indicator lead to changes in another indicator across time periods). Supported by the NCP neighborhood indicator database, these analyses go beyond the single indicator approach and take some initial steps in examining the inner workings of the neighborhood system, working toward generation of prospective information about neighborhood quality of life.

Indicator Trajectories

Consideration of the trajectories — or rates of change — of the individual indicators is a necessary first step in advancing understanding about the operation of the neighborhood system. The QoL indicator trajectories were examined by modeling the observed annual levels in all of the neighborhoods as a function of time. This was accomplished using a technique known as multilevel modeling, which allows for estimation of both overall effects and assessment of variation in the model parameters among the neighborhoods.[34] For the QoL indicators, separate models were estimated for three time periods (2000-2002, 2003-2005, 2006-2009), which roughly correspond to the phases of the economic cycle from 2000 to 2010; the first and third periods correspond to a recessionary economy, while the second period was an expansion economy. Since the time periods are fairly short, the models are simple, consisting of two parameters: the initial, or starting, level (intercept) and the rate of change (slope).

As the interest for this analysis is the indicator trajectories, the rates of change, or slope parameters, are the focus of the discussion, because they indicate both the intensity and the direction of the trajectories. First, the slope parameters (analogous to the rate of change) for each indicator are examined, comparing intensity and direction in each of the three time periods; this allows assessment of the relative volatility of the indicators and their responses to cyclical economic changes. Next, intra-neighborhood variation in the slope parameters is examined across the three time periods. This examination explores the extent to which trajectory variation is associated with neighborhood context (indicated by the neighborhood grouping in Box 1) or unique characteristics of the individual neighborhoods. Finally, the structure of the trajectories themselves is examined by assessing the extent to which the intensity of change in an indicator (that is, its slope parameter) is associated with its starting level (that is, its intercept parameter).

Figure 6 shows the overall (across all neighborhoods) rates of change for each period, by indicator; since the scale of the indicators varies considerably, the estimated rates of change are expressed as a percentage of the initial levels (intercepts), which can be interpreted as the

[34]See Appendix A for further details.

annual percentage change.[35] The number of completed foreclosures has the most volatile trajectory, with the largest relative rates that change direction from period to period. In contrast, the crime indicators are the least volatile, having a consistent direction and intensity level (that is, magnitude of the rate of change) in each of the three periods. The other indicators have moderate volatility: each changes direction at least once across the three periods and the intensity fluctuates from period to period.

In the context of the economic cycles, the foreclosures indicator is completely in sync — positive during recessionary periods (2000-2002, 2006-2009) and negative during expansionary periods (2003-2005). The mean home loan amounts trajectory has a similar directional pattern, which may seem counterintuitive. However, the positive rate of change for this indicator during recessionary periods may reflect the tightening of credit markets that is typical during recessions. If greater income and/or assets are required to secure a mortgage, a possible side effect is that the average loan amount will increase. Additionally, the difference in the growth trajectory during the two recessionary periods examined here may reflect the differences between the two recessions — in particular, the origin of the latter recession in the collapse of the housing market.

A similar pattern is seen for the total home purchase amount indicator ("Total Home Loans"). The increase of the growth rate from the first period to the second period indicates loosening of credit markets as the economy expanded. For this particular expansion period, it also reflects the formation of the housing bubble; the rapid rate of decline seen in the third period reflects the situation after the bubble collapsed. Comparing the first and third period rates of change indicates a critical difference between the first two recessions of the twenty-first century. In the recession at the start of the decade, the housing market was likely affected by the overall economic conditions, but had a positive rate of change, as was typical for recessions in the United States. In contrast, the latter recession originated in the housing market.

The other QoL indicators do not appear to have as strong a connection with the economic cycle. Crime, as noted earlier, had a fairly consistent trajectory across the three periods, with only minor fluctuations in intensity. The total amount of small loans to businesses, which might be expected to have a trajectory more in sync with the economic cycle, had a positive rate of change in the first period, changed directions during the mid-decade recovery period, and then became more negative in the third period. It is possible that this trajectory reflects dynamics similar to those proposed for the housing market indicators. However, recall that the universe for this measure is loans of $1 million or less; the negative rates of change observed here represent a decrease in the total value of these loans, but not necessarily all loans to businesses. Given what is known about the availability of credit during these two periods, discussed earlier,

[35]See Appendix Table B.3 for the parameter estimates and other model results.

it seems unlikely that the negative rate of change for small business loans reflects an overall decline of capital flows to businesses, particularly for the middle period (from 2003 to 2005). While a negative rate is more probable for the third period, particularly given the unprecedented tightening of all credit markets after the collapse of the housing market, it is possible that the negative rate seen here overstates the intensity of the trajectory.[36]

In addition to the variation across time for most of the indicators' trajectories, there is also considerable variation across neighborhoods, both within and between neighborhood groups, for most indicators, as shown in Figures 7 through 12.[37] Each figure shows the distribution of the neighborhood rates of change by neighborhood group and time period; the symbols plotted on each distribution indicate the neighborhood group trajectory estimate.[38] The extent and pattern of variation in the indicator trajectories indicate the relative influence of macro-level forces, neighborhood context (as indicated by the neighborhood groups), and unique characteristics of individual neighborhoods in determining the trajectory of QoL indicators.

Consider the trajectory variation for the most volatile indicator, completed foreclosures (Figure 11). In the second period (from 2003 to 2005), when the economy was expanding, there was very little variation in the trajectory of the indicator across neighborhoods; the rate of completed foreclosures was uniformly decreasing.[39] In contrast, during both of the recessionary periods (from 2000 to 2002, and from 2006 to 2009), there was fairly considerable variation, reflecting the mediating influence of context and unique characteristics on the macro-level forces. That is, the recession is the driving force of the direction of the trajectory (positive), but the strength of the negative effects was not uniform and varied both among and between the neighborhood groups, indicating that both context and unique characteristics played a role. Differences in the pattern of variation between the two recessionary periods possibly reflect critical differences in the two recessions under consideration,[40] but also may indicate changes at the

[36]The trend and trajectory seen for Chicago and its neighborhoods are consistent with data reported by the Federal Financial Institutions Examination Council (FFIEC) regarding national trends in these loans. An additional explanation for the results reported here is the cutoff point for reporting; that is, as a result of inflation and other trends in business capitalization, $1 million may no longer reflect the high point for the types of loans the data collection program was intended to track.

[37]See Appendix Tables B.4, B.5, and B.6 for further measures of the group-level and neighborhood-level variation in model parameters.

[38]These figures, known as "box plots," display the ranges of the rates of change transformed into percentages. Each box plot shows the distribution of the slope parameters for the neighborhoods in the indicated group, with the shaded box representing the range of the middle quartiles (that is, the 25th and 75th percentiles). A line divides each box at the median of the distribution.

[39]Note that the trajectories are adjusted to account for differences in starting levels. As there were considerable differences in the starting levels of foreclosures across the neighborhoods, similar trajectories do not indicate convergence in the level of foreclosures across the period.

[40]In addition to the differences in the origin of the two recessions discussed earlier, the recession at the beginning of the decade was much milder and of shorter duration. In addition, the recovery period following the

(continued)

neighborhood level in the process by which context and individual characteristics mediate the effects of recessionary economic trends.

The other indicators that might be expected to demonstrate influence from macro-level economic trends — total home purchase loan amounts, mean home purchase loan amounts, and small loans to business — do have changing patterns of variation, but the direct connection to the business cycle is less direct compared with the foreclosures indicator. For the total home loan amount indicator, the trajectories varied considerably both between and within neighborhood groups in the first period compared with the later periods. During the mid-decade expansion economy, most of the variation was within groups while the relative lack of variation in the total home loan amount trajectories during the third period indicates the strength of the macro-level forces that were operating on the housing market. Specifically, there were minor variations in intensity, but every neighborhood's trajectory was moving in the same direction. For the mean home loan amount indicator, there was less variation and most of the variation was within rather than between the neighborhood groups. The trajectories of the small loans to business among the neighborhoods were extremely variable, both within and between the neighborhood groups in the first period. This possibly reflects compositional differences among the neighborhoods, as several Chicago neighborhoods are almost completely residential. However, the significant reduction in trajectory variation after the first period supports the notion, raised earlier, that the observed trajectory for this indicator in the middle and latter parts of the decade was being driven primarily by macro-level forces.

Finally, the level of variation in both property and violent crime trajectories is fairly modest. Over time the variation in violent crime rates decreased both within and between groups, unlike property crime, for which the amount of trajectory variation was fairly constant across time periods. Note that for both crime indicators, exceptions to the overall trend of declining crime rates were rare and possibly a result of measurement error or reporting bias.[41]

Overall, the QoL trajectories vary across neighborhoods in terms of the intensity, rather than direction, of their rates of change. To some extent, this variation appears to be associated with neighborhood context, as summarized by the grouping structure. However, there is considerable variation within the neighborhood groups as well. This variation extends to both the rates of change and the initial levels and so raises the question of whether the variation in trajectory intensity is a function of the starting point of the trajectory. For example, did the neighborhoods where the rate of decline in crime rates is more intense start with a higher level of crime? That

earlier recession (that is, the length of time for economic indicators such as GDP and employment to return to their pre-recession levels) was extremely slow, meaning that the expansionary economy that preceded the later recession was fairly sluggish compared with the expansionary economy that preceded the earlier recession.

[41]See Appendix A for further information regarding the difficulty in accurately measuring crime.

is, is the observed trajectory variation an artifact of an equilibrium process whereby temporary factors may inflate or deflate levels for short periods but levels eventually return to some steady state?[42] Examination of the association between the parameters of the trajectory models addresses these questions. The association — or correlation — assesses the extent to which the pattern of variation for the two parameters concurs; that is, how frequently neighborhoods with high starting levels (large intercepts) have high rates of change (large slopes) and vice versa.[43]

Figure 13 shows the correlations between the initial levels and rates of change for each indicator, overall and by neighborhood group.[44] Across all neighborhoods, the correlations in all three periods were fairly strong,[45] which supports the idea that the variation in the initial levels is responsible for some portion of the interneighborhood trajectory variation. Specifically, these results suggest that:

- Neighborhoods with high initial levels of crime have more negative rates of change (negative correlation), meaning crime rates will decline faster.
- Neighborhoods with high levels of foreclosures had faster rates of growth when the trajectory was going up and more negative rates (faster decline) when the trajectory was going down (positive correlation for growth periods; negative correlation for decline periods).
- Neighborhoods with higher initial total home loan amounts had faster rates of growth when the trajectory was going up and more negative rates (faster decline) when the trajectory was going down (positive correlation for growth periods; negative correlation for decline periods).

The results are different for the remaining indicators. For mean home loan amount, neighborhoods that started with higher average amounts had faster rates of growth when the trend was positive (positive correlation) but there was no association between slopes and intercepts during the period when the indicator trajectory was negative. Likewise, the correlation for the small loans to business indicator is negative in all three periods.

[42]This was the conclusion of Galster, Cutsinger, and Lim (2007) and Lima and Galster (2008).

[43]The association is measured by computing the correlation coefficient between the neighborhood-level estimations of initial levels and rates of change. Correlation coefficients range from −1 to +1, with values close to 0 indicating a low level of association. The sign of the coefficient indicates whether the association is direct (or positive — that is, large intercepts occur with large slopes) or inverse (or negative — that is, large intercepts occur with small slopes).

[44]Appendix Table B.7 shows the correlation coefficient matrix for each period.

[45]Correlation coefficients of 0.6 or larger are generally considered to be evidence of a strong association, while a value between 0.4 and 0.6 (approximately) is considered evidence of a moderate association. Coefficients of less than 0.4 can provide evidence of a weak association, but as the value approaches 0 it is more likely to indicate the lack of an association.

For many indicators, the correlations calculated among the neighborhoods by groups are weaker than the correlation calculated across all neighborhoods.[46] Generally, this is a result of homogeneity among the starting levels of neighborhoods in the same group, as correlation coefficients measure similarity in cross-sectional variation. However, in some cases, the differences in the association between slopes and intercepts indicates a notable difference in the QoL indicator trajectory for a particular neighborhood group. For example, the Group I (moderate-income, black) neighborhoods' trajectories for the total home purchase loan amount were quite distinct from the other groups in the first period (from 2000 to 2002). While the other groups have correlations that are consistent with the overall measure (strongly positive), the association between initial level and the rate of change for the Group I neighborhoods was moderately negative. This means that neighborhoods in Group I that started with relatively lower levels of total home loan amounts had higher growth rates and vice versa; in other words, the level of total home loan amounts was equalizing across the Group I neighborhoods in this period.

In summary, the analysis of the trajectories of the individual QoL indicators revealed considerable volatility and variation among the neighborhoods; most of the trajectory variation was caused by differences in the intensity of the rates of change rather than their direction. Both neighborhood context, as captured by the groups, and unique characteristics of the neighborhoods were associated with trajectory variation, and the pattern of variation for almost every indicator changed over time. Among the indicators examined, foreclosures were the most volatile, responding strongly to macro-level forces but mediated at the neighborhood level. Crime was the least volatile, with a somewhat constant negative trajectory across variation in economic conditions and neighborhood contexts. This may be a result of the relatively high level of aggregation represented by these indicators; the trajectories for more specific crime categories may have more dynamic trajectories. The housing market indicators reflecting mortgage loan activity, like foreclosures, were also profoundly affected by macro-level forces, but the effect was not apparent until the mid-decade economic recovery, and it strengthened after the collapse of the housing market. A similar pattern was seen for small loans to businesses.

Temporal Relationships

The preceding examination of the indicator trajectories highlighted the volatility and variation among the domains of neighborhood QoL. While some part of the observed trajectories is clearly caused by macro-level forces, the results also indicate operation of more local forces. Obvious candidates for local determinants of a particular QoL indicator are other indicators from the same or a different domain. For example, the trajectory of crime rates could influence housing prices and thus the home purchase loan indicators. For this reason, the next step in

[46]See Appendix Table B.8.

the exploratory analysis of the neighborhood system is to broaden the focus to consider multiple indicators concurrently.

Simultaneous Relationships Among Indicators of Neighborhood Quality of Life

The first part of this analysis is focused on identifying simultaneous relationships, which is defined here as indicators whose trajectories are associated with each other in the same time period. Existence of a simultaneous relationship between a pair of indicators does not imply movement in the same direction, even though this may be the case. Rather, simultaneously related indicators have rates of change that are correlated across neighborhoods — the neighborhood-level pattern of variation in the indicator trajectories is similar.[47] For example, if the neighborhoods with higher rates of change for indicator A also consistently had lower rates of change for indicator B, this would indicate a simultaneous relationship between indicators A and B.[48]

- **Overall, the most consistent relationship between indicators is the moderate, positive association between the rate of change in the property crime and violent crime trajectories.**

The positive sign of the correlation coefficient for the relationship between the property crime and violent crime trajectories indicates a direct relationship, meaning that higher rates of decline in property crimes were associated with higher rates of decline in violent crimes. When the association between these two indicators is assessed controlling for neighborhood group, the consistently moderate and strong association is not evident.[49] For most of the groups, this is a result of the homogeneity of the property crime and/or violent crime trajectories, as shown earlier in Figures 7 and 8. That is, limited variation in property and violent crime trajectories within neighborhood groups limits the amount of association it is possible to measure.

- **The two indicators reflecting home purchase loan activity were also moderately correlated, but the direction of the association shifted from positive in the first two periods to negative in the third period. However, considering the direction of the indicators' trajectories, the results reflect multiple shifts in the relationship.**

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[47]Simultaneous relationships between indicators were analyzed using an extension of the modeling approach that was used to analyze the individual indicator trajectories. One feature of the multivariate change model is that the slope parameters can co-vary, which allows estimation of correlation coefficients to measure the strength of the association between indicators' rates of change. See Appendix A for further information about this method.

[48]Appendix Table B.9 contains the correlation matrix estimated from the multivariate model examining the simultaneous relationships among QoL indicators.

[49]See Appendix Table B.9.

In the first period, from 2000 to 2002, both indicators of home purchase loan activity had overall positive growth rates; the positive association computed for this period indicates that the mean home purchase loan amounts were growing faster for neighborhoods where the growth rate for total amount of home purchase loans was relatively high. In the second period, the trajectories of the two indicators were moving in opposite directions and so the positive association indicates that the mean home purchase loan amounts were declining faster among neighborhoods with relatively high growth in total home purchase loan amounts. The trajectories for the indicators in the final period, from 2006 to 2009, were still moving in opposite directions, but the directions were reversed (that is, mean home purchase loan amounts were increasing while total home purchase loan amounts were decreasing). The negative association between the two indicators means that neighborhoods with higher rates of growth in the mean loan amount also had more negative rates of change for the total home purchase loan amount indicator. That is, neighborhoods where the level of activity in the housing market (as indicated by the total home purchase loan amounts) was decreasing the fastest were also the neighborhoods where home values (using mean home purchase loan amount as a proxy) were rising the fastest.

- **The complicated dynamics between total and mean home purchase loan amounts are evident only when the neighborhoods are considered collectively.**

The pattern of association between these indicators described above is not apparent when examining the relationship at the neighborhood group level even though the neighborhood- and group-level trajectories were consistent with the overall trajectories for these indicators. There are sporadically strong or moderate relationships for mean home loans and total home loans, as well as occasional agreement regarding the direction of the association. The lack of consistent replication of the overall association among the neighborhood groups is not likely due to homogeneous trajectories within groups since, as described above, both indicators' trajectories are marked by considerable interneighborhood variation. Instead, these results reflect the complex interplay between macro-level forces and neighborhood context, which is too complex to untangle via an exploratory analysis.

Based on previous research on the dynamics of home values, it might be expected that strong associations exist between the crime and home loan indicators.[50] In particular, as crime is an important and somewhat easily observed indicator of neighborhood conditions, it follows that neighborhoods where crime levels were improving (that is, decreasing) would be associated with rising home values, which would be indicated by increasing mean home loan amounts or increasing total home loan activity. The results do not support this theory, at least in terms of simultaneous relationships between the indicators in the crime and housing domains. Within the

[50]Linden and Rockoff (2008); Gibbons (2003); Cully and Levitt (1996).

neighborhood groups' association tests, there are sporadic moderate or strong correlations between one of the crime indicators and mean home loan amounts, but the relationship assessed across all neighborhoods is, at best, weak. The association between the crime indicators and total home loan amounts is somewhat stronger across the neighborhoods and within the neighborhood groups, but frequently has a counterintuitive direction. For example, in the third period, the correlation between total home purchase loan amounts and both property and violent crime is positive; since all the indicators have downward trajectories during this period, these results indicate that total home loan amounts were declining faster in neighborhoods where the crime rates were declining at a relatively higher rate. Generally, these results do not rule out the possibility of an association between crime and housing market activity. Instead, they suggest that the relationship may be time-shifted. That is, the relationship between indicators in these two domains is played out over time, with the trajectories of the indicators in one period heralding trajectory changes in other indicators in a later period.

- **Very few associations were found for the completed foreclosures indicator.**

Finally, it is notable that very few strong or moderate associations were found for the completed foreclosures indicator, both across the neighborhoods and within neighborhood groups. Again, this result indicates a lack of simultaneous relationships rather than a complete lack of association between foreclosure trajectories and the other indicators.

In sum, the analysis of simultaneous relationships among the indicators shows the presence of relationships for some indicators, both within and between domains of QoL. Knowing that some of the indicators trend together leads to questions regarding the sequencing of the trends. Do the correlations between rates of change noted above reflect simultaneous determination (that is, some force or combination of forces acting on the related indicators to produce trend similarity) or does the correlation reflect a deterministic relationship between the two indicators? The general absence of relationships for one indicator (completed foreclosures) raises similar questions.

Time-shifted Relationships

To address these questions, the time-shifted or asynchronous relationships among the indicators are examined. Examining these types of relationships is usually quite difficult, particularly as time-shifted associations between indicators can be quite difficult to detect and the probability of a "false positive" (that is, finding evidence of a relationship where none exists) is fairly high. Therefore, this analysis uses a fairly simple, but conservative, method that is commonly employed for econometric analysis of time series relationships (that is, forecasting) known as Granger Causality. This method tests only whether knowledge of a given indicator enables better predictions of another indicator. For example, if information regarding the trajectories of crime rates in past periods is included in a model that forecasts home values in the pre-

sent period, Granger Causality tests whether the forecasts are improved by the inclusion of this additional information. This method provides no information regarding the direction of the relationship,[51] and, despite the name of this method, these results do not provide evidence of causal mechanisms.

The diagram shown in Figure 14 presents the results of the Granger Causality analysis of the QoL indicators.[52] Evidence of a Granger Causal relationship, suggesting a time-shifted relationship, is indicated by the arrows connecting the indicators. In some cases, the relationship is mutual (for example, property and violent crime), which implies either a feedback loop between the two indicators and/or an external force simultaneously determining both indicators. In other cases, the relationship is singular (for example, completed foreclosures and property crime), which indicates that changes in one indicator precede and predict changes in the other indicator.

Returning to the question regarding the association between crime and housing market indicators, note that there are mutual relationships between the crime indicators and the housing indicators, as well as a connection between property crime and the housing market indicators through the business loans indicator. While these results support the idea that the crime-housing market relationship is asynchronous (time-shifted), the nature of the relationship is circular — crime affects housing market activity, which in turn affects crime. Again, this is a complex relationship that will require more analysis to untangle.

The most striking findings from this analysis are the results concerning the completed foreclosures indicator. In Figure 14, "Completed Foreclosures" points toward several other indicators but no indicator points toward it. This is a unique result, meaning that all of the other indicators point toward at least one other indicator and are pointed at by at least one other indicator.[53] Recall that the trajectory for the completed foreclosures indicator had no strong or moderate simultaneous associations with any of the other indicators' trajectories. This result is consistent with the notion that foreclosures, at least for the set of QoL indicators analyzed here, reflect a driver or determining factor of the neighborhood system as measured by these indicators. Specifically, the completed foreclosures indicator was found to be predictive for three other indicators: property crimes, total home purchase loan amounts, and mean home purchase loan amounts. As these three indicators are connected to other indicators, the result is that changes in the foreclosure rate cascade throughout the neighborhood system. This effect is explored further below, specifically for the relationship between foreclosures and crime.

[51]For technical reasons, the analysis is conducted only for the neighborhoods as a whole and not replicated among the neighborhood groups. See Appendix A for further information regarding this method.

[52]Refer to Appendix Table B.10 for test statistics and p-values of the Granger Causality tests summarized in Figure 14.

[53]This analysis was also conducted using filed foreclosures, with similar results.

Foreclosures and Crime

The results presented in the previous section highlight the unique nature of the completed foreclosures indicator. While it generally has weak simultaneous relationships with the other indicators, it was found to have a time-shifted relationship with some indicators. This finding is of increased importance in the aftermath of a foreclosure crisis as part of the fallout from the collapse of the housing market; further investigation of the relationship between foreclosures and other neighborhood QoL indicators is warranted as it can contribute to the policy and priority-setting debate.

One particular concern related to the increased foreclosure rate is its possible effect on crime; foreclosures are generally thought to affect crime mainly through the housing vacancies they create: when the rate of foreclosures is such that the demand for housing cannot "keep up," the resultant vacant, abandoned-seeming properties contribute to the creation of an environment that facilitates crime. Previous studies of the foreclosure-crime relationship have found modest effects, typically stronger for violent crime compared with property crime.[54] However, most of those previous studies were examining simultaneous associations between foreclosures and crime, which the results presented in the previous section suggest are not particularly strong. In order to accurately assess the relationship, it is necessary to capture the time-shifted nature of the association. That is, the exploratory analysis described above suggests that crime rates change as a reaction to changes in foreclosures, but with a slight delay.

Specifically, the finding of a time-shifted relationship between foreclosures and crime trajectories from the exploratory analysis discussed above prescribes a longitudinal framework for further investigations into this relationship. In addition, as the investigation into the patterns of variation for the foreclosure indicator's trajectories suggests that both neighborhood context (as captured by the neighborhood groups) and unique characteristics of neighborhoods influence the extent of the variation in the indicator's trajectory, these factors should be considered when assessing the foreclosure-crime relationship. That is, an important dimension of the foreclosure-crime relationship to consider is whether the factors that mediate the effect of macro-level forces that drive increases in foreclosures also mediate the effect of foreclosures throughout the neighborhood system.

To address these questions, a multilevel change model was specified. This model is similar to those used to analyze the indicator trajectories discussed in the previous section. That is, the model decomposes the longitudinal trend by specifying it as a function of time with two

[54] Goodstein and Lee (2010); Ellen et al. (2011); Immergluck and Smith (2006).

parameters: a starting level and a rate of change. In addition, this method allows for both estimation of overall effects and assessment of variation among the neighborhoods.[55]

The dependent variables are the count of property and violent crimes in each neighborhood, regressed on the count of completed foreclosures in the previous period.[56] Counts instead of per capita rates are used, as this is a less restrictive specification and provides more interpretable results. Population and commercial land area (as an indicator of the number of businesses) are included as controls, so that the model estimates the number of crimes as a function of foreclosures, population, and business density. Single-family, owner-occupied housing units were included in the model to control for density differences among the neighborhoods that could potentially affect the number of foreclosures. The time period for this model is 1999 to 2009.

The model results are shown in Tables 2 (property crime) and 3 (violent crime).[57] The overall trend for both dependent variables is negative, with the number of property crimes decreasing annually by 54, and the number of violent crimes decreasing annually by 18 for neighborhoods with no foreclosures in the previous year; the starting level parameters are also estimated for neighborhoods with no foreclosures in the previous year. Each foreclosure in the previous year increases the initial number of both property and violent crimes by about 2. The effect on the rate of change from each foreclosure in the previous year is also similar for both types of crime; each additional foreclosure slows the decline in property crimes by 0.08 and slows the decline in violent crimes by 0.09.

Tables 2 and 3 also contain the results for the models controlling for neighborhood group.[58] Consider the estimates for the Group I neighborhoods (moderate income, predominantly black residents). The lack of statistical significance for this group's coefficient estimates in the property crime model indicates that the effect of foreclosures on crime among the neighbor-

[55]See Appendix A for further information about the estimation method and model specification.

[56]The model specification is a longitudinal version of the models estimated in Immergluck and Smith, (2006), which was part of the inspiration for this analysis.

[57]The control variables (population, commercial land area, and single-family, owner-occupied housing units) were centered prior to entering into the model. This means that the estimated effects for these variables correspond to the effect of deviations from the average neighborhood. For example, the results indicate that neighborhoods with a population size that is greater than average have higher levels of crime. It was not possible to estimate the effect of the control variables on the rate of change in the number of crimes, as data were not available.

These models were also estimated including neighborhood characteristics thought to influence crime rates. Few of these additional control variables had significant effects, but that may be a result of the high level of multi-colinearity present in the model.

[58]These results indicate whether the effects for neighborhoods in each group are different from the overall estimates. The neighborhood group model was parameterized such that the statistical tests for the coefficients (reported in the tables) are testing whether the effect for the group is different from the mean effect (across groups).

hoods in this group was not different from the overall effect for property crime. In contrast, the statistically significant coefficient for the effect of foreclosures on violent crime for neighborhoods in Group I indicates that the relationship between foreclosures and violent crime is different; specifically, each foreclosure in the previous year slows the decline in the violent crime rate among the Group I neighborhoods by 0.11 — slightly more than the effect estimated across all neighborhoods. In part, this is because of the high number of crimes in the Group I neighborhoods, which means that the overall results are relatively more reflective of these neighborhoods than those in other groups.[59] The Group II (moderate-income, white) neighborhoods had no significant effects for the foreclosure parameters, indicating that the overall effects generally apply to these neighborhoods as well.

The other three neighborhoods had differences for the effect of foreclosures for property and/or violent crime. In the Group III neighborhoods, which are predominantly Hispanic, moderate-income households, the effects of foreclosures were stronger than the overall effects for both the levels and the rate of change in the number of property crimes, while the effects were smaller on both the levels and rate of change for the number of violent crimes. For neighborhoods in group IV (low income), the effect of foreclosures on crime was weaker compared with the overall effect but only for the level (intercept) parameter; the effect of foreclosures on the violent-crime trajectory was stronger. Finally, the Group V neighborhoods, characterized by racially diverse, high-income households in large multi-unit rental housing, had much stronger effects for foreclosures on the number of property crimes but no difference from the overall effects for violent crime.

These results indicate mediation of the effect of foreclosures on crime at the neighborhood level. It is of note that one characteristic shared by all three of the neighborhood groups with markedly different foreclosure effects is that some significant portion of their residents are renters, not homeowners. Renters can certainly be affected by foreclosures, but foreclosures of non–owner-occupied properties are not included in the foreclosure counts that were used to estimate these models. Also important is the preponderance of large multi-unit dwellings in two of the diverging neighborhood groups (IV and V), as foreclosures among owner-occupiers in these residential units are not included in the foreclosure counts used in this analysis.

Nonetheless, these results provide evidence of the overall positive effect of foreclosures on crime. In particular, an increase in the number of foreclosures both raises the level of crime and slows the decline in crime rates. Neighborhood characteristics mediate this relationship, but the mediation is not a function of singular characteristics, such as income or race. Instead, it is more likely a combination of factors that serve to insulate the neighborhood or magnify the ef-

[59]On a per capita basis, the Group I neighborhoods have crime rates close to the citywide rates; the difference here is because these neighborhoods are relatively densely populated.

fects of foreclosures. In the case of the results presented here, the proportion of neighborhood residents who are renters certainly seems to be an important factor in the mediation process, but the scope of the foreclosure data would need to be examined to fully test how renters and rental housing affects the foreclosure-crime relationship.[60]

While the estimated effects found here are fairly modest, they are stronger and more consistent than those found in other studies, particularly previous cross-sectional studies. This reflects the essential time-shifted relationship between foreclosures and crime; if the time shift is not accounted for, the relationship is more difficult to discern. It is also important to consider the effects on both levels and rates of change; as foreclosures affect the parameters of both property crime and violent crime, the results suggest that even a one-period jump in foreclosures can have effects that persist for much longer.

Conclusion

This paper has explored a series of questions related to the dynamics of neighborhood quality. In order to explore those questions, and in keeping with NCP's comprehensive approach toward improving neighborhoods' quality of life, the analyses focused on the indicators collectively, taking into account the structure of relationships among multiple indicators. The paper also explored the application of analytic methods that are necessary for a deeper understanding of neighborhood dynamics.

Macro-level economic trends were a framing device for the analyses, as these trends act on neighborhoods and affect quality of life, mediated by conditions and characteristics at the neighborhood level. Of particular interest is the so-called Great Recession, the period of negative growth or stagnation following the collapse of the housing market in 2006. This economic downturn, unlike previous recessions, was accompanied by significant restriction of credit, particularly in the housing market. Another possibly unique characteristic of this recession was the neighborhood distribution of its most prominent effect: foreclosure rates. Instead of being concentrated in poorer neighborhoods, as the ill effects of previous downturns are thought to have been, the distinguishing characteristic of the neighborhoods with the greatest increase in foreclosures is the density of single-family, owner-occupied housing units. This is not a reflection of the greater opportunities for foreclosures in these neighborhoods, as the foreclosure rate used here controls for density differences among neighborhoods. Instead, as the foreclosures occur-

[60]High proportions of renters among the residents of a community have been cited frequently as at least a correlate of higher crime. Some speculate that renters contribute to crime rates because of their negative effect on the level of monitoring or social controls, as they are presumed to have fewer and less significant ties to the neighborhood. While the results presented here do not directly speak to this question, they do suggest that the observed correlation between renters and crime may not be directly causal.

ring during the period covered by our data (from 2006 to 2009) are most likely primarily a consequence of subprime lending and/or pre-collapse speculative home buying, the concentration in foreclosures in association with the density of single-family housing units is more likely an indicator of locations where the opportunity for these foreclosure-causing activities was greater.

A concentration of foreclosures can have devastating effects on a neighborhood, particularly when the demand for housing cannot keep up with the rate of housing vacancies created via foreclosures. This threat is particularly salient for the Great Recession. During the previous recession in the early part of the decade, foreclosures increased but home purchase loan activity and mean home loan amounts also had positive trends, indicating a sustained demand for home purchases that was able to negate some of the ill effects of the foreclosure increase. In contrast, the credit restrictions during the Great Recession have stifled home purchase loan activity and increased the risks to neighborhoods from rising foreclosures.

The foreclosure problem is particularly important because of the nature of the relationships between foreclosure rates and the other QoL indicators. Specifically, changes in foreclosure rates are predictive of changes in other indicators, but the relationship is asynchronous; that is changes in foreclosures today lead to changes in other indicators in a later period. Thus, unless the asynchronous or time-shifted relationship is considered explicitly, the extent of the effects of changes in foreclosures is not necessarily evident. For example, consider the differences between the descriptive analysis in QoL indicator trends during the Great Recession and the analysis of the time-shifted effects of foreclosure rates on crimes. In the first analysis, where the rates are summarized holding time constant, the association of large increases in foreclosure rates with less negative declines in crime is not particularly evident. However, once the time-shifted nature of the foreclosure-crime relationship is accounted for, the association is clarified and signals one mechanism by which concentrated foreclosures threaten neighborhood quality of life.

The analyses presented here also highlight a critical feature of the relationships among QoL indicators in and between domains. Very few indicators exhibited strong or moderate simultaneous relationships, but there were multiple, mutually determinant time-shifted relationships. That is, most of the indicators were found to have predictive power for several other indicators that, in turn, were found to have predictive power for the initial indicator. This finding highlights the danger in concentrating on individual indicator trends rather than rates of change and the time-sequencing of changes in the rates of change. In sum, these results suggest that quality of life be monitored using a systems framework, with time explicitly incorporated, as opposed to the traditional focus on component parts. Put more broadly, these analyses and results demonstrate the utility of the application of new methods for examining neighborhood trajectories and questions about dynamics — the opportunities provided by assembly of longitudi-

nal data, along with the application of a more holistic framework regarding neighborhoods and quality of life.

While these results have strong implications for future research in neighborhood quality of life, they are also relevant for practitioners and policymakers. Even though the set of QoL indicators considered here provides only a partial assessment of neighborhood quality of life, the unique relationship between foreclosures and the other indicators suggests that the potential effect of foreclosure prevention programs extends beyond alleviating the immediate negative consequences for affected homeowners.

In addition to providing more widespread foreclosure prevention services and establishing a framework for increased effectiveness of these programs, a second avenue for practice and policy concerns the fate of foreclosed properties, particularly when home purchase demand is low. That is, as some portion of the negative effect of foreclosures is likely associated with the increasing prevalence of abandoned and poorly maintained buildings in neighborhoods, monitoring the fate of foreclosed properties and taking action to maintain or even repurpose homes that are not quickly purchased could have substantial impacts on neighborhood quality of life.

The NCP evaluation is continuing. A follow-up to this paper will include extensions to the analyses reported here, enabled by additional data collection and use of additional systems-oriented statistical methods. The expanded results concerning quality-of-life trajectories will also be used to consider the various paths of NCP among the 14 neighborhoods. In addition, the evaluation of NCP includes an examination of the spatial distribution of projects funded and additional resources leveraged by NCP. One aspect of this analysis, based on a selected set of NCP planning areas, is the relationship between investments and quality-of-life conditions, which will incorporate and reflect the results and findings presented in this paper.

Table 1

NCP Quality-of-Life Indicators: Average Annual Percentage Change, by Neighborhood Group and Time Period

Indicator and Period (% change)	Chicago	Neighborhood Group I	II	III	IV	V
Property crime[a]						
2000 to 2002	-5.5	-2.2	-4.2	-4.0	-5.5	-8.3
2003 to 2005	-5.1	-4.1	-2.9	-8.1	-3.0	-7.4
2006 to 2009	-1.6	-2.1	1.6	-2.8	-5.1	-1.7
Violent crime[a]						
2000 to 2002	-2.7	1.1	-3.1	0.4	-4.4	-3.0
2003 to 2005	-3.6	-0.6	-4.0	-4.3	-1.8	-6.0
2006 to 2009	-4.5	-4.7	-2.7	-4.2	-8.6	-8.2
Total home purchase loan amount[b]						
2000 to 2002	11.2	6.0	13.0	13.4	29.8	11.9
2003 to 2005	18.3	31.7	16.8	21.8	42.0	15.7
2006 to 2009	-29.1	-43.2	-29.0	-41.7	-47.8	-20.5
Mean home purchase loan amount[c]						
2000 to 2002	7.8	3.3	9.6	11.2	10.2	7.1
2003 to 2005	-3.3	-1.8	-2.0	-2.3	-1.0	1.2
2006 to 2009	9.3	6.5	4.6	-1.3	3.1	8.3
Completed foreclosures[d]						
2000 to 2002	31.0	32.9	37.3	23.6	33.8	60.7
2003 to 2005	-28.4	-26.9	-27.3	-27.1	-28.6	-28.4
2006 to 2009	24.5	5.2	80.1	88.6	30.9	52.4
Total small business loan amount[e]						
2000 to 2002	8.4	6.6	13.1	16.3	13.2	8.9
2003 to 2005	-5.7	-4.1	-8.3	-0.9	6.9	-4.1
2006 to 2009	-15.4	-21.7	-16.7	-13.4	-24.9	-13.7
Area jobs[f]						
2003 to 2005	0.1	-0.2	1.2	1.0	1.8	0.7
2006 to 2009	1.9	0.2	-1.7	-2.6	1.4	2.0
Resident workers[f]						
2003 to 2005	-0.7	-2.2	-0.1	-2.8	-0.4	3.6
2006 to 2009	-1.6	-0.9	0.4	-1.1	-0.1	-0.9

(continued)

Table 1 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Average annual percentage change was calculated using a regression method in order to minimize the influence of other observations. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.
[b]Dollars in thousands per single-family, owner-occupied housing unit.
[c]Dollars in thousands per home loan.
[d]Number per 10,000 single-family, owner-occupied housing units.
[e]Dollars in thousands per square mile of commercial land area.
[f]Number per 10,000 working-age persons.

Table 2

Property Crime Model Results for the NCP Neighborhood Groups

Coefficient	Overall	Neighborhood Group I	II	III	IV	V
Main effects						
Initial level	1,724.8 ***	3,430.7 ***	1,273.3 ***	1,571.1 ***	1,966.1 ***	2,889.7 ***
	(153.6)	(1,083.5)	(208.7)	(176.4)	(286.8)	(310.6)
Average annual change	-54.3 ***	-20.4	-43.6 ***	-63.1 ***	-39.9 ***	-166.1 ***
	(7.1)	(14.6)	(10.7)	(13.6)	(11.8)	(18.6)
Foreclosures						
Effect on level	2.3 ***	-4.4	1.6	2.8 **	1.4 **	15.5 ***
	(0.621)	(5.4)	(2.9)	(1.1)	(0.624)	(2.6)
Effect on rate of change	0.076 **	0.064	0.196	0.121 *	0.039	2.9 ***
	(0.038)	(0.070)	(0.119)	(0.071)	(0.058)	(0.678)
Control variables						
Population	0.031 ***	0.099 ***	0.032 ***	0.030 ***	0.047 ***	0.046 ***
	(0.004)	(0.028)	(0.006)	(0.008)	(0.013)	(0.007)
Commercial land area	95.2	-83.1	61.5	-294.2	-319.4	906.6 ***
	(90.3)	(174.0)	(68.5)	(372.3)	(272.6)	(290.9)
SF-OO housing units[a]	0.037	-0.233	-0.003	0.113 **	0.122	-0.058
	(0.031)	(0.146)	(0.034)	(0.045)	(0.164)	(0.145)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent. For the overall model, the statistical significance levels indicate the probability that the estimated coefficients' "true value" is different from zero. For the neighborhood models, the statistical significance levels indicate the probability that the coefficients' "true value" is different from the mean effect across all groups. Standard errors are shown in parentheses. See Appendix A for further information regarding measure construction and methods.

[a]Single-family, owner-occupied housing units.

Table 3

Violent Crime Model Results for the NCP Neighborhood Groups

Coefficient	Overall	Neighborhood Group I	II	III	IV	V
Main effects						
Initial level	347.9 ***	1,135.2 **	208.1 **	399.7 ***	982.5 ***	379.2 ***
	(56.2)	(436.6)	(87.0)	(76.6)	(117.9)	(130.9)
Average annual change	-18.3 ***	-1.6	-12.8 **	-18.7 ***	-30.6 ***	-26.7 ***
	(3.0)	(6.8)	(5.0)	(6.3)	(5.5)	(8.7)
Foreclosures						
Effect on level	2.0 ***	0.050	1.6	1.6 ***	1.2 ***	0.751
	(0.259)	(2.2)	(1.2)	(0.429)	(0.251)	(1.0)
Effect on rate of change	0.092 ***	0.114 ***	0.033	0.042 **	0.131 ***	0.148
	(0.014)	(0.020)	(0.034)	(0.020)	(0.017)	(0.194)
Control variables						
Population	0.010 ***	0.041 ***	0.005 *	0.011 ***	0.016 ***	0.006 **
	(0.002)	(0.011)	(0.002)	(0.003)	(0.005)	(0.003)
Commercial land area	35.1	-23.7	12.1	-134.0	-66.7	184.3
	(37.6)	(70.0)	(27.5)	(149.6)	(109.6)	(116.9)
SF-OO housing units[a]	0.040 ***	-0.092	0.005	0.037 **	0.136 **	-0.043
	(0.013)	(0.059)	(0.014)	(0.018)	(0.066)	(0.058)

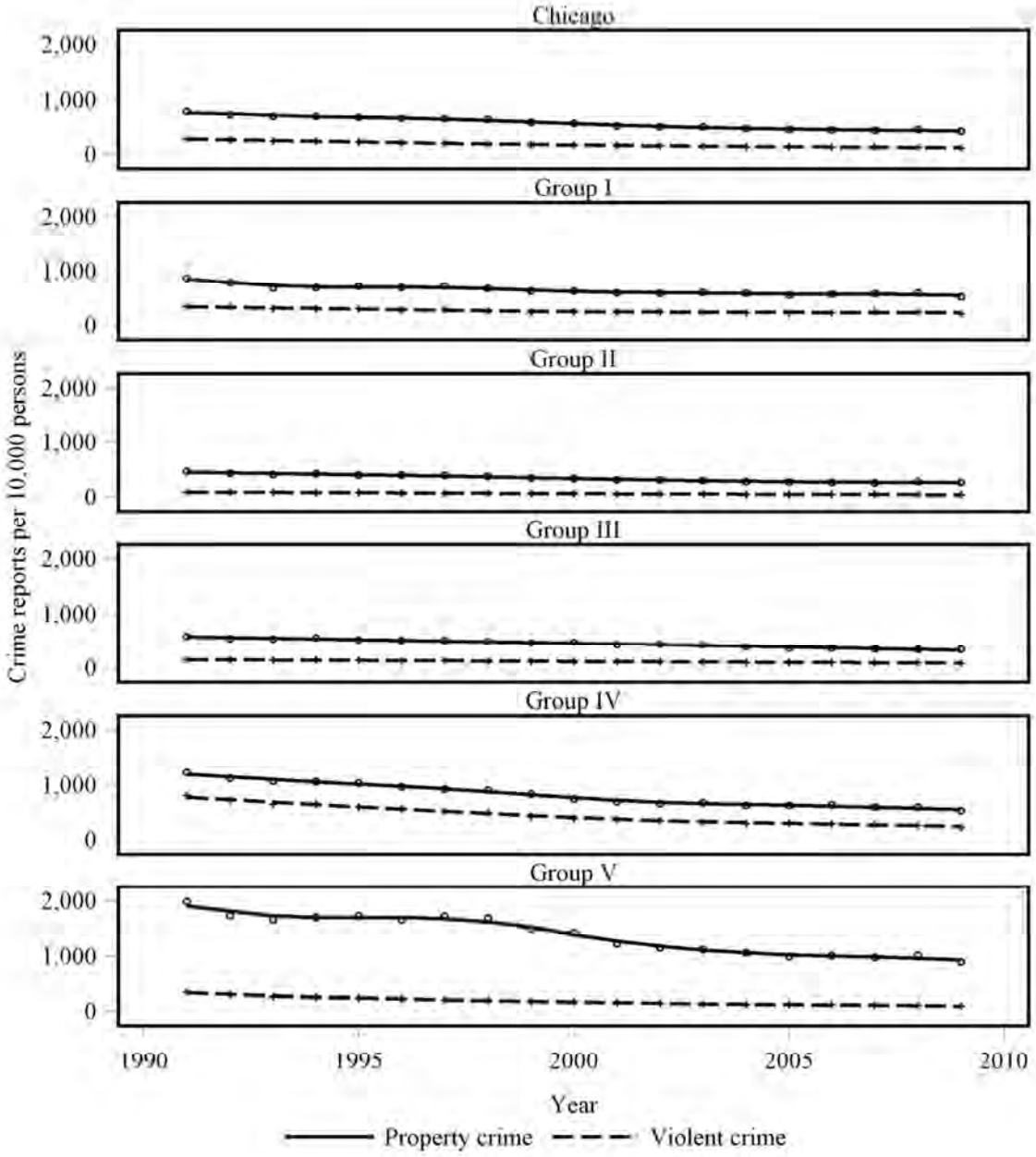
SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent. For the overall model, the statistical significance levels indicate the probability that the estimated coefficients' "true value" is different from zero. For the neighborhood models, the statistical significance levels indicate the probability that the coefficients' "true value" is different from the mean effect across all groups. Standard errors are shown in parentheses. See Appendix A for further information regarding measure construction and methods.

[a]Single-family, owner-occupied housing units.

Figure 1

Property and Violent Crime Reports per 10,000 Persons, by Neighborhood Group, 1991-2009

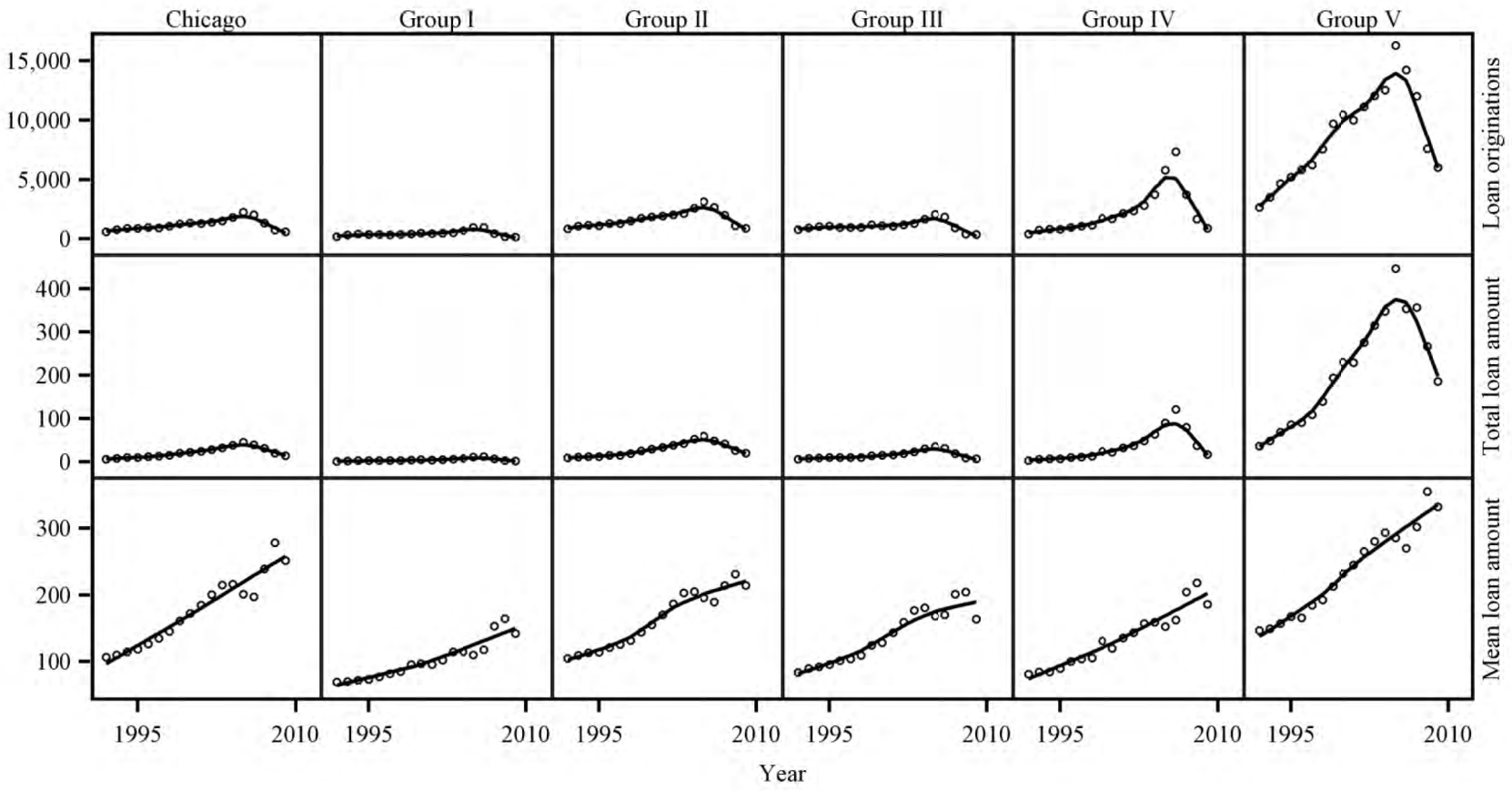


SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Figure 2

Home Purchase Loan Originations, Total Home Purchase Loan Amounts, and Mean Home Purchase Loan Amounts, by Neighborhood Group, 1992-2009



(continued)

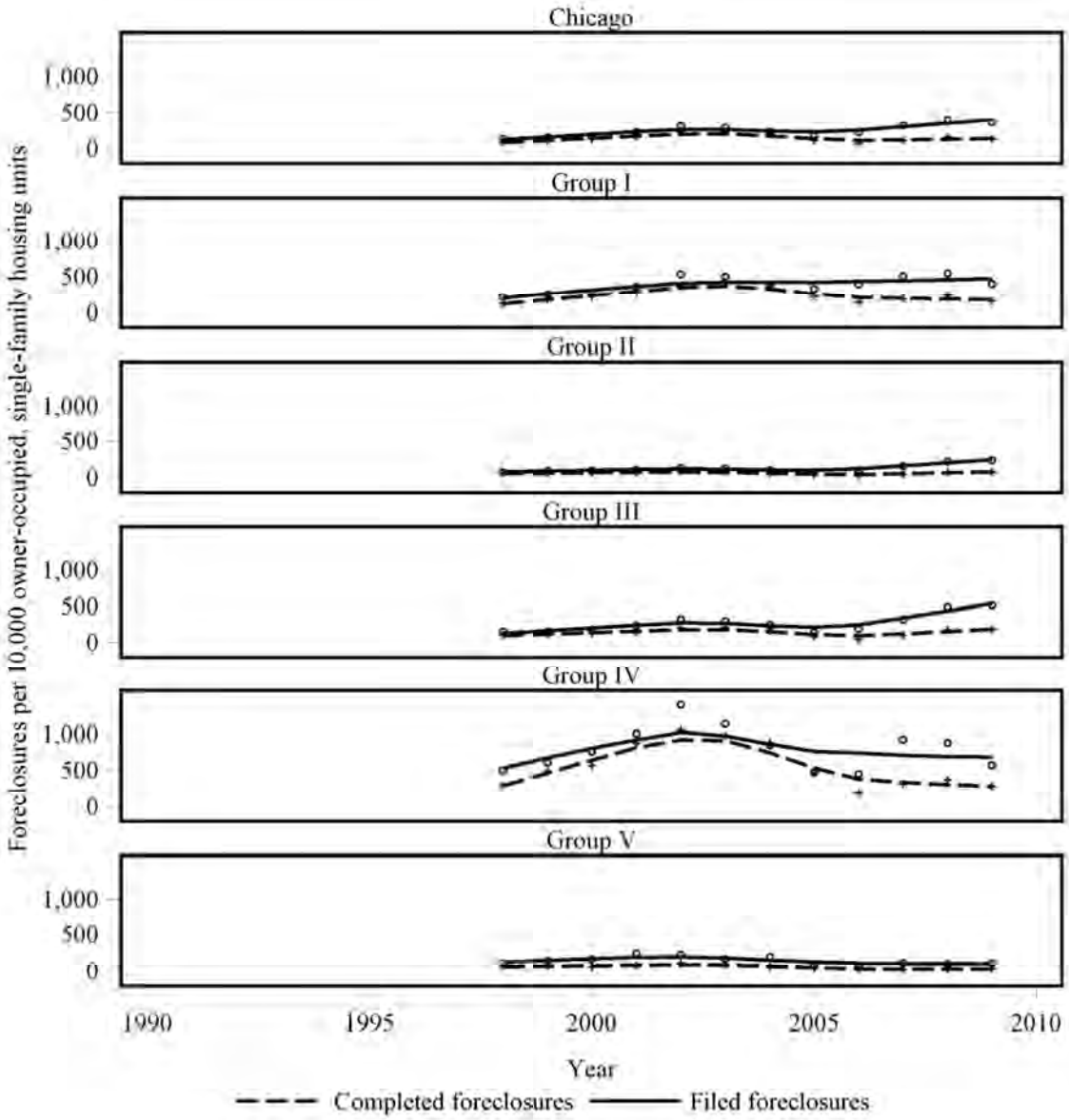
Figure 2 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. The loan originations measure is in units of originations per 10,000 single-family, owner-occupied housing units. The total home loans measure is in units of thousands of dollars per 10,000 single-family, owner-occupied housing units. The mean home loan measure is in units of thousands of dollars per home loan. See Appendix A for further information regarding measure construction and methods.

Figure 3

Filed and Completed Foreclosures per 10,000 Owner-Occupied, Single-Family Housing Units, by Neighborhood Group, 1998-2009

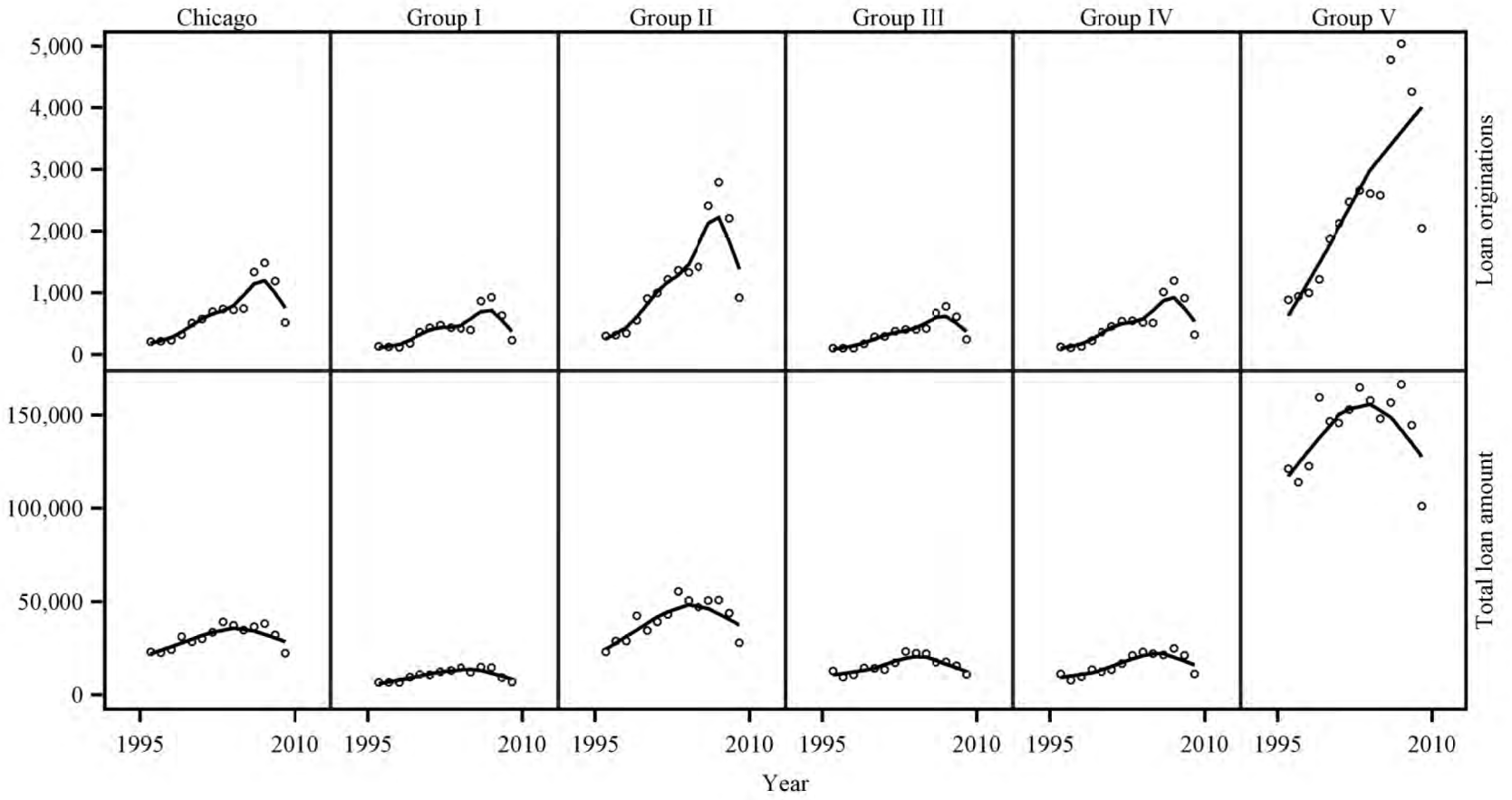


SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Figure 4

Small Business Loan Originations and Small Business Loan Amounts per Square Mile of Commercial Land Area, by Neighborhood Group, 1996-2009



(continued)

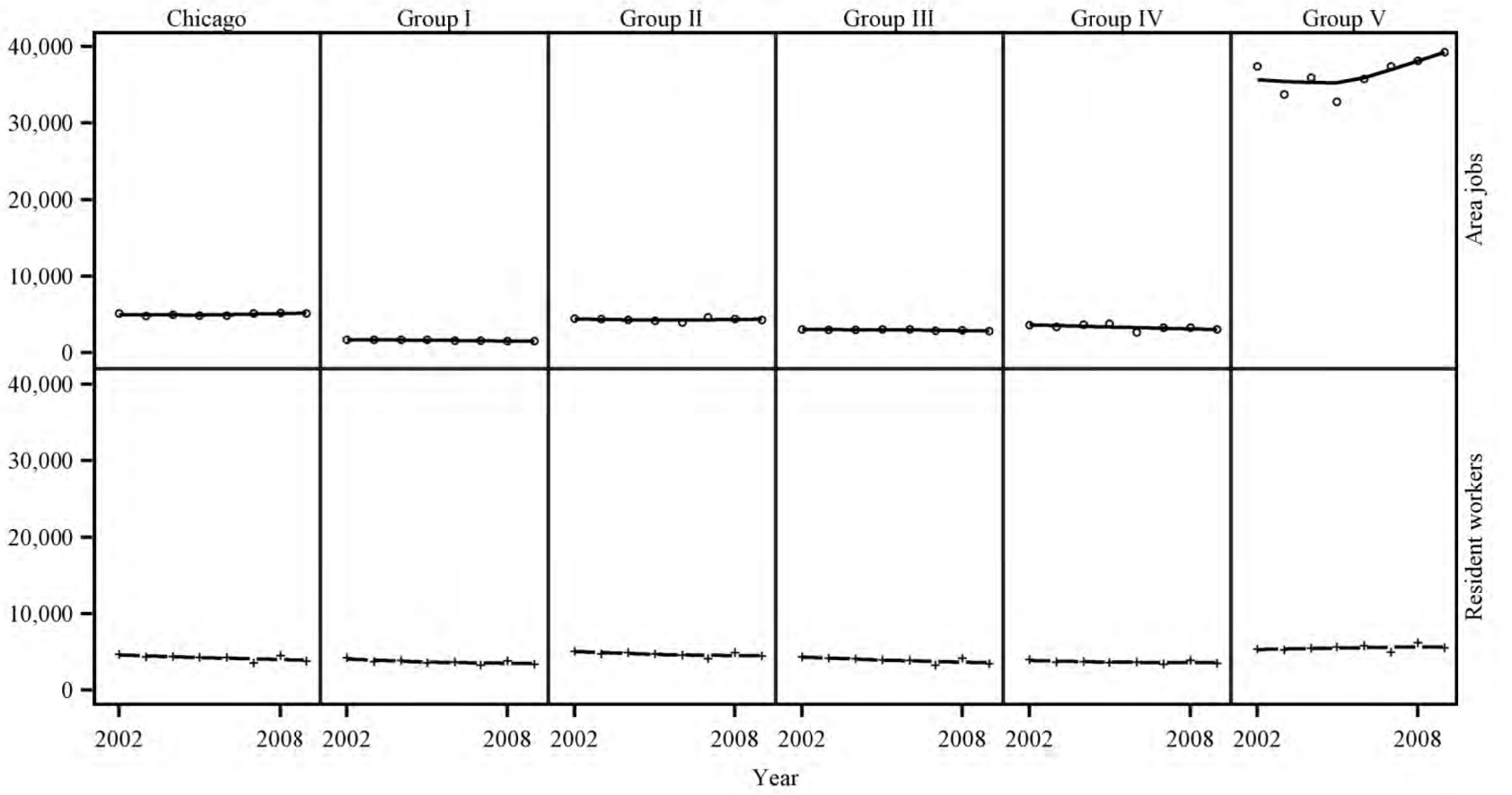
Figure 4 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. The loan originations measure is in units of loans per square mile of commercial land area. The total loan amounts measure is in units of thousands of dollars per square mile of commercial land area. See Appendix A for further information regarding measure construction and methods.

Figure 5

Area Jobs and Resident Workers per 10,000 Working-Age Persons, by Neighborhood Group, 2002-2009



(continued)

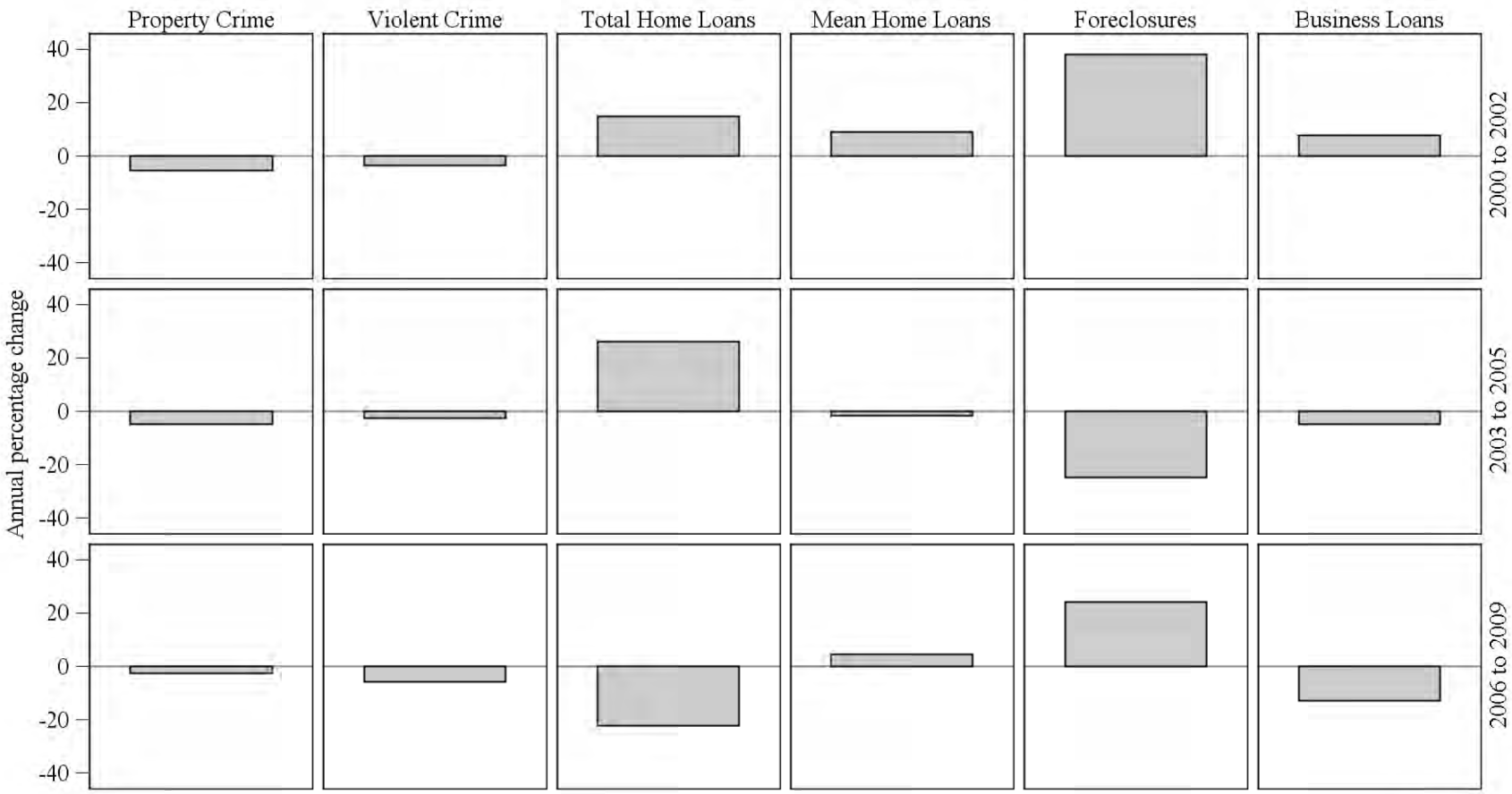
Figure 5 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Working age is defined, per the Bureau of Labor Statistics standard, as the civilian population age 15 and older. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. The area jobs measure is in units of jobs per 10,000 working-age persons. The resident workers measure is in units of workers per 10,000 working-age persons. See Appendix A for further information regarding measure construction and methods.

Figure 6

NCP Quality-of-Life Indicator Trajectories, by Period



(continued)

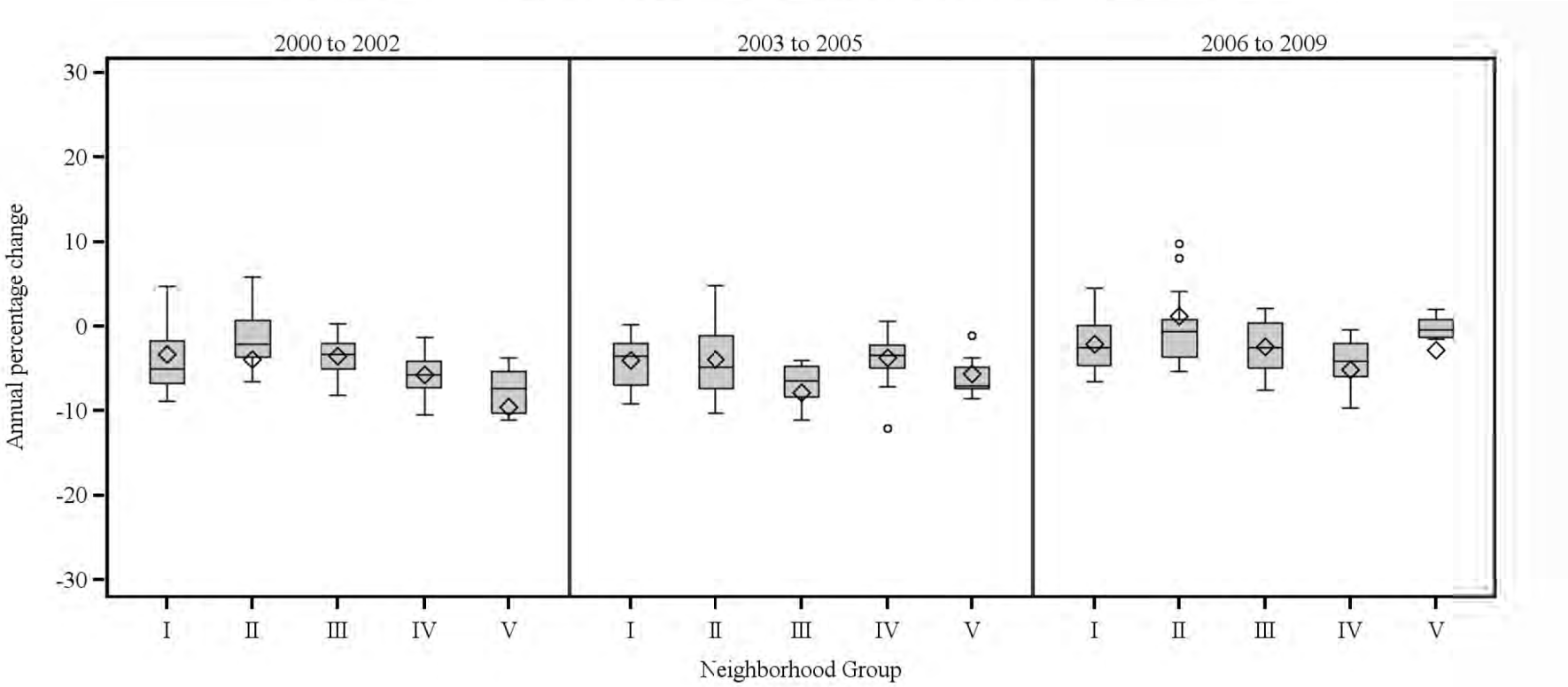
Figure 6 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories are shown transformed into common units to facilitate comparisons. The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. The violent and property crime measures are in units of crimes per 10,000 persons. The total home loans measure is in units of dollars per 10,000 single-family, owner-occupied housing units. The mean home loan measure is in units of dollars per home loan. The foreclosures measure is in units of completed foreclosures per 10,000 single-family, owner-occupied housing units. The business loans measure is in units of dollars per square mile of commercial land area. See Appendix A for further information regarding measure construction and methods.

Figure 7

Property Crime Trajectory Variation, by Neighborhood Group and Period

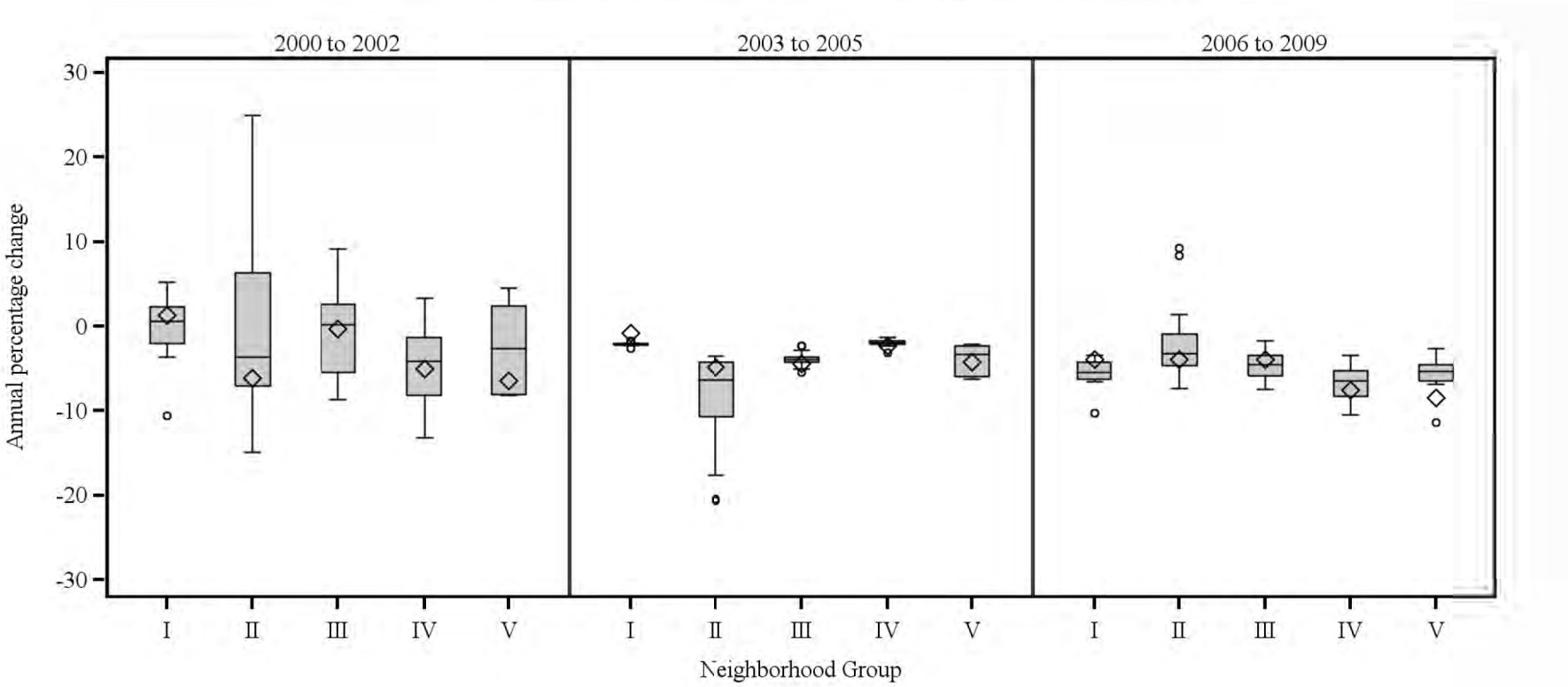


SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories are shown transformed into common units to facilitate comparisons. The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. The box plots represent the distribution of the estimated parameters for the neighborhoods within each group, with the shaded box indicating the interquartile range (that is, the 25th to 75th percentile) and the bars indicating the 10th and 90th percentiles; the median of the estimated parameters is indicated by the horizontal line dividing the box. The diamond symbols mark the neighborhood group parameter estimates, and the circles indicate outlier individual neighborhood parameters. See Appendix A for further information regarding measure construction and methods.

Figure 8

Violent Crime Trajectory Variation, by Neighborhood Group and Period

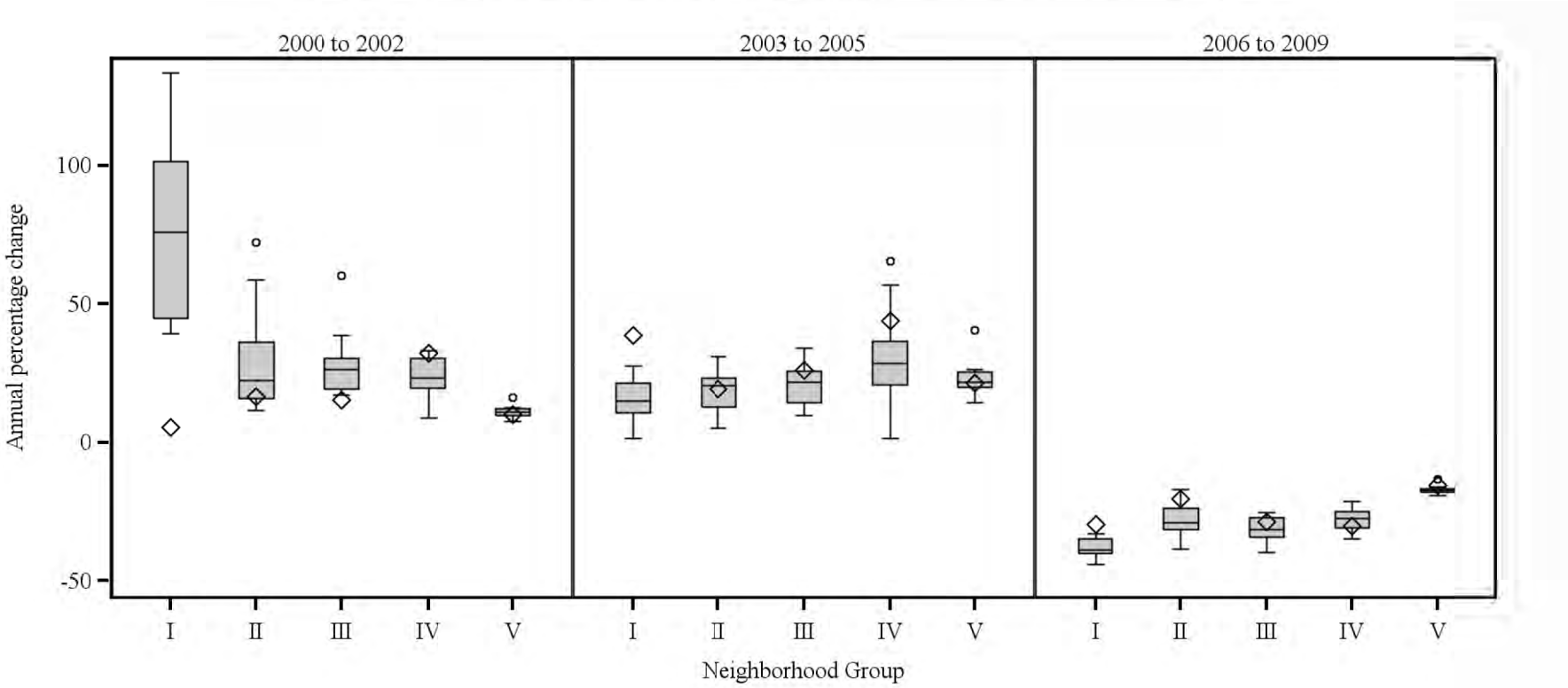


SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories are shown transformed into common units to facilitate comparisons. The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. The box plots represent the distribution of the estimated parameters for the neighborhoods within each group, with the shaded box indicating the interquartile range (that is, the 25th to 75th percentile) and the bars indicating the 10th and 90th percentiles; the median of the estimated parameters is indicated by the horizontal line dividing the box. The diamond symbols mark the neighborhood group parameter estimates, and the circles indicate outlier individual neighborhood parameters. See Appendix A for further information regarding measure construction and methods.

Figure 9

Total Home Loans Trajectory Variation, by Neighborhood Group and Period

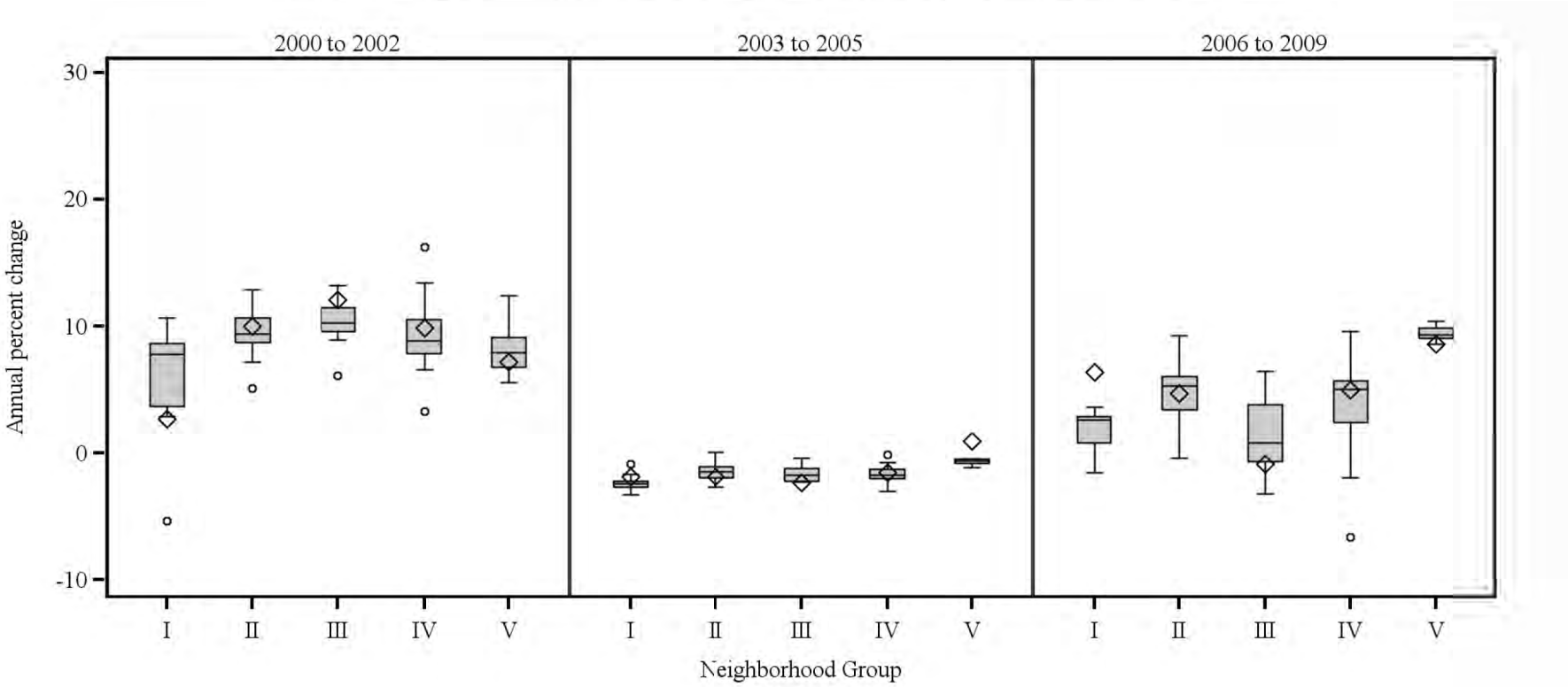


SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories are shown transformed into common units to facilitate comparisons. The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. The box plots represent the distribution of the estimated parameters for the neighborhoods within each group, with the shaded box indicating the interquartile range (that is, the 25th to 75th percentile) and the bars indicating the 10th and 90th percentiles; the median of the estimated parameters is indicated by the horizontal line dividing the box. The diamond symbols mark the neighborhood group parameter estimates, and the circles indicate outlier individual neighborhood parameters. See Appendix A for further information regarding measure construction and methods.

Figure 10

Mean Home Loan Trajectory Variation, by Neighborhood Group and Period

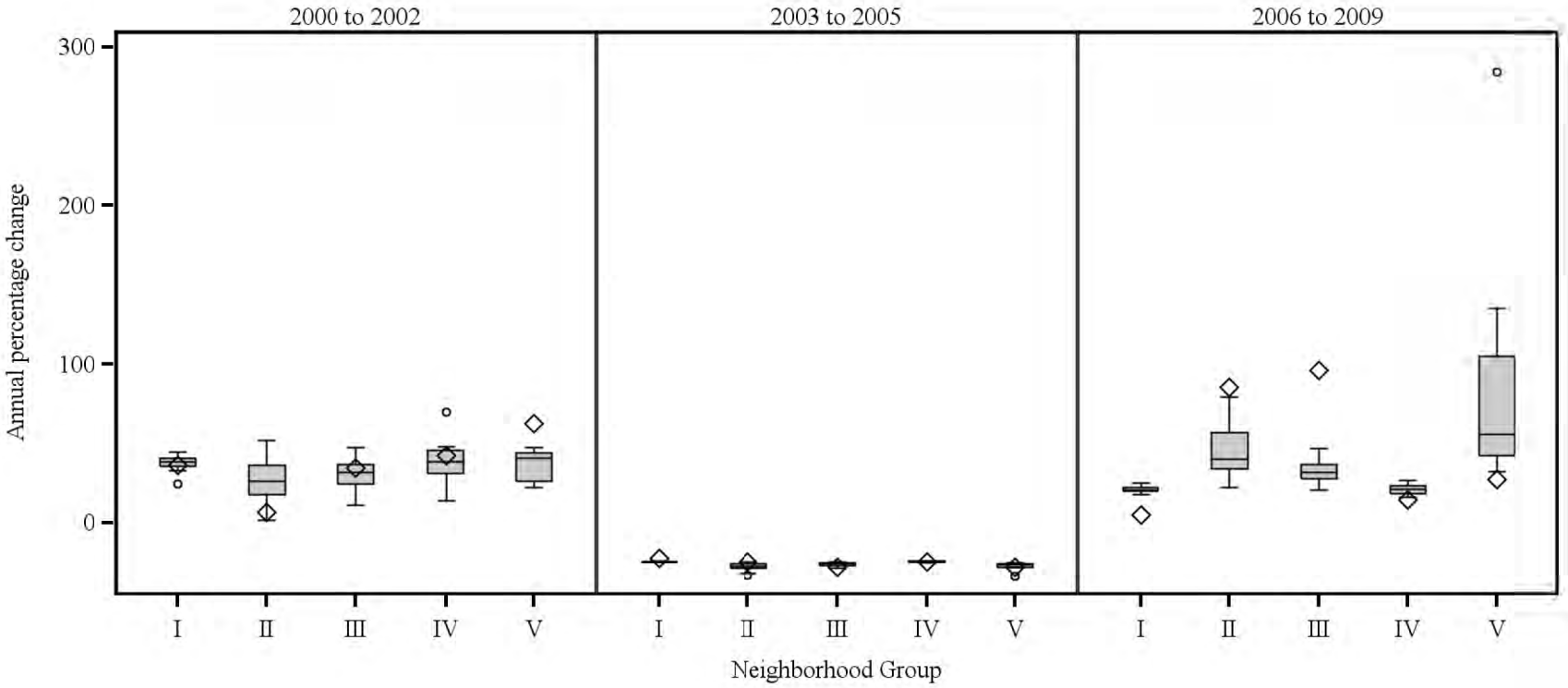


SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories are shown transformed into common units to facilitate comparisons. The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. The box plots represent the distribution of the estimated parameters for the neighborhoods within each group, with the shaded box indicating the interquartile range (that is, the 25th to 75th percentile) and the bars indicating the 10th and 90th percentiles; the median of the estimated parameters is indicated by the horizontal line dividing the box. The diamond symbols mark the neighborhood group parameter estimates, and the circles indicate outlier individual neighborhood parameters. See Appendix A for further information regarding measure construction and methods.

Figure 11

Completed Foreclosures Trajectory Variation, by Neighborhood Group and Period

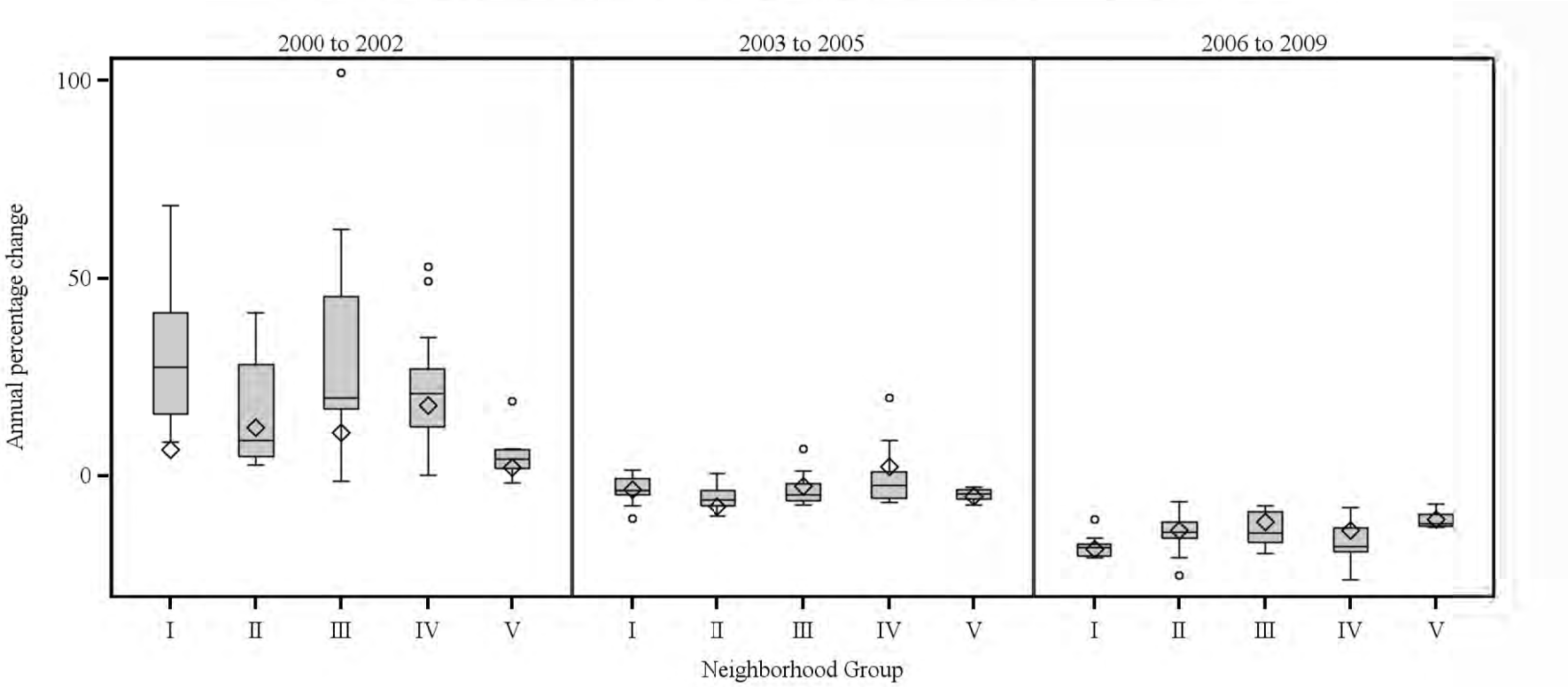


SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories are shown transformed into common units to facilitate comparisons. The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. The box plots represent the distribution of the estimated parameters for the neighborhoods within each group, with the shaded box indicating the interquartile range (that is, the 25th to 75th percentile) and the bars indicating the 10th and 90th percentiles; the median of the estimated parameters is indicated by the horizontal line dividing the box. The diamond symbols mark the neighborhood group parameter estimates, and the circles indicate outlier individual neighborhood parameters. See Appendix A for further information regarding measure construction and methods.

Figure 12

Business Loans Trajectory Variation, by Neighborhood Group and Period

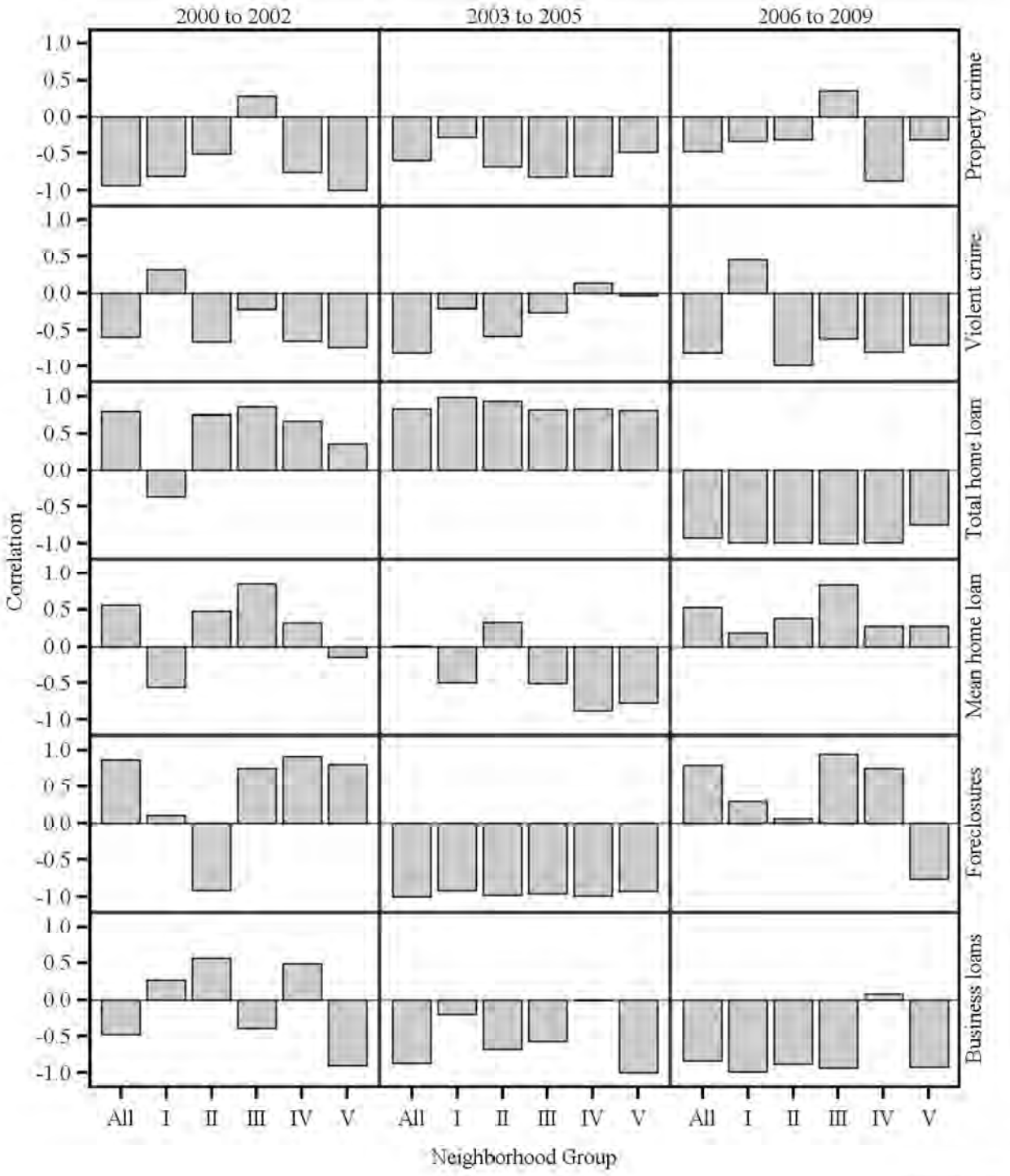


SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories are shown transformed into common units to facilitate comparisons. The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. The box plots represent the distribution of the estimated parameters for the neighborhoods within each group, with the shaded box indicating the interquartile range (that is, the 25th to 75th percentile) and the bars indicating the 10th and 90th percentiles; the median of the estimated parameters is indicated by the horizontal line dividing the box. The diamond symbols mark the neighborhood group parameter estimates, and the circles indicate outlier individual neighborhood parameters. See Appendix A for further information regarding measure construction and methods.

Figure 13

NCP Quality-of-Life Trajectories:
Correlations between Initial Levels and Rates of Change, by Neighborhood Group



(continued)

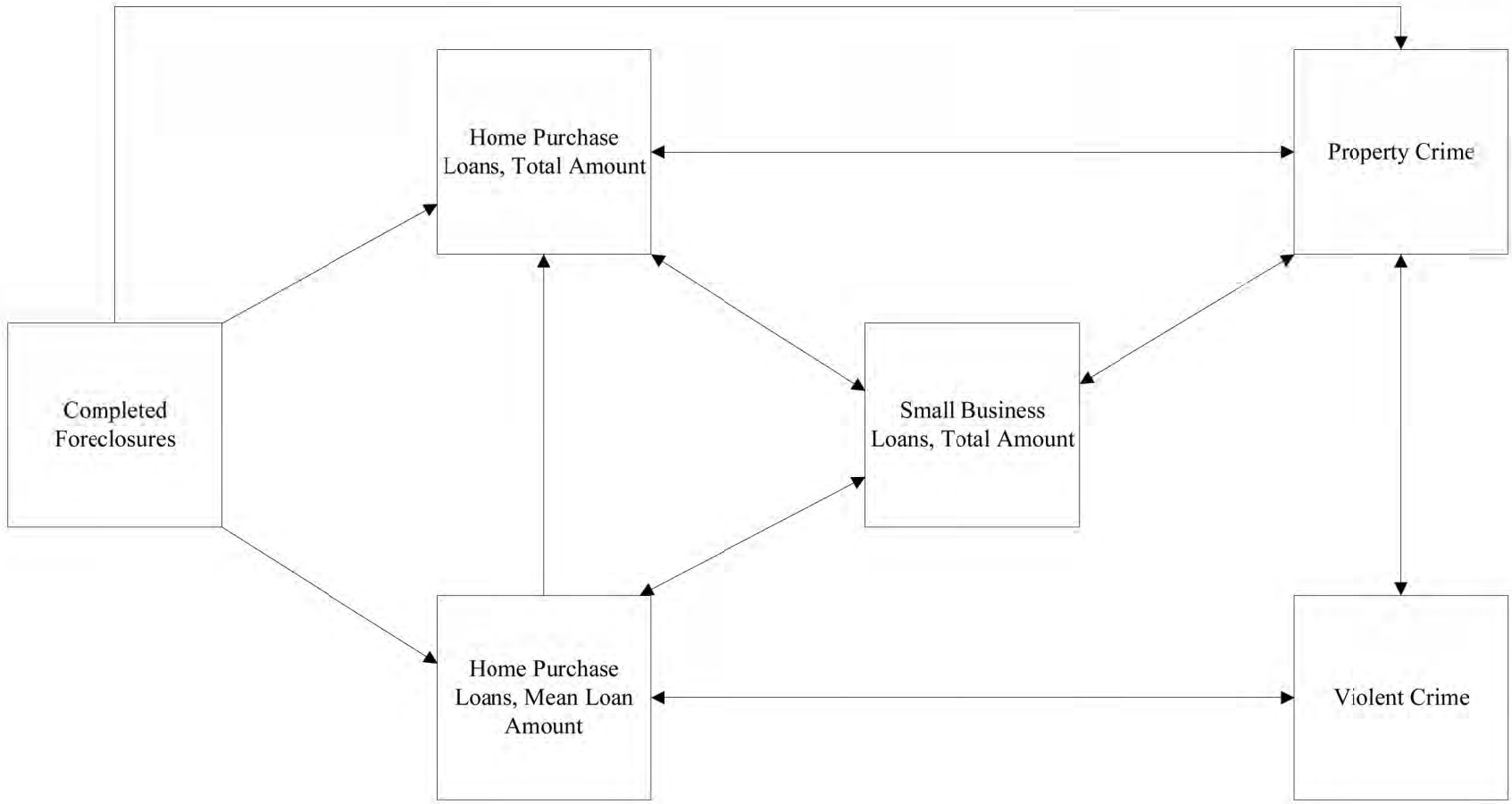
Figure 13 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. Shown here are the correlations, or levels of association, between the neighborhood parameters for initial levels (intercepts) and rates of change (slopes). Correlations range from -1 to 1, with values closer to zero indicating a weaker level of association. The violent and property crime measures are in units of crimes per 10,000 persons. The total home loans measure is in units of thousands of dollars per 10,000 single-family, owner-occupied housing units. The mean home loan measure is in units of thousands of dollars per home loan. The foreclosures measure is in units of completed foreclosures per 10,000 single-family, owner-occupied housing units. The business loans measure is in units of thousands of dollars per square mile of commercial land area. See Appendix A for further information regarding measure construction and methods.

Figure 14

Time-Shifted (Lead-Lag) Relationships between NCP Quality-of-Life Indicators



NOTE: Lines connecting indicators symbolize a time-shifted relationship between the two indicators, with the direction of the arrow indicating whether the relationship is one- or two-way. For example, the relationship between Completed Foreclosures and Property Crime is one-way, with Completed Foreclosures preceding Property Crime, while the relationship between Property Crime and Violent Crime is two-way, meaning that changes in on precede changes in the other, and vice versa. There is one additional one-way relationship (Violent Crime to Home Purchase Loans, Total Amount), which was omitted to preserve diagram clarity.

Appendix A

Measurement and Methods

The analysis of neighborhood quality-of-life dynamics reported here relies on both the extensive neighborhood indicator database that was assembled to support the evaluation of the New Communities Project (NCP) and on a variety of statistical methods. Additional information regarding the data sources and other measurement issues is provided below, followed by a discussion of the specification and estimation of the various models used in the analysis.

Measurement

The primary data provider for the NCP neighborhood indicator database was the Metro Chicago Information Center (MCIC), which obtained data from a variety of sources and transformed those data to create counts and sums for the census tracts within Chicago.[1] MDRC then used the tract-level data to create measures at the neighborhood level, using a tract-neighborhood relational matrix collectively developed by MCIC and MDRC.[2]

As described in the text, the primary unit of analysis — neighborhoods — was constructed using the NCP planning area geographies in combination with Chicago Community Area designations to create a set of units that subdivide the entire municipal area of Chicago within Cook County. The resulting set of neighborhoods vary widely in size, meaning that some proportion of the variation in the counts and sums of the various phenomena used to construct the neighborhood indicators is a result of differences in size rather than differences in quality-of-life dynamics. Thus, the final step in indicator construction was to standardize the neighborhood-level aggregations of the tract-level measures to reduce the influence of size on the inter-neighborhood variation in the quality-of-life indicators.

Further information regarding the data sources supporting the indicators that were used in the analysis of neighborhood quality dynamics is given below.[3] Additional information follows about the standardization of the indicators and the implications of the standardization strategy for the analysis.

[1]The census tract designations used for these transformations are the definitions created after the 2000 Decennial Census; data collected or assembled using earlier designations were transformed to the 2000-era designations using the relational matrices published by the U.S. Census Bureau.

[2]For most of the neighborhoods, the definitional boundaries align with tract boundaries such that the neighborhood-level measure is the aggregation of the tract-level measure. In cases where this is not true, the tract values were apportioned among multiple neighborhoods based on the distribution of the tract's population throughout the multiple neighborhoods.

[3]Additional information concerning the full scope of the NCP neighborhood indicators database can be found in Appendix A of Greenberg et al. (2010).

Crime

The crime data for this analysis originates from crimes reported by the Chicago Police Department classified using the Uniform Crime Report (UCR) typology. Each record reflects a police report of an incident, which may include multiple crimes; the incident is classified in the UCR category of the most serious crime (generally, the crime with the highest potential penalty). Note that these are police reports and do not reflect later adjudication of the incident. (For example, an assault recorded on the initial report as a criminal act and later adjudicated as justifiable self-defense is still included.) Also, as these data originate from police reports, unreported crimes are not included.[4] Finally, differences in police practices can also lead to systematic or nonsystematic underrecording of crime.[5]

The police report of the incident includes a location (usually a street address). Wes Skogan at Northwestern University appends latitude/longitude coordinates to the records and MCIC assigns tract identifiers; a small number of crime reports were not able to be geocoded and are excluded from the NCP neighborhood database.

Data holdings consist of annual counts for each UCR Part I classification (that is, "Index Crimes") for the period from 1991 to 2009. Index crimes are divided into two types, property and violent (also referred to as personal), with each type consisting of four crime categories, as follows:

- Property Crime: Arson, Auto Theft, Burglary, and Larceny-theft
- Violent Crime: Assault, Murder, Rape, and Robbery

The neighborhood level counts of property and violent crimes are constructed from the tract level sums by the index type of the crime counts in each category.

Home Purchase Loans

Data on home purchase loans are collected during the loan approval process by certain financial institutions pursuant to the federal Home Mortgage Disclosure Act (HMDA) and reported to the Federal Financial Institutions Examination Council (FFIEC). Each record includes information on applicant income, gender, race/ethnicity, location of the property, and applica-

[4]Wes Skogan's analysis of the National Crime Victimization Survey indicates that about 40 percent of violent crimes and 33 percent of property crimes are reported. Certain population groups (for example, lower income, young people, and men) tend to report at lower rates while others (for example, homeowners) report at high rates. Situational factors, such as where the crime occurred and the prior relationship between the victim and the perpetrator also affect reporting rates (Skogan, 1999).

[5]Lynch and Jarvis (2008); O'Brien (1996); Skogan (1999); Synder et al. (2010).

tion outcome (that is, origination or not) for each home purchase loan application that is eligible for reporting. The data are released on an annual basis.

Not all financial institutions are required to report this information to the FFIEC: institutions not meeting minimum asset size or other thresholds are exempt.[6] For this reason, these data potentially underreport the total number of home purchase loan applications and originations. Data coverage is particularly limited in nonmetropolitan areas and in geographies located within small counties. Additionally, HMDA data are only a subset of all home sales, as not all sales involve mortgages. (For example, the sale may involve another kind of instrument or may be paid for without the use of a lender.)[7]

Data holdings include counts of home purchase loan originations and aggregate values of home purchase loans by tract. Data coverage runs from 1992 to 2009, and only home purchase loans for owner-occupied homes in one- to four-unit dwellings are included.

Small Business Loans

Small business loan data contain information on loan location and amount for business loans of $1 million or less. Data collection is mandated by the federal Community Reinvestment Act (CRA) for independent commercial banks with total assets of $250 million and commercial banks affiliated with holding companies possessing at least $1 billion in total assets. These data are reported annually to the FFIEC, which releases aggregated counts and sums on an annual basis. The loans for which reporting is mandated are a subsample of all business loans, as loans over $1 million and those made to firms with annual gross revenues of more than $1 million are not included. Additionally, because smaller financial institutions are not subject

[6]Lending institutions are required to report data to the FFIEC if they (1) hold assets exceeding a minimum level set by the Federal Reserve Board; (2) have an office in a Metropolitan Statistical Area; (3) originated at least one home purchase or refinancing loan on a one- to four-family dwelling in the preceding calendar year; and (4) are federally insured or regulated, originated a mortgage loan last year that is insured/guaranteed/supplemented by a federal agency, or originated a loan last year intended for sale to Fannie Mae or Freddie Mac. To face reporting requirements, for-profit nondepository institutions must (1) have home purchase or refinancing loans exceeding either $25 million or 10 percent or more of their loan originations; (2) maintain a home or branch office in one or more metropolitan areas or in a given year execute five or more home purchase or home loan applications, originations, or loan purchases for properties located in metropolitan areas; and (3) hold assets exceeding a minimum level set by the Federal Reserve Board.

[7]Multiple Listing Service (MLS) data, which record the number and aggregate value of home sales, are also included in the NCP neighborhood indicator database. For the time period in which these data overlap with the HMDA data, the home sales counts were lower than the HMDA loan counts, but the aggregated sales prices were much greater than the aggregated loan values. As the MLS data cover existing home sales (that is, sales of newly constructed homes are not included), the results of the comparison between the MLS and HMDA data indicate that the HMDA loan counts capture a greater share of total housing market activity and so are less of an underrepresentation, compared with the aggregated loan amounts.

to reporting requirements, the data set undercounts the total number and value of small loans made to businesses in a given area to some degree.

Data holdings include counts and total values of loan originations reported under CRA for the years 1996 to 2009.

Foreclosures

Data on foreclosures originate from administrative records kept by local governmental entities, and contain counts of filed and completed foreclosures.[8] Foreclosure filings count properties where a complaint has been filed against the homeowner requesting that foreclosure proceedings be initiated. Foreclosure completions count of the number of foreclosures that ended with an auction of the property in question. (That is, foreclosure filings that are resolved in other ways are not classified as completed.) Filed and completed foreclosures are distinct measures: completed foreclosures are generally fewer in number, because lenders sometimes choose to halt foreclosure proceedings (usually because a negotiated settlement has been reached). Both the filings and completions data exclude some ownership transfers that occur as the result of financial distress, as properties subject to short sales or deed-in-lieu-of-foreclosure transactions completed in the absence of a foreclosure filing are not included in either measure.

In recent years, foreclosure filings and completions have diverged more dramatically than in years past. Several factors are driving this pattern, including a backlogged court system, new foreclosure prevention efforts, and a poorly performing housing market where lenders often take losses at foreclosure sales. Data holdings include counts of filed and completed mortgage foreclosures on single-family properties for the years 1998 to 2009.

Area Jobs and Resident Workers

Local Employment and Household Dynamics (LEHD) Origin-Destination Employment Statistics are compiled by the U.S. Census Bureau and released annually. The data contain counts of jobs and resident workers located in each census tract. Job counts record the number of jobs at businesses located within a tract, while counts of resident workers record the number of individuals living in a tract who are employed.[9]

Records of employment and earnings are derived from state-level Unemployment Insurance records. Employer locations are drawn from the Quarterly Census of Employment and

[8]In Illinois, foreclosure proceedings are conducted entirely within the court system. Therefore, MCIC's data provider, Record Information Services, obtained its foreclosure filing data from records kept by the Cook County Circuit Clerk's Office.

[9]In some cases, the count of resident workers includes only those who are employed within their state of residence.

Wages, which is conducted jointly by state governments and the Bureau of Labor Statistics. Workers' residence locations are determined by the Census Bureau using data from a variety of government sources. Since only jobs covered by Unemployment Insurance (UI) are included in the data, the total number of jobs and resident workers in an area may be undercounted.[10] In particular, federal civilian employees, uniformed members of the military, self-employed workers, and informally employed workers are not represented in the datasets.

Data holdings include counts for the years from 2002 to 2009.

Standardization

As shown in Appendix Figure A.1 (following Appendix A), the 80 neighborhoods vary widely in size along a number of dimensions, with several large outlier neighborhoods for each measure of size. Some of the smallest neighborhoods house fewer than 4,000 people and contain only a few dozen owner-occupied, single-family housing units, while others can claim over 100,000 residents and more than 10,000 units of single-family, owner-occupied housing. Land area varies in a similar fashion; the land area of the neighborhoods ranges from about one fourth of a square mile to over 10 square miles, while commercial land area ranges from almost none to more than seven square miles.

Since this lack of uniformity makes comparisons among neighborhoods in terms of the dynamics of quality of life difficult, all of the indicators are standardized by being transformed into rates. The denominator for each indicator is as follows:

- Crime: Population (number per 10,000 persons)
- Home purchase loans (number and total amount): Single-family, owner-occupied housing units
- Business loans (number and total amount): Commercial land area
- Employment and jobs: Working-age population[11] (number per 10,000 persons)

Population and housing unit counts are from the 2000 Census summary file 3 tabulation.[12] Commercial land area was obtained from an aerial survey commissioned by the Chicago Met-

[10]The *BLS Handbook of Methods* (2011) estimates that UI data covered over 96 percent of civilian wage and salary jobs in 1994.

[11]Working-age persons are defined as all persons over the age of 15 (the standard definition used to construct civilian employment estimates).

[12]There are minor differences in the population counts available in the various Census tabulations; this project uses the summary file 3 count for consistency, as other data elements from this tabulation are included in the description of NCP neighborhoods and QoL measurement.

ropolitan Agency on Planning in 2000. Even though the indicator time series spans 10 or more years, the denominators are held constant. Thus, the transformed indicators do not account for changes in neighborhood size that might affect the untransformed counts and sums, and so the standardized measures may over- or understate the "true" change. This is an unavoidable issue when constructing standardized indicators, as allowing the denominators to vary over the period of observation can also lead to a mistaken assessment of the level of change.

The choice of denominator used to standardize each indicator was based on standard practice in the field and the relevance of the size measure to the domain of quality of life represented by each indicator. However, just as the standardization operation affects the relative ranking of the neighborhoods for the indicator, the choice of denominator also has this effect. For example, consider the crime indicators, which are standardized based on population, following standard practice — which conceptualizes crime rates as the ratio of actual crime victims to the number of possible victims. Without entering into the discussion over the proper denominator,[13] it is conceivable that land area would be a viable alternative denominator, as small values would be less likely to inflate the standardized indicator and there is no issue with areas having zero land area, as is possible with population. Comparing crime rates that are calculated using this alternative denominator with those calculated using population as the denominator indicates that the assessment of the relative ranking of the neighborhoods is highly dependent on choice of denominator. For both property and violent crime, around half of the neighborhoods change to a different quintile of the rate distribution when the denominator that is used to calculate the rate is changed. Similar results are found for the other indicators, meaning that examination of levels, either in a single period or over time, is fundamentally dependent on the choice of denominator that is used to construct the rate.

However, since the denominator does not change over time for the NCP indicators, there is no effect of choice of denominator on the rates of change for the indicators. Thus, while differences between the observed levels of the various indicators are partly a function of the denominator, the analysis of indicator trajectories, or rates of change, is not affected. In fact, the rate of change for the standardized indicators is the same as the rate of change for the "raw" counts and sums.

Methods

The analysis of the neighborhood quality-of-life indicators presented here uses several statistical methods, both for displaying time trends and calculating rates of change, as well estimation of growth models and temporal indicator relationships. There are four specific methods document-

[13]Compare, for example, Stipak (1998) and Chamlin and Cochran, (2004).

ed here — LOESS curves, average annual rates and change calculation, multilevel growth modeling, and Granger Causality testing. Each is discussed in turn below.

LOESS Curves

One issue that is pertinent to the visual display of trends for indicators such as the ones that are used here is the level of volatility, usually referred to as noise, that is inherent in the data. As the unit of analysis represents a fairly high level of aggregation, compared with the original scale of measurement, the effect of random fluctuations and other noise-inducing events can be magnified, leading to inappropriate emphasis on points with high levels of variation and increased difficulty in identifying the overall course of the trend.

Thus, smoothing techniques were used to prepare the trend charts that are shown in the text (Figures 3 to 7) and Appendix B (Appendix Figures B.1 to B.9). Specifically, the trend charts show the actual indicator values (represented by small circles) superimposed upon a curve that represents the results of a local, nonparametric regression technique (LOESS). At each point of the trend, a low-degree polynomial is fit to a subset of the entire set of data consisting of those points nearest to the point in question (that is, its neighbors). The polynomial is fit using a weighted regression procedure, giving higher weight to points that are close neighbors and lower weights to those that are farther away. While the LOESS function is parametric within a single "neighborhood" of the data, the overall function — the compilation of the local regression results for each point — fit to the trend is nonparametric. Weighted moving averages are a simple example of a LOESS function, where the local polynomial regression function has a degree of zero. For the LOESS functions that are estimated for the indicators, a higher-degree polynomial was used so that shifts in trend direction would be more readily identified.

Average Annual Rates and Changes

For the same reasons that LOESS curves were used to plot trends, trend levels and percentage change (as shown in Table 1 and Appendix Tables B.3 to B.14) were calculated across multi-year periods to reduce the influence of extreme observations. The rates shown in these tables are averages of the levels of the standardized indicators for the three- or four-year period. The percentage change is calculated via regression of the log-transformed indicator on year; separate regressions were conducted for each analysis period (from 2000 to 2002, from 2003 to 2005, and from 2006 to 2009). The percentage change is calculated as a transformation of the estimated coefficient for year.[14]

[14]If β is the coefficient estimate, $100*(e^{\beta} - 1)$ is the percentage change per unit increase in the predictor (year).

Multilevel Growth Models

Several of the analyses reported here rely on multilevel growth models estimated for one or more indicators. Multilevel models, also known as hierarchical linear models (HLM), are generally used for examination of phenomena that operate at more than one level; the classic example of the HLM method is the analysis of students within classes or schools. When multilevel models are applied to longitudinal data, they are generally referred to as growth models.[15] The basic characteristic of these models is the inclusion of random subject effects, to account for the influence of subjects on their repeated observations.[16] These random subject effects indicate the degree of variability in the growth model main effects that exists within the population of subjects.

To illustrate the model, suppose the outcome of interest (y) is hypothesized to have a linear, additive change process.[17] This could be represented as:

$$y_{it} = \alpha_i + \beta_i x_{it} + \varepsilon_{it}$$

where y_{it} is the level for subject i at time t, x_{it} is the measure of time for subject i at time t, α_{it} and β_{it} are the intercept and slope parameters for subject i (that is, the starting level and amount of change per unit change in x_{it}), and ε_{it} is the residual (error) for subject i. The intercept and slope are random variables (that is, the random effects), with their variation across subjects modeled as:

$$\alpha_i = \alpha + \mu_{\alpha i}$$
and
$$\beta_i = \beta + \mu_{\beta i}$$

where α and β represent the fixed effects for the intercept and slope (somewhat analogous to the mean of the random effects) and $\mu_{\alpha i}$ and $\mu_{\beta i}$ represent the random variation of subjects. Substituting the fixed-effects equations into the first yields the combined model:

$$y_{it} = \alpha + \beta x_{it} + \mu_{\alpha i} + \mu_{\beta i} x_{it} + \varepsilon_{it}$$

[15]Despite the use of the term "growth," the model specification places no restriction on the course of the modeled phenomena; that is, the outcome under examination can be both growing and/or decaying.

[16]The multilevel model random effects are different from the random effects that are commonly used in econometric time series models. In the multilevel formulation, the random effects are equivalent to main effects, with the descriptor "random" referring to the nature of the subjects. (That is, they are theoretically drawn at random from some larger population.) In contrast, the econometric random effects describe the effect of individual differences (that is, random disturbance), which is necessary to account for in order to generate unbiased estimates for the main effects.

[17]More complicated models of change — for example, involving nonlinear transformations of x_{it} or nonlinear parameterization of the relationship between y_{it} and x_{it} — can be estimated using multilevel growth modeling. Additional parameters can also be introduced, including those that change over time and those that represent unvarying characteristics of the subjects.

To fit this model, two fixed effects (α and β) and four variance/covariance parameters are estimated: the residual variance ($var(\varepsilon_{it})$), the slope and intercept variance ($var(\mu_{\alpha i})$ and $var(\mu_{\beta i})$), and the covariance between the slope and intercept ($cov(\mu_{\alpha i}, \mu_{\beta i})$).[18]

As change in the indicator trajectories (rates of change, corresponding to β in preceding equations) associated with different economic regimes is a central focus of these analyses,[19] separate models were estimated for each time period (2000-2002, 2003-2005, and 2006-2009). Since there are only three or four years (observations) in each period, the model specification used the linear model of change described above. The same general specification is used for both the descriptive analysis of the indicator trajectories, as well as the foreclosure-crime relationship. The main difference is that the foreclosure-crime model includes covariates (both fixed and time-varying), while the descriptive models do not.

Multilevel growth models are also used to investigate relationships between indicator trajectories. The model specification for the multivariate case is fairly similar to that for the single variable (univariate) case:

$$y_{itk*} = \sum_{k} \delta_k (\alpha_{ik} + \beta_{ik} x_{itk} + \varepsilon_{itk})$$

where *k* indexes the various outcomes and δ_k is a series of indicator variables, one for each outcome.[20] In effect, the data for each outcome are "stacked" and the linear change models for each outcome are estimated simultaneously:

$$y_{itk*} = \sum_{k} \alpha_k \delta_k + \beta_k \delta_k x_{it} + \delta_k \mu_{\alpha i} + \delta_k \mu_{\beta i} x_{it} + \delta_k \varepsilon_{it}$$

There is a set of intercepts and slopes for each indicator, also with separate variance estimates. The covariance parameters include not only the covariance of the intercept and slopes for each indicator, but also the covariance between the intercepts and slopes of different indicators.

[18]It is possible to specify the model such that slopes and intercepts do not covary. However, as it is common across a wide range of phenomena that rates of change are dependent on initial levels, most multilevel growth models use the correlated specification, as is done here.

[19]In figures where the estimated rates of change (β) for multiple indicators are displayed (for example, Figures 8 to 14), the estimated coefficient was transformed by dividing by the intercept parameter to enforce a common scale on the estimates. This transformation is analogous to an annual percentage change.

[20]It is possible to estimate the multivariate, multilevel growth model using different models of change for each outcome.

Granger Causality Tests

Granger Causality describes a particular statistical relationship that can exist between two time series.[21] Formally, a time series X may be said to cause another time series Y if and only if the expectation of Y given the history of X is different from the unconditional expectation of Y:

$$E(Y|Y_{t-k}, X_{t-k}) \neq E(Y|Y_{t-k})$$

where *t* indexes time and *t-k* indexes some number of lags (previous values) of Y (that is, Y_{t-1}, Y_{t-2}, and so on). Since X can only change the expected value of Y if there is a statistical relationship between the two time series, the test of a Granger Causal relationship can be structured as a test of whether the fit of the model of Y improves when X is added as a predictor.

Granger Causality was developed as a technique for econometric forecasting,[22] where the data consist of multiple time series for a single unit. The traditional implementation of the test uses forecasting techniques to assess model fit, which involves separating the time series, and using the early portion to estimate the model and the later portion to test the model fit by comparing actual (observed) values with those predicted by the model. An alternative method, commonly used when the input time series are not of sufficient length to use the forecasting fit tests, tests for Granger Causality by assessing the joint significance tests of the estimated coefficients for the candidate predictor. First, an autodependence model of the outcome is estimated:

$$Y_t = \alpha + \beta_1 Y_{t-1} + \ ... \ + \beta_k Y_{t-k} + \varepsilon_t$$

where *k* is the number of lags used to account for the dependence of values of the outcome in one period on its value in past periods.[23] A second model, including the candidate predictor, is then estimated:

$$Y_t = \alpha + \beta_1 Y_{t-1} + \ ... \ + \beta_k Y_{t-k} + \gamma_1 X_{t-1} + \gamma_k X_{t-k} + \varepsilon_t$$

If the Y_t parameters are jointly significant, this provides evidence of the existence of a Granger Causal relationship between X and Y.

Note that the Granger Causality test relies on overfitting to ensure that all autodependence is removed from the data. This overfitting is harmless in regard to bias, meaning that it does not imperil the validity of the statistical significance tests. However, overfitting causes estimator inefficiency and so results in coefficient estimates that are not informative. In other

[21]The use of "causal" in the name of the test and throughout this section is a reference to the particular statistical relationship, not to be mistaken for conceptual causality and/or causal mechanisms.

[22]Granger (1969).

[23]The value of *k* is not determined empirically, as Granger Causality is a "brute force" method. Generally, the value of *k* is set high enough to ensure that the autodependence of the outcome is accounted for within the limits of the input data.

words, Granger Causality tests whether there is a relationship (that is, its existence) but provides no information with regard to the strength or direction of effects of X on Y.

A further adaptation of the Granger Causality test is necessary when the input data concern multiple units, as is the case here. Recall that the models specified above include a single error term, $å_t$, which accounts for random disturbance associated with individual time periods. Since the data used here include multiple units, random disturbances associated with the individual units must also be accounted for in the model specification. Thus, the models specified to conduct the Granger Causality tests reported on here include two-way random effects (that is, ε_t and ε_i, where *i* indexes the units) to account for the structure in the error term.

Typical implementations of Granger Causality focus on a single outcome, with the aim of identifying the best forecast model. Multiple candidates may be tested, but the outcome of interest remains constant (that is, all of the estimated models have the same variable on the left-hand side). For this analysis, the concern differs from the typical implementation; the focus here is on identification of time-shifted (asynchronous) associations or lead/lag relationships among a set of variables. Thus, for every pair of indicators within the set tested, Granger Causality is assessed using each member of the pair as the outcome. That is, using the notation from above, this analysis tests whether X causes Y and whether Y causes X.[24]

For each pair tested, there are four possible outcomes, as follows:[25]

1. $X \rightarrow Y; Y \nrightarrow X$
2. $X \nrightarrow Y; Y \rightarrow X$
3. $X \rightarrow Y; Y \rightarrow X$ (or $X \leftrightarrow Y$)
4. $X \nrightarrow Y; Y \nrightarrow X$

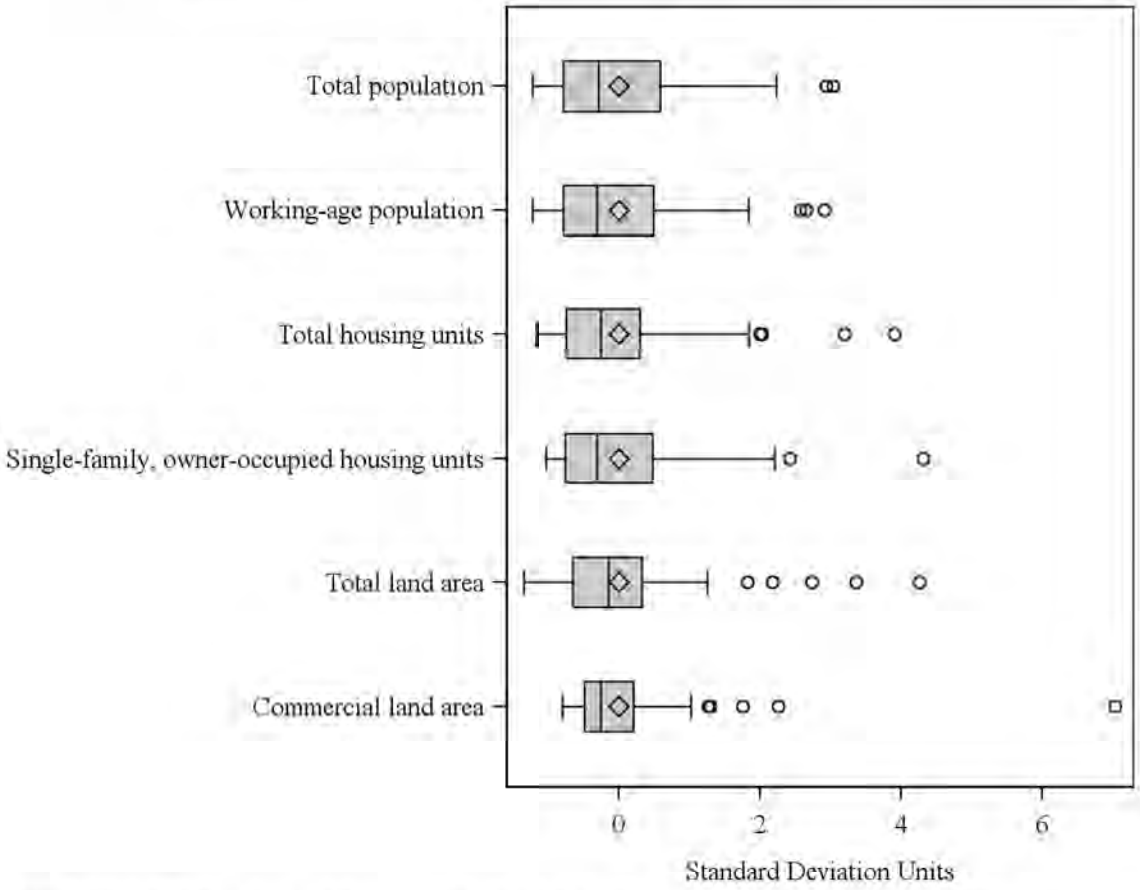
Interpretation of the results is straightforward for three of these cases. For outcomes 1 and 2, X leads Y or vice versa, while for outcome 4, the null hypothesis of no time-shifted relationship cannot be rejected. Interpretation of the third outcome is not as clear-cut: X and Y each leads the other, which may be due to a feedback loop, the influence of a third variable that is not accounted for, or something else. Untangling such indeterminate cases requires consideration of the conceptual structure of the system as well as use of more complex statistical methods. Such efforts are also necessary to further explicate any identified Granger Causal relationships.

[24]Typical Granger Causality analyses may also include estimation of such "mirror" models, but in those cases the aim is to establish the exogeneity of X (in the case that the outcome to be forecast is Y).

[25]The arrow symbol represents the existence of a Granger Causal relationship.

Appendix Figure A.1

Neighborhood Size Distribution, Chicago Municipal Area



SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: A total of 80 neighborhoods are reflected in this figure: 14 NCP planning areas and 66 non-NCP areas. Together, these 80 neighborhoods encompass the Chicago municipal area.

For all size measures except commercial land area, the measures are based on data drawn from the 2000 Decennial Census Summary File 3. The box plots represent the distribution of the neighborhoods, with the shaded box indicating the interquartile range (that is, the 25th to 75th percentile), and the bars indicating the 10th and 90th percentiles; the median of the measures is indicated by the vertical line dividing the box. The diamond symbols indicate means, and the circles indicate outlier neighborhoods. Commercial land area was based on an aerial survey conducted by the Chicago Metropolitan Agency on Planning in 2000. As the range of the various size measures differs, the measures were transformed into standard deviation units prior to plotting.

Appendix B

Supplementary Tables

Appendix Table B.1

All Chicago Neighborhoods, by NCP Neighborhood Group

	Neighborhood Group				
	I	**II**	**III**	**IV**	**V**
Non-NCP Neighborhoods	Auburn Gresham[a] Avalon Park Burnside Calumet Heights Chatham[a] Greater Grand Crossing[a] Pullman Roseland South Chicago[a] South Deering West Pullman Washington Heights	Albany Park Ashburn Avondale Beverly Clearing Dunning Edgewater Edison Park Forest Glen Garfield Ridge Hegewisch Irving Park Jefferson Park Lincoln Square Morgan Park Mt Greenwood North Park Norwood Park O'Hare Portage Park Rogers Park Uptown West Ridge	Archer Heights Belcragin Bridgeport Brighton Park East Side Gage Park[a] Hermosa McKinley Park Montclare New City West Elsdon[a]	Armour Square Austin Douglas[a] E. Garfield Park[a] Fuller Park Grand Boulevard[a] Hyde Park Kenwood[a] North Lawndale Oakland[a] Riverdale South Shore West Garfield Park Washington Park	Lakeview Lincoln Park Loop North Center Near North Side Near South Side West Haven[a] West Town[a]
NCP Neighborhoods	Auburn Gresham	Logan Square	Chicago Lawn Humboldt Park Pilsen Little Village	East Garfield Park Englewood North Lawndale West Haven Quad Communities South Chicago Washington Park Woodlawn	

(continued)

Appendix Table B.1 (continued)

SOURCE: MDRC analysis of data from Metro Chicago Information Center (MCIC).

NOTES: Cluster analysis was used to group Chicago neighborhoods for the interim evaluation report. See Appendix A of Greenberg, Verma, Dillman, and Chaskin (2010) for details on the clustering methodology.

[a]Portion of community area not part of an NCP target neighborhood.

Appendix Table B.2

Characteristics of Chicago Neighborhoods, by Group, Before NCP Rollout

Characteristic	All	Neighborhood Group I	II	III	IV	V
Population and households						
Population change, 1990-2000 (%)	3.6	-5.0	5.6	20.4	-9.7	13.7
Change in population age 55+, 1990-2000 (%)	-6.8	11.2	-10.5	-13.3	-12.5	1.2
Black (%)	42.7	90.9	10.7	8.8	84.2	20.4
Hispanic (%)	21.0	5.3	21.0	61.4	4.4	12.2
Foreign-born (%)	18.6	3.6	26.9	37.0	6.5	13.8
Less than high school education (%)	29.3	25.3	22.0	45.7	34.6	13.5
Unemployed civilian labor force (%)	6.8	8.4	3.8	5.8	10.9	4.7
Individuals living in poverty[a] (%)	20.9	19.9	10.6	17.4	38.1	16.7
Households in poverty[a] (%)	19.6	18.6	10.1	16.7	36.0	14.4
Households receiving public assistance (%)	8.5	11.0	3.2	5.9	17.1	3.8
Households with earnings (%)	77.1	76.6	80.7	80.9	67.1	84.8
Mean annual household income ($)	49,646	45,908	57,022	45,826	34,491	78,646
Households with single mothers (%)	11.6	15.2	5.0	9.0	21.7	4.8
Moved in last five years (%)	57.1	68.7	57.7	56.0	57.0	38.8
Housing units (%)						
Rentals	47.6	36.8	39.1	44.6	63.5	56.6
Vacant	8.7	7.5	4.2	7.0	15.6	10.0
Multi 2 to 4	31.4	25.8	22.9	51.0	33.9	22.7
Multi 5 or more	32.9	15.9	30.4	11.9	49.8	65.0
Built in last 5 years	2.6	0.9	1.7	2.0	3.0	8.4
Housing market						
Single-family home purchase loans (N)	2,313	476	1,830	1,127	1,713	10,471
Change in number of loans, 1995-2000 (%)	74.6	27.9	43.7	9.2	138.2	207.0
Single-family home loan mean amount ($)	140	97	155	128	119	232
Change in mean loan amount, 1995-2000 (%)	36.0	33.5	36.3	34.5	36.8	40.4
Filed foreclosures (N)	310	265	89	177	763	161
Change in filed foreclosures, 1998-2000 (%)	36.0	25.5	10.2	35.8	59.0	73.8
Completed foreclosures (N)	226	222	69	126	563	49
Change in number of completed foreclosures (%)	51.5	67.9	23.5	54.6	92.0	-0.6

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Shown above is the mean (average) across neighborhoods for the indicated characteristics. Unless otherwise indicated, the reference period for measurement is 2000. See Appendix A for further information regarding measure construction and methods.

[a]The percentage of individuals and households living in poverty was calculated using Census 2000 tabulations. The Census determines poverty status using household size and income.

Appendix Table B.3

NCP Quality-of-Life Indicator Trajectories: All-Neighborhoods Model Estimates, by Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Indicator	Intercept	Slope	Intercept	Slope	Intercept	Slope
Property crime[a]	610.8 ***	-34.3 ***	545.0 ***	-26.2 ***	498.7 ***	-13.6 ***
	(57.0)	(7.6)	(42.9)	(4.0)	(39.9)	(4.4)
Violent crime[a]	190.2 ***	-6.5 ***	161.8 ***	-4.3 ***	157.6 ***	-9.4 ***
	(17.7)	(2.2)	(14.0)	(1.3)	(14.1)	(1.7)
Completed foreclosures[b]	227.5 ***	86.6 ***	401.4 ***	-99.8 ***	105.1 ***	25.3 ***
	(39.4)	(18.3)	(65.8)	(17.8)	(13.8)	(4.3)
Total home purchase loan amount[c]	40.1 ***	6.0 ***	60.4 ***	15.7 ***	89.3 ***	-19.9 ***
	(9.3)	(1.4)	(12.2)	(4.3)	(16.5)	(3.3)
Mean home purchase loan amount[d]	139.4 ***	12.6 ***	182.0 ***	-2.6 ***	189.0 ***	8.5 ***
	(5.3)	(0.9)	(6.6)	(0.7)	(5.9)	(2.0)
Total small business loan amount[e]	322.1 ***	25.3 ***	451.5 ***	-21.8 ***	457.3 ***	-58.9 ***
	(85.6)	(5.9)	(86.4)	(6.8)	(85.8)	(12.0)
Employed residents[f]	NA	NA	42.9 ***	-0.2	40.8 ***	-0.0
			(0.8)	(0.2)	(1.0)	(0.5)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories were estimated using multilevel change models. Parameters shown above are the fixed effects, with standard errors in parentheses. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.

[b]Number per 10,000 single-family, owner-occupied housing units.

[c]Dollars in thousands per single-family, owner-occupied housing unit.

[d]Dollars in thousands per home loan.

[e]Dollars in thousands per square mile of commercial land area.

[f]Number per 10,000 working-age persons.

Appendix Table B.4

NCP Quality-of-Life Indicator Trajectories: Distribution of All-Neighborhoods Model Estimates, by Period

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
2000-2002					
Property crime[a]					
Intercept	-470.3	-246.9	-95.8	60.1	3,591.6
Slope	-403.3	-5.3	12.4	25.0	57.1
Violent crime[a]					
Intercept	-179.9	-120.9	-47.3	73.9	575.7
Slope	-70.5	-2.3	3.2	8.5	20.5
Total home loan[b]					
Intercept	-40.0	-34.7	-26.7	-2.3	441.9
Slope	-4.7	-3.6	-3.0	0.0	40.9
Mean home loan[c]					
Intercept	-83.9	-30.1	-12.8	31.2	130.1
Slope	-18.1	-2.8	-0.1	3.5	13.0
Completed foreclosures[d]					
Intercept	-215.6	-195.0	-121.9	42.1	1,859.5
Slope	-88.7	-77.7	-54.5	11.4	669.1
Total business loan[e]					
Intercept	-332.3	-237.1	-177.9	31.7	6,281.5
Slope	-142.1	-3.9	-0.6	5.7	56.7

(continued)

Appendix Table B.4 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
2003-2005					
Property crime[a]					
Intercept	-450.6	-203.4	-57.6	93.7	2,575.8
Slope	-99.5	-9.0	5.9	14.2	31.6
Violent crime[a]					
Intercept	-147.9	-102.4	-54.7	73.6	452.5
Slope	-4.0	-0.7	0.5	1.0	1.4
Total home loan[b]					
Intercept	-57.0	-48.5	-37.6	-1.6	557.0
Slope	-15.7	-13.9	-10.1	1.8	221.5
Mean home loan[c]					
Intercept	-109.8	-42.5	-10.8	40.2	165.6
Slope	-2.6	-0.6	0.1	0.5	4.7
Completed foreclosures[d]					
Intercept	-381.2	-338.2	-248.0	151.9	2,760.6
Slope	-667.5	-36.5	59.6	82.6	92.9
Total business loan[e]					
Intercept	-441.6	-293.3	-211.5	134.5	6,046.9
Slope	-299.6	-1.7	11.6	18.2	32.9
Employed residents[f]					
Intercept	-19.2	-5.2	-1.5	5.8	18.6
Slope	-1.8	-0.5	-0.1	0.5	2.8

(continued)

Appendix Table B.4 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
2006-2009					
Property crime[a]					
Intercept	-395.6	-200.3	-61.3	111.3	2,313.2
Slope	-180.0	-5.5	3.3	13.7	107.1
Violent crime[a]					
Intercept	-148.0	-102.5	-51.7	77.6	423.1
Slope	-47.7	-5.2	3.6	6.9	10.3
Total home loan[b]					
Intercept	-81.9	-72.2	-59.6	2.9	789.2
Slope	-96.4	-1.6	10.8	14.5	16.2
Mean home loan[c]					
Intercept	-91.3	-29.8	-5.9	20.9	140.4
Slope	-15.0	-6.6	-0.9	3.6	25.3
Completed foreclosures[d]					
Intercept	-102.7	-77.7	-32.0	54.7	432.6
Slope	-18.9	-13.7	-5.0	8.1	86.9
Total business loan[e]					
Intercept	-440.0	-304.1	-218.2	112.9	5,730.4
Slope	-610.6	-12.6	22.8	36.7	51.3
Employed residents[f]					
Intercept	-11.4	-4.0	-1.5	3.8	30.9
Slope	-3.0	-1.3	-0.4	0.6	12.7

(continued)

Appendix Table B.4 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories were estimated using multilevel change models, allowing variation in the parameter estimates at the neighborhood level. Shown above are statistics describing the distribution of the neighborhood-level estimates. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.
[b]Dollars in thousands per single-family, owner-occupied housing unit.
[c]Dollars in thousands per home loan.
[d]Number per 10,000 single-family, owner-occupied housing units.
[e]Dollars in thousands per square mile of commercial land area.
[f]Number per 10,000 working-age persons.

Appendix Table B.5

NCP Quality-of-Life Indicator Trajectories: Model Estimates, by Neighborhood Group and Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Indicator	Intercept	Slope	Intercept	Slope	Intercept	Slope
Neighborhood Group I						
Property crime[a]	620.2 ***	-20.3	603.9 ***	-24.5 **	580.6 ***	-12.1
	(50.2)	(13.0)	(40.7)	(9.1)	(30.4)	(7.6)
Violent crime[a]	236.2 ***	3.2	230.0 ***	-1.8	244.7 ***	-9.5 **
	(16.7)	(4.3)	(17.1)	(3.3)	(17.0)	(4.0)
Completed foreclosures[b]	215.3 ***	77.3 ***	445.7 ***	-101 ***	173.2 ***	8.3
	(25.9)	(12.7)	(47.3)	(16.7)	(24.2)	(17.7)
Total home purchase loan amount[c]	4.5 ***	0.2	6.1 ***	2.4 ***	10.9 ***	-3.2 ***
	(0.4)	(0.3)	(0.6)	(0.4)	(1.5)	(0.5)
Mean home purchase loan amount[d]	95.7 ***	2.6	115.0 ***	-2.2 *	131.9 ***	8.4
	(5.0)	(2.2)	(4.7)	(1.1)	(9.7)	(8.6)
Total small business loan amount[e]	106.1 ***	7.0	138.6 ***	-4.7	158.6 ***	-29.2 ***
	(18.4)	(5.4)	(26.9)	(10.1)	(26.0)	(7.2)
Employed residents[f]	NA	NA	38.0 ***	-0.8	35.7 ***	-0.2
			(0.7)	(0.6)	(1.2)	(1.1)

(continued)

Appendix Table B.5 (continued)

Indicator	2000 to 2002		2003 to 2005		2006 to 2009	
	Intercept	Slope	Intercept	Slope	Intercept	Slope
Neighborhood Group II						
Property crime[a]	335.9 ***	-13.2 ***	300.2 ***	-11.7 **	263.1 ***	3.2
	(22.2)	(3.4)	(21.0)	(4.7)	(17.9)	(6.1)
Violent crime[a]	64.3 ***	-4.0 **	54.7 ***	-2.7 **	49.5 ***	-1.9 ***
	(8.9)	(1.6)	(6.7)	(1.1)	(6.2)	(0.6)
Completed foreclosures[b]	65.3 **	4.4	73.7 ***	-18.5 ***	22.3 ***	19.1 ***
	(28.6)	(12.2)	(12.7)	(4.3)	(5.1)	(3.0)
Total home purchase loan amount[c]	28.8 ***	4.8 **	43.3 ***	8.3 ***	49.6 ***	-10.2 ***
	(7.6)	(2.2)	(12.1)	(2.1)	(12.8)	(2.3)
Mean home purchase loan amount[d]	155.1 ***	15.5 ***	205.2 ***	-3.8 ***	198.3 ***	9.3 ***
	(6.7)	(1.3)	(8.5)	(1.3)	(8.2)	(2.1)
Total small business loan amount[e]	346.9 ***	42.6 **	553.2 ***	-42.7 ***	546.5 ***	-75.6 ***
	(49.8)	(15.9)	(69.7)	(14.3)	(72.0)	(13.1)
Employed residents[f]	NA	NA	48.1 ***	-0.0	44.4 ***	0.4
			(1.0)	(0.3)	(1.8)	(1.6)

(continued)

Appendix Table B.5 (continued)

Indicator	2000 to 2002		2003 to 2005		2006 to 2009	
	Intercept	Slope	Intercept	Slope	Intercept	Slope
Neighborhood Group III						
Property crime[a]	462.6 ***	-16.5 **	429.8 ***	-33.9 ***	362.1 ***	-8.7 **
	(29.2)	(7.5)	(30.6)	(5.5)	(24.5)	(3.3)
Violent crime[a]	117.9 ***	-0.4	104.1 ***	-4.6 *	97.3 ***	-3.9 ***
	(14.8)	(2.2)	(12.6)	(2.6)	(11.9)	(1.4)
Completed foreclosures[b]	117.5 **	40.3 *	218.8 **	-62.4 **	52.1 ***	49.9 ***
	(45.6)	(22.6)	(76.4)	(26.1)	(17.3)	(5.7)
Total home purchase loan amount[c]	14.4 ***	2.2 ***	23.4 ***	6.1 ***	29.1 ***	-8.3 ***
	(1.6)	(0.5)	(2.9)	(1.7)	(4.8)	(1.4)
Mean home purchase loan amount[d]	128.2 ***	15.5 ***	179.7 ***	-4.2 **	187.1 ***	-1.6
	(6.4)	(1.8)	(9.0)	(1.7)	(7.9)	(4.6)
Total small business loan amount[e]	135.5 ***	14.8	231.7 ***	-5.8	186.8 ***	-21.8 ***
	(18.6)	(9.0)	(24.2)	(6.9)	(21.0)	(4.7)
Employed residents[f]	NA	NA	41.7 ***	-1.1 ***	37.8 ***	-0.6
			(2.0)	(0.2)	(1.8)	(0.7)

(continued)

Appendix Table B.5 (continued)

Indicator	2000 to 2002		2003 to 2005		2006 to 2009	
	Intercept	Slope	Intercept	Slope	Intercept	Slope
Neighborhood Group IV						
Property crime[a]	731.2 ***	-42.2 ***	658.6 ***	-24.6 **	625.3 ***	-32.1 ***
	(66.4)	(12.6)	(52.5)	(10.4)	(49.4)	(6.9)
Violent crime[a]	374.9 ***	-18.8 ***	302.6 ***	-7.1	290.4 ***	-22.0 ***
	(39.3)	(6.8)	(28.5)	(4.3)	(29.3)	(4.8)
Completed foreclosures[b]	584.8 ***	248.9 ***	1028 ***	-254 ***	234.9 ***	33.7 *
	(117.6)	(56.3)	(191.7)	(54.4)	(34.8)	(18.9)
Total home purchase loan amount[c]	23.2 ***	7.5 ***	46.7 ***	20.6 ***	116.9 ***	-35.2 ***
	(3.5)	(2.3)	(8.5)	(5.7)	(27.4)	(9.1)
Mean home purchase loan amount[d]	120.8 ***	11.9 ***	158.8 ***	-2.5	180.3 ***	8.9
	(8.9)	(2.3)	(9.4)	(1.7)	(11.4)	(7.2)
Total small business loan amount[e]	120.3 ***	21.5	216.6 ***	5.1	248.5 ***	-34.3 **
	(19.7)	(19.2)	(41.1)	(9.0)	(42.2)	(14.6)
Employed residents[f]	NA	NA	36.8 ***	-0.1	36.2 ***	-0.0
			(0.8)	(0.3)	(1.1)	(0.6)

(continued)

Appendix Table B.5 (continued)

Indicator	2000 to 2002		2003 to 2005		2006 to 2009	
	Intercept	Slope	Intercept	Slope	Intercept	Slope
Neighborhood Group V						
Property crime[a]	1398 **	-134 **	1116 ***	-62.3 ***	1012 ***	-28.9
	(435.2)	(53.4)	(308.4)	(16.2)	(285.5)	(32.2)
Violent crime[a]	166.6 ***	-10.8	128.6 ***	-5.4	121.6 ***	-10.3 *
	(40.1)	(7.7)	(25.5)	(3.2)	(28.5)	(5.2)
Completed foreclosures[b]	47.1 **	29.5 ***	87.7 ***	-24.9	17.3 *	4.7
	(15.9)	(8.0)	(23.3)	(15.2)	(7.6)	(5.5)
Total home purchase loan amount[c]	222.5 ***	22.6 *	304.0 ***	65.7 *	379.5 ***	-59.3 ***
	(60.7)	(12.5)	(72.2)	(37.2)	(94.1)	(17.1)
Mean home purchase loan amount[d]	230.9 ***	16.6 ***	284.0 ***	2.7	279.0 ***	24.0 **
	(11.6)	(3.2)	(15.9)	(3.5)	(19.1)	(11.0)
Total small business loan amount[e]	1453 *	32.1	1654 *	-84.3 *	1705 **	-188 **
	(763.1)	(35.9)	(716.8)	(40.1)	(693.8)	(88.7)
Employed residents[f]	NA	NA	52.5 ***	1.9 **	55.8 ***	0.3
			(1.4)	(0.8)	(4.2)	(3.3)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories were estimated using multilevel change models. Parameters shown above are the fixed effects, with standard errors in parentheses. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.
[b]Number per 10,000 single-family, owner-occupied housing units.
[c]Dollars in thousands per single-family, owner-occupied housing unit.
[d]Dollars in thousands per home loan.
[e]Dollars in thousands per square mile of commercial land area.
[f]Number per 10,000 working-age persons.

Appendix Table B.6

NCP Quality-of-Life Indicator Trajectories: Distribution of Model Estimates, by Neighborhood Group and Period

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group I, 2000-2002					
Property crime[a]					
Intercept	-188.1	-110.1	-25.6	106.9	417.9
Slope	-57.0	-10.7	3.3	25.5	57.1
Violent crime[a]					
Intercept	-30.6	12.6	41.3	70.4	174.6
Slope	-21.1	1.2	8.4	10.4	20.5
Total home purchase loan amount[b]					
Intercept	-38.8	-38.2	-37.5	-36.1	-34.7
Slope	-4.7	-4.1	-4.1	-3.9	-3.5
Mean home purchase loan amount[c]					
Intercept	-71.6	-54.4	-42.6	-37.3	-19.2
Slope	-18.1	-8.2	-6.1	-5.0	-2.3
Completed foreclosures[d]					
Intercept	-111.3	-64.8	-30.4	36.1	114.8
Slope	-41.7	-28.4	-17.0	4.8	58.3
Total small business loan amount[c]					
Intercept	-330.4	-266.7	-244.1	-208.8	-84.5
Slope	-5.0	-4.9	-2.7	-2.1	5.0

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group I, 2003-2005					
Property crime[a]					
Intercept	-133.5	-16.5	14.0	175.9	323.3
Slope	-32.2	-17.1	0.9	15.1	27.0
Violent crime[a]					
Intercept	-16.3	62.8	72.2	90.5	174.1
Slope	-1.6	-0.8	-0.6	-0.5	0.1
Total home purchase loan amount[b]					
Intercept	-55.5	-53.9	-53.2	-50.8	-46.3
Slope	-15.7	-15.0	-14.5	-14.0	-11.8
Mean home purchase loan amount[c]					
Intercept	-92.8	-78.0	-65.7	-52.1	-43.1
Slope	-1.1	-0.3	-0.1	0.1	1.7
Completed foreclosures[d]					
Intercept	-160.1	-67.1	-2.5	158.7	331.2
Slope	-80.2	-39.1	0.4	16.8	39.5
Total small business loan amount[e]					
Intercept	-437.7	-359.9	-321.3	-288.4	-91.1
Slope	-5.4	14.5	18.1	21.1	23.2
Employed residents[f]					
Intercept	-7.2	-5.8	-5.1	-4.2	-3.0
Slope	-0.8	-0.6	-0.6	-0.5	0.1

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group I, 2006-2009					
Property crime[a]					
Intercept	-80.7	1.7	62.0	179.1	249.2
Slope	-20.3	-12.1	-3.5	14.1	32.5
Violent crime[a]					
Intercept	-6.7	68.1	95.2	124.4	210.8
Slope	-14.9	-6.1	-4.9	-0.6	3.9
Total home purchase loan amount[b]					
Intercept	-80.2	-78.3	-77.6	-71.7	-64.0
Slope	11.6	13.7	15.3	15.6	15.9
Mean home purchase loan amount[c]					
Intercept	-73.1	-55.7	-39.8	-34.6	-29.5
Slope	-10.3	-7.4	-4.5	-4.0	-2.7
Completed foreclosures[d]					
Intercept	-25.8	-5.3	17.1	55.2	119.5
Slope	-5.6	-3.3	2.9	6.2	20.0
Total small business loan amount[e]					
Intercept	-429.0	-333.8	-302.1	-274.5	-105.8
Slope	-12.6	26.3	35.2	36.6	50.6
Employed residents[f]					
Intercept	-5.4	-4.8	-3.5	-2.8	-0.7
Slope	-1.9	-1.5	-0.9	-0.5	0.9

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group II, 2000-2002					
Property crime[a]					
Intercept	-470.3	-365.9	-262.3	-230.8	14.4
Slope	-0.1	19.1	25.6	35.4	43.3
Violent crime[a]					
Intercept	-179.9	-161.7	-130.6	-112.4	-30.9
Slope	-9.9	0.3	4.8	8.4	15.7
Total home purchase loan amount[b]					
Intercept	-37.3	-33.2	-26.4	-6.8	139.4
Slope	-3.9	-3.6	-3.1	0.0	17.2
Mean home purchase loan amount[c]					
Intercept	-47.3	-13.0	20.2	36.1	74.3
Slope	-5.7	-0.8	1.6	5.3	9.8
Completed foreclosures[d]					
Intercept	-215.6	-202.5	-195.0	-160.8	150.6
Slope	-86.0	-81.3	-78.6	-61.8	-44.0
Total small business loan amount[e]					
Intercept	-314.9	-223.1	39.2	183.1	698.3
Slope	-13.4	-3.4	0.9	11.9	32.4

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group II, 2003-2005					
Property crime[a]					
Intercept	-450.6	-303.0	-240.7	-200.7	8.2
Slope	-21.0	4.7	13.6	23.0	31.6
Violent crime[a]					
Intercept	-147.9	-133.4	-110.9	-76.5	-54.0
Slope	0.5	0.7	1.1	1.2	1.4
Total home purchase loan amount[b]					
Intercept	-53.7	-47.7	-40.0	-8.0	197.8
Slope	-15.3	-14.1	-11.6	-3.7	38.3
Mean home purchase loan amount[c]					
Intercept	-65.4	-14.2	28.7	47.8	111.7
Slope	-2.6	-0.9	-0.1	0.4	2.8
Completed foreclosures[d]					
Intercept	-380.5	-361.6	-345.5	-280.5	-156.3
Slope	38.2	68.2	84.3	88.1	92.8
Total small business loan amount[e]					
Intercept	-415.9	-220.4	123.8	266.2	915.6
Slope	-86.8	-22.1	0.1	9.4	22.1
Employed residents[f]					
Intercept	-2.7	0.9	4.7	8.2	14.0
Slope	-0.4	-0.0	0.5	0.7	1.5

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group II, 2006-2009					
Property crime[a]					
Intercept	-395.6	-287.8	-223.6	-181.8	-57.4
Slope	-2.7	3.5	11.8	15.4	107.1
Violent crime[a]					
Intercept	-148.0	-134.0	-111.0	-88.3	-39.7
Slope	1.7	6.4	7.5	9.1	10.3
Total home purchase loan amount[b]					
Intercept	-79.1	-74.0	-65.6	-27.1	196.6
Slope	-28.8	3.8	13.0	15.1	15.9
Mean home purchase loan amount[c]					
Intercept	-53.2	-12.5	9.2	25.6	90.1
Slope	-9.1	-1.8	2.1	3.7	12.1
Completed foreclosures[d]					
Intercept	-101.3	-87.0	-73.0	-50.8	-13.9
Slope	-17.7	-15.3	-12.7	-6.8	-3.1
Total small business loan amount[e]					
Intercept	-414.1	-258.4	68.8	257.5	807.1
Slope	-102.2	-49.8	-12.6	26.7	49.9
Employed residents[f]					
Intercept	-4.4	-0.8	3.0	5.6	9.1
Slope	-2.0	-0.9	0.9	2.2	4.5

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group III, 2000-2002					
Property crime[a]					
Intercept	-365.5	-249.9	-133.4	-43.1	2.6
Slope	-15.4	9.7	18.3	28.2	35.9
Violent crime[a]					
Intercept	-133.2	-103.5	-86.5	-62.4	65.2
Slope	-5.5	0.6	6.6	9.9	15.7
Total home purchase loan amount[b]					
Intercept	-36.8	-30.3	-28.2	-21.9	-12.6
Slope	-4.0	-3.4	-3.1	-2.3	-1.1
Mean home purchase loan amount[c]					
Intercept	-48.9	-25.9	-13.5	17.4	34.5
Slope	-7.0	-1.4	1.0	4.4	7.6
Completed foreclosures[d]					
Intercept	-208.9	-194.0	-166.1	-122.8	371.2
Slope	-83.2	-78.5	-68.0	-47.9	134.0
Total small business loan amount[e]					
Intercept	-299.5	-256.2	-189.3	-136.4	-84.6
Slope	-28.5	-3.9	0.0	4.9	15.4

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group III, 2003-2005					
Property crime[a]					
Intercept	-318.9	-195.7	-132.9	-11.5	52.7
Slope	-19.4	-17.4	2.0	6.8	15.5
Violent crime[a]					
Intercept	-118.7	-77.5	-67.8	-57.6	42.1
Slope	-0.4	0.5	0.6	0.7	1.1
Total home purchase loan amount[b]					
Intercept	-53.2	-41.8	-37.5	-32.0	-4.1
Slope	-15.0	-12.5	-10.4	-8.7	1.1
Mean home purchase loan amount[c]					
Intercept	-70.6	-25.1	-7.4	25.0	49.7
Slope	-2.3	-0.9	-0.2	0.3	1.9
Completed foreclosures[d]					
Intercept	-363.0	-331.2	-295.2	-164.4	542.6
Slope	-133.9	39.8	72.0	81.0	88.7
Total small business loan amount[e]					
Intercept	-308.1	-287.9	-245.1	-138.6	-0.7
Slope	-6.0	6.7	12.4	17.1	32.7
Employed residents[f]					
Intercept	-19.2	-5.0	1.2	2.8	5.8
Slope	-1.8	-0.5	-0.2	0.1	0.3

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group III, 2006-2009					
Property crime[a]					
Intercept	-274.1	-219.0	-153.3	-54.4	41.4
Slope	-9.9	-1.6	2.4	14.9	21.2
Violent crime[a]					
Intercept	-112.3	-81.1	-74.2	-46.0	48.7
Slope	-5.6	3.0	5.1	6.7	8.0
Total home purchase loan amount[b]					
Intercept	-78.0	-71.4	-61.1	-54.9	-11.6
Slope	-1.0	10.3	11.0	13.6	15.4
Mean home purchase loan amount[c]					
Intercept	-53.6	-29.4	-9.1	11.7	29.4
Slope	-13.6	-9.5	-7.1	-0.1	4.5
Completed foreclosures[d]					
Intercept	-81.8	-50.7	-22.8	10.0	132.3
Slope	-14.5	-5.7	0.8	6.3	23.8
Total small business loan amount[e]					
Intercept	-359.2	-329.3	-284.4	-188.4	-134.7
Slope	3.9	25.6	36.9	42.9	50.2
Employed residents[f]					
Intercept	-11.4	-4.6	-1.9	0.4	3.7
Slope	-2.8	-1.7	-0.7	-0.1	1.2

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group IV, 2000-2002					
Property crime[a]					
Intercept	-110.8	-60.5	45.1	140.1	1,058.9
Slope	-139.9	-14.6	-3.3	11.1	23.4
Violent crime[a]					
Intercept	-93.4	74.8	171.8	277.2	575.7
Slope	-70.5	-22.7	-3.1	2.5	18.6
Total home purchase loan amount[b]					
Intercept	-40.0	-30.9	-16.1	2.0	21.2
Slope	-4.4	-3.2	-1.4	0.9	11.2
Mean home purchase loan amount[c]					
Intercept	-83.9	-30.1	-18.6	4.2	48.7
Slope	-10.8	-2.8	-1.5	0.4	9.3
Completed foreclosures[d]					
Intercept	-214.7	15.0	338.4	540.2	1,859.5
Slope	-88.7	11.4	108.8	274.0	669.1
Total small business loan amount[e]					
Intercept	-332.3	-256.8	-212.2	-165.9	-32.7
Slope	-25.0	-3.5	-0.7	2.7	56.7

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group IV, 2003-2005					
Property crime[a]					
Intercept	-162.3	-13.8	88.5	130.1	647.4
Slope	-99.5	-3.5	6.0	13.3	29.3
Violent crime[a]					
Intercept	-65.5	67.2	129.0	212.7	452.5
Slope	-4.0	-2.1	-1.4	-0.6	0.7
Total home purchase loan amount[b]					
Intercept	-57.0	-39.6	-18.8	14.8	86.9
Slope	-15.7	-10.2	-7.6	7.2	45.6
Mean home purchase loan amount[c]					
Intercept	-109.8	-40.1	-19.3	-0.9	43.8
Slope	-2.2	-0.4	0.2	0.7	2.5
Completed foreclosures[d]					
Intercept	-365.8	7.3	395.0	953.3	2,760.6
Slope	-667.5	-234.0	-95.4	-1.7	89.3
Total small business loan amount[e]					
Intercept	-441.6	-334.3	-279.7	-171.4	338.2
Slope	-11.6	9.7	16.1	22.6	32.9
Employed residents[f]					
Intercept	-11.8	-7.8	-5.4	-2.4	1.7
Slope	-0.9	-0.8	-0.4	-0.2	0.9

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group IV, 2006-2009					
Property crime[a]					
Intercept	-215.2	-44.1	111.3	245.4	579.0
Slope	-60.6	-25.9	-7.5	3.8	12.3
Violent crime[a]					
Intercept	-72.7	58.8	127.4	203.9	423.1
Slope	-47.7	-14.7	-10.0	-2.9	5.8
Total home purchase loan amount[b]					
Intercept	-81.9	-53.2	-18.9	47.4	292.9
Slope	-86.8	-14.1	2.1	9.2	16.2
Mean home purchase loan amount[c]					
Intercept	-91.3	-14.7	-7.3	3.3	83.5
Slope	-15.0	-4.2	1.0	3.0	13.0
Completed foreclosures[d]					
Intercept	-93.5	31.5	108.5	176.2	432.6
Slope	-16.2	4.4	14.9	33.0	86.9
Total small business loan amount[e]					
Intercept	-440.0	-308.6	-257.8	-181.9	304.5
Slope	-12.6	16.3	24.4	34.7	51.3
Employed residents[f]					
Intercept	-7.5	-5.2	-3.4	-1.6	5.6
Slope	-3.0	-1.2	-0.7	-0.1	1.9

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group V, 2000-2002					
Property crime[a]					
Intercept	-188.2	6.1	419.6	983.9	3,591.6
Slope	-403.3	-134.8	-36.9	-1.2	18.6
Violent crime[a]					
Intercept	-135.4	-132.3	-40.4	61.9	154.6
Slope	-21.2	-13.9	2.6	7.8	9.2
Total home purchase loan amount[b]					
Intercept	22.7	70.4	125.2	295.9	441.9
Slope	1.8	6.7	14.6	24.2	40.9
Mean home purchase loan amount[c]					
Intercept	45.4	62.5	92.3	112.9	130.1
Slope	0.7	2.3	4.1	10.4	13.0
Completed foreclosures[d]					
Intercept	-209.3	-204.5	-179.6	-127.8	-110.6
Slope	-82.6	-79.2	-64.9	-47.4	-42.8
Total small business loan amount[e]					
Intercept	-143.1	132.2	439.1	950.0	6,281.5
Slope	-142.1	-8.4	6.1	8.4	27.3

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group V, 2003-2005					
Property crime[a]					
Intercept	-142.4	4.7	296.3	737.3	2,575.8
Slope	-90.3	-52.5	-26.1	-3.4	12.0
Violent crime[a]					
Intercept	-109.9	-105.6	-43.7	29.2	74.9
Slope	-0.8	-0.2	0.4	1.0	1.0
Total home purchase loan amount[b]					
Intercept	19.5	78.9	168.7	383.6	557.0
Slope	3.8	15.9	31.5	75.6	221.5
Mean home purchase loan amount[c]					
Intercept	54.6	74.3	97.9	139.2	165.6
Slope	-0.1	0.3	0.8	1.2	4.7
Completed foreclosures[d]					
Intercept	-381.2	-352.4	-296.7	-279.9	-240.8
Slope	57.3	68.4	72.6	86.0	92.9
Total small business loan amount[e]					
Intercept	-202.6	206.4	509.7	1,164.9	6,046.9
Slope	-299.6	-84.5	-19.0	-4.8	15.0
Employed residents[f]					
Intercept	6.4	7.5	9.8	11.7	18.6
Slope	0.7	0.9	0.9	1.3	2.8

(continued)

Appendix Table B.6 (continued)

Indicator	Minimum	25th Percentile	Median	75th Percentile	Maximum
Neighborhood Group V, 2006-2009					
Property crime[a]					
Intercept	-147.9	-24.9	270.7	720.5	2,313.2
Slope	-180.0	-11.6	10.6	16.8	20.7
Violent crime[a]					
Intercept	-121.7	-108.1	-55.7	34.1	69.2
Slope	-15.0	-0.9	2.8	7.3	8.1
Total home purchase loan amount[b]					
Intercept	26.4	82.1	233.9	443.9	789.2
Slope	-96.4	-77.8	-36.2	-10.4	1.2
Mean home purchase loan amount[c]					
Intercept	35.6	58.5	71.6	110.6	140.4
Slope	10.9	14.6	15.6	20.9	25.3
Completed foreclosures[d]					
Intercept	-102.7	-96.0	-88.3	-81.9	-67.2
Slope	-18.9	-18.3	-16.3	-14.6	-10.0
Total small business loan amount[e]					
Intercept	-187.7	228.7	484.2	1,452.9	5,730.4
Slope	-610.6	-128.3	-59.1	-28.3	39.9
Employed residents[f]					
Intercept	3.7	5.9	7.6	10.6	30.9
Slope	-1.1	-0.2	0.7	3.2	12.7

(continued)

Appendix Table B.6 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Indicator trajectories were estimated using multilevel change models, allowing variation in the parameter estimates at the neighborhood level. Shown above are statistics describing the distribution of the neighborhood-level estimates. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.
[b]Dollars in thousands per single-family, owner-occupied housing unit.
[c]Dollars in thousands per home loan.
[d]Number per 10,000 single-family, owner-occupied housing units.
[e]Dollars in thousands per square mile of commercial land area.
[f]Number per 10,000 working-age persons.

Appendix Table B.7

NCP Quality-of-Life Indicator Trajectories: Correlations between Initial Levels and Rates of Change, by Neighborhood Group and Period

Period and Group	Indicator					
	Property Crime[a]	Violent Crime[a]	Completed Foreclosures[b]	Total Home Loan[c]	Mean Home Loan[d]	Total Business Loan[e]
All neighborhoods						
2000 to 2002	-0.9358	-0.5890	0.8725	0.7950	0.5627	-0.4775
2003 to 2005	-0.5917	-0.8112	-0.9984	0.8314	0.0031	-0.8733
2006 to 2009	-0.4786	-0.8114	0.8008	-0.9259	0.5333	-0.8378
Group I neighborhoods						
2000 to 2002	-0.8084	0.3136	0.1058	-0.3651	-0.5611	0.2593
2003 to 2005	-0.2881	-0.2102	-0.9178	0.9926	-0.5009	-0.1956
2006 to 2009	-0.3353	0.4582	0.2924	-0.9849	0.1906	-0.9915
Group II neighborhoods						
2000 to 2002	-0.5101	-0.6547	-0.9113	0.7494	0.4757	0.5624
2003 to 2005	-0.6741	-0.5829	-0.9807	0.9379	0.3212	-0.6768
2006 to 2009	-0.3168	-0.9907	0.0595	-0.9931	0.3841	-0.8767
Group III neighborhoods						
2000 to 2002	0.2820	-0.2150	0.7527	0.8624	0.8475	-0.3890
2003 to 2005	-0.8145	-0.2587	-0.9594	0.8211	-0.5033	-0.5716
2006 to 2009	0.3560	-0.6110	0.9470	-0.9944	0.8411	-0.9300
Group IV neighborhoods						
2000 to 2002	-0.7576	-0.6415	0.9140	0.6701	0.3164	0.4822
2003 to 2005	-0.8038	0.1309	-0.9907	0.8261	-0.8853	-0.0043
2006 to 2009	-0.8688	-0.7947	0.7538	-0.9879	0.2687	0.0771

(continued)

Appendix Table B.7 (continued)

Period and Group	Indicator					
	Property Crime[a]	Violent Crime[a]	Completed Foreclosures[b]	Total Home Loan[c]	Mean Home Loan[d]	Total Business Loan[e]
Group V neighborhoods						
2000 to 2002	-0.9975	-0.7297	0.8044	0.3599	-0.1398	-0.9068
2003 to 2005	-0.4896	-0.0354	-0.9265	0.8066	-0.7789	-0.9974
2006 to 2009	-0.3123	-0.6981	-0.7692	-0.7409	0.2710	-0.9255

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The trajectory for each indicator was estimated using multilevel change models, with separate models estimated for each time period. Shown here are the correlations, or levels of association, between the neighborhood parameters for initial levels (intercepts) and rates of change (slopes). Correlations range from -1 to 1, with values closer to zero indicating a weaker level of association. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.
[b]Number per 10,000 single-family, owner-occupied housing units.
[c]Dollars in thousands per single-family, owner-occupied housing unit.
[d]Dollars in thousands per home loan.
[e]Dollars in thousands per square mile of commercial land area.

Appendix Table B.8

NCP Quality-of-Life Indicator Trajectories: Correlations between Rates of Change among Indicators, by Period

Period and Indicator	Indicator						
	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Completed Foreclosures[d]	Total Business Loan[e]	Employed Residents[f]
2000 to 2002							
Property crime[a]	1.000	0.433	-0.488	-0.203	-0.048	0.309	NA
Violent crime[a]	0.433	1.000	-0.440	-0.160	-0.264	0.217	NA
Total home loan[b]	-0.488	-0.440	1.000	0.424	0.341	-0.015	NA
Mean home loan[c]	-0.203	-0.160	0.424	1.000	0.061	0.121	NA
Completed foreclosures[d]	-0.048	-0.264	0.341	0.061	1.000	-0.277	NA
Total business loan[e]	0.309	0.217	-0.015	0.121	-0.277	1.000	NA
2003 to 2005							
Property crime[a]	1.000	0.458	-0.254	-0.243	-0.047	-0.001	-0.116
Violent crime[a]	0.458	1.000	-0.037	-0.143	0.263	-0.199	-0.170
Total home loan[b]	-0.254	-0.037	1.000	0.432	-0.322	-0.382	0.265
Mean home loan[c]	-0.243	-0.143	0.432	1.000	-0.050	-0.183	0.217
Completed foreclosures[d]	-0.047	0.263	-0.322	-0.050	1.000	-0.254	0.076
Total business loan[e]	-0.001	-0.199	-0.382	-0.183	-0.254	1.000	-0.168
Employed residents[f]	-0.116	-0.170	0.265	0.217	0.076	-0.168	1.000

(continued)

Appendix Table B.8 (continued)

Period and Indicator	Indicator						
	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Completed Foreclosures[d]	Total Business Loan[e]	Employed Residents[f]
2006 to 2009							
Property crime[a]	1.000	0.561	0.304	-0.111	-0.131	-0.108	-0.341
Violent crime[a]	0.561	1.000	0.652	-0.244	0.042	-0.189	-0.335
Total home loan[b]	0.304	0.652	1.000	-0.430	-0.332	0.122	-0.216
Mean home loan[c]	-0.111	-0.244	-0.430	1.000	-0.212	-0.651	0.071
Completed foreclosures[d]	-0.131	0.042	-0.332	-0.212	1.000	0.196	-0.076
Total business loan[e]	-0.108	-0.189	0.122	-0.651	0.196	1.000	0.243
Employed residents[f]	-0.341	-0.335	-0.216	0.071	-0.076	0.243	1.000

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Simultaneous relationships between indicators were assessed by estimation of multivariate multilevel change models, allowing variation in the parameters at the neighborhood level. The correlation coefficients shown above indicate the level of association between the slope parameters of pairs of indicators. Shown here are the correlations, or levels of association, between the neighborhood parameters for initial levels (intercepts) and rates of change (slopes). Correlations range from -1 to 1, with values closer to zero indicating a weaker level of association. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.
[b]Dollars in thousands per single-family, owner-occupied housing unit.
[c]Dollars in thousands per home loan.
[d]Number per 10,000 single-family, owner-occupied housing units.
[e]Dollars in thousands per square mile of commercial land area.
[f]Number per 10,000 working-age persons.

Appendix Table B.9

NCP Quality-of-Life Indicator Trajectories: Correlations between Rates of Change among Indicators, by Neighborhood Group and Period

Group, Period, and Indicator	Indicator						
	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Completed Foreclosures[d]	Total Business Loan[e]	Employed Residents[f]
Neighborhood group I							
2000 to 2002							
Property crime[a]	1.000	-0.595	-0.570	-0.586	-0.289	0.081	NA
Violent crime[a]	-0.595	1.000	0.870	0.763	0.837	-0.090	NA
Total home loan[b]	-0.570	0.870	1.000	0.971	0.667	-0.007	NA
Mean home loan[c]	-0.586	0.763	0.971	1.000	0.539	0.063	NA
Completed foreclosures[d]	-0.289	0.837	0.667	0.539	1.000	0.204	NA
Total business loan[e]	0.081	-0.090	-0.007	0.063	0.204	1.000	NA
2003 to 2005							
Property crime[a]	1.000	-0.098	-0.108	-0.243	0.278	0.872	0.050
Violent crime[a]	-0.098	1.000	-0.061	0.281	-0.235	-0.378	-0.060
Total home loan[b]	-0.108	-0.061	1.000	0.112	-0.291	-0.001	0.027
Mean home loan[c]	-0.243	0.281	0.112	1.000	-0.554	-0.235	0.001
Completed foreclosures[d]	0.278	-0.235	-0.291	-0.554	1.000	0.011	0.004
Total business loan[e]	0.872	-0.378	-0.001	-0.235	0.011	1.000	0.007
Employed residents[f]	0.050	-0.060	0.027	0.001	0.004	0.007	1.000

(continued)

Appendix Table B.9 (continued)

Group, Period, and Indicator	Indicator						
	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Completed Foreclosures[d]	Total Business Loan[e]	Employed Residents[f]
Neighborhood group I							
2006 to 2009							
Property crime[a]	1.000	-0.099	0.148	-0.236	-0.531	0.253	0.013
Violent crime[a]	-0.099	1.000	-0.096	0.139	0.062	-0.266	-0.011
Total home loan[b]	0.148	-0.096	1.000	-0.094	-0.222	0.046	0.018
Mean home loan[c]	-0.236	0.139	-0.094	1.000	0.518	-0.234	-0.037
Completed foreclosures[d]	-0.531	0.062	-0.222	0.518	1.000	-0.375	-0.039
Total business loan[e]	0.253	-0.266	0.046	-0.234	-0.375	1.000	0.007
Employed residents[f]	0.013	-0.011	0.018	-0.037	-0.039	0.007	1.000
Neighborhood group II							
2000 to 2002							
Property crime[a]	1.000	0.499	-0.183	-0.267	0.181	0.041	NA
Violent crime[a]	0.499	1.000	-0.392	-0.061	0.565	-0.112	NA
Total home loan[b]	-0.183	-0.392	1.000	0.077	-0.076	0.323	NA
Mean home loan[c]	-0.267	-0.061	0.077	1.000	0.178	0.502	NA
Completed foreclosures[d]	0.181	0.565	-0.076	0.178	1.000	0.261	NA
Total business loan[e]	0.041	-0.112	0.323	0.502	0.261	1.000	NA
2003 to 2005							
Property crime[a]	1.000	0.434	-0.121	-0.124	0.090	-0.435	0.020
Violent crime[a]	0.434	1.000	-0.484	0.077	0.399	-0.085	0.491
Total home loan[b]	-0.121	-0.484	1.000	-0.248	-0.667	0.349	-0.469
Mean home loan[c]	-0.124	0.077	-0.248	1.000	0.344	-0.013	0.127
Completed foreclosures[d]	0.090	0.399	-0.667	0.344	1.000	-0.276	-0.034
Total business loan[e]	-0.435	-0.085	0.349	-0.013	-0.276	1.000	0.197
Employed residents[f]	0.020	0.491	-0.469	0.127	-0.034	0.197	1.000

(continued)

Appendix Table B.9 (continued)

Group, Period, and Indicator	Indicator						
	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Completed Foreclosures[d]	Total Business Loan[e]	Employed Residents[f]
Neighborhood group II							
2006 to 2009							
Property crime[a]	1.000	0.044	-0.031	-0.406	-0.091	0.458	0.592
Violent crime[a]	0.044	1.000	-0.078	-0.091	-0.159	-0.121	-0.208
Total home loan[b]	-0.031	-0.078	1.000	-0.480	-0.028	0.410	0.473
Mean home loan[c]	-0.406	-0.091	-0.480	1.000	-0.153	-0.564	-0.470
Completed foreclosures[d]	-0.091	-0.159	-0.028	-0.153	1.000	-0.102	-0.302
Total business loan[e]	0.458	-0.121	0.410	-0.564	-0.102	1.000	0.605
Employed residents[f]	0.592	-0.208	0.473	-0.470	-0.302	0.605	1.000
Neighborhood group III							
2000 to 2002							
Property crime[a]	1.000	0.207	-0.340	0.027	-0.413	-0.553	NA
Violent crime[a]	0.207	1.000	-0.663	-0.315	-0.178	-0.146	NA
Total home loan[b]	-0.340	-0.663	1.000	0.202	0.277	0.107	NA
Mean home loan[c]	0.027	-0.315	0.202	1.000	-0.298	-0.278	NA
Completed foreclosures[d]	-0.413	-0.178	0.277	-0.298	1.000	0.212	NA
Total business loan[e]	-0.553	-0.146	0.107	-0.278	0.212	1.000	NA
2003 to 2005							
Property crime[a]	1.000	0.306	-0.220	-0.157	-0.158	-0.326	0.020
Violent crime[a]	0.306	1.000	-0.543	0.474	0.497	0.314	-0.021
Total home loan[b]	-0.220	-0.543	1.000	-0.046	-0.774	-0.265	0.140
Mean home loan[c]	-0.157	0.474	-0.046	1.000	-0.141	0.106	0.011
Completed foreclosures[d]	-0.158	0.497	-0.774	-0.141	1.000	0.339	-0.179
Total business loan[e]	-0.326	0.314	-0.265	0.106	0.339	1.000	-0.061
Employed residents[f]	0.020	-0.021	0.140	0.011	-0.179	-0.061	1.000

(continued)

Appendix Table B.9 (continued)

Group, Period, and Indicator	Indicator						
	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Completed Foreclosures[d]	Total Business Loan[e]	Employed Residents[f]
Neighborhood group III							
2006 to 2009							
Property crime[a]	1.000	0.168	-0.152	0.219	0.183	-0.342	0.100
Violent crime[a]	0.168	1.000	0.056	-0.236	0.092	-0.067	0.009
Total home loan[b]	-0.152	0.056	1.000	-0.406	-0.464	0.234	0.082
Mean home loan[c]	0.219	-0.236	-0.406	1.000	0.355	-0.056	0.019
Completed foreclosures[d]	0.183	0.092	-0.464	0.355	1.000	-0.286	-0.214
Total business loan[e]	-0.342	-0.067	0.234	-0.056	-0.286	1.000	0.108
Employed residents[f]	0.100	0.009	0.082	0.019	-0.214	0.108	1.000
Neighborhood group IV							
2000 to 2002							
Property crime[a]	1.000	0.560	0.059	-0.141	0.014	0.090	NA
Violent crime[a]	0.560	1.000	-0.236	-0.410	-0.149	0.482	NA
Total home loan[b]	0.059	-0.236	1.000	0.825	0.640	-0.116	NA
Mean home loan[c]	-0.141	-0.410	0.825	1.000	0.353	-0.067	NA
Completed foreclosures[d]	0.014	-0.149	0.640	0.353	1.000	-0.671	NA
Total business loan[e]	0.090	0.482	-0.116	-0.067	-0.671	1.000	NA
2003 to 2005							
Property crime[a]	1.000	0.688	-0.163	-0.149	-0.158	-0.388	-0.097
Violent crime[a]	0.688	1.000	-0.247	-0.664	0.142	-0.516	-0.116
Total home loan[b]	-0.163	-0.247	1.000	0.084	-0.780	0.848	-0.050
Mean home loan[c]	-0.149	-0.664	0.084	1.000	-0.015	0.162	-0.008
Completed foreclosures[d]	-0.158	0.142	-0.780	-0.015	1.000	-0.600	0.071
Total business loan[e]	-0.388	-0.516	0.848	0.162	-0.600	1.000	0.039
Employed residents[f]	-0.097	-0.116	-0.050	-0.008	0.071	0.039	1.000

(continued)

Appendix Table B.9 (continued)

Group, Period, and Indicator	Indicator						
	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Completed Foreclosures[d]	Total Business Loan[e]	Employed Residents[f]
Neighborhood group IV							
2006 to 2009							
Property crime[a]	1.000	0.352	0.222	0.054	-0.010	0.282	-0.039
Violent crime[a]	0.352	1.000	0.518	-0.060	0.260	-0.175	-0.040
Total home loan[b]	0.222	0.518	1.000	-0.035	-0.407	0.184	-0.071
Mean home loan[c]	0.054	-0.060	-0.035	1.000	-0.017	0.103	0.032
Completed foreclosures[d]	-0.010	0.260	-0.407	-0.017	1.000	-0.762	0.017
Total business loan[e]	0.282	-0.175	0.184	0.103	-0.762	1.000	-0.004
Employed residents[f]	-0.039	-0.040	-0.071	0.032	0.017	-0.004	1.000
Neighborhood group V							
2000 to 2002							
Property crime[a]	1.000	0.844	-0.718	-0.145	-0.148	0.764	NA
Violent crime[a]	0.844	1.000	-0.924	-0.138	-0.057	0.405	NA
Total home loan[b]	-0.718	-0.924	1.000	0.273	-0.199	-0.320	NA
Mean home loan[c]	-0.145	-0.138	0.273	1.000	-0.578	-0.118	NA
Completed foreclosures[d]	-0.148	-0.057	-0.199	-0.578	1.000	0.063	NA
Total business loan[e]	0.764	0.405	-0.320	-0.118	0.063	1.000	NA
2003 to 2005							
Property crime[a]	1.000	-0.091	-0.173	0.013	0.137	0.493	0.038
Violent crime[a]	-0.091	1.000	0.329	0.175	-0.305	-0.167	-0.027
Total home loan[b]	-0.173	0.329	1.000	0.411	-0.972	-0.775	0.024
Mean home loan[c]	0.013	0.175	0.411	1.000	-0.397	-0.210	0.007
Completed foreclosures[d]	0.137	-0.305	-0.972	-0.397	1.000	0.708	-0.042
Total business loan[e]	0.493	-0.167	-0.775	-0.210	0.708	1.000	0.007
Employed residents[f]	0.038	-0.027	0.024	0.007	-0.042	0.007	1.000

(continued)

Appendix Table B.9 (continued)

Group, Period, and Indicator	Indicator						
	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Completed Foreclosures[d]	Total Business Loan[e]	Employed Residents[f]
Neighborhood group V							
2006 to 2009							
Property crime[a]	1.000	0.681	0.212	0.071	-0.159	-0.324	-0.313
Violent crime[a]	0.681	1.000	0.238	0.070	-0.143	-0.290	-0.222
Total home loan[b]	0.212	0.238	1.000	0.051	0.001	-0.179	-0.156
Mean home loan[c]	0.071	0.070	0.051	1.000	-0.273	-0.439	0.001
Completed foreclosures[d]	-0.159	-0.143	0.001	-0.273	1.000	0.677	0.039
Total business loan[e]	-0.324	-0.290	-0.179	-0.439	0.677	1.000	0.073
Employed residents[f]	-0.313	-0.222	-0.156	0.001	0.039	0.073	1.000

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Simultaneous relationships between indicators were assessed by estimation of multivariate multilevel change models, allowing variation in the parameters at the neighborhood level. The correlation coefficients shown above indicate the level of association between the slope parameters of pairs of indicators. Shown here are the correlations, or levels of association, between the neighborhood parameters for initial levels (intercepts) and rates of change (slopes). Correlations range from -1 to 1, with values closer to zero indicating a weaker level of association. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.
[b]Dollars in thousands per single-family, owner-occupied housing unit.
[c]Dollars in thousands per home loan.
[d]Number per 10,000 single-family, owner-occupied housing units.
[e]Dollars in thousands per square mile of commercial land area.
[f]Number per 10,000 working-age persons.

Appendix Table B.10

Time-Shifted (Lead-Lag) Relationships between NCP Quality-of-Life Indicators: Granger Causality Test Statistics

	Outcome							
Predictor	Property Crime[a]	Violent Crime[a]	Completed Foreclosures[b]	Filed Foreclosures[b]	Total Home Loan[c]	Mean Home Loan[d]	Total Business Loan[e]	Employed Residents[f]
Property crime[a]		**13.3**	0.06	3.69	**21.5**	0.33	**7.52**	0.22
Violent crime[a]	**19.3**		3.16	**18.9**	**6.69**	**18.2**	0.55	0.26
Completed foreclosures[b]	**4.95**	3.78		**25.8**	**10.6**	**23.6**	3.30	**10.2**
Filed foreclosures[b]	2.85	**41.4**	**213**		**6.40**	**32.9**	1.52	1.60
Total home loan[c]	**11.3**	1.79	0.74	**5.26**		1.59	**9.01**	**23.8**
Mean home loan[d]	1.74	**15.6**	1.98	**14.4**	**12.7**		**7.10**	2.66
Small business loans[e]	**5.02**	3.87	1.20	0.30	**38.2**	**7.18**		0.28
Employed residents[f]	**19.0**	**9.03**	0.62	**12.1**	0.47	0.01	**8.31**	

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The Granger Causality test measures whether there is a significant difference in the forecast model fit due to the addition of the predictor variable. See Appendix A for further information regarding measure construction and methods. The test statistics use the chi-square distribution with two degrees of freedom; tests that are statistically significant at $p < 0.1$ are indicated in bold.

[a]Number per 10,000 persons.

[b]Number per 10,000 single-family, owner-occupied housing units.

[c]Dollars in thousands per single-family, owner-occupied housing unit.

[d]Dollars in thousands per home loan.

[e]Dollars in thousands per square mile of commercial land area.

[f]Number per 10,000 working-age persons.

Appendix C

NCP Neighborhoods

Since the publication of the New Communities Project (NCP) interim evaluation report in 2010,[1] the NCP neighborhood indicators database has been expanded through the addition of several more years of data and by the addition of two new indicators (neighborhood jobs and employment). Included here are tables and figures showing the indicators for each of the NCP neighborhoods, reflecting the expanded database; see Appendix Box C.1 for a summary of the NCP neighborhoods and Appendix Figure C.1 for a map of the neighborhoods. Appendix Figures C.2 through C.11 show the full time series of each indicator by NCP neighborhood, while Appendix Tables C.2 through C.12 summarize the indicator trends and trajectories by time period (2000 to 2002, 2003 to 2005, and 2006 to 2009).

As reported in the interim evaluation report, in the years prior to and during the rollout of NCP, examination of the quality-of-life (QoL) indicators suggested overall improving conditions. The onset of the Great Recession, as discussed in the text, has had a profound effect on Chicago's neighborhoods. The most notable effects were seen for indicators that reflect the state of the housing market — home purchase lending activity is decreasing and the rate of foreclosures is increasing. However, there was considerable variation in the response to the Great Recession among the neighborhood groups. In some cases, there was also considerable variation within neighborhood group. These differences are summarized below and in Appendix Table C.1, particularly focusing on the experiences of the NCP neighborhoods since 2006.

For the Group I neighborhoods (moderate income, black), the decline in the credit market indicators was more severe compared with the overall city trend, but the increase in foreclosure rates was much smaller. Specifically, the annual average decrease in the total amount of home purchase loans (labeled as "Home Loan Total $" in Table 2) for the Group I neighborhoods was 43.2 percent, compared with the city annual average decrease of 29.1 percent. In contrast, the rate of completed foreclosures increased by 5.2 percent in the Group I neighborhoods, compared with a citywide increase of 24.5 percent. The NCP neighborhood in this group, Auburn Gresham, is fairly similar to its group, with the exception of the crime rate trends. (Decline in crime slowed more compared with the set of Group I neighborhoods.)

For the Group II neighborhoods (moderate income, white), the foreclosure rates increased at a much higher rate than the overall city foreclosure rates. This is particularly true for the Group II NCP neighborhood, Logan Square. Comparing the Group II neighborhoods' experiences with the Group I neighborhoods' experiences with regard to foreclosures is particularly interesting, as these two neighborhood groups have the largest proportion of single-family, owner-occupied homes. Specifically, the rate of change in the Group I neighborhoods' foreclosure rate was the lowest in the city for the period from 2006 to 2009; for some neighborhoods

[1]Greenberg et al. (2010).

Appendix Box C.1

The NCP Neighborhoods: A Brief Introduction

Auburn-Gresham: Though buffeted by white flight, redlining, and gangs, this mostly African-American community has a strong housing stock and more homeowners than renters. Planners are looking for residential investments and retail growth.

Chicago Lawn: Despite a growing poverty rate and a changing racial and ethnic dynamic, planners hope to build on area pluses, such as Midway Airport and affordable bungalows.

East Garfield Park: Hit hard by the riots of 1968, the community has seen a decline in population and has about 1,750 vacant lots. But powered by the rising visibility of the Garfield Park Conservatory, Chicago Transportation Agency (CTA) improvements, and interest in historic graystones, planners hope to spur a turnaround.

Englewood: This area has struggled for decades to reverse a declining population and job base. Residents will focus on job creation, promoting healthy lifestyles, and finding uses for 3,500 vacant lots.

Humboldt Park: The community is responding to encroaching gentrification by staking a claim for longtime residents. Strategies include developing affordable housing and improving education and health care.

Little Village: La Villita is considered the capital of the Mexican Midwest. With half the residents under age 25, challenges revolve around investing in youth. Planners want to focus on better schools, violence prevention, and health and social services.

Logan Square: Gentrification is issue No. 1 in this neighborhood of sturdy homes and boulevards. Strategies revolve around preserving diversity and affordable housing, expanding community school programs, and revitalizing Armitage Avenue.

North Lawndale: After decades of job loss and population decline, North Lawndale has seen a resurgence with a new shopping center, Ogden Ave. improvements, and 1,200 housing units planned or under construction. But the challenges of poverty and high unemployment top the list for planners.

Pilsen: This heavily Mexican-American community started in a pilot program in 1998. It already has developed affordable housing, set up a $300,000 revolving loan fund for minority contractors, and worked with local schools. Work in those areas is ongoing.

Quad Communities: These four communities (Douglas, Grand Boulevard, Oakland, and North Kenwood) are undergoing a transformation. Mixed-income developments are replacing Chicago Housing Agency (CHA) projects, schools are being overhauled, and developers are snapping up homes. Strategies revolve around managing those changes and enhancing retail opportunities and activities for kids.

South Chicago: This community, hurt by the loss of steel makers, started in a pilot program in 1998. It already has set up a homeowners and tenants association and helped start an after-school program.

Washington Park: Planners are focused on creating an employment center, a market for mixed-income housing, and a welcome program for residents.

West Haven: This community started in a pilot program in 2000. It is undergoing a rapid influx of housing and retail development. Residents have helped shepherd that development, improved a park, and set up a CHA resident support program.

Woodlawn: The population has stabilized and new construction is starting to fill in 1,700 vacant lots. Planners are focused on housing for a mix of incomes, school improvements, 63rd St. beautification, and retail.

within this group, foreclosure rates continued to trend downward after the collapse of the housing market. In contrast, the Group II neighborhoods experienced the largest increase in foreclosures after the collapse of the housing market. However, the level of foreclosures in the Group I neighborhoods is several orders of magnitude higher than the level in the Group II neighborhoods, in part because the Group I neighborhoods generally did not experience the large decline in foreclosures after the early 2000s recession that was typical for most other neighborhoods.

For the Group III neighborhoods (moderate income, Hispanic), the foreclosure rates also increased at a much higher rate than the overall city foreclosure rates (the percentage change in the rates for this group of neighborhoods is fairly similar to Group II) and the mean home loan amount percentage change was small, but negative. Most of the NCP neighborhoods in this group had lower increases in their foreclosure rates compared with the overall group; the exception is Pilsen. Pilsen also differed in that its mean home loan amounts followed the city trend by increasing during this period; the same is true for Humboldt Park. Little Village had a greater decline in its housing market indicators, while Pilsen had a less negative change in these indicators. Finally, the property crime rates in both Little Village and Pilsen actually decreased more in the recessionary period compared with the period before (from 2003 to 2005). The other NCP neighborhood in this group, Chicago Lawn, was generally consistent with the overall Group III trends.

For the Group IV neighborhoods (low income), the decline in both the number and total amount of home purchase loans was larger, relative to the city decline. However, the decline in both property and violent crime in this period increased compared with the previous period (from 2003 to 2005). While foreclosures for this group were in line with the city, two of the NCP neighborhoods, Washington Park and West Haven, had relatively larger increases in either filed and/or completed foreclosures. Several of the NCP Group IV neighborhoods (North Lawndale, South Chicago, and Washington Park) had larger percentage declines in their housing market indicators. Most of the Group IV NCP neighborhoods experienced a modest increase in their housing values; the exceptions are Englewood (20 percent increase) and South Chicago (small decline). Garfield Park experienced a large decline in its number of jobs, while both Quad Communities and South Chicago had modest increases in this indicator. Several of the NCP communities had relatively large percentage changes in either their property and/or violent crime rates (North Lawndale, Quad Communities, South Chicago, Washington Park, and West Haven). Finally, one of the NCP neighborhoods, Woodlawn, had trends that were similar to those of the overall Group IV experience.

For the Group V neighborhoods (high income), the decrease in housing market activity was lower compared with the city and other neighborhood groups. The neighborhoods in this group also had a relatively large increase in their rate of completed foreclosures. Otherwise, these neighborhoods' indicator trends were consistent with the overall city trends.

Appendix Table C.1

Neighborhood Quality-of-Life Indicators: Average Annual Percentage Change, 2006-2009

	Percentage Change, 2006-2009								
Neighborhood	Property Crime[a]	Violent Crime[a]	Total Home Loan[b]	Mean Home Loan[c]	Filed Foreclosures[d]	Completed Foreclosures[d]	Total Business Loan[e]	Area Jobs[f]	Resident Workers[f]
Chicago	-1.6	-4.5	-29.1	9.3	17.9	24.5	-15.4	1.9	-1.6
Neighborhood Group I (mean)	-2.1	-4.7	-43.2	6.5	1.7	5.2	-21.7	0.2	-0.9
Auburn Gresham	-0.0	-2.4	-46.2	5.7	-2.9	8.5	-27.2	-2.1	-0.6
Neighborhood Group II (mean)	1.6	-2.7	-29.0	4.6	41.2	80.1	-16.7	-1.7	0.4
Logan Square	0.1	-3.0	-29.1	6.9	65.9	109.1	-22.7	0.4	-6.5
Neighborhood Group III (mean)	-2.8	-4.2	-41.7	-1.3	46.7	88.6	-13.4	-2.6	-1.1
Chicago Lawn	-0.5	-2.1	-42.8	-3.1	36.3	41.1	-29.1	-3.0	-2.3
Humboldt Park	3.5	0.6	-43.3	7.2	19.2	41.7	-17.9	0.1	-3.2
Little Village	-6.8	-1.4	-56.5	-9.7	50.7	51.5	-18.9	0.2	-3.1
Pilsen	-10.5	-5.3	-34.4	4.6	41.4	98.4	-10.6	1.4	-1.5
Neighborhood Group IV (mean)	-5.1	-8.6	-47.8	3.1	15.6	30.9	-24.9	1.4	-0.1
Englewood	-0.9	-6.1	-47.5	20.7	-2.0	-1.1	-13.9	-1.5	-0.5
Garfield Park	-8.2	-2.8	-54.5	3.5	1.9	23.3	-13.9	-19.4	-0.6
North Lawndale	-4.4	-11.4	-59.0	7.8	-4.8	-5.1	-50.8	-7.2	-0.4
Quad Communities	-0.8	-17.0	-39.9	3.9	2.9	15.6	-36.5	8.5	2.3
South Chicago	-14.2	-11.0	-61.3	-3.2	14.2	0.7	-26.5	6.4	0.9
Washington Park	-13.1	-4.8	-56.8	1.5	5.7	50.8	-51.9	-0.9	1.7
West Haven	0.0	-15.9	-49.0	4.6	46.5	69.5	-6.0	1.3	2.7
Woodlawn	-2.9	-3.6	-43.4	7.5	21.0	32.1	-31.1	1.3	5.8
Neighborhood Group V (mean)	-1.7	-8.2	-20.5	8.3	17.2	52.4	-13.7	2.0	-0.9

(continued)

Appendix Table C.1 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: Average annual percentage change was calculated using a regression method in order to minimize the influence of other observations. See Appendix A for further information regarding measure construction and methods.

[a]Number per 10,000 persons.
[b]Dollars in thousands per single-family, owner-occupied housing unit.
[c]Dollars in thousands per home loan.
[d]Number per 10,000 single-family, owner-occupied housing units.
[e]Dollars in thousands per square mile of commercial land area.
[f]Number per 10,000 working-age persons.

Appendix Table C.2

Property Crime Reports per 10,000 Persons: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	528	-5.5	474	-5.1	439	-1.6
Neighborhood Group I (mean)	600	-2.2	579	-4.1	562	-2.1
Auburn Gresham	784	-2.1	823	-6.0	710	-0.0
Neighborhood Group II (mean)	323	-4.2	288	-2.9	268	1.6
Logan Square	591	-5.3	505	-12.2	437	0.1
Neighborhood Group III (mean)	446	-4.0	396	-8.1	349	-2.8
Chicago Lawn	503	-1.2	461	-3.7	431	-0.5
Humboldt Park	546	-2.3	488	-11.9	445	3.5
Little Village	288	-5.6	248	-4.6	207	-6.8
Pilsen	373	-11.3	342	-9.3	276	-10.5
Neighborhood Group IV (mean)	689	-5.5	634	-3.0	577	-5.1
Englewood	691	-5.9	660	-1.7	701	-0.9
Garfield Park	689	1.6	712	0.6	715	-8.2
North Lawndale	530	-1.9	643	4.2	571	-4.4
Quad Communities	578	-8.9	544	-0.4	479	-0.8
South Chicago	539	-5.2	599	0.1	600	-14.2
Washington Park	767	-15.9	642	-3.9	664	-13.1
West Haven	845	7.9	915	-18.7	802	0.0
Woodlawn	687	-9.4	626	-1.1	648	-2.9
Neighborhood Group V (mean)	1,264	-8.3	1,053	-7.4	969	-1.7

(continued)

Appendix Table C.2 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The property crime indicator is calculated as the number of reported property crimes divided by the 2000 population count (U.S. Decennial Census) multiplied by 10,000. Rate for each time period is the average annual number of property crimes per 10,000 persons over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.3

Violent Crime Reports per 10,000 Persons: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	161	-2.7	139	-3.6	128	-4.5
Neighborhood Group I (mean)	239	1.1	228	-0.6	230	-4.7
Auburn Gresham	329	3.0	331	-2.2	327	-2.4
Neighborhood Group II (mean)	60	-3.1	52	-4.0	47	-2.7
Logan Square	149	-8.3	99	-11.7	79	-3.0
Neighborhood Group III (mean)	118	0.4	99	-4.3	92	-4.2
Chicago Lawn	131	5.2	139	7.4	148	-2.1
Humboldt Park	246	-3.6	196	-6.1	170	0.6
Little Village	118	2.2	83	-4.8	72	-1.4
Pilsen	127	-12.3	93	-7.8	75	-5.3
Neighborhood Group IV (mean)	356	-4.4	296	-1.8	257	-8.6
Englewood	418	-1.6	366	-4.2	347	-6.1
Garfield Park	467	-0.1	410	-1.7	390	-2.8
North Lawndale	336	-9.6	288	0.7	299	-11.4
Quad Communities	294	-12.2	227	3.3	181	-17.0
South Chicago	270	4.4	259	-1.4	257	-11.0
Washington Park	540	-11.2	409	-2.0	325	-4.8
West Haven	454	-0.1	372	-11.3	258	-15.9
Woodlawn	350	-5.1	319	4.0	317	-3.6
Neighborhood Group V (mean)	156	-3.0	123	-6.0	106	-8.2

(continued)

Appendix Table C.3 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The violent crime indicator is calculated as the number of reported violent crimes divided by the 2000 population count (U.S. Decennial Census) multiplied by 10,000. Rate for each time period is the average annual number of violent crimes per 10,000 persons over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.4

Home Purchase Loan Originations per 10,000 Owner-Occupied, Single-Family Housing Units: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	1,345	3.2	1,860	22.3	1,163	-35.2
Neighborhood Group I (mean)	476	1.9	741	34.0	443	-46.7
Auburn Gresham	580	19.8	1,033	37.6	576	-49.1
Neighborhood Group II (mean)	1,930	3.2	2,612	19.4	1,663	-32.2
Logan Square	3,188	6.3	4,316	25.4	3,059	-33.6
Neighborhood Group III (mean)	1,134	2.1	1,675	24.7	888	-40.9
Chicago Lawn	883	5.8	1,354	25.6	531	-41.0
Humboldt Park	1,865	3.2	3,667	40.8	2,190	-47.1
Little Village	1,462	5.5	2,029	31.0	817	-51.8
Pilsen	1,391	23.2	1,822	24.1	1,443	-37.3
Neighborhood Group IV (mean)	2,074	17.1	4,119	42.8	3,409	-50.9
Englewood	633	14.7	1,437	60.3	836	-56.5
Garfield Park	2,295	24.0	5,159	52.0	3,009	-56.0
North Lawndale	1,711	31.0	2,802	22.0	2,070	-61.9
Quad Communities	2,719	4.1	4,998	33.8	3,943	-42.2
South Chicago	1,243	-0.1	1,761	45.0	1,055	-60.0
Washington Park	3,895	14.6	10,824	124.2	9,298	-57.4
West Haven	2,472	39.1	7,101	7.5	10,676	-51.2
Woodlawn	2,536	26.3	5,854	31.4	4,391	-47.3
Neighborhood Group V (mean)	10,529	4.4	13,632	14.1	9,976	-26.6

(continued)

Appendix Table C.4 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The home mortgage loan originations indicator is calculated as the number of Home Mortgage Disclosure Act home purchase loan originations for owner-occupied, single-family homes divided by the 2000 count of owner-occupied, single-family housing units (U.S. Decennial Census) multiplied by 10,000. Rate for each time period is the average annual number of loan originations per 10,000 owner-occupied, single-family housing units over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.5

Total Home Purchase Loan Amounts ($ in Thousands) per Owner-Occupied, Single-Family Housing Unit: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	25	11.2	39	18.3	27	-29.1
Neighborhood Group I (mean)	5	6.0	8	31.7	6	-43.2
Auburn Gresham	6	33.6	13	36.8	9	-46.2
Neighborhood Group II (mean)	34	13.0	52	16.8	34	-29.0
Logan Square	71	19.4	110	24.2	82	-29.1
Neighborhood Group III (mean)	17	13.4	29	21.8	17	-41.7
Chicago Lawn	11	18.6	20	20.3	8	-42.8
Humboldt Park	32	13.3	73	35.1	46	-43.3
Little Village	18	16.0	31	24.8	13	-56.5
Pilsen	23	38.8	35	23.1	30	-34.4
Neighborhood Group IV (mean)	31	29.8	67	42.0	64	-47.8
Englewood	5	27.1	15	64.2	13	-47.5
Garfield Park	31	33.3	84	50.3	56	-54.5
North Lawndale	21	45.6	42	23.2	37	-59.0
Quad Communities	52	9.1	104	32.9	91	-39.9
South Chicago	10	6.5	19	47.7	14	-61.3
Washington Park	54	27.6	150	120.7	162	-56.8
West Haven	46	44.8	150	6.8	216	-49.0
Woodlawn	34	41.5	91	19.6	78	-43.4
Neighborhood Group V (mean)	245	11.9	370	15.7	291	-20.5

(continued)

Appendix Table C.5 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The home mortgage total loan amount indicator is calculated as the sum of the amounts of Home Mortgage Disclosure Act home purchase loan originations for owner-occupied housing units in one- to four-unit dwellings (in thousands of 2005 dollars) divided by the 2000 count of owner-occupied, single-family housing units (U.S. Decennial Census). Rate for each time period is the average annual total home purchase loan amount per 10,000 owner-occupied, single-family housing units over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.6

Mean Home Purchase Loan Amounts ($ in Thousands) per Loan Origination: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	186	7.8	211	-3.3	242	9.3
Neighborhood Group I (mean)	98	3.3	113	-1.8	145	6.5
Auburn Gresham	107	11.6	129	-0.6	164	5.7
Neighborhood Group II (mean)	171	9.6	201	-2.0	212	4.6
Logan Square	223	12.3	255	-1.0	277	6.9
Neighborhood Group III (mean)	144	11.2	175	-2.3	185	-1.3
Chicago Lawn	125	12.1	147	-4.2	157	-3.1
Humboldt Park	172	9.8	200	-4.1	222	7.2
Little Village	126	9.9	153	-4.7	151	-9.7
Pilsen	161	12.6	194	-0.8	218	4.6
Neighborhood Group IV (mean)	133	10.2	156	-1.0	193	3.1
Englewood	80	10.9	105	2.4	183	20.7
Garfield Park	134	7.5	163	-1.2	199	3.5
North Lawndale	121	11.2	153	1.0	199	7.8
Quad Communities	191	4.8	209	-0.7	240	3.9
South Chicago	80	6.6	107	1.9	137	-3.2
Washington Park	138	11.4	141	-1.6	181	1.5
West Haven	187	4.1	210	-0.6	217	4.6
Woodlawn	132	12.0	159	-9.0	188	7.5
Neighborhood Group V (mean)	248	7.1	287	1.2	315	8.3

(continued)

Appendix Table C.6 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The home mortgage loan mean amount indicator is calculated as the sum of the amounts of Home Mortgage Disclosure Act home purchase loan originations for owner-occupied housing units in one- to four-unit dwellings (in thousands of 2005 dollars) divided by the number of loan originations. Rate for each time period is the average home purchase loan amount per loan origination over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.7

Filed Foreclosures per 10,000 Owner-Occupied, Single-Family Housing Units: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	239	34.3	237	-22.0	329	17.9
Neighborhood Group I (mean)	387	41.9	404	-17.8	461	1.7
Auburn Gresham	461	58.2	470	-23.2	508	-2.9
Neighborhood Group II (mean)	108	38.1	96	-18.8	175	41.2
Logan Square	241	36.9	197	-42.9	287	65.9
Neighborhood Group III (mean)	246	34.8	226	-21.8	379	46.7
Chicago Lawn	196	43.1	237	-21.3	483	36.3
Humboldt Park	726	40.5	640	-42.4	710	19.2
Little Village	302	32.5	291	-30.8	439	50.7
Pilsen	351	20.2	257	-35.0	302	41.4
Neighborhood Group IV (mean)	1,061	32.4	822	-32.8	707	15.6
Englewood	931	26.7	825	-16.8	867	-2.0
Garfield Park	1,964	29.2	1,338	-43.2	966	1.9
North Lawndale	1,553	17.7	1,428	-45.2	714	-4.8
Quad Communities	624	45.4	581	-22.5	694	2.9
South Chicago	935	54.4	754	-39.0	710	14.2
Washington Park	2,921	10.3	2,247	-30.5	2,051	5.7
West Haven	757	79.2	741	-0.4	662	46.5
Woodlawn	1,177	30.2	995	-33.2	956	21.0
Neighborhood Group V (mean)	208	20.5	145	-29.7	92	17.2

(continued)

Appendix Table C.7 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The foreclosures filed indicator is calculated as the total number of single-family home foreclosures filed divided by the 2000 count of owner-occupied, single-family housing units (U.S. Decennial Census) multiplied by 10,000. Rate for each time period is the average annual number of filed foreclosures per 10,000 owner-occupied, single-family housing units over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.8

Completed Foreclosures per 10,000 Owner-Occupied, Single-Family Housing Units: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	175	31.0	182	-28.4	119	24.5
Neighborhood Group I (mean)	293	32.9	344	-26.9	186	5.2
Auburn Gresham	324	30.1	417	-36.2	204	8.5
Neighborhood Group II (mean)	70	37.3	55	-27.3	51	80.1
Logan Square	123	34.5	101	-47.1	90	109.1
Neighborhood Group III (mean)	158	23.6	156	-27.1	127	88.6
Chicago Lawn	133	40.5	159	-26.1	157	41.1
Humboldt Park	519	39.0	552	-40.4	277	41.7
Little Village	168	56.3	172	-42.8	134	51.5
Pilsen	134	12.8	188	-38.0	84	98.4
Neighborhood Group IV (mean)	834	33.8	774	-28.6	286	30.9
Englewood	827	30.3	778	-26.3	441	-1.1
Garfield Park	1,589	21.2	1,285	-47.4	421	23.3
North Lawndale	1,341	69.3	1,045	-36.9	370	-5.1
Quad Communities	475	58.5	484	-43.2	249	15.6
South Chicago	772	37.2	715	-27.1	273	0.7
Washington Park	2,921	26.9	1,985	-32.3	730	50.8
West Haven	353	6.7	283	-52.6	358	69.5
Woodlawn	1,083	45.8	931	-14.6	391	32.1
Neighborhood Group V (mean)	77	60.7	63	-28.4	24	52.4

(continued)

Appendix Table C.8 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The foreclosures completed indicator is calculated as the total number of single-family home foreclosures completed divided by the 2000 count of owner-occupied, single-family housing units (U.S. Decennial Census) multiplied by 10,000. Rate for each time period is the average annual number of completed foreclosures per 10,000 owner-occupied, single-family housing units over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.9

Small Business Loans per Square Mile of Commercial Land Area: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	598	16.0	740	0.2	1,135	-26.4
Neighborhood Group I (mean)	429	15.1	423	-3.9	668	-33.8
Auburn Gresham	237	4.7	293	-7.8	372	-39.6
Neighborhood Group II (mean)	1,043	16.6	1,379	1.7	2,087	-26.6
Logan Square	957	13.3	1,171	9.5	1,958	-26.8
Neighborhood Group III (mean)	323	17.2	412	2.0	579	-27.7
Chicago Lawn	372	14.4	455	7.4	593	-29.6
Humboldt Park	386	22.3	484	-1.9	735	-27.2
Little Village	193	13.3	228	-1.2	302	-29.6
Pilsen	259	24.5	310	-2.2	443	-25.6
Neighborhood Group IV (mean)	458	21.7	528	-3.2	866	-31.5
Englewood	270	23.2	265	-8.2	362	-33.2
Garfield Park	329	34.9	420	5.2	568	-31.1
North Lawndale	575	22.7	484	-22.5	653	-32.2
Quad Communities	322	37.2	468	10.7	920	-33.6
South Chicago	267	19.0	407	3.5	476	-29.8
Washington Park	283	37.7	283	5.3	415	-28.6
West Haven	463	10.5	601	-2.4	970	-21.1
Woodlawn	326	24.0	362	0.0	752	-37.6
Neighborhood Group V (mean)	2,159	15.8	2,621	2.3	4,032	-23.6

(continued)

Appendix Table C.9 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The small business loans indicator is calculated as the number of Community Reinvestment Act small business loans divided by the square miles of commercial land area. Rate for each time period is the average annual number of small business loans per square mile of commercial land area over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.10

Mean Small Business Loan Amounts ($ in Thousands) per Square Mile of Commercial Land Area: Average Rate and Annual Percentage Change, by Time Period

	2000 to 2002		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	30,719	8.4	37,120	-5.7	32,344	-15.4
Neighborhood Group I (mean)	11,311	6.6	13,387	-4.1	11,476	-21.7
Auburn Gresham	6,288	4.3	7,518	-10.3	7,761	-27.2
Neighborhood Group II (mean)	38,952	13.1	51,043	-8.3	43,322	-16.7
Logan Square	59,392	17.5	59,777	-0.2	53,746	-22.7
Neighborhood Group III (mean)	15,035	16.3	22,590	-0.9	15,415	-13.4
Chicago Lawn	11,174	-6.4	15,941	-5.2	11,882	-29.1
Humboldt Park	20,953	7.5	27,434	-7.2	24,814	-17.9
Little Village	9,352	34.6	14,410	-6.6	9,363	-18.9
Pilsen	15,694	10.4	19,218	-15.5	13,993	-10.6
Neighborhood Group IV (mean)	14,184	13.2	22,171	6.9	19,706	-24.9
Englewood	6,564	49.6	10,340	-15.9	8,523	-13.9
Garfield Park	20,275	2.2	31,278	15.2	22,988	-13.9
North Lawndale	12,276	-40.3	18,723	4.9	11,646	-50.8
Quad Communities	6,745	4.7	13,464	51.7	10,305	-36.5
South Chicago	12,202	11.1	15,998	-5.0	11,902	-26.5
Washington Park	11,949	-11.3	9,037	45.0	9,498	-51.9
West Haven	34,137	45.7	58,550	4.4	61,759	-6.0
Woodlawn	7,092	14.7	12,749	-10.9	10,629	-31.1
Neighborhood Group V (mean)	148,494	8.9	156,997	-4.1	142,224	-13.7

(continued)

Appendix Table C.10 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The small business loan amount indicator is calculated as the sum of the Community Reinvestment Act small business loan amounts (in thousands of 2005 dollars) divided by the square miles of commercial land area. Rate for each time period is the average annual total dollar amount of small business loans per square mile of commercial land area over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

Appendix Table C.11

Area Jobs per 10,000 Working-Age Persons: Average Rate and Annual Percentage Change, by Time Period

	2002[a]		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	5,129	—	4,873	0.1	5,074	1.9
Neighborhood Group I (mean)	1,686	—	1,690	-0.2	1,550	0.2
Auburn Gresham	1,183	—	1,140	0.5	1,118	-2.1
Neighborhood Group II (mean)	4,447	—	4,288	1.2	4,311	-1.7
Logan Square	2,198	—	2,145	0.7	2,258	0.4
Neighborhood Group III (mean)	3,068	—	3,007	1.0	2,925	-2.6
Chicago Lawn	1,755	—	1,712	-1.0	1,629	-3.0
Humboldt Park	2,562	—	2,458	-2.5	2,287	0.1
Little Village	1,670	—	1,668	-1.9	1,681	0.2
Pilsen	4,201	—	4,177	1.8	4,329	1.4
Neighborhood Group IV (mean)	3,623	—	3,605	1.8	3,052	1.4
Englewood	745	—	658	-6.4	598	-1.5
Garfield Park	2,584	—	2,883	8.1	3,213	-19.4
North Lawndale	1,062	—	1,244	6.4	1,397	-7.2
Quad Communities	960	—	863	-0.0	1,126	8.5
South Chicago	1,341	—	1,248	2.9	1,412	6.4
Washington Park	434	—	470	-6.3	431	-0.9
West Haven	16,033	—	18,464	1.8	10,162	1.3
Woodlawn	1,227	—	1,145	-3.1	1,161	1.3
Neighborhood Group V (mean)	37,417	—	34,150	0.7	37,642	2.0

(continued)

Appendix Table C.11 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The area jobs indicator is calculated as the total number of jobs in the area divided by the 2000 count of population over 15 years of age (U.S. Decennial Census) multiplied by 10,000. Rate for each time period is the number of area jobs per 10,000 working-age persons over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

[a]Data are not available before 2002.

Appendix Table C.12

Resident Workers per 10,000 Working-Age Persons: Average Rate and Annual Percentage Change, by Time Period

	2002[a]		2003 to 2005		2006 to 2009	
Neighborhood	Rate	% Change	Rate	% Change	Rate	% Change
Chicago	4,663	—	4,357	-0.7	4,035	-1.6
Neighborhood Group I (mean)	4,221	—	3,718	-2.2	3,535	-0.9
Auburn Gresham	3,999	—	3,690	-2.2	3,556	-0.6
Neighborhood Group II (mean)	5,101	—	4,804	-0.1	4,504	0.4
Logan Square	4,940	—	4,708	-0.6	4,032	-6.5
Neighborhood Group III (mean)	4,335	—	4,065	-2.8	3,693	-1.1
Chicago Lawn	4,837	—	4,573	-1.1	4,079	-2.3
Humboldt Park	4,464	—	4,119	-1.8	3,652	-3.2
Little Village	2,992	—	2,741	-4.4	2,356	-3.1
Pilsen	3,684	—	3,460	-0.6	3,267	-1.5
Neighborhood Group IV (mean)	3,999	—	3,672	-0.4	3,616	-0.1
Englewood	3,896	—	3,416	-4.1	3,195	-0.5
Garfield Park	4,195	—	3,980	-0.1	3,850	-0.6
North Lawndale	4,406	—	4,090	0.4	3,934	-0.4
Quad Communities	4,071	—	3,691	-1.1	3,915	2.3
South Chicago	3,859	—	3,442	-5.6	3,293	0.9
Washington Park	3,500	—	3,225	-2.5	3,406	1.7
West Haven	4,448	—	4,489	3.4	5,001	2.7
Woodlawn	3,984	—	3,518	-0.6	3,742	5.8
Neighborhood Group V (mean)	5,351	—	5,446	3.6	5,623	-0.9

(continued)

Appendix Table C.12 (continued)

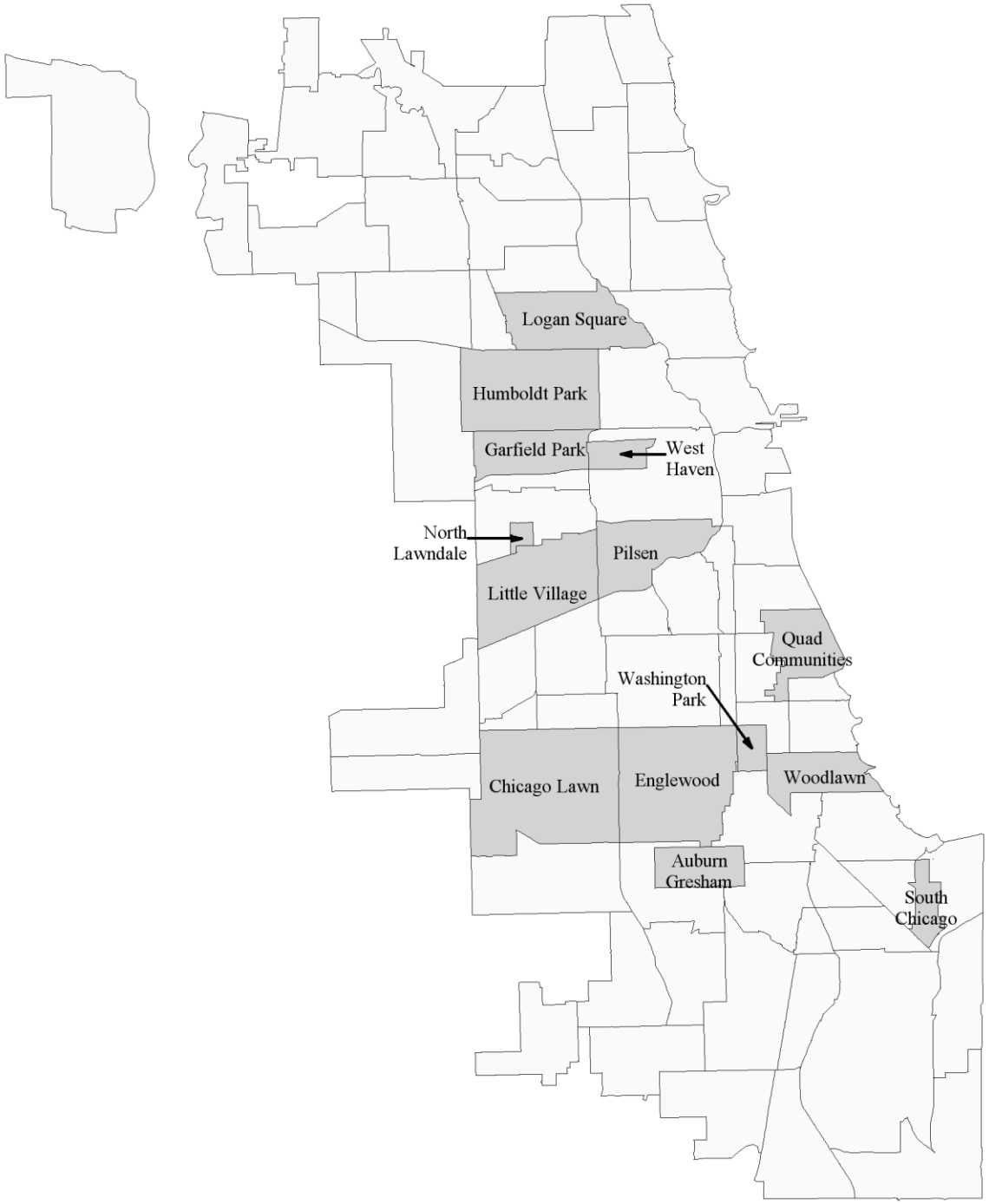
SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The resident workers indicator is calculated as the total number of workers residing in the area divided by the 2000 count of population over 15 (U.S. Decennial Census) multiplied by 10,000. Rate for each time period is the number of resident workers per 10,000 working-age persons over the time period. Average percentage change for each time period was calculated using a regression procedure in order to lessen the influence of extreme values and outliers. See Appendix A for further information regarding measure construction and methods.

[a]Data are not available before 2002.

Appendix Figure C.1

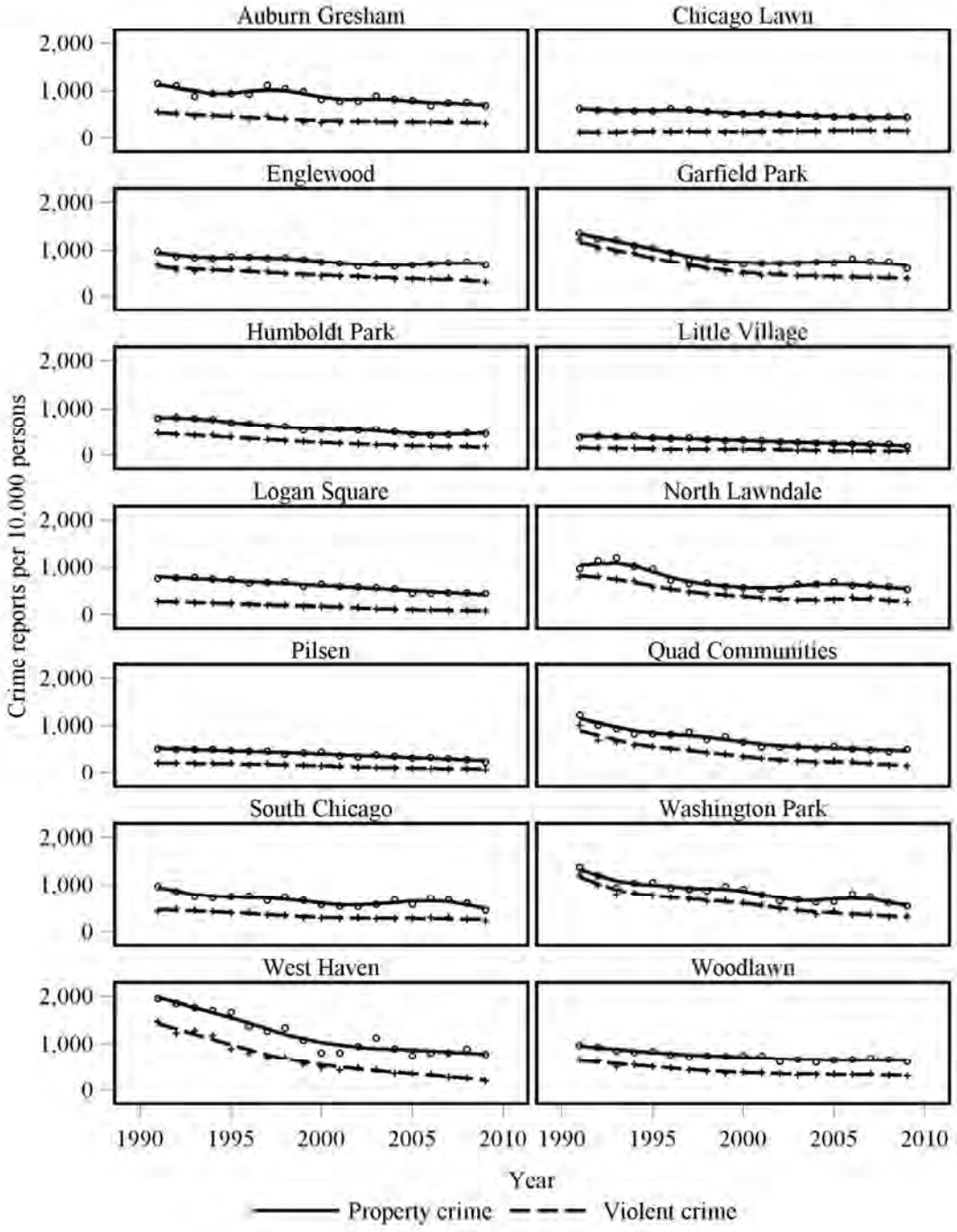
NCP Neighborhoods and the City of Chicago



NOTES: Map displays the Chicago municipal area within Cook County divided into the 80 neighborhoods defined for the NCP analysis. The 14 NCP neighborhoods are labeled and shaded.

Appendix Figure C.2

Property and Violent Crime Reports per 10,000 Persons, by Neighborhood, 1991-2009



(continued)

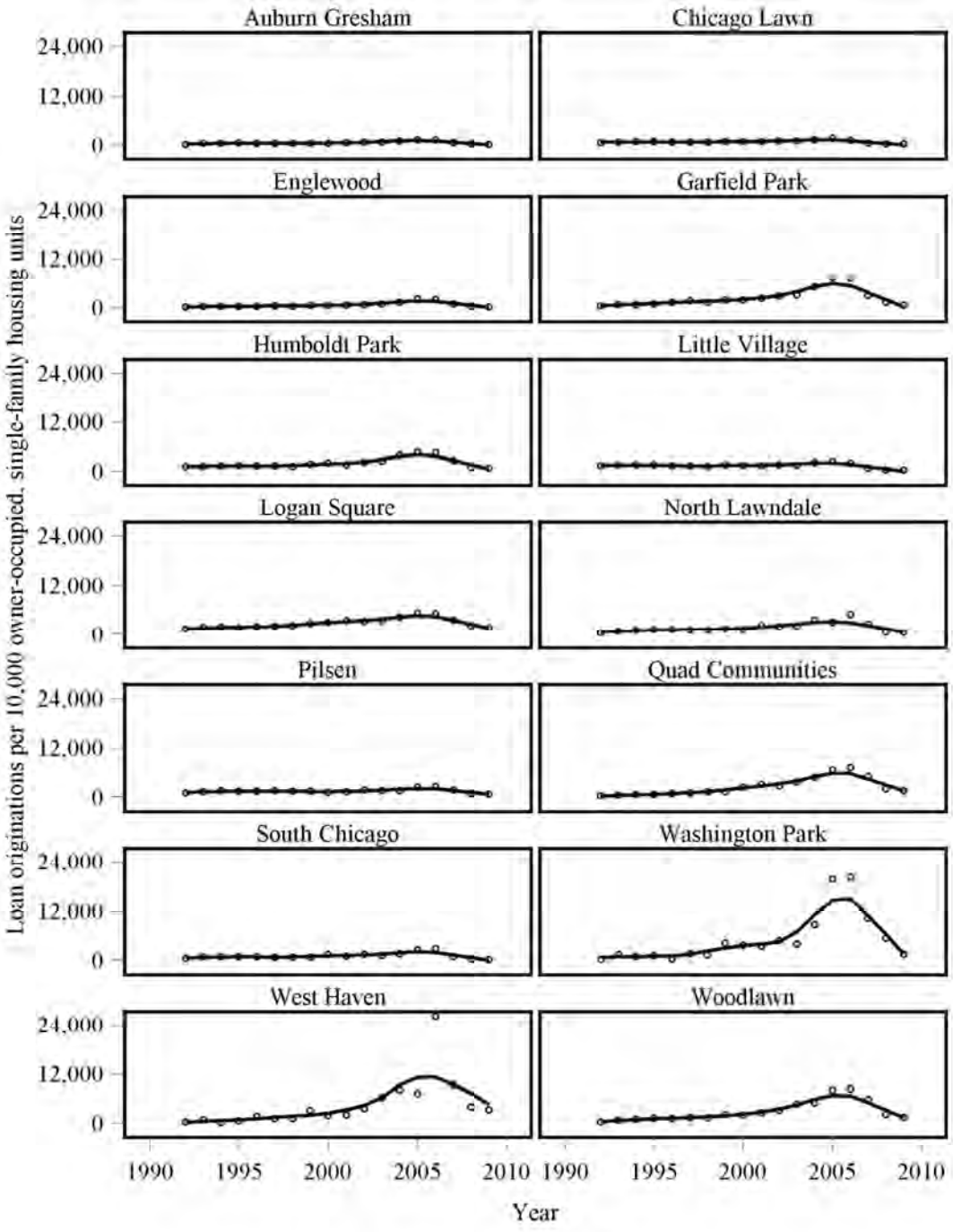
Appendix Figure C.2 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The property crime indicator is calculated as the number of reported property crimes divided by the 2000 population count (U.S. Decennial Census) multiplied by 10,000. The violent crime indicator is calculated as the number of reported violent crimes divided by the 2000 population count (U.S. Decennial Census) multiplied by 10,000. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Appendix Figure C.3

Home Purchase Loan Originations per 10,000 Owner-Occupied, Single-Family Housing Units, by Neighborhood, 1992-2009



(continued)

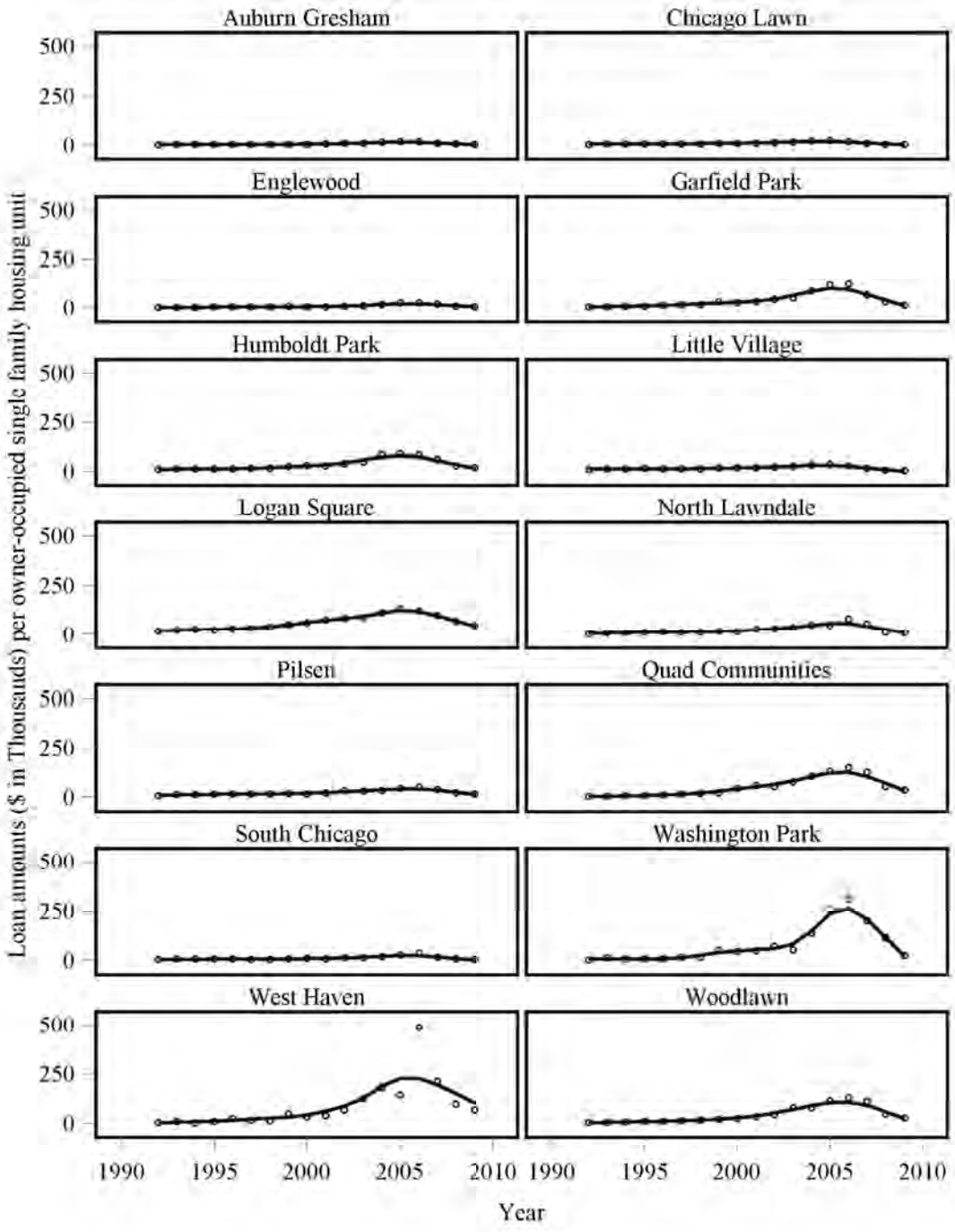
Appendix Figure C.3 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The home mortgage loan originations indicator is calculated as the number of Home Mortgage Disclosure Act home purchase loan originations for owner-occupied, single-family homes divided by the 2000 count of owner-occupied, single-family housing units (U.S. Decennial Census) multiplied by 10,000. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Appendix Figure C.4

Total Home Purchase Loan Amounts per Owner-Occupied, Single-Family Housing Unit, by Neighborhood, 1992-2009



(continued)

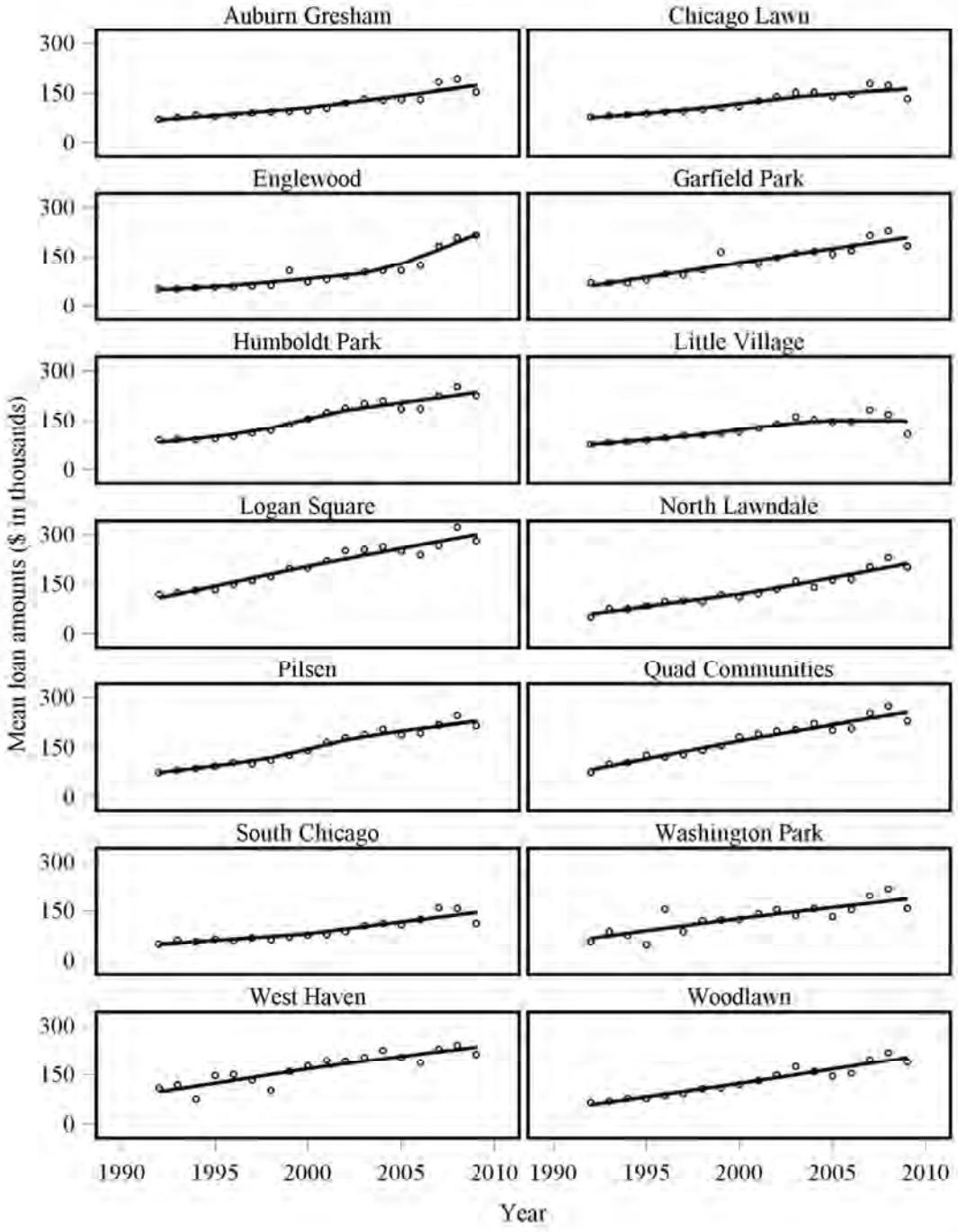
Appendix Figure C.4 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The home mortgage total loan amount indicator is calculated as the sum of the amounts of Home Mortgage Disclosure Act home purchase loan originations for owner-occupied housing units in one- to four-unit dwellings (in thousands of 2005 dollars) divided by the 2000 count of owner-occupied, single-family housing units (U.S. Decennial Census). The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Appendix Figure C.5

Mean Home Purchase Loan Amounts, by Neighborhood, 1992-2009



(continued)

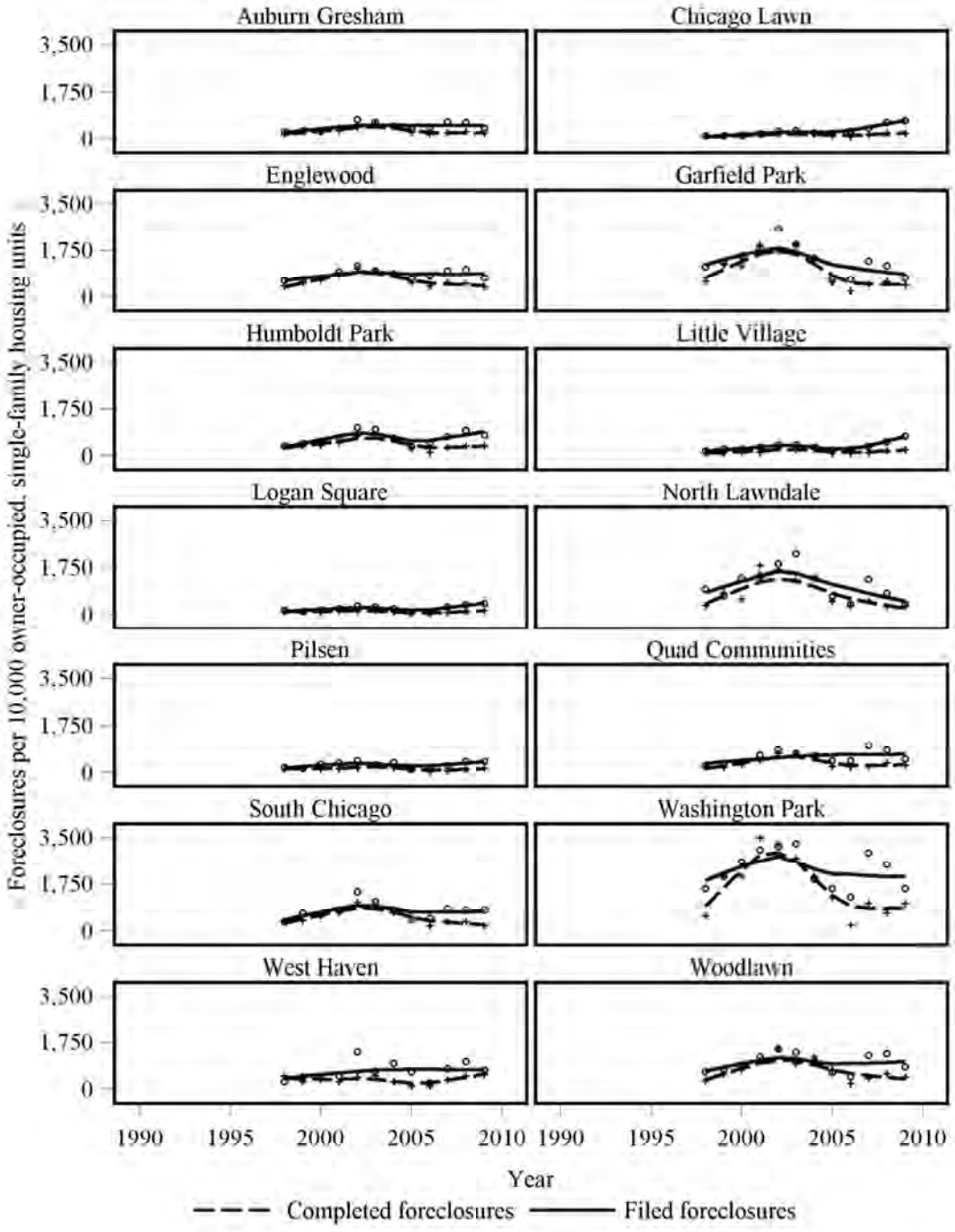
Appendix Figure C.5 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The home mortgage loan mean amount indicator is calculated as the sum of the amounts of Home Mortgage Disclosure Act home purchase loan for owner-occupied housing units in one- to four-unit dwellings (in thousands of 2005 dollars) divided by the number of loan originations. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Appendix Figure C.6

Filed and Completed Foreclosures per 10,000 Owner-Occupied, Single-Family Housing Units, by Neighborhood, 1998-2009



(continued)

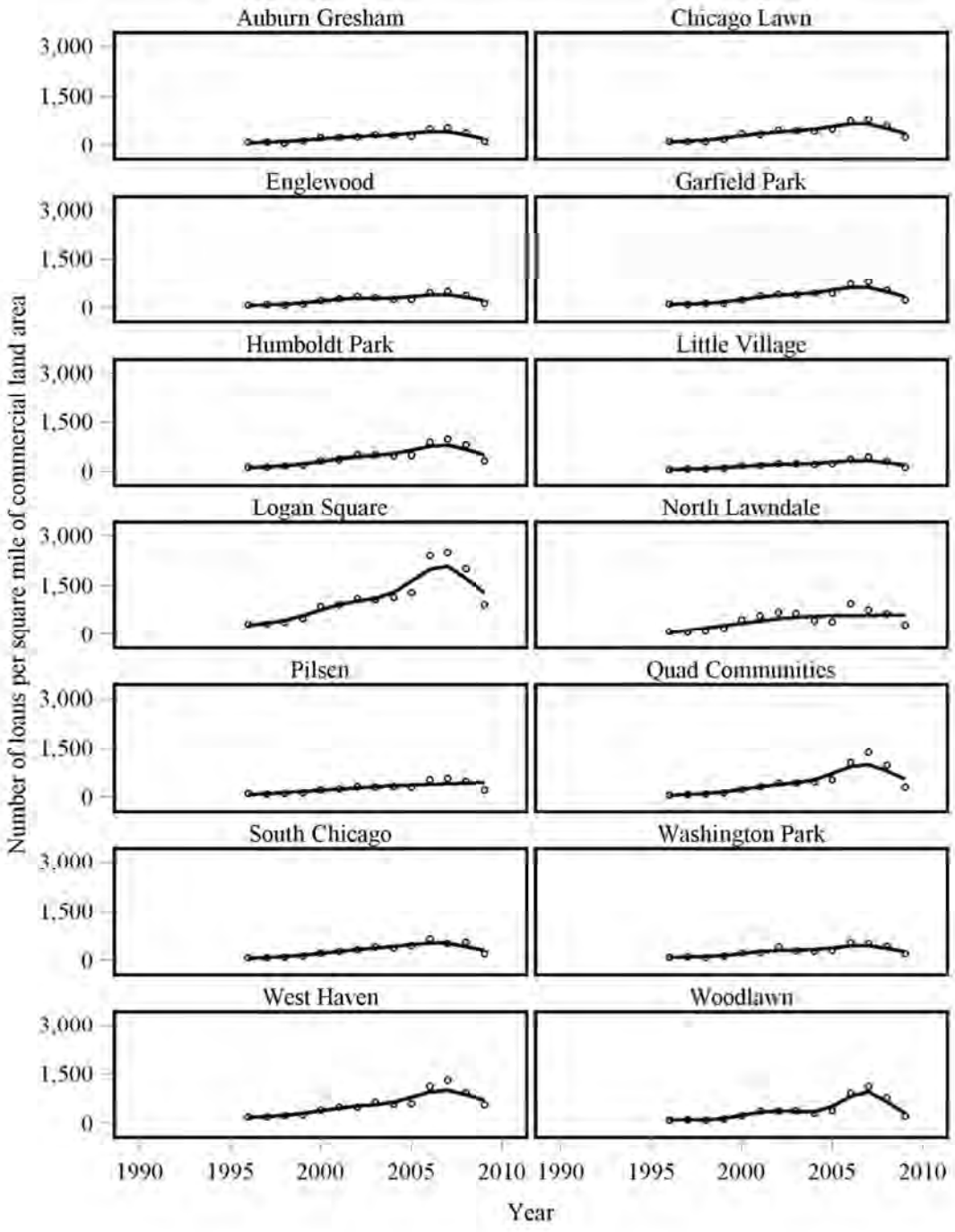
Appendix Figure C.6 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The foreclosures filed indicator is calculated as the total number of single-family home foreclosures filed divided by the 2000 count of owner-occupied, single-family housing units (U.S. Decennial Census) multiplied by 10,000. The foreclosures completed indicator is calculated as the total number of single-family home foreclosures completed divided by the 2000 count of owner-occupied, single-family housing units (U.S. Decennial Census) multiplied by 10,000. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Appendix Figure C.7

Small Business Loans per Square Mile of Commercial Land Area, by Neighborhood, 1996-2009



(continued)

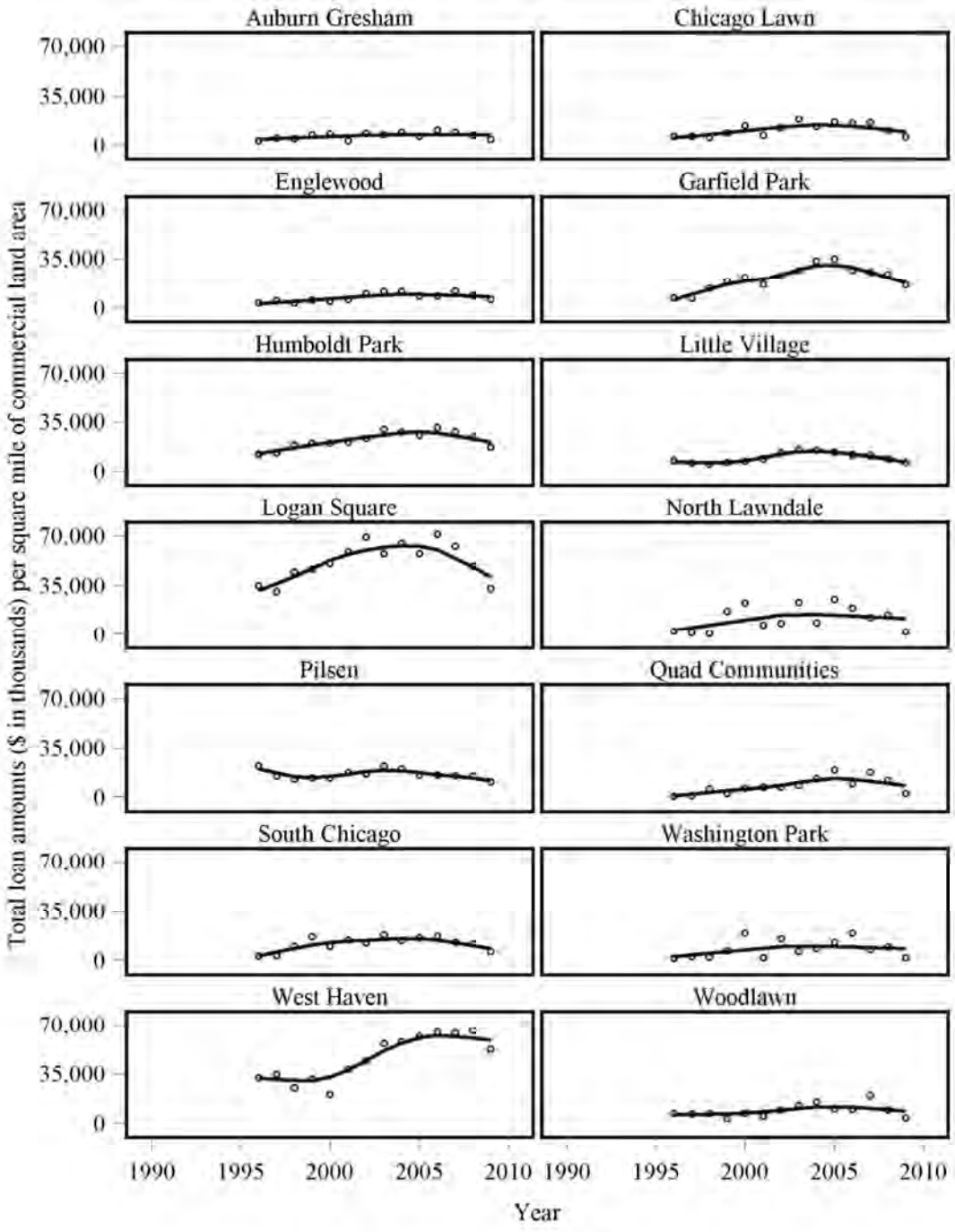
Appendix Figure C.7 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The small business loans indicator is calculated as the number of Community Reinvestment Act small business loans divided by the square miles of commercial land area. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Appendix Figure C.8

Small Business Loan Amounts per Square Mile of Commercial Land Area, by Neighborhood, 1996-2009



(continued)

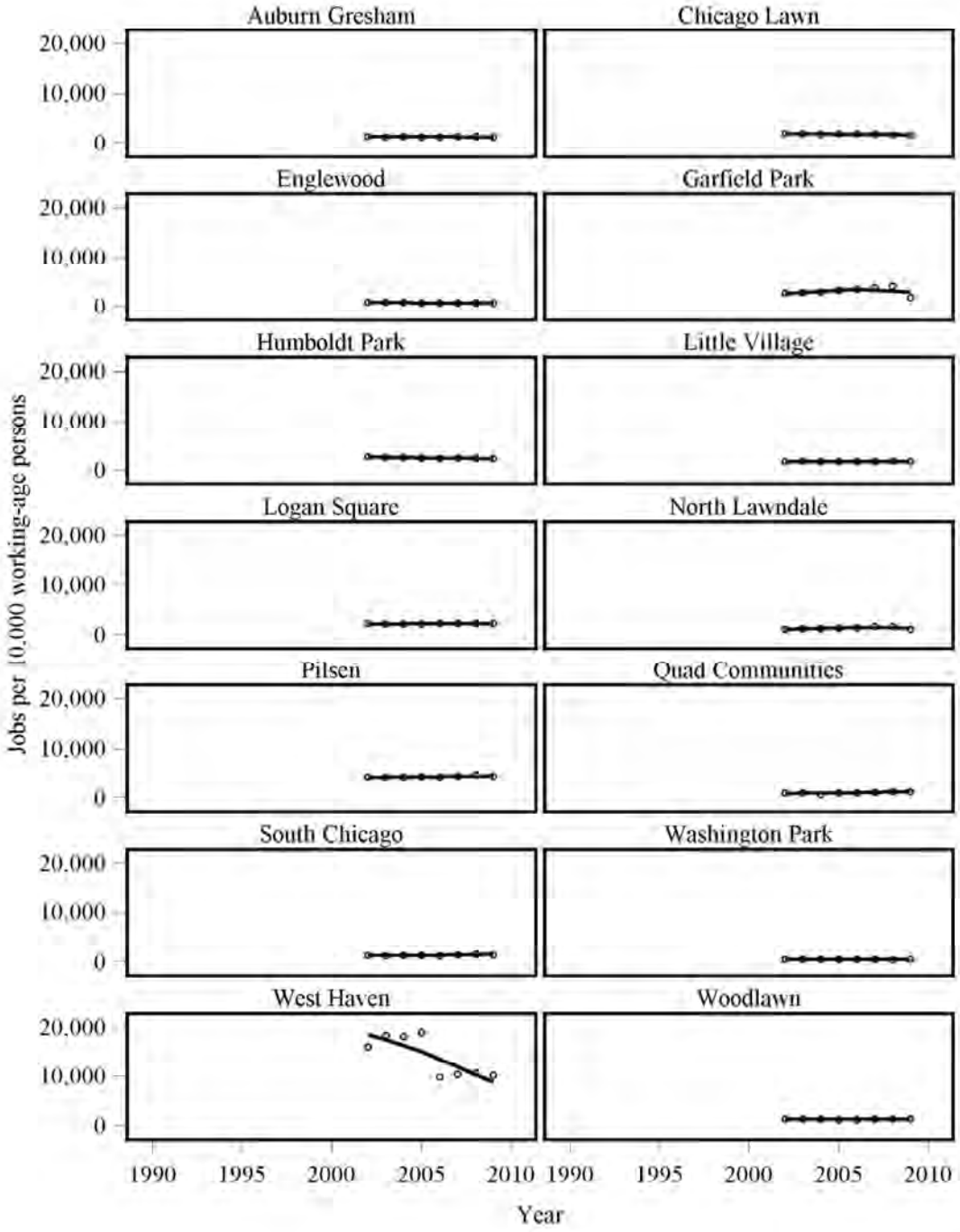
Appendix Figure C.8 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The small business loan amount indicator is calculated as the sum of the Community Reinvestment Act small business loan amounts (in thousands of 2005 dollars) divided by the square miles of commercial land area. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Appendix Figure C.9

Area Jobs per 10,000 Working-Age Persons, by Neighborhood, 2002-2009



(continued)

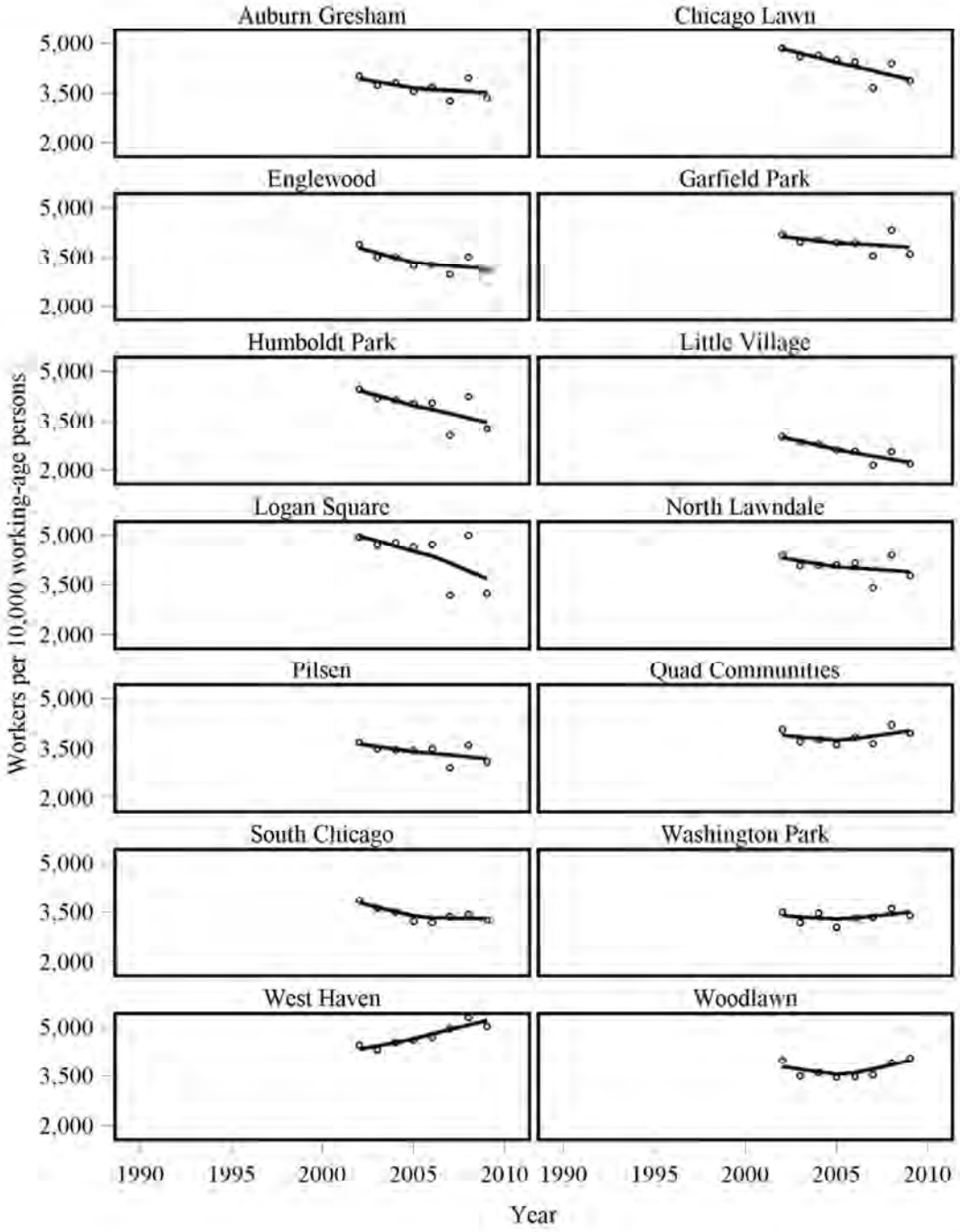
Appendix Figure C.9 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The area jobs indicator is calculated as the total number of jobs in the area divided by the 2000 count of population over 15 years of age (U.S. Decennial Census) multiplied by 10,000. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

Appendix Figure C.10

Resident Workers per 10,000 Working-Age Persons, by Neighborhood, 2002-2009



(continued)

Appendix Figure C.10 (continued)

SOURCE: MDRC analysis of data assembled by Metro Chicago Information Center (MCIC).

NOTES: The resident workers indicator is calculated as the total number of workers residing in the area divided by the 2000 count of population over 15 years of age (U.S. Decennial Census) multiplied by 10,000. The plotted line for each indicator is smoothed using a nonparametric locally weighted regression technique known as LOESS. See Appendix A for further information regarding measure construction and methods.

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About MDRC

MDRC is a nonprofit, nonpartisan social and education policy research organization dedicated to learning what works to improve the well-being of low-income people. Through its research and the active communication of its findings, MDRC seeks to enhance the effectiveness of social and education policies and programs.

Founded in 1974 and located in New York City and Oakland, California, MDRC is best known for mounting rigorous, large-scale, real-world tests of new and existing policies and programs. Its projects are a mix of demonstrations (field tests of promising new program approaches) and evaluations of ongoing government and community initiatives. MDRC's staff bring an unusual combination of research and organizational experience to their work, providing expertise on the latest in qualitative and quantitative methods and on program design, development, implementation, and management. MDRC seeks to learn not just whether a program is effective but also how and why the program's effects occur. In addition, it tries to place each project's findings in the broader context of related research — in order to build knowledge about what works across the social and education policy fields. MDRC's findings, lessons, and best practices are proactively shared with a broad audience in the policy and practitioner community as well as with the general public and the media.

Over the years, MDRC has brought its unique approach to an ever-growing range of policy areas and target populations. Once known primarily for evaluations of state welfare-to-work programs, today MDRC is also studying public school reforms, employment programs for ex-offenders and people with disabilities, and programs to help low-income students succeed in college. MDRC's projects are organized into five areas:

- Promoting Family Well-Being and Children's Development
- Improving Public Education
- Raising Academic Achievement and Persistence in College
- Supporting Low-Wage Workers and Communities
- Overcoming Barriers to Employment

Working in almost every state, all of the nation's largest cities, and Canada and the United Kingdom, MDRC conducts its projects in partnership with national, state, and local governments, public school systems, community organizations, and numerous private philanthropies.