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Emerging Patterns of Regional Resilience

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I. Introduction

Regional scientists and geographers have long tried to uncover the keys to regional success through comparative studies. From Chinitz's (1961) comparison of Pittsburgh and New York to Saxenian's (1994) pairing of Silicon Valley and Route 128, these studies have generally adopted an exceptionalist or historicist perspective, in which what is important is not the commonality of processes that produce the spatial world we see, but the unique results that can only be understood by deep observation of specific regions. The contrast between two regions helps to highlight the differences in regional assets (in particular, factor endowments), as well as regional institutions, actors, and cultures, that have led to different outcomes. Of particular interest in these studies is the ability of regions to adapt, to reinvent themselves after a downturn, as Silicon Valley did in the late 1980s, due in large part to the networked structure of its economy (Saxenian, 1994).

In contrast, the systematic perspective seeks to analyze the processes of change and the phenomena that they produce on a large (e.g., national) scale. By detecting patterns across a large number of regions, researchers hope to find commonalities that can lead to large-scale policy reform. Examples of large-scale pattern detection studies abound, from city ranking studies (Chapple et al., 2004; Hill, Wolman & Ford, 1995), to a growing literature on metropolitan disparities (Orfield 2002; Rusk 1993). The advantage of these systematic studies is that they are able to identify outliers, or regions that have performed exceptionally well, and suggest common factors behind success that are likely to be replicable across regions. The disadvantages are that they typically look at success at one point in time, rather than success or adaptiveness *through* time, and attribute success to a set of variables that are by definition universal across regions.

In this paper, we adopt a systematic perspective on regional economic change, looking across US metropolitan areas. However, rather than looking at how regions perform according to different measures of success, we examine why, confronted with a similar challenge, some regions rebound and others falter over time. In other words, we look not at the ability to attain a certain level of success on a single outcome measure, but at the ability of a region to turn itself around on an outcome measure in the face of another dimension of change. This is what we call regional *resilience*: the ability to transform regional outcomes in the face of a challenge.

Many different fields, from ecology and psychology to economics and disaster studies, have explored the concept of resilience (for a review, see Pendall, Foster, and Cowell, 2006). We borrow from two conceptual frameworks here to examine four emerging economic phenomena in regions: the tradeoff between job growth and job quality; the association between income inequality and the New Economy; the relationship between increasing regional poverty and concentration of poverty in the suburbs; and the rise of nonprofit labor market institutions in the face of government retrenchment.

The first framework for resilience, which we call "creating a new equilibrium," stems from the idea in ecology, psychology, and economics that a system might have multiple equilibria. In a state of "ecological resilience," a system can absorb a prolonged disturbance by shifting its structure or adapting its behavior. To look at this resilience in

creating new equilibria, we examine the ability to absorb rapid employment while also increasing earnings per worker; the ability to maintain a middle class despite the advent of the New Economy; and the rise of nonprofit labor market institutions. Since, unlike the ecologists, we are working from a normative framework, we are positing that this new equilibrium will be superior in some way. In each of these cases, economic transformation and restructuring results in improved social equity outcomes or processes.

The second resilience framework, which we call “reversing path dependency,” comes from the idea of path dependency from economics (e.g., Paul David’s (1985) work on the lock-in of the QWERTY keyboard) and geography (e.g., Massey, 1998; North, 1990). The idea here is that history matters: the more certain conditions characterize a social or political system, the higher the cost of choosing an alternative path, even if that alternative is superior in some ways to the current one. Thus, historical contingency at certain moments is followed by historical overdetermination. However, a resilient region can diverge from this predictable course. To illustrate this form of resilience, we examine the ability of metropolitan areas to reverse the concentration of poverty in the suburbs despite growing poverty region-wide.

We next revisit the debates over these four emergent economic, spatial, and institutional challenges in regions (improving job quality, maintaining the middle class, dispersing the poor, and building new nonprofit institutions). Then, we use GIS to describe emerging patterns of resilience in response to these challenges and discriminant analysis to explore the factors behind these forms of resilience. In the process, we explore possibilities for matched-pair case studies to examine each challenge in more detail, focusing more on the institutional and governance factors behind resilience.

II. Emergent debates around economic, spatial, and institutional restructuring

The transformation of the economy in the past thirty years has led to a set of new scholarly debates over the nature of restructuring: simply put, who benefits, where, and how. The next section explores the impact of economic growth and restructuring on wages and inequality; the relationship between increasing poverty and the spatial concentration of poverty, particularly in the suburbs; and the relationship between economic restructuring, government restructuring, and institutional reorganization, in particular, the rise of the nonprofit sector.

A. Employment versus earnings tradeoff

Over the past three decades of business cycles, several major trends are clear. First, the real hourly wage level for all but the top ten percent of workers fell or remained stagnant between 1979 and 2000 (Mishel, Bernstein, & Allegretto, 2005). Second, there has been a profound industrial shift away from goods-producing to service sectors. Third, there has been a rapid expansion of computer and other information technology products in nearly all facets of the workplace. Collectively these changes have produced what some observers call the ‘hour-glass’ economy. The U.S. creates many more new jobs openings each year, but they pay, on average, much less than jobs in other industrialized countries. (Blau & Kahn, 1996; Freeman & Katz, 1994). This has raised

questions about whether regions can increase earnings at the same time as expanding economically.

The national industry shifts away from manufacturing jobs and towards lower-paying service sector industries have had uneven effects across regional economies. First, we can expect the rate of job growth to closely track inter-regional population shifts. Existing research has shown a strong link between population growth and growth in low-productivity/low-wage service sector jobs (what regional economists would term the *residential sector*) (Houseman, 1995). This suggests that regions which experience rapid population growth, due perhaps in part to new immigrants, may see the average wage level fall.

Another factor which may lead to regional variation in average earnings over time is the uneven development pattern of new high-wage industries. Regional economists argue that high-paying service sector jobs in knowledge-intensive, creative industries are highly concentrated in only a handful of competitive regions, although there is some disagreement over the main causal mechanism behind this concentration. Richard Florida (2002) argues that firms follow an elite workforce (“the creative class”) to the cities and regions in which they choose to live based on their own preferences for a certain quality of life. Other scholars (e.g., Storper, 1997) stress that high-paying technology firms are drawn to regions which already possess a strong “pull factor” for growth in the form of agglomeration economies based mainly on knowledge spillovers.

Given the overall trends towards the proliferation of low-wage jobs and the geographic concentration of high-paying jobs, we choose to examine regional resilience simply on the basis of earnings growth. We seek to understand which regions were able to move from a relatively low-wage equilibrium to a high-wage equilibrium, in the face of this dominant trend towards the proliferation of low-paying jobs. By examining long-run wage change in average wages (over two decades) we are able to explore the relevance of existing theories of regional development as well as highlight both the cases in which theory holds and in which it is inconsistent.

B. Maintaining a stable middle class in the face of “the New Economy”

Academic research and popular accounts of the “new economy” claim that a set of new information technology and knowledge intensive industries are now the key drivers of U.S. international competitiveness and that the growth of these industries has fundamentally altered the labor market. Researchers also argue that the rise of the “new economy” is closely linked to rising income inequality, and specifically to the “hollowing out” of the middle class. Most interpretations of the link between the “new economy” and income inequality fall along a continuum marked at one end by theories which privilege purely *technological* or market-based explanations and at the other end by theories of changing *institutional* and social norms within the labor market.

One of the most technologically driven explanations for rising inequality in the decades characterized by the “new economy” stems from neoclassical economics. The skill-biased technological change (SBTC) argument claims that the implementation of new technologies (such as computers) resulted in rising demand for college-educated

workers relative to their supply (Bound and Johnson 1992; Katz and Murphy 1992). Because this explanation follows a neoclassical model of market clearance, wages are bid up for those workers who possess high levels of human capital and, due to falling demand, wages fall or stagnate for less educated workers.¹ While most empirical work within the SBTC paradigm tends to take these technological shocks as exogenous, there has been some attempts made to link the increased demand for skilled workers to the introduction of computers in the workplace (Krueger, 1993) with mixed results (DiNardo & Pischke, 1997).

Galbraith (1998) provides another technologically driven explanation but from a Keynesian, macroeconomic approach. He argues that industrial sectors which produce the technological inputs needed throughout the economy (information technology and knowledge-based industries) have de facto monopoly pricing power, while other sectors of the economy (e.g., the service sector and producers of commodity goods) face competitive conditions. He argues that while firms in these technology-producing industries obtain higher profit, they also share their monopoly surplus with a considerable portion of wage and salary workers.

Scholars who argue that the loss of middle class jobs in the U.S. is due in large part to globalization invoke both technological as well as institutional explanations. Advances in information technology and transportation make international trade more efficient (i.e., by lowering transactions costs) yet national policies and international bodies regulate trade flows and structure the relationships between trading partners. Feenstra and Hanson (1996) find that the global outsourcing of intermediate inputs by domestic manufacturers led to a sharp increase in relative demand for skilled labor in the United States and contributed to the declining wages for less-skilled manufacturing workers. In a recent study, (Bardhan & Kroll, 2003) document the significance of outsourcing throughout the service sector and show that many middle-income business-process occupations—such as computer programming or medical transcription—are increasingly locating in low-wage countries. These processes eliminate middle income job opportunities in the U.S., with likely disproportionate impacts on certain regions.

The widespread implementation of information technology plays a pivotal role in Manuel Castells' (1996) theory of the *network society*. The use of information technology enables breakdown of production processes into tasks that are either highly knowledge-intensive and creative or highly routinized and repetitive. According to Castells, the restructuring of work—enabled by new technology—has fundamentally reshaped the labor markets in the new economy. He writes:

The prevailing model for labor in the new, information-based economy, is that of a core labor force, formed by information-based managers and by those whom Reich calls 'symbolic analysts,' and a *disposable labor force* that can be automated and/or hired/fired/offshored, depending upon market demand and labor costs. (Castells, 1996: 272).

¹ While this model explains rising wage dispersion between categories of workers (less versus more educated) it does not explain the additional within-group inequality observed empirically.

While Castells stresses that the restructuring of the labor market during the 1980s and 1990s involved both technological as well as institutional changes, other scholars focus greater attention on the institutional factors behind the rise in income inequality. Osterman (1999) argues that the social norms that underpinned the employment relationship between employers and workers for most of the post-war period changed fundamentally during the 1980s. In response to new competitive pressures and shareholder demands corporations shed large portions of their *core* workforce who enjoyed high wages, lifelong employment characterized by internal job-ladders, and benefits such as health care and pensions. As firms shrink the size of their core workforce, they increasingly rely upon a flexible, contingent pool of workers whose earnings are forced down by stiff competition, and many even actively deskilled work to reduce costs (Appelbaum, Bernhardt and Murnane 2003). Other scholars point to the declining power of unions, increasing profit expectations by shareholders (Harrison and Bluestone 1988), and stagnant minimum wage levels (Lee 1999) as additional institutional factors behind rising inequality and/or the decline of middle-class jobs.

Overall, most studies have focused on the relationship between the New Economy and rising income inequality, rather than the loss of the middle class per se. For instance, a study by ICF Kaiser (1998) found that regional economies that were specialized in high-technology industry clusters had higher levels of overall inequality; likewise Benner's (1998) study of Silicon Valley found high and rising levels of wage and household income disparity amid a boom in the region's information-technology sector. The implication of these studies is that the middle class is declining in these bipolarizing regions. Thus, to examine this question further, we look here at regions that move from a below average to above average income level for the middle class (the 50th percentile, measured relative to the 10th percentile), in the face of the New Economy.

C. The rise of suburban poverty: A reflection of regional trends?

We turn next to the spatial manifestation of economic change, in particular, the rising incidence of poverty in the suburbs. Because of the occupational polarization that occurs with economic restructuring (Castells, 1989; Sassen, 1991), as well as other factors such as the gradual dismantling of the welfare state, many regions have experienced increasing poverty over the past two decades. Researchers first noted a sharp increase in concentrated poverty in the 1980s, and some suggested restructuring as the most likely cause (Jargowsky, 1997; Wilson, 1996).

Concurrently, most research suggests that economic segregation is increasing generally (but see Fischer, 2003). For instance, Jargowsky (2001) found that economic segregation increased in all racial and ethnic groups from 1970 to 1980, but the increases were especially large for minorities in the 1980s, despite a decrease in segregation by race. Economic segregation seems to increase at the expense of middle-income places, which either become more poor or more affluent (Dreier, Mollenkopf, & Swanstrom, 2004). At first, increases in poverty were strongly associated with inner-city neighborhoods (Jargowsky, 1997).

Yet, concentrated poverty in central cities clearly began declining in the 1990s (Galster, 2005; Jargowsky, 2003). This shift was due in part to declining poverty rates

nationally, but also to the redevelopment of downtown neighborhoods and public housing as downtown living gained popularity (Birch, 2005). Instead, commentators (e.g., Berube & Kneebone, 2006) are now pointing to the growth of poverty in the suburbs.

Overall, the share of the population living in moderate-poverty neighborhoods is increasing, as is the share of high-poverty neighborhoods in the suburbs {Galster, 2005; Kingsley & Pettit, 2003}. In other words, as the poor move out of downtown, they tend to enter moderate-poverty neighborhoods, many in the suburbs, which in turn increases the incidence of high-poverty neighborhoods in the suburbs (though most high-poverty tracts are still in the central cities). For instance, McConville & Ong (2003) show that in suburban Los Angeles the percentage of poor neighborhoods quadrupled between 1970 and 2000. As overall poverty rates continue to increase, the geography of poverty is gradually shifting.

Examining changes in the 100 largest metropolitan areas, Galster et al. (2005) find that, consistent with the trend toward increasing economic segregation, there has been a decline in overall neighborhood income diversity since 1970 (Galster et al., 2005). As the overall share of moderate-income families decreases and shares of families in the extreme income ranges increase, moderate-income neighborhoods are becoming less income diverse. Although they do not investigate how this spatial reorganization affects city and suburban neighborhoods, others have suggested that much of the loss of income diversity is occurring in the inner-ring suburbs (Lucy & Phillips, 1999; Talen, 2006). Thus, we examine this challenge by looking at the ability of regions to reverse the rise of economic segregation (measured by the dissimilarity index) in the suburbs in the 1980s with a decline in the 1990s – despite growing poverty regionally.

D. Rise of labor market institutions in the face of economic restructuring

While the dynamics of contemporary capitalist economic development are driven by many changes (both technological and institutional) that have their genesis at a super-regional spatial scale, these structural changes impact workers and households at a local level. Regional and community-based labor market institutions, which are by definition constructed by individuals who interact at a geographic scale that is amenable to the reproduction of labor processes, play an important role in filtering these broad structural changes to a local level. These institutions and their capacity to intervene in the labor market vary widely across regions: Peck (1996:106) argues that labor market institutions are critically influenced by local cultural and political conditions, as well as region's relative position in broader forms of "uneven spatial development."

A growing literature is documenting the rise of workforce intermediaries (Giloith 2004). Acting as intermediaries are hundreds of Workforce Investment Boards, business associations, unions, community colleges, community-based organizations (CBOs), and other organizations, all leading efforts to facilitate the transition to work, improve job quality, and develop more productive workers. Some, such as the WIBs and community colleges, are primarily supply-driven, focused on the need to improve employability and employment rates for disadvantaged workers. Others, mostly led by employers, are demand-driven, concerned mostly with meeting employer skill needs. A third type is the dual customer intermediary, which serves both jobseekers and employers and typically

tries to alter both the supply- and the demand-side of the labor market; sector initiatives are the most common example.

Do they work? A series of evaluations of sector initiatives suggest that they can indeed raise wages (Chapple, 2005; Conway & Zadniapour, 200x; PPV, 200x). Appelbaum, Bernhardt and Murnane (2003) directly attribute regional success in mitigating poor wages and labor conditions to the intervention of labor market institutions, arguing that unions, regional labor market institutions such as employer-led consortia, and intermediaries that impart technological knowledge explain most of the variation within low-wage labor markets. Regional labor market institutions deliver resources (particularly skilled labor) utilized by multiple employers, creating incentives for individual firms to improve conditions.

To explore which regions have been able to develop the capacity of these labor market institutions, we look at the expansion in nonprofit labor-related organization revenue from 1995 to 2004, focusing on the ability to shift from below average per capita revenue in 1995 to above average in 2004, in the face of ongoing economic restructuring.

III. Data and Methods

The goal of our empirical analysis is twofold. First, we operationalize the concept of regional resilience across the four measures discussed in the preceding section by constructing and mapping typologies based on performance over time on a given dependent variable. Second, we conduct discriminant analysis on each resilience typology to explore the distinguishing characteristics of each resilience category (e.g. what factors distinguish transformative regions from stagnant regions).

To perform this exploratory analysis we gathered data on U.S. metropolitan areas on a broad array of indicators of economic performance, demographic change, and spatial concentration of poverty. To this database we added several measures of the civic and institutional capacity of the public and non-profit sectors within regions. Our database (described in Table 1 below) covers all metropolitan regions (N=192) with a population of at least 200,000 persons in 2000 under the 2003 U.S. Census metropolitan area definitions.²

To evaluate the ability to increase earnings per worker, to maintain a middle class (as measured by the 50/10 ratio) despite the advent of the New Economy, and to develop the capacity of nonprofit labor market institutions, we use the “new equilibrium” method (Figure 1). According to this method, a transformative region starts below average on some indicator and ends up above average. These transformative regions can be contrasted in particular with the stagnant regions, who aren’t able to turn themselves around.

² <http://www.census.gov/population/www/estimates/metrodef.html>

Figure 1. Resilience Typology: Creating a New Equilibrium

<div> <div>End status</div> <div>Start status</div> </div>	Below average	Above average
	Stagnant	Transformative
Above average	Faltering	Thriving

To look at the ability of metropolitan areas to reverse the concentration of poverty in the suburbs despite growing poverty region-wide, we use a different resilience typology – “reversing path dependency” – that adds a dynamic dimension (Figure 2). This compares the direction of change in the first decade versus that in a second decade. So if a region gains in suburban concentration of poverty in the 1980s but declines in the 1990s, then it is transformative, i.e., able to change the course of history.

Figure 2. Resilience Typology: Reversing Path Dependency

<div> <div>Change in decade 1</div> <div>Change in decade 2</div> </div>	Below average	Above average
	Stagnant	Transformative
Above average	Faltering	Thriving

We present GIS maps of the four regional resilience typologies in Figures 3-6. We also conduct a multivariate analysis of each resilience typology to help highlight the differences between each group. Our main technique for exploring differences among regions across the categories of resilience (transformative, stagnant, faltering, and thriving) is discriminant analysis. Discriminant analysis derives functions for these groups (based on many independent variables discussed below) and assigns each region to a group on the basis of its score. The overall score for each region is calculated by summing its weighted scores for each function, and weight is based on the percentage of the overall variation between resilience categories accounted for by that discriminant function.

Discriminant analysis has been commonly used in medical, psychological, and educational research. However, it can also be quite useful in social science and public

policy research whenever the questions center on why people, geographic units, or institutions are distributed into distinct groups or categories. As the name suggests, the methodology statistically evaluates factors that discriminate among two or more groups. It is similar in many respects to multiple regression. However, the dependent variable is structured around two or more discrete units much like logit or probit models. Further, the coefficients for the independent variables represent the values that maximize the distance between the mean values for each of these dependent variable groups. It is important to underscore that this is a tool for exploratory analysis rather than a causal model.

IV. Findings

A. Employment versus earnings tradeoff

Table 2 lists the number of regions in our sample (N=192) that categorized into each resilience group. The vast majority of regions were classified as “stagnant”. This is indicative of both an overall context of relatively slow wage growth during the 1980s as well as an overall bias towards higher wages in larger regions (most of which are in the “thriving” category). Only 11 regions were “transformative” on average earnings per worker. Table 2 also lists the discriminant scores for the individual discriminant functions described in Table 3. Figure 3 maps the distribution of each resilience category for the continental U.S. Transformative regions are those that were either closely associated with the booming high-technology economy of the 1990s (e.g., Austin, TX, Raleigh-Durham, NC, Boulder, CO), or medium sized, industrial regions that were particularly hard hit in the 1980s (e.g., Milwaukee, WI, Trenton, NJ). Indianapolis, IN, Jackson, MI and Charlotte, NC are interesting exceptions that may require further analysis.

We performed discriminant analysis on the “new equilibrium” typology definition, which means that transformative regions are those that had average annual earnings per worker below the regional average in 1980 but ended up with above average earnings in 2000. We chose to examine variation among our four resilience categories across the following set of independent variables. We note briefly the theoretical basis for including each factor in the analysis. For each group of variables we include both the level or share at the starting point (1980 or 1979) and the change in that variable in both the 1980s and 1990s.

- **Population and employment (level and growth).** Larger regions tend to have higher wage levels, on average, than smaller ones due to both a higher cost of living as well as potentially higher levels of productivity. However, as noted in the literature review above, the majority of job growth over the 1990s has occurred in lower-skilled service sectors. According to classical location theory, larger cities tend to have larger and more diverse service sectors (tertiary industries).

- **Industry diversity.** The ‘portfolio argument’ is often put forward as a strategy for long-term regional economic resilience. As the theory goes, regions that begin with a more diverse industry structure will be less likely to experience significant and drastic swings in employment and wages. Diverse regions are “protected” from exogenous changes in demand and are more likely to have industries at different points/peaks in the product cycle.³
- **Innovation.** Many regional development theorists argue that innovation and/or participating in a knowledge-based economy is the key to regional competitiveness (Saxenian, 1994; Storper & Scott, 1995). Innovation—it is suggested—results in higher wage jobs as firms compete in a Schumpeterian, winner-take-all manner, and as workers increasingly use knowledge and information technology to create new products (Galbraith, 1998).
- **Educational attainment of the workforce.** Both neoclassical labor market economics and recent regional development theorists (e.g., Richard Florida) argue that the demand for workers with a high level of education increased sharply in the 1980s and 1990s relative to other workers. Florida (2002) argues that the degree to which cities and metropolitan areas can attract such highly educated, creative workers largely determines their overall level of economic success.
- **Demographic trends.** We include a full set of population and demographic change measures to control for trends which may push wages down such as increasing labor supply (e.g., new immigrants), racial/ethnic discrimination, and a higher share of the populations outside the labor force (% non-working population).

We also include dummy variables corresponding to the census divisions, which are made up of groups of states in broad geographic regions (e.g., New England, Pacific).

As indicated in Table 2, transformative regions in the case of changing real wage levels (from below to above average) scored high on Functions 1 and 3. Based on the correlations listed in Table 3, we can see that transformative regions (11 in the total sample) tended to be smaller in terms of population and employment size. They also started off in 1980 with a lower share of immigrants and Hispanic residents, and had a higher share of workers with at least a bachelor’s degree. Both transformative regions as well as thriving regions had an increasing share of highly skilled workers and an increasing share of Hispanic residents and a declining share of manufacturing jobs. However, since transformative regions scored high on Function 3, it appears that transformative regions also share “New Economy” characteristics (i.e., increasing patents per capita during the 1980s and 1990s and increasing share of college-educated workers in the 1990s).

Stagnant and faltering regions scored negatively on Function 1 and therefore have the opposite characteristics of thriving and transformative regions. It is important to note that faltering regions are clearly associated with a declining industrial economy. It is

³ See Chinitz’s (1961) classic comparison of the Pittsburgh and New York regions. This argument also stems from Markusen’s (1985) careful analysis of the impact of product cycles on regional economic performance.

interesting to note that having a relatively diverse employment base at the starting point does not provide a cushion against adverse economic change in terms of wages.

Overall, this exploratory analysis appears to confirm existing theories of regional development. We find evidence that participating in the knowledge-based economy is strongly associated with resilience, in terms of maintaining high wages or reversing a downward trend. Those regions which attract highly-skilled workers and are engaged in innovation create enough regional income to increase the average earnings per worker over time. However, rising average wages may likely be associated with rising inequality. In the next discriminant analysis we explore the factors that enable some regions to maintain a middle class in the face of the “New Economy.”

Potential Case Comparisons

In selecting potential comparison case studies we first look for two types of paired comparisons. First, we look for two transformative regions of similar size to control for a similar macro environment. For this transformative-transformative comparison, we compared potential case pairs along a set of independent variables to further control for structural differences (e.g. employment/population size, poverty rate, and educational attainment). Our ability to fully control for structural factors in selecting comparisons is limited by the low number of transformative regions (11). However, the Indianapolis and Milwaukee-Waukesha-West Allis, Wisconsin MSAs are an ideal pair for comparison. Both regions are located in the East North Central census division and each had approximately 1.5 million inhabitants in 2000. In addition, the Indianapolis and Milwaukee had similar demographic profiles.⁴ While both regions experienced similar rates of growth in earnings per worker during the 1990s (13% and 11% respectively), there were some important differences between the regions. Indianapolis had slightly more patents per-capita in 1998 (3.2 versus 3.0) while labor related non-profits there spent only half as much as those in Milwaukee (\$60 versus \$145 per-capita in 2004). An in depth case study will help us understand if institutional mechanisms such as increased civic sector capacity can help each regions “move up the value chain” and attain above average wage levels.

Second, we suggest a comparison between transformative and stagnant regions, since these two types had similar performance in the 1980s, but diverged in the 1990s. Here we selected regions within the same census division that started with similar earnings levels in 1979. One potential case comparison is Trenton-Ewing, New Jersey (transformative) versus Atlantic City, New Jersey (stagnant). The average earnings level per worker was similar between Trenton (\$35,275 in 2000 dollars) and Atlantic City (\$37,883) in 1979, but diverged in 2000 (\$40,901 versus \$49,135).

⁴ Indianapolis, IN and Milwaukee-Waukesha-West Allis, WI had a comparable proportion of African-American (17% each), Latino (3% versus 6%) and foreign born residents (3.5% and 5.4%) in 2000. In both regions 27% of workers aged 25 or older had at least a bachelor's degree in 2000.

B. Maintaining a stable middle class versus “the New Economy”

In this typology we measure the position of middle class relative to low-income households as an indicator of the degree to which regional economies generate opportunities for the median worker. In creating our typologies we construct the 50-10 household income ratio for metropolitan areas based on the 1990 and 2000 Census Public Use Microdata Sample (PUMS). We define middle-class resilience typologies based on the “new equilibrium” concept described above. In each decade we compare the 50-10 ratio relative to the regional (census division) average. It is important to note that the 50-10 ratio can change or vary from region to region based on differences in either the denominator (the 10th percentile) or the numerator (median income). Although this means that our findings should be interpreted with caution, this analysis can still provide useful information if we consider this ratio as only a relative measure of the health of the middle class.

The independent variables used to differentiate resilience categories are similar to those in the average earnings per worker analysis above with the following exceptions. We include two different institutional variables—jurisdictional complexity (the number of local governments per capita) and per capital revenue of labor-related community-based organizations in 1995—as measures of the degree to which regions have the capacity to respond to changes in the labor market by retraining workers and implementing a cohesive economic development strategy. Table 4 summarizes the middle-class (50-10) resilience typology and discriminant function scores. Twenty-three regions are categorized as transformative, in that middle-income households had incomes closer to the poor in 1980s, but by 2000 had incomes relatively higher than households at the 10th percentile. This diverse set of regions includes metros from all parts of the country including older New England areas such as Providence, RI and Worcester, MA, and portions of California’s central valley such as Bakersfield, Fresno and Stockton. Older Midwestern regions such as Akron and Dayton are also included in the transformative category (see Figure 4).

The discriminant analysis on this typology resulted in three significant functions (Tables 4 and 5). Transformative regions scored highly negative on Function 2, while stagnant and thriving regions were best described by Function 1 (with opposite scores indicating an inverse interpretation of the correlations.) At the starting point, transformative regions tended to be larger (in population and employment) and had tighter labor markets. There is mixed evidence that regions transformed their middle class due to an influx of immigrants that drove wages down at the 10th percentile (e.g., immigration variables in Function 3 are positive but this function has a low score for the transformative category (.390) and itself explains a low share of the overall variance between the groups). However, the proportion of adults in the workforce, as well as the share of Hispanic residents, did decline in transformative regions. This suggests that these metros were relatively low-growth areas.

Interestingly, thriving regions tended to be lower growth regions that did not attract either highly skilled workers or new immigrants in the 1980s and 1990s. Thus, the economies of these places are not faced with the implicit tradeoff between economic growth and growing inequality. Stagnant regions on the other hand did experience

economic and population growth (see Function 1, Table 5) and exhibit some evidence of being part of the New Economy (higher patents per capita and a growing share of highly skilled workers). Stagnant regions are also the most numerous (97), indicating that the majority of metropolitan areas cannot reverse the broad national trend of “hollowing out” the middle-class.

Potential case study comparisons

In selecting potential comparison case studies we first look for two types of paired comparisons. First, we look for two transformative regions of similar size to control for a similar macro environment. Second, we compare potential case pairs along a set of independent variables to further control for structural differences (e.g. employment/population size, poverty rate, educational attainment). However, to ensure some variation, we select pairs with key differences in industry structure. Given these considerations the best case comparison among the 23 transformative regions is the Miami-Ft. Lauderdale-Miami Beach MSA to the Houston-Baytown-Sugarland MSA. Miami and Houston are both large southern regions that have similar poverty levels (13.8% vs. 13.4%) and a comparable share of workers with a bachelor’s degree or higher (24.1% vs. 26.3%). However, Miami had a less diverse industry structure with significantly lower average earnings levels (\$37,600 vs. \$49,500) in 2000 and fewer patents per capita in 1998 (1.8 vs. 3.1). Yet Miami had a higher 50-10 ratio in 2000 (4.34 up from 3.56 in 1980), than Houston (4.12 in 2000 and 4.15 in 1980).

Second, we suggest a comparison between transformative and stagnant regions, since these two types had similar performance in the 1980s, but diverged in the 1990s. Here we select regions within the same census division that started with similar 50-10 ratios in 1980, but ended up with vastly different ratios in 2000. Interesting comparisons in this group are: Reno, Nevada versus Provo-Orem, Utah, Miami versus Orlando, or Ann Arbor versus Kalamazoo.

C. The rise of suburban poverty: A regional phenomenon?

This typology examines the ability of regions which experience increasing concentrations of suburban poverty in the 1980s (as measured by the dissimilarity index) to reverse course and deconcentrate in the 1990s. Highly transformative regions make this shift in the face of increasing regional poverty rates in the 1990s. This list of 28 regions includes three types of places (Figure 5): declining metros in upstate New York and New England (Albany, Syracuse, Rochester, Springfield, New London, Hartford, New Haven), relatively prosperous California metros (Santa Barbara, Ventura), and very large cities (San Jose, Los Angeles, New York, and Philadelphia). In contrast, an eclectic set of 58 cities also transform themselves but only as regional poverty decreases: this set includes Cleveland, Cincinnati, Pittsburgh, Chicago, Baltimore, San Francisco, Austin, Raleigh, Atlanta, Dallas, Erie, and Lancaster.

These transformative regions contrast with a set of stagnant regions, which experienced the increasing concentration of suburban poverty in both the 1980s and 1990s. These include a set of New England cities (e.g., Boston and Providence);

southwestern metros (Las Vegas, Albuquerque, and Tucson), and fast-growing California cities (Salinas and Sacramento).

We chose to examine variation among our four resilience categories across the following set of independent variables. We note briefly the theoretical basis for including each factor in the analysis. For each group of variables we include both the level or share at the starting point (1980) and the change in that variable in the 1980s and 1990s.

- **Population, employment, earnings, inequality, and labor force participation (level and growth).** Larger regions are likely to have higher levels of economic segregation, as are regions with higher levels of inequality. These regions may also see increasing suburban concentrations of poverty over time, due to growth pressures.
- **Industry diversity and structure.** As regions shift out of manufacturing and/or develop industrial structures that are either more diverse or more specialized, job-rich suburbs may be disproportionately impacted, which may in turn affect local concentrations of poverty.
- **Spatial factors.** Growth in concentrated poverty in a metropolitan area's suburbs may result in part from changing spatial patterns including racial/ethnic segregation and the distribution of poverty and jobs between cities and suburbs. We also examine jurisdictional complexity, which may decrease the likelihood of poverty concentration due to the existence of multiple exclusionary jurisdictions. Finally, we include super-regional dummies to account for different suburbanization patterns across the country.
- **Demographic trends.** We include a full set of population and demographic change measures to control for trends which may shift population to the suburbs or affect suburban resident employment outcomes such as increasing labor supply (e.g. new immigrants), racial/ethnic discrimination, and educational attainment.

The discriminant analysis, which omitted the faltering and thriving groups in order to focus on the difference between transformative and stagnant, yielded two highly significant functions (Tables 6 and 7). The regions that are transformative in face of increasing poverty are characterized by the inverse of Function 1. They start with a relatively high immigrant population, large population size and job base, but also a highly segregated population, in terms of Latino and African-American population, concentrations of poverty neighborhoods, and relatively highly educated suburban resident population. Over time, they experience increasing earnings and decreasing poverty, as well as increasing inequality and decreasing educational levels for suburban residents.

In contrast, the stagnant regions are consistent with Function 2: they have high rates of growth in employment, population, immigration, and manufacturing; increasing earnings with decreasing inequality and African-American population; and decreasing jurisdictional complexity. At the start, they have a relatively low proportion of jobs in manufacturing.

This suggests that the regions best able to turn themselves around in terms of suburban poverty are relatively mature: large cities like New York and Los Angeles, as well as smaller deindustrializing metros in New York and New England, experienced relatively early suburbanization and inner ring suburb decline, and are beginning to experience some suburban revitalization. Increasing affluence, accompanied by increasing income inequality, is creating new population pressure on suburbs, which are likely experiencing an influx of both middle-class residents and less-educated residents, perhaps immigrants.

One potential factor behind the ability to reverse the concentration of suburban poverty is the presence of CBOs and other nonprofits working to ameliorate poverty in the suburbs. Interestingly, the presence of suburban poverty-related CBOs seems to be correlated with transformative metros (Figure 6). In metros that transform their suburban poverty in the face of increasing poverty regionally, the average per capita revenue per suburban poverty-related CBO is \$54, but in stagnant, faltering, and thriving metros, revenue is just \$29 per capita. Case studies could help determine the extent to which these CBOs are actually making these regions more resilient in their response to suburban poverty.

Potential case study comparisons

Again, we select two pairs for case studies, first comparing a pair of transformative metros (from the same region) in order to examine the role of different independent variables, and second comparing a transformative and a stagnant metro, again from the same region, to see why their paths diverged in the 1990s. Two adjacent metros that are transformative in terms of the concentration of suburban poverty are Rochester and Syracuse, New York. Comparable in size (Rochester with just over one million inhabitants, and Syracuse with 827,000), the two metros have relatively low rates of suburban poverty (6.4% and 8.1%, respectively) and immigration (5.9% and 4.5%). The suburban share of metropolitan employment is also similar (67%), as is the level of income inequality. Yet, the two areas differ on several key variables related to institutional capacity and jurisdictional complexity. Rochester lags Syracuse in per capita revenue in suburban poverty-related CBOs (\$17 versus \$45) and it has half as many jurisdictions per 10,000 population (.44 versus .82). However, Rochester's ratio of city to suburban poverty is higher than Syracuse's (4.08 versus 3.39), suggesting that Rochester's suburban resilience is related to the concentration of poor in the core, while Syracuse copes by opening up its many suburbs.

Another matched pair of cases is Hartford, a transformative metro, and Providence, which is stagnant. These two metros are similar across many dimensions, allowing us to control for size, industry structure, immigration, and suburban share of employment. Yet Providence lags Hartford slightly, in terms of revenue in suburban poverty-related CBOs, jurisdictions per capita, and city/suburban poverty ratio, suggesting a slightly different story than Rochester and Syracuse.

D. Rise of labor market institutions in the face of economic restructuring

In this typology, we examine the ability of regions who start with relatively little (below average) economic capacity in their labor-related community-based organizations (CBOs) in 1995 to shift to above average capacity in 2004. These transformative regions include places as diverse as Little Rock, New Haven, Hartford, San Antonio, Louisville, Philadelphia, and Seattle (Figure 7). Interestingly, many of the regions that are already thriving in labor CBO capacity in 1995 (in blue) are Rustbelt communities that began struggling with restructuring labor markets in the decades prior. Overall, these transformative and thriving regions are concentrated in the Midwest, Mid-Atlantic, and Pacific regions. In contrast, the stagnant regions, including Amarillo, Mobile, Charleston, Daytona Beach, Oklahoma City, Erie, Lancaster, and Youngstown (among others), cut a broad swath across the southern US.

We chose to examine variation among our resilience categories across the following set of independent variables. We note briefly the theoretical basis for including each factor in the analysis. For each group of variables we include both the level or share at the starting point (1990) and the change in that variable in the 1990s.

- **Population, employment, earnings, inequality, and labor force participation (level and growth):** Larger regions are likely to have more per capita capacity in labor CBOs because such organizations rely on economies of scale in order to survive. Employment and earnings levels, as well as labor force participation and income inequality, are also likely to influence the development of labor CBO capacity.
- **Industry diversity and structure:** As regions shift out of manufacturing, develop innovative capacity (patents), and/or develop industrial structures that are either more diverse or more specialized, they are likely to require new training programs for dislocated workers. Thus, we would expect to see these variables influence how labor CBOs develop.
- **Spatial factors:** Growth in CBO capacity in a metropolitan area may result in part from changing spatial patterns including racial/ethnic segregation and the distribution of poverty and jobs between cities and suburbs: for instance, more concentrated poverty may create a need for more intermediaries to aid the transition to work. We also examine jurisdictional complexity, since more fragmented regions are less likely to experience the economies of scale necessary for the government to run workforce programs. Finally, we include super-regional dummies to account for different labor cultures across the country.
- **Demographic trends.** We include a full set of population and demographic change measures to control for trends which may increase demand for workforce intermediaries such as increasing labor supply (e.g. new immigrants), racial/ethnic discrimination, and educational attainment.

The discriminant analysis yielded two significant functions (Tables 8 and 9), neither of which successfully characterizes transformative regions. Function 1, which

best characterizes thriving regions (and inversely, stagnant regions), describes regions that start with a high level of labor-related CBO revenue, a high level of jurisdictional complexity, and a relatively low share of African-American and immigrant population. In the 1990s, they experienced increasing labor force participation, decreasing inequality, and decreasing innovation (as measured by patents). Function 2, which accounts for just three percent of the variation, can be interpreted inversely to understand faltering regions; the most important factors here are low employment, population, immigration, and earnings growth, as well as decreasing racial/ethnic segregation. The characterization of thriving regions suggests that the increasing jurisdictional fragmentation in regions with growing labor force participation may create the need for intervention by local labor market institutions, as governments lack their own capacity to develop workforce programs. In contrast, low-growth regions are falling behind in terms of CBO capacity.

Omitting the faltering and thriving regions from the discriminant analysis, there is one significant function that characterizes transformative regions (Tables 10 and 11). As in the first discriminant, this function emphasizes regions that start with a high level of labor-related CBO revenue. At the onset, they are relatively large cities in terms of population and employment, with high levels of racial/ethnic segregation and concentrated poverty, but a relatively low African-American population. Over time, they are becoming less segregated and losing African-American population. They tend to begin strong in the New Economy (as measured by patents) and over time are increasing the number of patents relative to the regional average.

Potential case study comparisons

Two cases that have transformed their labor-related CBO capacity are New Haven and Bridgeport, which are in the same region and of similar size, with similar racial composition and segregation levels. Though both have transformed, they differ substantially in population, spatial, and industry structure: perhaps because of its close ties with the New York metropolitan region, Bridgeport's population is more educated (40% with a bachelor's degree or higher, versus 28% in New Haven), with more immigrants (17% versus 9% in New Haven), lower concentrations of poverty, more jobs in the center city (55% versus just 29% in New Haven), and increasing specializations in New Economy sectors. Investigating this pair further could answer questions about the resilience of labor market intermediaries in large versus small labor markets.

For the transformative-stagnant pair, an interesting contrast could be drawn between Philadelphia and Miami, which are similar in population size, jurisdictional complexity, educational attainment, income inequality, poverty concentration, and other dimensions but differ substantially in immigrant population and segregation. Philadelphia has just seven percent immigrants, who are dispersed throughout the metro despite its high concentration of poverty in the central city relative to the suburb, while Miami's population is 35% immigrants, who are relatively segregated. This case comparison could look at questions such as whether labor market intermediaries are more resilient (or better funded) in Philadelphia because of their focus on native-born groups, and whether the lack of resilient labor market intermediaries in Miami has made a difference for immigrants in the labor market.

V. Conclusion

We provide an empirical exploration of the concept of regional resilience that helps illuminate factors that shape the different responses of metropolitan economies to external challenges. Our study differs from previous work in that we focus our attention mainly on those regions that reversed trends (changed path dependency) or changed equilibrium over the past two decades, rather than those that are currently on top. The first three modes of resilience analyze normative outcomes: higher wage jobs, a stable middle-class, and deconcentrated poverty. The final resilience measure (the capacity of labor-related CBOs) captures a process (civic capacity to respond to economic restructuring) rather than an outcome.

In the face of each challenge, we identify regions that transform themselves by achieving a new equilibrium or reversing path dependency. Regions that transform their earnings per worker in the face of rapid job growth tend to have concentrations of high-skilled workers participating in a knowledge-based economy. Regions with a resilient middle class tended to be low growth, with fewer Latinos and/or immigrants. Regions that are able to buck the trend of growing suburban poverty tend to be large, mature metros with established concentrations of minorities and immigrants, as well as high civic capacity in suburban poverty-related CBOs. Finally, the most resilient regions in terms of capacity in labor-related CBOs tend to be large, segregated cities that are restructuring into the New Economy.

In some cases, discriminant functions were insignificant or unable to characterize transformative regions. We suspect that this is due in part to the lack of institutional or governance variables, including measures of government programs, fiscal capacity, representation in state legislatures, voter participation, and so forth. In the next phase of the project, we hope to gather more detailed data on these indicators for a limited number of cases.

Tables and Figures

Table 1. Regional resilience database summary

Variable	Variable Construction/Notes	Data source
Employment, population, average earnings per worker	-% change by decade -Point in time levels for 1979, 1989, 2000. -Income variables adjusted for inflations using CPI-U ⁵ .	Regional Economic Information System (REIS), 1969-2000.
Industry Diversity	<u>Two measures</u> -Standard entropy index calculated by share of regional employment across 12 sectors. -Number of “export” industries in each time period. ⁶	REIS
Poverty Concentration	-Poverty dissimilarity index calculated from census tract level data. -Calculated for overall region and suburban and central city tracts separately. ⁷	Geolytics Neighborhood Change Database Tract Data 1970-2000.
Demographics	Data on population by race, ethnicity, age, foreign born status, and educational attainment calculated as static shares and decadal change variables.	State of the Nation’s Cities Data System. U.S. Department of Housing and Urban Development.
Nonprofit organizations	Data on revenue for nonprofit organizations (labor-related, poverty-related, etc.)	National Center for Charitable Statistics
Innovation	-Number of use patents granted by the U.S. Patent Office in 1979, 1989, and 1999 per capita. -Individual patent records were geocoded according to the city of residence of the first inventor named on the application.	National Bureau of Economic Research (NBER) Patent Citations Data File ⁸

⁵ Obtained from the Bureau of Labor Statistics, <http://www.bls.gov>

⁶ Export is defined as those sectors in which the location quotient (LQ) of regional personal income was greater than 1.1 (versus the U.S.) and which accounted for at least 1% of total regional income. Measured across a potential group of 90 industry sectors.

⁷ See Appendix A for dissimilarity index formula.

⁸ Hall, B. H., A. B. Jaffe, and M. Tratjenberg (2001). "The NBER Patent Citation Data File: Lessons, Insights and Methodological Tools." NBER Working Paper 8498." (<http://www.nber.org/patents>)

Table 2. Average earnings per worker resilience categories and discriminant function scores

Earnings/worker resilience typology, 1980 versus 2000	Number of Cases	Function 1	Function 2	Function 3
Transformative (-,+)	11	1.725	0.659	1.513
Stagnant (-,-)	103	-0.959	-0.362	0.068
Faltering (+,-)	34	-0.599	1.362	-0.373
Thriving (+,+)	44	2.171	-0.282	-0.369

Table 3. Real Earnings/Worker Discriminant Analysis

Variable Name	Function 1	Function 2	Function 3
Chg in % with BA, 1980-90	0.2574	-0.0823	0.0843
% chg. in Hispanic population, 1990-2000	0.2168	-0.1743	0.1743
Change in % MFG, 1979-1989	-0.2030	0.0067	0.1014
East South Central	0.1805	0.1237	0.0063
Industry Diversity Index (employment based), 1979	-0.0425	0.5825	-0.3209
% African American, 1980	0.2321	0.4725	-0.0816
% chg. in Hispanic population, 1980-90	-0.1279	-0.3266	0.0881
Change in % immigrants, 1990-2000	0.2349	-0.2799	-0.0243
Change in 80-20 ratio, 1989-1999	-0.0131	-0.2776	-0.1281
Percent of population not in labor force, 1980	-0.2418	0.2641	-0.0786
Change in # of Exports, 1989-00	-0.1439	0.2614	0.0907
80-20 Ratio HHincome, 1979	0.0420	0.2572	-0.2393
Suburban share of regional jobs, 1980	-0.1638	-0.2526	-0.0275
West South Central	-0.0913	0.2384	-0.1296
% of total nonfarm employment in manufacturing, 1979	0.1824	-0.2375	0.0347
Change in % African American, 1990-2000	0.0195	0.2323	0.0129
Patents Per Capita, 1979	0.0787	-0.2235	0.1206
Chg. in industry diversity index, 1979-89	-0.0508	-0.1898	0.0621
Change in 80-20 ratio, 1979-89	-0.0911	0.1850	-0.0999
Change in # of Exports, 1979-89	-0.0257	-0.1780	-0.0099
Change in % MFG, 1989-2000	-0.1112	0.1686	-0.0163
Jurisdictional Complexity, 1980	0.0782	-0.1660	-0.0006
Chg. in industry diversity index, 1989-2000	0.0598	-0.1575	0.1010
New England	-0.0654	-0.1395	0.0304
Change in % African American, 1980-90	-0.0279	0.1067	-0.0481
Change in Jurisdictional Complexity, 1980-90	-0.0813	-0.0913	-0.0701
% change in suburban employment, 1990-2000	0.1405	0.0996	0.7014
Chg in % with BA, 1990-2000	0.3296	-0.0687	0.5487
Total non-farm wage and salary employment, 1979	0.3570	-0.0688	-0.5189
Population, 1979	0.3338	-0.0611	-0.5108
% Chg. in employment 1989-2000	0.0251	-0.0171	0.4980
% Chg. in population, 1989-2000	-0.0028	-0.1320	0.4078
Change in Patents PC, 1979-89	0.0181	-0.1424	0.3920
% Chg. in employment 1979-89	-0.0138	-0.1062	0.3840
Change in Patents PC, 1989-98	0.2481	-0.2001	0.3801
Chg. in % nonworking population, 1990-2000	0.1364	-0.1489	-0.3546

% foreign born, 1980	-0.0889	-0.1275	-0.3408
Change in % immigrants, 1980-90	0.0958	-0.1340	-0.3080
% Hispanic, 1980	-0.1659	0.0490	-0.2896
Chg. in % nonworking population, 1980-1990	-0.2415	0.0348	-0.2847
Percent of Regional Population w/ BA or higher, 1980	0.0991	-0.1259	0.2543
West North Central	0.1466	-0.1791	-0.2475
% Chg. in population, 1979-89	-0.1112	-0.0572	0.2266
Change in Jurisdictional Complexity, 1990-2000	-0.1620	0.1475	-0.2171
Pacific	-0.0952	-0.1875	-0.1919
Mid Atlantic	0.1088	-0.1255	-0.1881
South Atlantic	0.0272	0.1769	0.1845
East North Central	-0.0693	0.0142	0.1270
Number of Exports, 1979	0.0109	0.0586	-0.1213
Function significance	**	**	**
Percentage of variance explained	74.5	16.7	8.9

Table 4. 50-10 Household income resilience typology and discriminant function scores

50-10 income ratio resilience categories, 1980 versus 2000	Number of Cases	Function 1	Function 2	Function 3
Transformative (-, +)	23	0.320	-0.769	0.391
Stagnant (-, -)	97	-0.839	0.026	-0.057
Faltering (+, -)	16	0.474	1.032	0.412
Thriving (+, +)	56	0.830	-0.015	-0.208

Table 5. Middle class resilience Discriminant Analysis.

Variable Name	Function 1: Smaller, High skill regions	Function 2: Older, deindustrializing, slow growth	Function 3
Mid Atlantic	-0.395	0.171	-0.239
% chg. in Hispanic population, 1980-90	-0.357	-0.132	0.139
% Chg. in employment 1979-89	-0.296	0.244	0.135
East South Central	0.275	0.242	-0.124
Change in Patents PC, 1989-98	-0.272	-0.085	0.154
% change in suburban employment, 1990-2000	-0.269	0.153	0.078
Percent of Regional Population w/ BA or higher, 1980	-0.259	-0.093	0.129
% Chg. in population, 1989-2000	-0.246	0.094	0.173
East North Central	0.246	-0.018	0.008
% Chg. in population, 1979-89	-0.227	0.043	0.226
% Chg. in employment 1989-2000	-0.225	0.191	0.223
Jurisdictional Complexity (# of places per 10,000 pop), 1980	-0.218	0.028	-0.187

% of regional poverty population in very high poverty tracts, 1980	0.213	0.139	-0.160
Chg in % with BA, 1990-2000	-0.198	0.151	-0.017
West South Central	0.171	-0.093	0.037
Chg. in industry diversity index, 1979-89	0.168	-0.086	-0.071
Patents Per Capita, 1979	-0.138	-0.055	0.052
Chg in % with BA, 1980-90	-0.133	0.071	-0.125
West North Central	-0.128	-0.126	-0.050
Suburban share of regional jobs, 1980	-0.126	0.014	-0.098
Change in Patents PC, 1979-89	-0.120	-0.030	-0.014
Chg. in industry diversity index, 1989-2000	-0.089	0.080	-0.034
Chg. in % nonworking population, 1980-1990	0.196	-0.350	0.171
South Atlantic	0.050	0.282	-0.224
New England Dummy	-0.039	-0.280	0.115
Total non-farm wage and salary employment, 1979	0.084	-0.246	0.134
% chg. in Hispanic population, 1990-2000	0.087	0.237	-0.226
Population, 1979	0.076	-0.230	0.135
Chg. in % nonworking population, 1990-2000	0.124	-0.181	0.047
Percent of population not in labor force, 1980	0.066	0.159	0.082
% chg. in population in very high poverty tracts, 1980-90	0.081	-0.142	0.020
% African-American, 1980	0.562	0.414	-0.632
% foreign born, 1980	0.102	-0.485	0.587
% Hispanic, 1980	0.034	-0.302	0.516
Change in Jurisdictional Complexity, 1980-90	0.318	0.403	0.408
Change in % immigrants, 1980-90	0.138	-0.283	0.399
Pacific	-0.006	-0.304	0.368
Change in % African American, 1990-2000	0.269	0.208	-0.363
Change in Jurisdictional Complexity, 1990-2000	0.082	-0.038	0.363
Change in % immigrants, 1990-2000	-0.069	-0.166	0.271
% chg. in population in very high poverty tracts, 1990-2000	-0.085	-0.035	0.207
Change in % African American, 1980-90	0.170	-0.054	-0.197
Change in % MFG, 1979-1989	-0.077	0.018	0.181
percent of total nonfarm employment in manufacturing, 1979	0.110	-0.032	-0.181
% change in suburban employment, 1980-90	-0.036	0.107	0.179
Labor CBO Income per 10,000 population, 1995	0.039	0.055	0.157
Change in % MFG, 1989-2000	-0.105	-0.057	0.155
Industry Diversity Index (employment based), 1979	0.034	-0.074	0.143
Function significance	**	**	*
Percentage of variance explained	70.5	22.9	6.6

Table 6. Suburban poverty concentration resilience typology and discriminant function scores.

Ability to reverse suburban concentration of poverty, 1980s vs. 1990s	Number of Cases	Function 1: starting with low employment, population, immigrants, segregation, then decreasing earnings and inequality	Function 2: high employment, population, immigration manufacturing growth; decreasing inequality, decreasing African-American population
Transformative in the face of increasing poverty	28	-1.276	-0.114
Transformative while poverty decreases	58	0.413	-0.307
Stagnant	65	0.173	0.402

Table 7. Suburban poverty concentration resilience discriminant analysis.

Variable name	1	2
% immigrants, 1980	-0.712	0.496
% change in earnings, 1980s	-0.515	0.190
Change in 80-20 ratio, 1990-2000	-0.482	0.316
Total non-farm wage and salary employment, 1979	-0.393	0.178
Population, 1979	-0.388	0.169
Change in poverty rate, 1980-90	0.386	-0.156
Dissimilarity index for Latinos, 1980	-0.354	0.071
% change in share of suburban residents with a BA+, 1990 to 2000	0.346	-0.117
Total poor population in high poverty tracts (>20%), 1980	-0.335	0.149
Percent of suburban pop w/ BA or higher, 1980	-0.307	0.252
Dissimilarity index for African-Americans, 1980	-0.300	-0.142
% change in citysub ratio, 1990 to 2000	0.295	-0.038
Total poor population in very high poverty tracts (>40%), 1980	-0.268	0.104
New England	-0.259	-0.175
Suburban share of regional jobs, 1980	-0.240	-0.160
West South Central	0.219	0.146
% change in suburban share of regional jobs, 1990 to 2000	0.215	-0.018
Suburban poverty dissimilarity index, 1980	-0.209	-0.003
% change in industry diversity index, 1989-2000	0.179	0.106
% change in share of suburban residents with a BA+, 1980 to 1990	-0.172	-0.151
Change in jurisdictional complexity, 1990-2000	-0.159	-0.087
% change in African-American dissimilarity index, 1980 to 1990	0.143	-0.063
Percent of population not in labor force, 1980 (includes <18, >65, and adults not in labor force for whatever reason)	0.141	-0.114
% change in Latino dissimilarity index, 1990 to 2000	0.118	0.052
Dissimilarity index for foreign born versus native population, 1980	-0.115	0.103
80-20 ratio HH income, 1980	-0.077	-0.028
South Atlantic	0.076	0.037

% change in population, 1989-2000	0.391	0.879
% change in population, 1979-1989	0.044	0.796
Change in % immigrants, 1990-2000	-0.132	0.687
% change in employment, 1989-2000	0.543	0.665
% change in employment, 1979-1989	-0.015	0.652
% Latino, 1980	-0.180	0.589
Change in % immigrants, 1980-1990	-0.250	0.586
Change in % Latino, 1990-2000	-0.100	0.566
Change in % manufacturing, 1979-1989	0.066	0.547
Change in 80-20 ratio, 1980-1990	0.322	-0.504
Change in % Latino, 1980-1990	-0.321	0.493
Percent of total nonfarm employment in manufacturing, 1979	0.041	-0.440
Pacific	-0.292	0.426
Change in % African-American, 1990-2000	0.012	-0.416
% change in earnings, 1990s	-0.033	0.397
Change in jurisdictional complexity, 1980-90	0.001	-0.369
Change in % African-American, 1980-1990	0.032	-0.369
% change in African-American dissimilarity index, 1990 to 2000	0.060	-0.366
Ratio of city % in poverty to suburban, 1980	-0.185	-0.349
Change in % manufacturing, 1989-2000	0.065	0.316
East North Central	0.059	-0.314
Jurisdictional complexity (# of places per 10,000 pop), 1980	0.281	-0.302
Industry diversity index (employment based), 1979	0.039	0.285
Index of dissimilarity, 1980	-0.080	-0.268
Mid Atlantic	-0.138	-0.248
% change in suburban share of regional jobs, 1980 to 1990	-0.087	-0.242
Change in industry diversity, 1979-1989	-0.054	-0.239
Average annual earnings per job (place of work basis), 1979	-0.179	-0.193
% change in Latino dissimilarity index, 1980 to 1990	0.179	-0.182
% change in citysuburb poverty ratio, 1980 to 1990	-0.045	-0.182
West North Central	0.099	-0.163
Poverty rate, 1980	0.005	0.160
% African-American, 1980	-0.022	-0.140
East South Central	-0.007	-0.119
Function significance	***	***
Percentage of variance explained	79.1	20.9

Table 8. Labor-related CBO resilience typology and discriminant function scores

Labor-related CBO revenue per capita categories, 1995 vs. 2004	Number of Cases	Functions at Group Centroids	
		Function 1: high starting point, increasing LF participation, high jurisdictional complexity	Function 2: high employment, population, immigration growth; increasing racial/ethnic segregation
Transformative (-,+)	26	-0.439	-0.240
Stagnant (-,-)	97	-0.798	0.097
Faltering (+,-)	17	0.544	-0.491
Thriving (+,+)*	45	1.822	0.115

Table 9. Labor-related CBO resilience discriminant analysis

Variable name	1	2
Labor CBO Revenue per 10,000 population, 1995	0.974	-0.225
Change in LF participation, 1990-2000	-0.147	0.108
Jurisdictional Complexity (# of places per 10,000 pop), 1990	0.107	-0.066
% African-American, 1990	-0.105	0.044
Percent of regional population w/ BA or higher, 1990	-0.097	0.064
% immigrants, 1990	-0.076	0.001
Change in number of patents 1989-1998	-0.061	0.029
West North Central	-0.061	0.011
80-20 ratio HH income, 1990	-0.059	-0.024
New England	-0.047	-0.028
Change in 80-20 ratio, 1990-2000	0.045	0.025
% Latino, 1990	-0.044	0.027
Pacific	-0.041	-0.031
Index of Dissimilarity, 1990	-0.039	-0.001
% change in citysuburb poverty ratio, 1990 to 2000	-0.035	0.017
number of patents in 1989 (3yr avg)	-0.022	-0.020
% change in Latino dissimilarity index, 1990 to 2000	0.103	0.995
Dissimilarity index for Latinos, 1990	0.002	-0.278
% change in population, 1989-2000	-0.098	0.246
% change in immigrants, 1990-2000	-0.060	0.245
% change in employment, 1989-2000	-0.021	0.195
Change in % Latino, 1990s	-0.038	0.184
% change in African-American dissimilarity index, 1990 to 2000	0.044	0.173
Percent of total nonfarm employment in manufacturing, 1989	0.099	0.169
Dissimilarity index for foreign born versus native population, 1990	0.060	-0.157
Suburban share of regional jobs, 1990	0.040	-0.149
% change in earnings, 1990s	-0.073	0.147
Percent of population not in labor force, 1990 (includes <18, >65, and adults not	0.111	-0.139

in labor force for whatever reason)		
West South Central	-0.014	0.124
East South Central	-0.024	-0.113
Industry diversity index (employment based), 1989	0.049	-0.107
Change in % manufacturing, 1989-2000	-0.095	-0.104
Change in industry diversity, 1989-2000	-0.056	0.098
East North Central	0.088	-0.095
Dissimilarity index for African-Americans, 1990	0.084	-0.094
% change in share of residents with a BA+ in region, 1990 to 2000	0.007	0.092
% change in share of suburban residents with a BA+, 1990 to 2000	0.041	0.089
% change in suburban share of regional jobs, 1990 to 2000	0.020	0.084
Change in % African-American, 1990-2000	-0.030	-0.081
Change in jurisdictional complexity, 1990-2000	-0.013	-0.057
Total poor population in very high poverty tracts (>40%), 1990	0.025	-0.053
Ratio of city % in poverty to suburban, 1990	-0.018	-0.050
Average annual earnings per job (place of work basis), 1989	-0.009	-0.047
South Atlantic	0.041	0.046
Total poor population in high poverty tracts (>20%), 1990	0.011	-0.041
Poverty rate, 1990	0.029	-0.040
Suburban poverty dissimilarity index, 1990	0.003	0.028
Population, 1989	-0.011	-0.028
Mid Atlantic	-0.016	-0.025
Total non-farm wage and salary employment, 1989	-0.012	-0.022
% change in share of suburban residents with a BA+, 1990 to 2000	0.016	0.101
Percent of total nonfarm employment in manufacturing, 1979	-0.021	-0.094
Change in poverty rate, 1980-90	-0.008	-0.089
% foreign born, 1980	-0.044	0.076
East South Central	-0.038	0.076
Change in % manufacturing, 1979-1989	0.034	0.069
East North Central	0.048	0.062
% change in share of suburban residents with a BA+, 1980 to 1990	-0.030	0.056
Dissimilarity index for Latinos, 1980	-0.047	-0.050
% change in Latino dissimilarity index, 1990 to 2000	-0.015	0.047
Ratio of city % in poverty to suburban, 1980	0.002	-0.046
% chg. in Hispanic population, 1980-90	0.012	-0.044
Change in 80-20 ratio, 1989-1999	-0.011	-0.020
% change in Latino dissimilarity index, 1980 to 1990	0.016	-0.020
Function significance	***	**
Percentage of variance explained	96.9	3.1

Table 10. Labor-related CBO resilience: Discriminant function scores for transformative vs. stagnant

Labor-related CBO revenue per capita categories, 1995 vs. 2004	Number of Cases	Function 1: large, segregated cities with high CBO revenue starting point, increasing New Economy
Transformative (-,+)	26	0.893
Stagnant (-,-)	97	-0.240

Table 11. Labor-related CBO resilience discriminant analysis: Transformative vs. stagnant

Variable name	1
Labor CBO Income per 10,000 population, 1995	0.861
% change in African-American dissimilarity index, 1990 to 2000	-0.274
Dissimilarity index for African-Americans, 1990	0.270
Dissimilarity index for Latinos, 1990	0.232
Change in number of patents 1989-1998	0.192
Number of patents in 1989 (3yr avg)	0.190
% African-American, 1990	-0.190
Population, 1989	0.185
Total non-farm wage and salary employment, 1989	0.181
Total poor population in very high poverty tracts (>40%), 1990	0.177
Total poor population in high poverty tracts (>20%), 1990	0.169
East South Central	-0.163
80-20 ratio HH income, 1990	-0.153
% change in Latino dissimilarity index, 1990 to 2000	-0.136
Percent of population not in labor force, 1990	0.127
% change in suburban share of regional jobs, 1990 to 2000	0.127
East North Central	0.127
Poverty rate, 1990	-0.126
Change in % African-American, 1990-2000	-0.126
Percent of regional population w/ BA or higher, 1990	-0.124
Ratio of city % in poverty to suburban, 1990	0.117
Change in industry diversity, 1989-2000	-0.113
Dissimilarity index for foreign born versus native population, 1990	0.106
% change in share of residents with a BA+ in region, 1990 to 2000	0.105
% change in citysub ratio, 1990 to 2000	-0.088
% foreign born, 1990	0.087
Mid Atlantic	0.080
% change in earnings, 1990s	0.079
Change in % not working, 1990-2000	-0.076

% Latino, 1990	0.075
% change in population, 1989-2000	-0.073
South Atlantic	-0.069
Jurisdictional Complexity (# of places per 10,000 pop), 1990	-0.065
West North Central	-0.064
Suburban share of regional jobs, 1990	0.056
Average annual earnings per job (place of work basis), 1989	0.055
West South Central	0.049
Industry diversity index (employment based), 1989	0.044
Pacific	0.043
Suburban poverty dissimilarity index, 1990	-0.042
New England	-0.041
Change in 80-20 ratio, 1990-2000	0.035
Change in % manufacturing, 1989-2000	0.031
% change in share of suburban residents with a BA+, 1990-2000	-0.031
Change in % Latino, 1990s	0.025
% change in immigrants, 1990-2000	0.023
% change in employment, 1989-2000	-0.009
Change in jurisdictional complexity, 1990-2000	0.005
Index of dissimilarity, 1990	0.004
Percent of total nonfarm employment in manufacturing, 1989	0.004
Function significance	***
Percentage of variance explained	100.0

Figure 3. Regional Resilience Typology: Changing Equilibrium on Real Average Annual Earnings Per Worker, 1980 and 2000

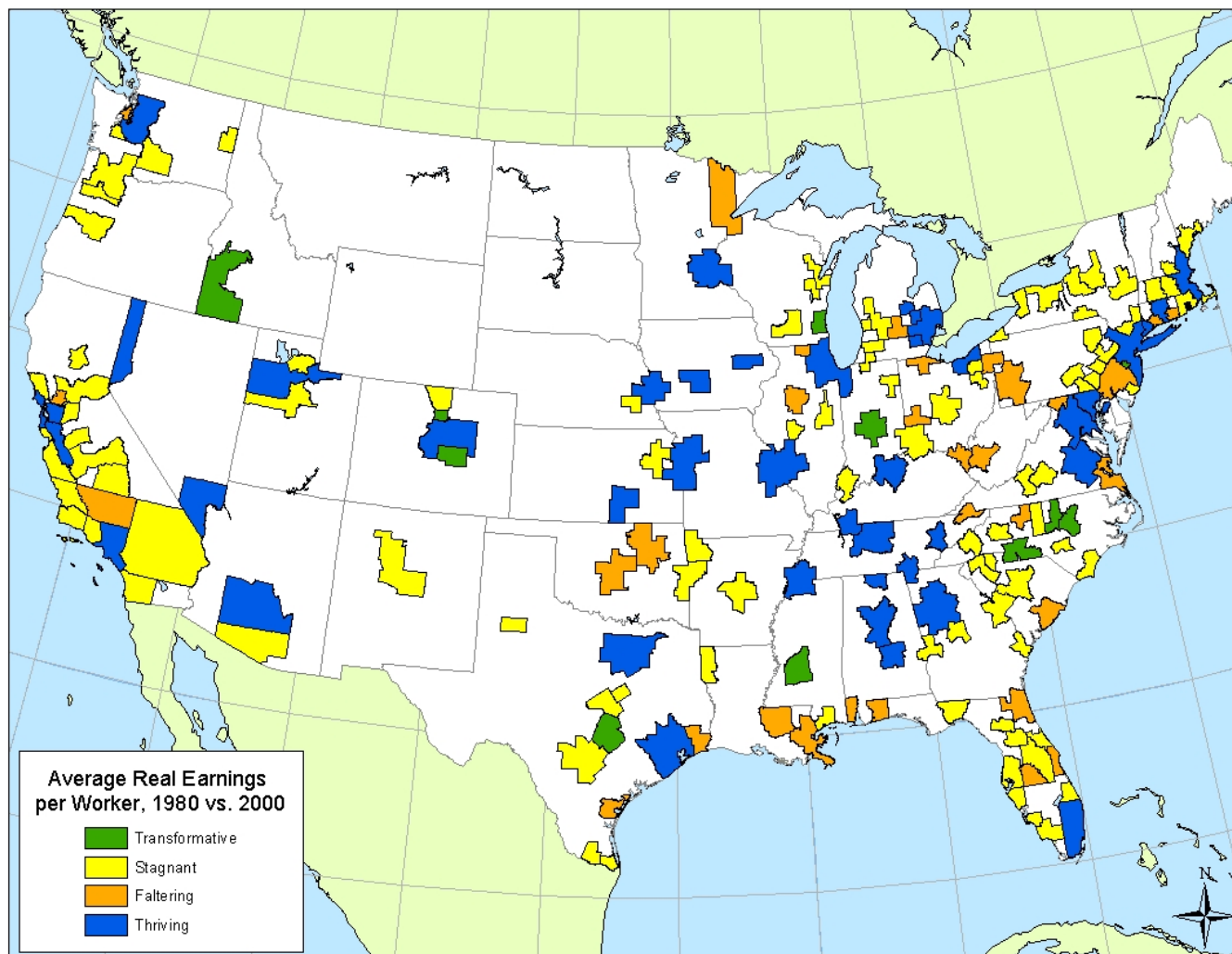


Figure 4. Regional Resilience Typology: Changing Equilibrium on the Position of the Middle-Class (50-10 Household Income Ratio), 1980 and 2000.

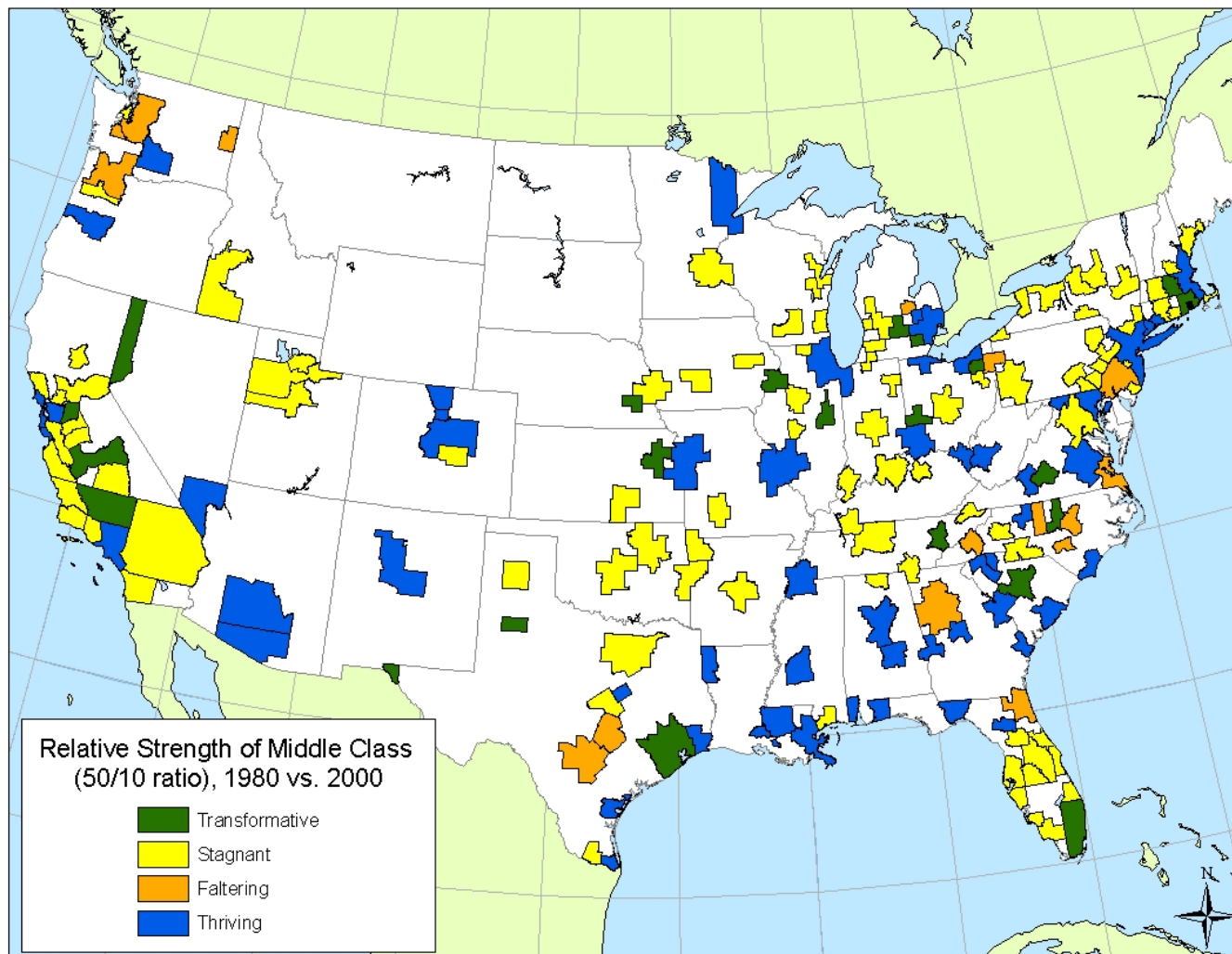


Figure 5. Regional Resilience Typology: Changing Path Dependence on the Concentration of Suburban Poverty, 1980 and 2000

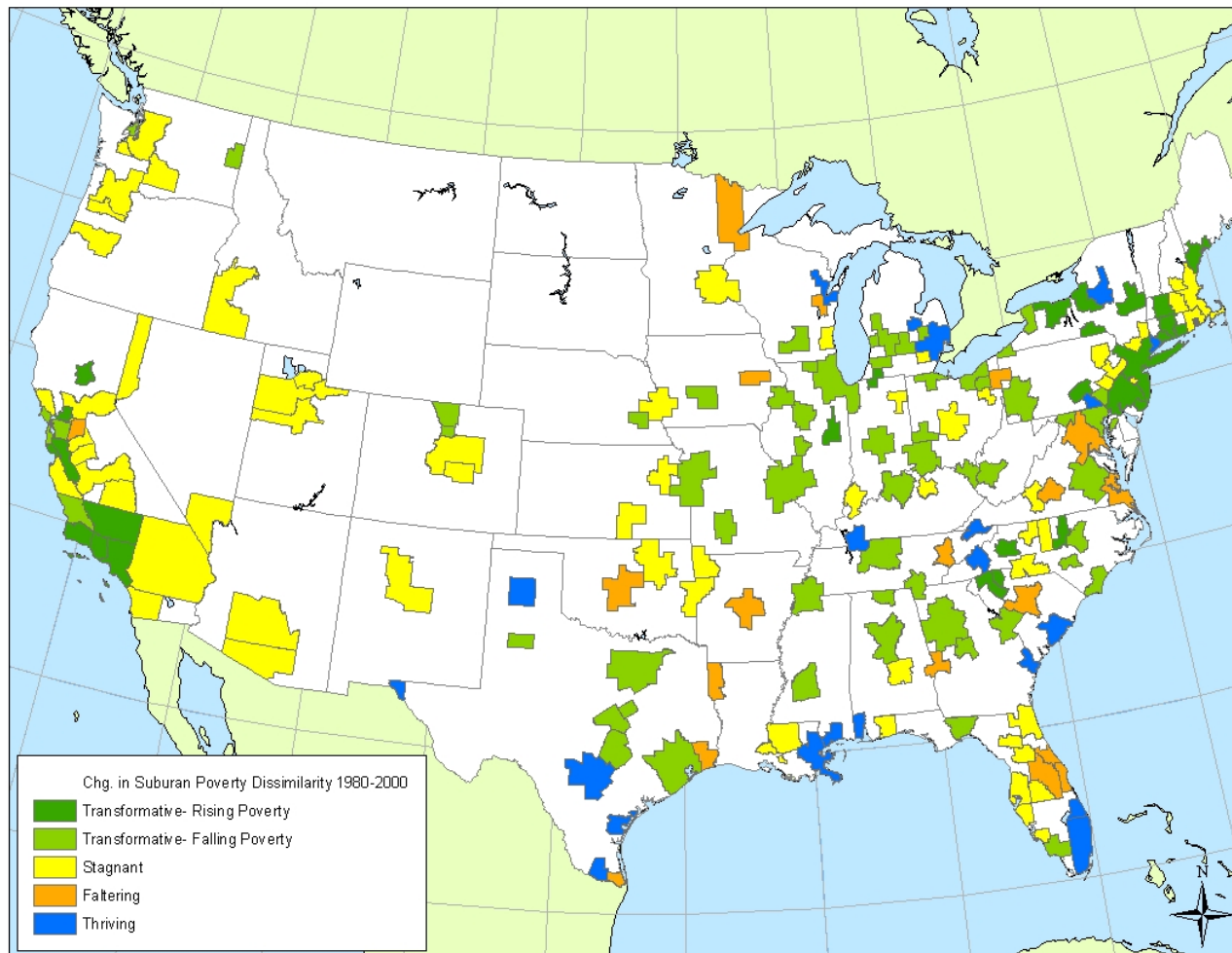


Figure 6. Per capita revenue in suburban poverty-related CBOs, 2004.

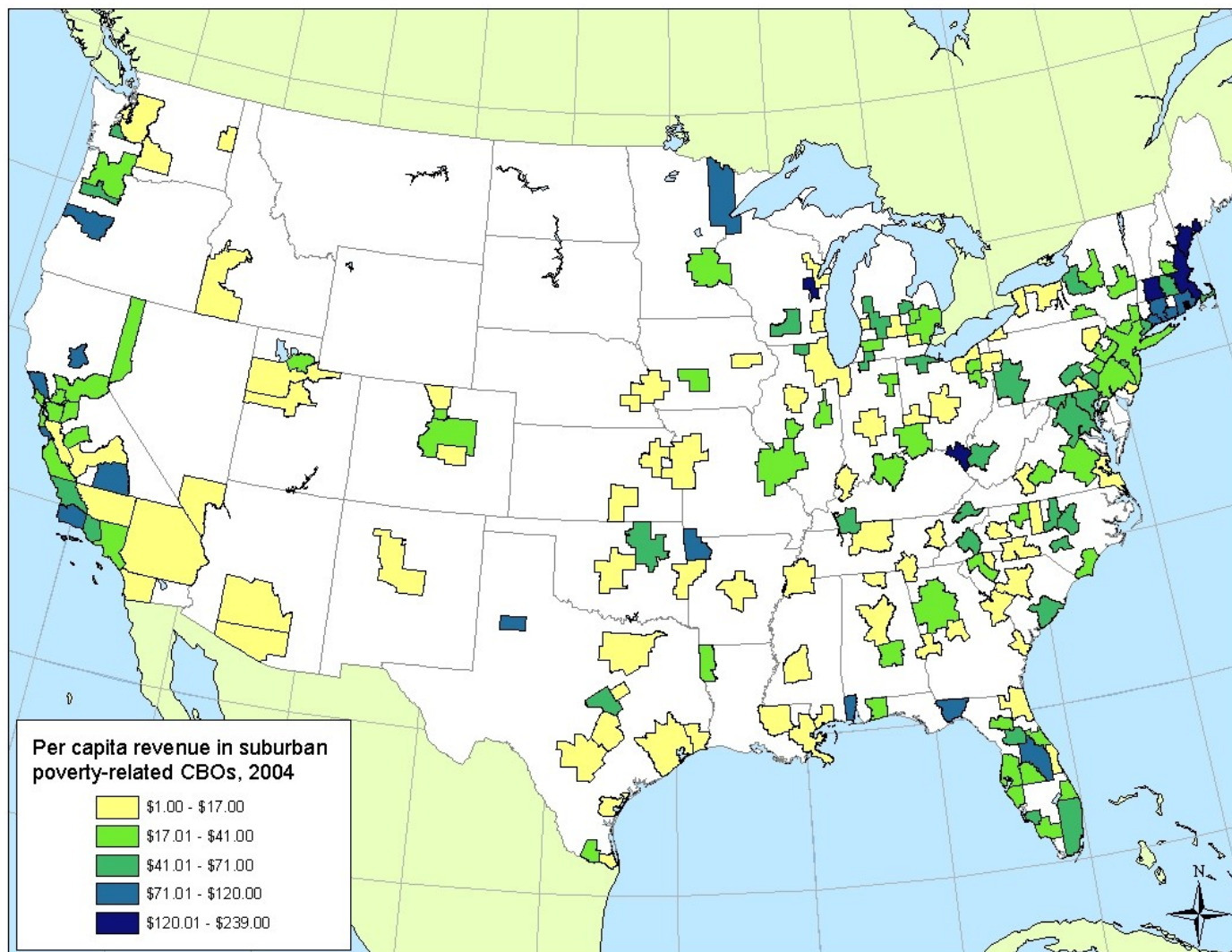
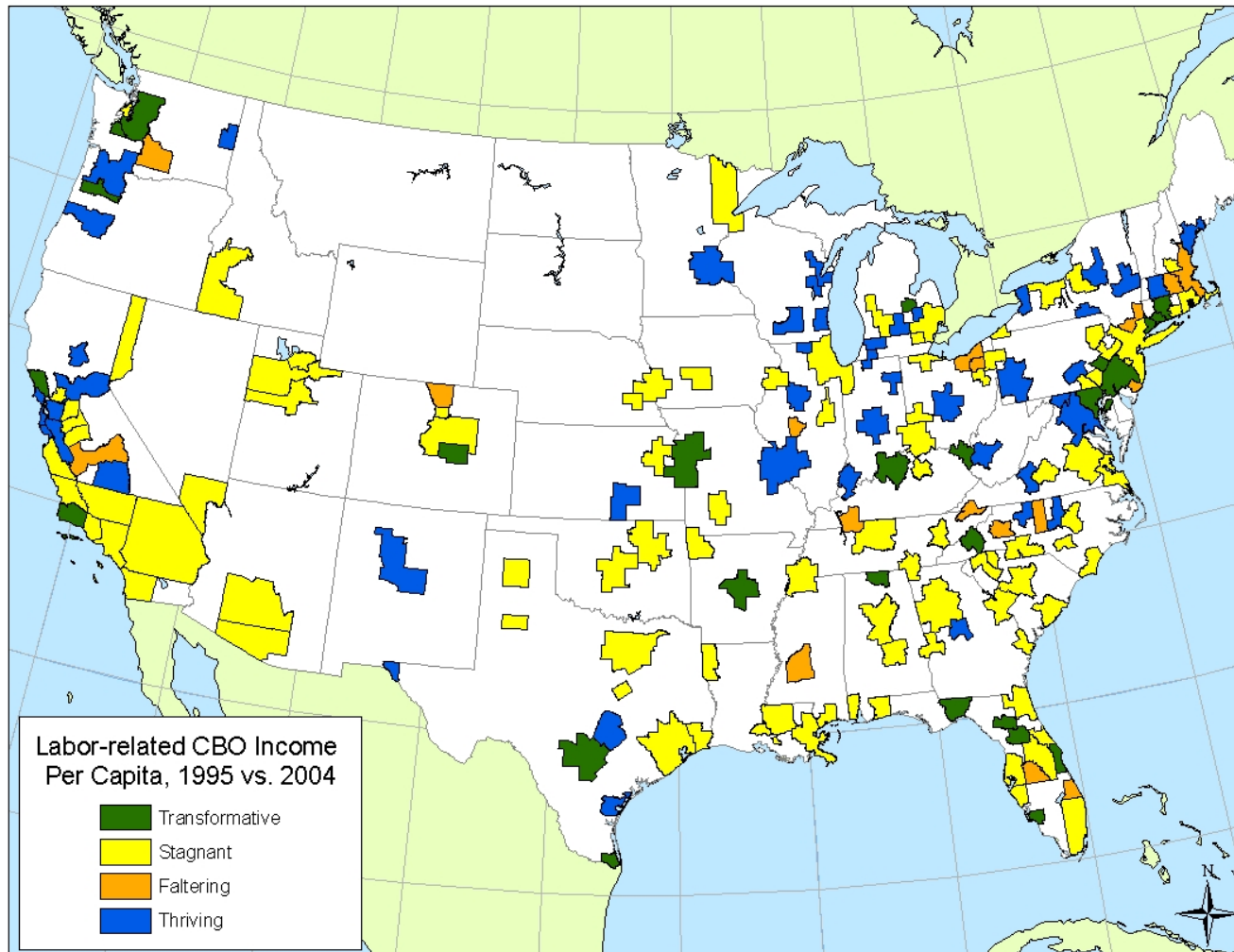


Figure 7. Regional Resilience Typology: Changing Equilibrium on Labor-Related CBO Capacity, 1980 and 2000



APPENDIX A. Formulas

- Entropy index used for calculating industry diversity index.

$$E = \frac{-\sum_i^k \pi_i \ln \pi_i}{\ln k}$$

Where π_i is the share of employment in industry i , and k is the number of industry sectors.

Dissimilarity index used for racial and ethnic segregation and poverty concentration measures.

$$D = \left(\frac{1}{2}\right) \sum_{i=1}^n \left| \frac{B_i}{B} - \frac{W_i}{W} \right|$$

Where:

B_i = The Black/African-American population in tract i .

B = The Black/African-American population in the metropolitan area.

W_i = The White population in tract i .

W = The White population in the metropolitan area

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