1-1-2013

Inequality and Opportunity At theMsa-Level: Investigating Place As A Structure of Inequality Shaping Mobility and Earnings

Colby R. King
University of South Carolina

INEQUALITY AND OPPORTUNITY AT THE MSA-LEVEL: INVESTIGATING PLACE AS A STRUCTURE OF INEQUALITY SHAPING MOBILITY AND EARNINGS

by

Colby R. King

Bachelor of Arts
Westminster College, 2007

Master of Arts
University of South Carolina, 2009

Submitted in Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy in

Sociology

College of Arts and Sciences

University of South Carolina

2013

Accepted by:

Shelley A. Smith, Major Professor

Jimy Sanders, Committee Member

Patrick Nolan, Committee Member

Caroline Nagel, Committee Member

Lacy Ford, Vice Provost and Dean of Graduate Studies

DEDICATION

To my family, my friends, and everyone who does work.

And to the memories of Isaac Ludwig and Sandy Edmiston; I work to carry on something of each of their spirits through my life.

ACKNOWLEDGEMENTS

I would first like to thank my adviser Shelley A. Smith for her persistent and energetic guidance and encouragement. Beyond simply this dissertation project, she has been a great mentor guiding my academic career. I must also thank Jimy Sanders, who has continued to be steady and thoughtful advisor. Thank you also to Patrick Nolan and Caroline Nagel for their insightful comments throughout this project and their supportive advice as I have navigated graduate school.

Several fellow graduate students provided support, advice, or comments on drafts of this project that were instrumental in my progress towards completion. First, I would like to thank Matthew Cazessus, my "academic spouse," for his encouragement of my research interests and wise perspective through the past several years. I would also like to thank my other graduate student comrades, especially Alison McLetchie, Deronta Spencer, Danielle Lewis, Nick Berigan Jake Frederick, Stephen Chicoine, Joseph Park, Josephine McKelvey, and Daniela Negraia.

Also, I want to thank Kristin Park, my undergraduate advisor at Westminster College, who has continued to be a great mentor and friend. The faculty members at Westminster College are a great group and they all seem to always be available for advice, support, and encouragement. Also from Westminster College, I'd like to thank Gary Lilly, as his Urban Sociology course framed my research interests, and his teaching style has influenced my teaching as well. I have also very much appreciated the advice and encouragement offered by Kristenne Robison and James Perkins.

I have had the fortune of developing helpful relationships with a few other colleagues in academia, and would like to recognize their support and encouragement as well. Thank you to Laura Crommelin, Nick Dempsey, Melinda Messineo, Nathan Martin, Mike Finewood, and Dave Purcell.

Of course, academic colleagues are only a portion of the people I would like to thank. I am grateful to Jen(ny) Slobodian for encouraging me to refine my thinking about what I wanted to study, for all of the proofreading of so many papers, and for being by my side throughout the various challenges of graduate school. My brother, Trevor King, inspires me with his work, and I profoundly appreciate the mutually encouraging relationship we share. Thank you also to my parents and grandparents for their love, support, and the years of hard work that provided the foundation from which I have lived my life.

Finally, thank you to all of my friends, from my hometown, and from college, and from graduate school, as well as darts, mountain biking, and everywhere in between. A dissertation is such a daunting project, and I'm such a sociologist, that I feel I should thank everyone I have interacted with ever for being part of the process that brought me to where I am. I am appreciative of all the encouragement, assistance, advice, and support that each of you have provided. Thank you.

ABSTRACT

This study examines how the new urban economy has transformed the structures that impact individual earnings opportunities across place. Using data from the 1990 and 2000 Census, this study is based on two multi-level data sets, each reporting characteristics for approximately 1 million individuals nested within more than 200 Metropolitan Statistical Areas (MSAs). This study examines how inequality varies across MSAs in the US. Associations between MSA-level characteristics, including proportion of employment in new economy sectors, earnings, educational attainment, and inequality, are tested. Strong evidence is found demonstrating strong and statistically significant correlations between new economy indicators and MSA-level inequality, which is measured through an MSA-level Gini index and an earnings ratio. In the last portion of the study, hierarchical linear modeling, which makes it possible to test and control for cross-level interactions, is used to examine how these indicators shape individual earnings across place.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Over the last few decades, the growth of the new urban economy has re-shaped cities and individual work opportunities across the US. By the new urban economy, I am referring to economic sectors rooted in human capital, and including what is referred to as creative or innovative work, as well as high-technology industries. The rise of the new urban economy has transformed some metropolitan regions and been associated with growth in high-earning job opportunities for skilled and talented workers. The rise of the new urban economy has also re-emphasized the importance of social structures in determining individual earnings opportunities, including place and inequality. While many scholars have investigated the rise of the new urban economy, few have done so with a precise focus on inequality and individual earnings. This study works to bring a systematic analysis of the how the structures of the new urban economy shape individual opportunities using a large sample data set.

In this new urban economy, characteristics of place have a renewed importance for workers in that place. Despite prognostications that advances in communication technology and the sustained forces of globalization would render a person's location irrelevant to their work, it is instead becoming more important factor. Cities are now popularly seen as defining institutions in the modern economy (Sassen, 2001, 2012; Glaeser, 2011; Moretti, 2012). We are coming to understand that in this new urban economy, place is an increasingly important social structure which shapes individual opportunities. As such, the ability to be geographically mobile also plays a role in an

individual's opportunities, and the rates of geographically mobile works in a region's labor force can be expected to have an impact on that region's economy as well.

Concurrent with the rise of the new urban economy has been increased social stratification and inequality. Being stuck in places with few stable job opportunities has become normal for many U.S. workers (Hamer, 2011; Carr and Kefalas, 2009; Wilson 1987 and 1996). After decades of gradually increasing inequality, the dramatic recession of 2008 spurred a greater social consciousness about social inequality. In scholarship and academia, people are returning to the issue of inequality and social class.

As the son of a steel mill worker growing up in western Pennsylvania, I recognized early on how structural changes operating through place (such as industrial disinvestment) can dramatically alter the work opportunities available to local residents. I have watched with both scholarly and personal interest as the rise of the new urban economy has re-shaped many metropolitan regions. Some cities have seen massive growth, at least in some industries, while others have continued to languish after deindustrialization. Workers, like my friends and even me, must quickly adapt to this changing landscape in order to find the best opportunities for themselves.

This study works to assess how the new urban economy has reshaped the landscape of opportunity. New patterns of inequality which impact individuals but take shape across metropolitan statistical areas (MSAs) will be described and assessed. Then associations between characteristics of metropolitan regions will be studied to see what characteristics of MSAs are associated with rates of employment in new economy sectors in these regions and the nature of inequality in those regions. Finally, the role of the metropolitan region in shaping an individual's earnings opportunities will be examined through a multi-level statistical analysis.

This study works to describe and analyze how the new urban economy has re-shaped earnings opportunities across all US metropolitan regions. Chapter 2 will outline the theoretical framework guiding this study. Chapter 3 delineates the data and methods used in this investigation. Chapter 4 describes the landscape of inequality across US metropolitan regions, answering several descriptive questions that emerge from the literature. Chapter 5 tests several hypotheses that are extracted from the relevant literature which tests associations among MSA-level characteristics. In Chapter 6, several multi-level models are specified which examine how an individual's earnings are impacted by the social structure of their metropolitan region. Chapter 7 summarizes and reflects on the results of this investigation.

CHAPTER 2

THE NEW URBAN ECONOMY: INEQUALITY AND PLACE IN A POST-INDUSTRIAL ECONOMY

As Mills (1959) wrote, the "first fruit" of the sociological imagination is the idea that "the individual can understand his own experience and gauge his own fate only by locating himself within his period, that he can know his own chance in life only by becoming aware of those of all individuals in his circumstances" (22). Individuals can understand their situation, the prospects available to them, by using a sociological imagination to perceive and understand how social structures shape their opportunities. For workers in the U.S., the last few decades have been marked by major economic tumults and dramatic shifts in the economic landscape. These shifts may be summarized through three major trends. Each of these three have interacted in re-shaping labor market structures in US metropolitan regions and earnings opportunities for individuals in those labor markets.

The first major trend is the rise of the new urban economy. Much of the economic growth experienced in the last few decades has been based in industries and occupations in the new urban economy. Sometimes referred to as the "knowledge economy," the "innovative economy," or the "creative economy," growth in these jobs has been the defining characteristic of economic growth in the US, and a popular topic among a range of scholars (Florida 2002, 2003, 2012; Nevarez 2003; Sassen 2012; and Moretti 2012). Much of the related scholarship focuses primarily on the economic "winners" without

giving due consideration to transformations taking place throughout labor markets. To understand the trend of the rise of the new urban economy, one must understand two aspects of this new economic growth. First, this growth has emerged from innovation and creativity, and so has a foundation in human capital. Second, this growth is also characterized by a distinctly urban component in the places or locations in which this innovative growth has emerged is also understood as vitally important to the growth.

The second major trend is the renewed importance of place as a factor in economic opportunity. Many social commentators anticipated that processes of globalization and the continued development and use of communication technology would cause place to become an irrelevant factor in the modern economy, but in this new urban economy, the opposite has proven true. During the early portion of the rise of thew new urban economy, Clarke and Gaile (1998) noticed, for cities, globalization meant that, "city roles and functions are changing dramatically and taking on greater importance" (3). The metropolitan region in which a person is working has proven to be an increasingly important social structure in shaping an individual's opportunities. Meanwhile, investors, technology firms small and large, and city leaders are recognizing that cities and urban regions are competing to attract the most talented workforce in the hopes of acquiring a critical density to generate the next great innovation.

The third major trend, the continued increase in stratification and inequality, is in some ways a consequence of the first two. Over the last several decades, the US has seen a widening of social stratification and increased inequality (Massey 2007). A simmering issue for years, the recession of 2008 aroused concerns about unemployment and the Occupy protests stimulated public discussion of the widening gap in wealth between the top one percent and the rest of the country. But, even when considering only those who

are employed and considering only their wage and salary earnings, inequality has increased over the last several decades. As this study will demonstrate, this inequality is in large part driven by an increasingly divided labor market in which a some skilled worker are gainfully employed while many others struggle to earn a livable wage.

These trends have generated substantial academic consideration. This scholarship, though, often focuses on only one or two of these three trends, rather than considering all of them together. This study examines the simultaneous impact of each of these three trends on workers across US MSA's. Through this examination, I will establish a systematic analysis of how these processes have altered the landscape of inequality for workers in the US, creating a more uneven geography of opportunity. Below I will consider each of these trends in more detail along with relevant scholarship that has worked to understand these trends. From these considerations descriptive questions and hypotheses which will form the basis of this investigation will emerge.

2.1 THE NEW URBAN ECONOMY

The first major economic force shaping regional economies in the US has been the growth around human capital-dependent industries and occupations, understood here as the new urban economy. Scholars studying these processes refer to it in a variety of ways – the knowledge economy, the post-industrial economy, the innovative economy, the creative economy – but I will refer to scholarship on this subject as scholarship of the new urban economy. Several scholars have contributed to this area of research from a variety of angles.

Allen (2006) recognizes that scholars have made several attempts to assess the essential features of the new economic order, stating that the new economy has been "variously evoked in terms of postindustrial society (Bell 1973), flexible accumulation

(Harvey 1987), and postfordism (Albertsen 1988), among other labels, although none of them is entirely satisfactory" (3). Nevarez (2003) explains that by the 1980s the "new economy" referred to "disarmament, industrial disinvestment, services" (15). Nevarez (2003) argues that the primary sectors of the new economy (tourism, entertainment, technology) are responsive to much different incentives than those offered by the traditional growth machine. One important difference Nevarez (2003) notes is that because technology companies are dependent on elite, talented workers, these firms are more interested in locating in areas that provide lifestyle incentives to potential employees, than they are interested in local tax breaks or other incentives of more traditional firms (56). The work of Clark et al. (2002) confirms this argument, as they contend that the presence of cultural amenities function as a major driver of economic growth within American cities. Hyra (2008) and Lloyd's (2005) works also underscore the role of art and culture in neighborhood change and gentrification. Nevarez (2003) argues that the particular locations which appeal to knowledge-economy workers will host growing clusters of workers around particular specialized industries.

In this milieu, Richard Florida's creative class paradigm provided a succinct and catchy means to summarize these patterns. While his work has generated heated critiques, the work has also been one of the most influential in understanding these new processes. Florida's *The Rise of the Creative Class* (*RCC*) was released in 2002, followed by a 2003 article in *City and Community*. Briefly, the creative class paradigm argues that people whose work relies on creativity, from architects to musicians to professors, are the economic and cultural drivers of modern metropolitan regions. Not only does their creative work stimulate economic growth, but also their preferences for a tolerant community and convenient cultural amenities have the ability to transform

neighborhoods. Because their talents are specialized and rare, cities do well to work to attract the creative class. While creative work often demands high earnings, the amenity preferences of this class stimulate growth in less stable, and less well-paying service jobs. This leads to an as-yet underappreciated pattern of widening earnings inequality.

Florida (2002) argues that the creative class is an economic class along the lines that Weeden and Grusky (2005) might refer to as a "stylized measure" of social class because it aggregates detailed occupational categories into a large class category. Florida (2002) explains that the operationalization of the creative class is a relatively simple aggregation of occupational codes from the standard occupational classification system (68, 73). Florida then distinguished between those individuals who form the core of the creative class, who are the most creative in their work, and a periphery. The core is comprised of individuals who "create new ideas, new technology and/or new creative content," such as architects or musicians (8). Members of the periphery are labeled "creative professionals" and include individuals whose work engages "in complex problem solving that involves a great deal of independent judgment and requires high levels of education or human capital," (8) including, for example, many individuals who work in finance or health care. With this operational definition, Florida found that about 38 million Americans, or about 30 % of all employed workers, were members of the creative class in 2002 (8).

The definition of the creative class, in contrast to the operationalization, is more complex and theoretical. Florida (2002) defines the creative class as people who "add economic value through their creativity" in their work which creates new ideas, technologies, and content (68). Florida distinguishes the creative class from what he labels the working and service classes, which again are based on groupings of detailed

occupations. Florida (2002) argues that the creative class has grown as a proportion of the employed workforce over the past several decades, and it commands the highest wages, compared to the two other large class categories he considers.

Of course, social class concepts provide a popular lens through which sociologists examine social inequality (Wright, 1982; Grusky and Sorensen, 1998; Weeden and Grusky, 2005). Many sociological scholars are not satisfied with Florida's conceptualization of class this paradigm (Reese, Faist, and Sands, 2010). Florida's class concept does provide one way to make sense of a new pattern—that the cities with the most robust local economies—those experiencing the most growth--seem to be simultaneously experiencing widening inequality. For Florida, the creative class is about much more than a social class ranking. Members of the creative class share a culture based on the members' desire to be creative and their place in the economy. In this sense, the creative class definition relates to Weber's (1946) concept of status as creative class members interact in their social worlds through shared cultural preferences. This suggests that the creative class moves beyond occupations and even financial consideration to include non-economic characteristics, such as cultural preferences like tolerance of diversity, and patterns of interaction including professional networking. Whether in the core or periphery, Florida argues that "All members of the Creative Class – whether they are artists or engineers, musicians or computer scientists, writers or entrepreneurs – share a common creative ethos that values creativity, individuality, difference, and merit" (8). As he states, their "social and cultural preferences, consumption and buying habits, and their social identities all flow from this" (68). In this sense, the creative class develops and relies on a sort of capital which relates to Bourdieu's cultural capital (Kingston, 2001; Dumais, 2002).

Studies examining the influence of the creative class as an economic force have dominated urban literature for nearly a decade since Florida's (2002, 2003) work delineating his creative class thesis was published (Allen, 2006; Scott, 2006; Evans, 2009; Reese, Faist, and Sands, 2010). For example, Ponzini and Rossi (2010) demonstrate that localities are aware of and strive to become a "creative city," an effort which can alter the urban regeneration process. They (2010) suggest this results in a neglect of the "classic goals of socio-spatial justice," as cities cater to the creative class and disregard goals of improved opportunity for all residents.

In the decade since the publication of the first book, Florida has released a handful of books based on the same core ideas. Florida has also produced some peer reviewed and co-authored research (Florida, Mellander, Stolarick, 2008). More recently, he has become an editor at *Atlantic Cities*, releasing frequent snapshots of work exploring his perspective on cities and the Creative Class.

Florida's work has been criticized from a variety of angles. Hoyman and Faricy (2009) note several assessments of the creative class thesis, many of which critique the broader arguments on which the paradigm is based. For example, Peck's (2005) work underscores the circular reasoning in the theoretical logic of the creative class thesis. Essentially, Peck critiques Florida for arguing that growth attracts creative class members, who then cause growth, which then attracts creative class members (757). Other criticisms focused on methodology, interrogating the paradigm's claims about the strength of the relationship between creative class presence and economic growth (Montgomery, 2005; Rausch and Negrey, 2006; Reese, Faist, and Sands, 2010). Scott (2006) acknowledges that several "historically specific forms of the creative city seem to be on the rise," but Scott contends that Florida fails to "articulate the necessary and

sufficient conditions under which skilled, qualified, and creative individuals will actually congregate together in particular places and remain there" (2006: 11).

Another strong critique comes from Markusen (2006), and reflects Milligan's (2002) call for a more interactionist approach. Interrogating the interaction of creative class members, Markusen (2006) argues that the workers which fall into the creative class classification lack any sense of group identity. This relates to another critique, from Markusen (2006) and others, which refer back to human capital theory and suggest that education is often a more simple and obvious indicator of the new economy than any creativity marker.

Another example of critiques of Florida's methods is Rausch and Negrey's (2006) effort to test the usefulness of Florida's indicators. Their work replicates Florida's (2002) creativity index and then implements this index in regression analyses of MSA's economic development. They find, however, that when controlling for other relevant factors, high technology and educational attainment are more important factors in economic development or urban places. They state, "it does not appear that merely adding creative class individuals in an MSA will lead to a stronger economy" (482). Hoyman and Faricy's (2009) also tested the creative class and human and social capital models of economic growth among 276 metropolitan statistical areas. Employing the same index for the creative class, they found no supporting evidence for the argument that the creative class is related to growth. Both of these studies, of course, directly contradict Florida's repeated argument that the creative class drives the modern urban economy.

A more recent investigation of methodological problems in the creative class thesis is the work of Reese, Faist, and Sands (2010). The authors argue that the growing

creative class literature has provided "little overall sense of relative validity" because it has employed a diversity of methods, from analysis of census data to interviews with business leaders. While bringing a diversity of methods to a research problem could be a strength and not a weakness, their comment on the "validity" of the findings in this paradigm underscore the lack of systemization of the theory, and the appearance that proponents selectively choose data for its supportiveness of the paradigm.

Working to refine and systematize understanding in this paradigm, Reese, Faist, and Sands (2010) then set out to test four measures of the creative class, comparing them for "consistency and reliability" but they produced mixed results (346). The problem is that each of these measures are more adjacent to than in line with the aggregated occupation codes Florida uses to define the creative class. In the end, these authors fall back on an "admittedly subjective (but reasonably consistent)" assessment based on their own visits to several of the downtown areas in the cities they studied to assert that their downtown quality index, the creative class index (based on Census occupational classifications), and the location of university employees are the best for identifying the metropolitan areas which would be most desirable to creative class members (360). They conclude that measures of entertainment and cultural amenities are better, though not perfect, indicators of the creative class in a region than high-tech employment, but acknowledge that this "says nothing about the usefulness of either indicator in designing policies to attract creative class individuals" (359).

In working to refine measures and arguments in the creative class paradigm, many scholars, then, have found mixed results. The paradigm remains compelling, but there remains a need for continued refinement of the definition of concepts, use of indicators, and the overall model of economic growth. Perhaps the problem is that the paradigm is

motivated by an effort to predict economic growth, rather than assess the drivers of economic growth accurately. These critiques suggest then that education may be a simpler, but not necessarily better, indicator of the new economy, and the creative class does not necessarily correlate with a strong regional economy. As a social class schema, the creative class may not be a satisfactory for many sociologists, but as an indicator of the new economy, the creative class proves very useful. But, as this study will demonstrate, Florida's original definition of the creative class is a powerful indicator of the new economy, if not regional economic well-being. While the creative class paradigm has faced substantial criticism, it remains a popular paradigm among policymakers and urban planners, it continues to stimulate new research, and it proven to be one of the clearest indicators of the new economy (Evans, 2009).

While each of these criticisms has merit, Florida has also responded. For example, to the critique that it is basically a more complex way of measuring individuals with a college degree he notes that the creative class and those with a college degree are substantially different groups, both in membership and in their effect on their city's economy. He argues that, in the U.S., more than a quarter of those with a college degree are not in the creative class and refers to Stolarick and Currid-Halkett's (2012) analysis, which found that just less than 60 percent of the creative class have a college degree (40). Florida (2012) also refers to Gabe's (2011) study, which demonstrated that the creative class has a substantial effect on regional economic growth, an impact separate from educational attainment alone.

I think the major problem with Florida's work is that he concluded that the creative class *causes* new economy growth, rather than that the two are simply *correlated*. This leads to the circularity of his early arguments and was the foundation of

his oversimplified prescriptive policy recommendation that cities focus on attracting the creative class without fully considering what investment in such efforts would mean for the entirety of a region's economy. While Florida has spent a decade convincing localities to invest in attracting the creative class, other scholars have recognized that solutions to regional problems are likely not so simple. As Clarke and Gaile (1998) explained a handful of years before Florida's first work on the creative class, "Cities vary on so many salient dimensions … that it is unrealistic to search for one best solution" (9). His contention that cities should invest in attracting the creative class may be a good policy recommendation for some cities, but not for all, and it certainly does little more than tell cities that they should emulate the cities that are doing well. The creative class can be a useful indicator of the new economy without it implying that the best policy for every urban region is to invest in attracting the creative class. In his more recent work, Florida has come around to a similar conclusion, giving greater consideration to understanding how the creative economy shapes opportunities for workers beyond the creative class. This leads to some very interesting findings, as we will see below in the section on inequality.

What Florida's work on the creative class does do well is summarize many of the processes at play in the new urban economy. And while the creative class paradigm is a decade old, this new economy is still of vital interest to urban scholars. Moretti's (2012) work outlines many of the same patterns, but focuses on "innovation" rather than creativity. Scholarship which works to better understand the impact of the major processes association with the new urban economy is still needed. The major processes include that human capital, however defined, plays a major role in this new economy. Agglomeration of skilled workers in innovative industries encourages economic growth

(Florida, 2002, Nevarez, 2003, Moretti, 2012). The uneven geographic dispersal of agglomeration of talent makes place a more important factor. Finally, the cultural amenities available in these places interact with the lifestyle of these skilled workers in re-shaping place character (Paulsen, 2004). These processes have particular implications for the relevance of place and the nature of stratification and inequality. Each of these issues will be considered in the following sections. The scholarship that this new urban economy literature has generated has mostly focused on determining which cities are growing and which factors (usually education, creativity, or innovation) are most associated with that growth. This study, though, will examine what these processes have meant for stratification and inequality in the U.S., and how individual workers across all job types are impacted by these processes through the region in which they work. At the end of this chapter I will develop several descriptive questions and testable hypotheses which will be used throughout this study to examine this new urban economy more thoroughly.

2.2 THE ROLE OF PLACE IN THE NEW URBAN ECONOMY

The second major trend is that the growth of the new economy has occurred unevenly across the US. As Harvey wrote in 2006, "There is nothing new, of course, about uneven geographical development" (71). What is noteworthy is that this uneven development has been exacerbated by the new urban economy, rather than the forces of globalization making place less important. As a result, individuals have experienced these upheavals through their location, often as a regional phenomenon. From the 1970's and continuing through these decades, some communities, particularly those in the rust belt, saw much of their manufacturing base disappear, completely reshaping the economic opportunities available to local workers. These communities often saw tremendous

population loss and in these regions concerns about a "brain drain," or exodus of young skilled workers, persist. Meanwhile other regions have witnessed tremendous economic growth around new economy sectors.

At the heart of urban sociology is the recognition that place matters and over the past decade, as urban sociologists have worked to understand the changing landscape of work in the modern economy, place has risen to primary importance. Like class, race, or gender, place is a social structure that shapes the opportunities available to those who live and work in any particular location. Several characteristics about a place may affect an individual's earnings opportunities within that place. The extent of deindustrialization, the proportion of individuals with a bachelor's degree, and many other attributes of a place may shape an individual's opportunities in addition to their own individual attributes.

Many scholars have investigated place as a social structure, interrogating how uneven opportunities across places shapes individual opportunity. Logan and Molotch (1987) recognized that cities "are highly unequal in the life chances they offer residents," and that "inequality among places persists in radical degree" (xi). Place structures social relations, as Tickamyer (2000) argues that a particular place can be understood as "a set of causal factors that shape social structure and process" (806). As Tickamyer (2000) elaborates, "Spatial arrangements are both products and sources of other forms of inequality" (806). Massey (2007) writes that social boundaries are made to conform to geographic boundaries "through a systematic process of segregation." With his focus on inequality, he elaborates on the pivotal role of place in shaping stratification in the US, writing that "spatial segregation renders stratification easy, convenient, and efficient

because simply by investing or disinvesting in a place, one can invest or disinvest in a whole set of people" (19).

The shifts in the opportunities available to local workers in regions have been accompanied by changes in the perceptions of the place character, or economic identity, of these regions. Cities like San Francisco, Austin, and Raleigh emerged as trendy, hip, and prosperous (Florida, 2002; Moretti, 2012). Perceptions of place character can play a major role in a city (Paulsen, 2004). As Tickameyer (2000) notes, place can be understood as "an identifiable territorial manifestation of social relations and practices that define that particular setting" (806). These cities became even more appealing to the most talented workers who were willing and able to relocate. From the work of Florida (2002) and Moretti (2012), we know that regions now compete for talent as drivers of the economy. For cities which experienced substantial disinvestment, such as Detroit, the ability to maintain a critical mass of talented workers became even more difficult. In such a setting, a workers location, and their ability to be geographic mobile, becomes an even more important factor in determining that individual's occupational opportunities.

The regional level, or the level of the MSA has been a common level at which to study how place can differentially shape opportunities for those in the local labor market. South and Xu (1990) argue that the particular industry which dominates an MSA will impact earnings attainment in each MSA. Using data from the 1980 Census and the 125 largest SMSA's they found a significant effect on earnings of economic sector and local sectoral dominance. Workers in core and state sectors earned 43% more than those in the periphery, and the dominance of a worker's sector in the local economy adds significantly to their earnings. Lorence (1991) examined how changing gender inequality was associated with changing levels of service sector employment at the MSA-level and

concluded that "factors other than personal characteristics," particularly characteristics of MSA's, shape gender earnings inequality (764).

Cohen and Huffman (2003) and Huffman and Cohen (2004) have examined inequality at the MSA-level, employing such hierarchical linear modeling techniques. In the 2003 piece, the authors examine gender inequality and the female dominance of particular kinds of jobs. In the 2004 piece, they investigate racial wage inequality, studying the impacts of "black concentration" effects within labor markets. The models used in both of these pieces were built on the "jobs" variable. To implement this variable, the authors created the jobs level, which they situate between the individual and the MSA, and which is a combination of the Census industry and occupation categories, as well as the individual's MSA. According to this construction, a secretary in the mining industry in Pittsburgh, PA has a different job than a secretary in the mining industry in Charleston, WV place was is considered as important of a factor in a job as the industry and occupation. Place, then, becomes a dominant aspect of these author's investigations. "Jobs" as operationalized in these studies are defined equally by the occupational category, industry category, and MSA in which the individual works.

Logan and Molotch (1987) anticipated that regions would differentially struggle to "deal effectively" in the new economy result in "uneven" growth with some MSA's attracting large amounts of growth, and other struggling (258). Pais' (2010) study of data from the National Longitudinal Survey of Youth found that geographic and occupational factors in combination contribute to earnings variations to the same extent as traditional individual-level control variables. Other scholars also found that characteristics of place play important roles in shaping a worker's opportunities. Bozick's (2009) research based on a nationally representative sample of high-school graduates found that youth have

higher odds of entering the work force in areas with low unemployment and sufficient job opportunities which do not require a bachelor's degree. Conversely, youth in areas with higher unemployment and fewer jobs with low education requirements are more likely to enter college.

Reviewing this literature, then, we see that place has been a component of studies of occupational mobility, earnings, and stratification and inequality, throughout the last several decades. MSA's have been used as the appropriate scale with which to investigate dynamics driving earnings outcomes and earnings inequalities. The most recent research in urban sociology, which investigates dynamics of the new economy as shaping, or the creative class as drivers of, post-industrial economic growth, demonstrates that in the new urban economy, place is an even more important factor.

Of course, if place shapes a worker's opportunity, then their ability to move, their geographic mobility is also an important factor. Examining the geographic mobility of workers is not a new idea. In their foundational work on occupational mobility, Blau and Duncan (1967) focused particular attention on geographic mobility as an important aspect of occupational mobility. As they framed the discussion, geographic mobility is a mechanism by which workers' skills are re-matched with the geographical distribution of occupational opportunities. They argued that the necessity of geographic mobility results from "differences in economic and industrial developments among communities" (243).

As modern urban sociologists would agree, Blau and Duncan (1967) do find that "A man's economic chances are improved by his motility", which is defined as his freedom to relocate in search of new work opportunities. They recognize that both psychological attachments and economic limitations may restrict an individual's motility.

Their evidence, however, shows that geographic movement is positively associated with greater occupational mobility "regardless of place of birth or destination" (250).

Recognizing that location means the presence or absence of job opportunities, workers across the U.S. have realized that relocation may offer their best chance at stable earnings and occupational mobility. Kilborn's (2009) work examining "relovilles," or neighborhoods built primarily to temporarily house families of mid-level managers demonstrates that these forces involve professionals as well as the working class. As the impacts of deindustrialization were becoming clearer in the mid-1980s, Frey (1987) examined the subsequent population shifts using population projections from census data. He found support for the deconcentration perspective, which anticipated a "pervasive diffusion of population associated with increasing locational flexibility of employers and residents" (240). This view expected depopulation of large MSA's with growth in relatively smaller areas. This was attributed to "consumer locational preferences and their interaction with employment location decisions" – an argument that corresponds with Florida (2002) and Nevarez (2003) view of geographically mobile skilled workers searching for the best locations in which they may leverage their talent for wages.

One limit on a worker's geographic mobility is their access to resources, and during an economic downturn such resources often run short. Frey's (2009) research found that during the recession of 2007-2009, the U.S. migration rate had dropped to its lowest point since World War II. Where migration did occur, suggests much about where opportunities are available. The MSA's which experienced the highest out-migration were those that grew the fastest a few years earlier during the housing bubble. Concurrently, many MSA's in northern areas which had been experiencing continued population loss saw their population loss slow or even stop. Reflecting on these patterns

Frey (2009) anticipates that once an economic recovery is underway, "both Sun Belt and Snow Belt areas with diversified, new economy industries could find themselves at the leading edge of the next migration boom" (1).

Recognizing this trend of the increasing importance of place in the new urban economy, the overall expectation is that place and geographic mobility will continue to become more important to the individual worker. As those workers navigate decisions about occupational opportunities in regions across the U.S., a variety of MSA-level characteristics are at play in determining the local and opportunity structures and stratification patterns they encounter. This study, then, expects that workers who have been geographically mobile are expected to have greater earnings than those who have not. Furthermore, this difference should become greater over time, with the gap growing each decade.

2.3 INEQUALITY IN THE NEW URBAN ECONOMY

The landscape of job opportunities and earnings inequality across the U.S. then, is largely being shaped by the forces of this new, creative economy. With Massey (2007) finding that education has become an increasingly important predictor of earnings, and gender and race receding in importance, one might expect that earnings will have become more equal overtime as stratification is reduced. The opposite seems to be the case, however. Combined with continued deindustrialization and the loss of manufacturing jobs, the growth of the new economy is associated with earnings inequality increasing over the past few decades. Moretti (2012) argues that "American communities are desegregating racially, they are becoming more segregated in terms of schooling and earnings" (4). Smeeding (2005) demonstrates that by 2005, that among OECD nations, the U.S. had the highest ratio of 90^{th} to 20^{th} percentile income distribution.

The new urban economy is characterized by increases in two kinds of inequality: inequality between places and inequality within places. Inequality between places is driven by uneven growth in the new economy across places. As some cities have seen investment and growth in new economy sectors, while other areas have lagged behind, inequality between these places has expanded. Inequality within places is driven by the increasingly split structure of regional labor markets. As some workers find opportunities in the new economy, their earnings increase, but those who are unable to find work in these growing sectors are often stuck in jobs that pay less well and offer less opportunity.

Between-place inequality is in part the result of what several scholars refer to as a clustering effect, which is a factor in how new economy sectors function (Nevarez, 2003, Moretti, 2012). Clustering is the agglomeration of workers and firms in new economy sectors in particular cities. Harvey (1989, 1990) sees these new patterns of clustering as the result of flexible accumulation, an economic pattern that results when firms re-specialize in response to forces of globalization and increased competition. As Moretti (2012) explains the clustering process, "social interactions among workers tend to generate learning opportunities that enhance innovation and productivity. Being around smart people makes us smarter and more innovative" (15).This agglomeration benefits those who are working in these industries in these cities, but it has the effect of reinforcing barriers for those who work in the same sector in another city.

Florida (2008) argues that this pattern results in "spikiness" between places as some places continue to grow while others are left behind. Moretti (2012) refers to this as the "great divergence," in which "a handful of cities with the 'right' industries and a solid base of human capital keep attracting good employers and offering high wages, while

those at the other extreme, cities with the 'wrong' industries and a limited human capital base, are stuck with dead-end jobs and low average wages." (3-4).

This pattern of increased inequality between places which is exacerbated by attractive forces between those working in new economy sectors are also understood beyond the urban region. In in *Hollowing Out the Middle*, Carr and Kefalas (2009) examine the processes of rural brain drain through the reality of a small town in Iowa. Another view on this same pattern of inequality between places is what Neal (2011) calls the city's position "in networks of interurban exchanges" such as air travel through local airports. Several distinct studies have demonstrated a positive association between travel through a city's airport(s) and employment (Brueckner 1985; Irwin and Kasarda, 1991; Goetz, 1992; Debbage and Delk, 2001). Such studies contribute to a model of what Neal (2011) calls an "urban hierarchy," or understanding U.S. cities as a set of interrelated but differentially advantaged places, each presenting competing for investment, traffic, and involvement from whatever resources might contribute to further development.

In this new urban economy, the opportunities offered by metropolitan regions continue to diverge, becoming more unequal between places. As Moretti (2012) argues, workers find themselves in a situation in which, "Your salary depends more on where you live than your resume" (88). But inequality between places is not the only way in which inequality is growing in the new urban economy. Inequality within places is also growing in the new urban economy. Massey (2007), considering a figure which illuminates income segregation in largest 50 metro areas of the US from 1970 to 2000, explains that "class segregation increased sharply between 1970 and 1990, with residential dissimilarity between poor and affluent households rising from .287 to .43" (192).

Florida (2002) recognized that growth of the creative class may be associated with growing inequality at the metropolitan level. Florida (2002) explained that while city growth may be driven by the creative class, this same growth necessitates an increase in low skill and low wage jobs to support this growing class. As he stated, "in many lower-end service jobs … the jobs continue to be 'de-skilled' or 'de-creatified'" (71). This class, he attests, works "low-end, typically low-wage and low-autonomy occupations, such as janitors and personal care attendants, in the so-called 'service sector' of the economy" (71). As a result, he argued that alongside the growing creative class is a social group he labels the service class.

For the paperback edition, Florida developed an inequality index based in part on his creative class occupational categorization. As he explained, "The Inequality Index is not part of the Creativity Index, but its relation to creativity is fascinating and disturbing – though not, perhaps, entirely unexpected. There is a strong correlation between inequality and creativity: The more creative a region is, the more income inequality you will find there" (354). Florida's recognition of this split between what he labels the creative class and the service class is a useful framework with which to perceive the increasingly bifurcated regional labor markets. Florida explains the process: "As the middle has disappeared, the job market has literally been split in two" (358). This mutually reinforcing relationship between the creative class and the service class is a major cause of increasing inequality

In his 2012 book, Florida unpacked this relationship, devoting an entire chapter to the geography of inequality across US metropolitan areas and another chapter on the "inclining significance" of class (xix). Examining more recent data, he finds that the service class does continue to grow in numbers in association with the creative class (46).

He argues that the growth of the service class is due in large part to the growth of the creative economy. As he writes, "the Creative Class has increasingly outsourced functions that were previously provided within the family to the Service Class" (47). Sassen (2012) makes a similar argument, as she describes "sharp polarization in the profit making capabilities of different sectors of the economy" (10). This polarization, she concludes, is growing, and "is engendering massive distortions in the operations of various markets, from housing to labor" (10). So, scholars examining changes in metropolitan inequality from various perspectives are concluding that the overall pattern is increased polarization in earnings.

To examine this increased polarization, Florida (2012) explores two measures of inequality. One is wage inequality based on a coefficient created by his research partner that compares wages between the creative class and other classes. Using this measure, he acknowledges that his list of the most unequal cities reads "like a who's who of Creative Class centers" (359). This increase in inequality is not the result of declining earnings for the poorest in creative class cities, though, as he finds that those at the bottom "also do better" in metropolitan areas where this wage gap is largest. He acknowledges, though, that this is often mitigated by higher housing prices. The other measure uses a Gini coefficient calculated based on all of the individuals' income within the metropolitan areas. He finds that these two measures reveal very different results. Smaller cities appear more frequently on the list of most unequal metros in total income, while the list of most unequal cities by Gini includes larger cities more commonly associated with extreme inequality (360-2). This is supported by his findings that cities with a high proportion of creative class members, like Boulder, CO, and Austin, TX, rank higher in inequality than cities commonly associated with inequality, like Washington, DC. He argues that these

findings support not only a reinvigorated consideration of class, but also the value of studying inequality at the level of the metropolitan area. While the evidence provided by both of these measures is compelling, the fact that both measures are developed through the creative class, rather than a more standard inequality measure, is problematic for generalizability. The dramatic variations not only in earnings inequality, but also in opportunity structures between metropolitan areas, and in neighborhoods within metropolitan areas, demands continued scrutiny. A more thorough assessment of these patterns of inequality, developed separately from any commitment to the creative class concepts is needed.

As we can see from these descriptions of the processes that exacerbate within-MSA inequality, the earnings opportunities in these local labor markets are perceived as becoming increasingly split, , or bifurcated. The dual economy literature, which emerged in the 1980s, provides a useful framework for understanding an increasingly bifurcated labor market. Because this literature emphasizes how structures shape work opportunities and because its focus is on understanding how structures lead to greater inequality, this literature may prove useful within this study.

The dual economy literature emerged several decades ago, just as deindustrialization reached its height in many cities across the U.S. As Hodson and Kaufman (1982) explain, by the 1970's stratification scholars had recognized the "persistence of poverty and the continuation of large racial and gender inequalities" despite massive expansion of training and education programs across the U.S. (728). These programs were expected to alleviate at least some of persistent problems of inequality, and their failure suggested shortcomings in the academic understanding of stratification.

Frustrated and anxious to build better frameworks for understanding the U.S. stratification system, several scholars realized that structural characteristics may have a larger role in the stratification system than earlier theories recognized. This led to the development of dual economy approaches, beginning with O'Connor's (1973) chapter "An Anatomy of American State Capitalism." The chapter laid out a simple model of the U.S. economy and labor system which was the foundation for the dual economy approach. The model argues that the U.S. economic system may be divided into three groups of overlapping and interrelated, but still distinct industries – competitive, monopolistic, and state.

Both Hodson (1978) and Beck, Horan, and Tolbert (1978) moved this approach further, while others, such as Baron and Bielby (1980, 1984), brought critiques. By the mid-1980's, a thesis-antithesis-synthesis process was realized. The dual economy perspective was advanced, criticized, and reformed. By the end of this scholarly conversation, Baron and Bielby, through their 1984 piece pushed the work away from an arbitrary sectoral dichotomy and toward a recognition of a continuum of firm's or industry's location in the economy, which coincided with Hodson and Kaufman's (1982) resource perspective.

While the dual economy approach has laid relatively dormant for a couple of decades, related arguments have emerged in urban sociology. For example, work like that of Morris, Bernhardt, and Handcock's (1994), which investigates changing patterns of inequality in the U.S. based on data from 1967-1987 Current Population Survey data, is a good example. The authors find support for what they label the polarization thesis, which argues that the growth of service jobs raises the numbers of both high-wage and low-wage service jobs, with declines in the middle.

Studying the manufacturing decline associated with globalization and deindustrialization, as well as the growth of the technology sector, suggests that labor markets are becoming more dichotomous in the work opportunities they offer. The relatively high-paying manufacturing jobs which supported the middle class for decades have all but disappeared in most regions. Meanwhile, many of the new job opportunities that have emerged have been low-paying, often unstable service occupations or the high-paying, but also high-skill demand, technology jobs.

The argument, then, is not an entirely new one, but is one that needs revisiting. The argument is that these national processes of deindustrialization, restructuring, and growth around new economy sectors actually exacerbate inequality in metropolitan regions. While new growth in high technology sectors is good for some workers, it is not good for all workers. While restructuring in a rust belt city like Pittsburgh is great for well-educated creative workers, it does not directly benefit those workers without the human capital, or the opportunity to retrain, to play a role in the new economy. In sun belt city's with growth almost entirely rooted in the new economy, there is even less room for a strong middle (or lower-middle) class to develop because there is less manufacturing. Metropolitan regions, then, may be expected to develop increasingly bifurcated labor markets to the extent to which each has experiences this economic transition.

This, then, leads us to several empirical questions which will be investigated in this study. The next few sections delineate several descriptive questions and hypotheses which will be tested in this study. Additional summary of the relevant literature is also provided in building towards these questions and hypotheses.

2.4 DESCRIPTIVE QUESTIONS

The analyses in this study will investigate the impact of each of these three trends in the new urban economy. As elaborated in chapters 3 and 4, employment in high-technology industries and creative class occupations will be used as indicators of the new economy. Place will be a major factor in the analysis as each of the analyses will move through the MSA-level, and geographic mobility will also be considered. Finally, several indicators of inequality will be used to explore the processes of inequality anticipated in this analysis.

As we saw above, scholars of the new urban economy argue that place is an increasingly important determinant of earnings opportunities (Florida, 2012; Moretti, 2012). The scholarship delineated in here encourages many questions about the landscape of earnings and inequality across the new urban economy. While each metropolitan area has been uniquely influenced by some combination of these forces, it is important to understand the geography of earnings opportunities across the US. In Chapter 4, I will answer the following descriptive questions:

- To what extent do earnings vary across MSA's?
- To what extent do other characteristics including geographic mobility of the labor force and educational attainment of labor force vary across MSA's?
- To what extent do indicators of the new economy vary across MSA's?
- To what extent does earnings inequality vary across MSA's?
- What important changes may be observed among these characteristics between 1990 and 2000?

2.5 MSA-LEVEL HYPOTHESES

Having addressed these descriptive questions, the study will then examine how MSA-level characteristics are associated with each other. In chapter 5 I will test for associations between MSA-level characteristics using a correlation analysis. These tests will be based on the hypotheses elaborated below.

While scholars of the new urban economy generally agree about human capital driving economic growth, there is some debate about the association between rates of employment in new economy sectors and inequality within MSA's. Florida (2012) has argued for more than a decade that the creative class members are drivers of the modern urban economy. In more recent writings, Florida has acknowledged what he sees as an interdependent relationship between the creative class and the service class, explaining that "There is a strong correlation between inequality and creativity: The more creative a region is, the more income inequality you will find there" (2012; 354). In Florida's model of the new urban economy, creative class workers are dependent on the low-cost services provided by service class workers, and this interdependence results in increased inequality where the creative class is increasing.

Moretti (2012) has a contrasting perspective. His model of the new urban economy emphasizes inequality between MSA's. He contends that a person's salary depends more on the city in which they live than their resume (2012:88). Moretti comes to this conclusion by arguing "Attracting a scientists or a software engineer to a city triggers a multiplier effect, increasing employment and salaries for those who provide local services" (2012:12-13). This two-fold ripple effect that increases both the number of other jobs and the level of income earned in those jobs means that growth in new economy sectors should not increase within-MSA inequality, but decrease it.

These two views leave us with diametrically opposed perspectives. Using Florida's model, growth in new economy sectors in any MSA should be associated with increased within-MSA inequality. Using Moretti's model, growth in new economy sectors should increase all workers earnings, suppressing any increased inequality caused

by inflation of earnings at the highest income levels. Each of these will be systematically tested in the ensuing analysis.

The first set of hypotheses examines associations between MSA-level characteristics and MSA-level median earnings. Education is broadly understood to be associated with higher earnings, but the first hypothesis tests this association at the MSA-level. The second hypothesis tests the argument from the new urban economy literature that earnings will be associated with the proportion of individuals employed in new economy sectors. The third hypothesis tests the impact of individual geographic mobility, which would be related to the clustering effects expected in the new economy literature, on MSA-level earnings. As the proportion of workers who have been geographically mobile increases in an MSA, median earnings are also expected to increase.

- Hypothesis 1A: The proportion of workers in MSA's with a college degree or higher will be positively related to MSA-level median earnings.
- Hypothesis 1B: The proportion of workers in MSA's employed in new economy sectors will be positively related to MSA-level median earnings.
- Hypothesis 1C: The proportion of geographically mobile workers in MSA's will be positively related to MSA-level median earnings.

The next set of hypotheses examines associations between indicators of the new economy and indicators of inequality at the MSA-level. In Chapter 3 the indicators of the new economy used in this study are elaborated. They include educational attainment in the workforce, as well as employment in high-technology industries, employment in the creative class (and also the super creative core). The three indicators of inequality at the MSA-level used here are the Gini index, the 90:20 earnings ratio, and the employed low earner rate in each MSA. The low earner rate is the proportion of individuals in the sample in each MSA that whose earnings were at or below the poverty level. All individuals in the sample are employed, so this is an employed low earner rate.

Hypothesis 2A states the expectation of an association between the proportion of individuals with a college degree or more in an MSA and the three indicators of inequality. Hypothesis 2B examines associations between indicators of new economy employment and the indicators of inequality. This hypothesis is particularly interesting because it is here that the disagreement between Moretti (2012) and Florida (2012) about the impact of new economy workers on regional inequality will be tested. In Moretti's view, the multiplier effect means that additional innovative jobs are associated with both more jobs, and higher pay for all jobs in that metropolitan region. Florida's argument disagrees, as he acknowledges an association between the creative class jobs and inequality based on the creative class's dependence on often low-paying service class jobs. So, when asking if the rising tide of new economy jobs lifts all boats at the MSA-level, the results of the tests of hypothesis 2B will answer that question. To round out these tests of associations with inequality, hypothesis 2C tests whether the proportion of geographically mobile workers in an MSA is associated with inequality.

- Hypothesis 2A: The proportion of workers in MSA's with a college degree or higher will be positively related to MSA-level indicators of inequality.
- Hypothesis 2B: The proportion of workers in MSA's employed in new economy sectors will be positively related to MSA-level indicators of inequality.
- Hypothesis 2C: The proportion of geographically mobile workers in will be positively related to MSA-level indicators of inequality.

Many scholars of the new urban economy suggest that the impact of new economy workers on their urban region has increased over time. For example, Florida argues that the creative class is the "economic driver" of this new economy (2002). Moretti contends that the agglomeration of innovative workers is reshaping the geography of the US. From these arguments, we can anticipate that whatever the associations are between the new economy jobs and both earnings and indicators of

inequality, those associations must be growing stronger over time. Hypothesis 3 examines this argument.

- Hypothesis 3: The relationships tested in hypotheses 1A through 2C will be stronger in 2000 than in 1990.

If the impact of new economy employment is growing over time, then we can also anticipate that positive change in proportions of employment in these sectors within a particular MSA should also be associated with both higher earnings in that MSA and higher indicators of inequality in that MSA. Hypotheses 4A and 4B examine this argument.

- Hypothesis 4A: The change in the MSA-level proportion of workers employed in new economy sectors will be positively related to MSA-level median earnings.
- Hypothesis 4B: The change in the MSA-level proportion of workers employed in new economy sectors employment will be positively related to MSA-level indicators of inequality.

2.6 MULTI-LEVEL HYPOTHESES

While the above hypotheses flow relatively directly from the model of the new urban economy described throughout the literature, expectations for what this uneven geography of opportunity means for individual opportunities and earnings require a little more development. Because consensus holds that the attainment of higher degrees is positively associated with higher earnings, most research examining individual-level factors which are associated with earnings focus on other individual-level variables, particularly race and gender (Tomaskovic-Devey, Thomas, and Johnson 2005; Huffman and Cohen, 2004; Cotter et al, 1997). While such factors have been examined thoroughly, the variation of the impact of educational attainment across labor markets anticipates more exploration. Meanwhile, scholars of urban life, economics, and stratification have become increasingly interested in place as a factor in occupational outcomes such as earnings (Nevarez, 2003; Florida, 2002, 2008, 2012; and Moretti, 2012). Therefore, an

important next step in the research agenda is to bring labor market level factors into models of earnings, while also modeling how the labor market level factors effects the individual level.

Several theoretical arguments inform expectations about how and why the relationship between educational attainment and earnings may vary across MSA's. Queuing theory (Kornrich, 2009) and other related statements suggest that the value of a higher degree will decrease as the local labor market becomes flooded with higher degrees. Briefly, the queuing theory argument is that laws of supply and demand will have an impact on the value of higher degrees in labor market.Meanwhile, arguments about the nature of the new economy and the demands of the creative class suggest that areas concentrated with a high proportion of workers employed in the new economy (high-technology industries or creative class occupations) will see higher demand and therefore higher rewards for higher degrees (Nevarez, 2003; Florida, 2012).

Specifically, this study examines if the relationship between an individuals' education, and their employment in either high-technology industries, or creative class occupations, and their earnings varies across labor markets. For this study, the labor market is conceptualized as the MSA, as done by Cotter, et al (1997) and Hoffman and Cohen (2004). At the individual level, this study will investigate the impact of characteristics such as educational attainment, employment in high-technology industries or creative class occupations, as well as demographic factors such as age, race, marriage and having children. Meanwhile, this study will also investigate the impact of MSA-level characteristics such as rates of college education in the MSA, percent of residents employed in high-technology industries and creative class occupations, and levels of inequality. The focus of the hypotheses delineated below is to investigate the relationship

between an individual's educational attainment and their earnings, asking whether and why it varies significantly across MSA's.

The impact of labor market effects on earnings has been considered in several relevant studies. For instance, Hanson and Pratt (1992) investigate the ways in which unique local characteristics of labor markets shape interactions between employees and employers. Whether qualitative or quantitative in nature, many of these studies are limited by their case study focus, as they examine only one or a small number of labor markets at a time (Leete and Bania, 1999). Some movement has been made toward involving labor markets as a simultaneous, additional level of analysis, such as Williams (2002) work which develops a hierarchical model to examine how young women's choices in the labor market are shaped by their labor market. More recent studies have demonstrated the value of investigating earnings through a multi-level model, particularly Cotter et. al's (1997) work examining gender differences in earnings in Metropolitan Statistical Areas (MSA's)and Huffman and Cohen's (2004) work examining racial wage inequality with individual's nested within jobs within Metropolitan Statistical Areas.

Drawing from these and works elaborated below, this study will advance two major arguments in describing how MSA-level factors impact individual earnings. The first argument that this examination anticipates is that as a labor market experiences increased rates of higher education among its workers, a queuing effect develops that reduces the (still quite positive) impact of individual education attainment on earnings. Queuing theory argues that individual skill levels, or educational attainment, relative to that of the rest of their labor market, are of primary importance in determining employment, and therefore earnings outcomes. Queuing theory is related to work on skills and spatial mismatch. Kasarda's (1989) work is among the first and best statements

of the skills and spatial mismatch perspectives. Handel's (2003) work is a recent example of the skills mismatch perspective. He argues that the work-related skills of the labor force do not match the skill requirements of available jobs (and that this explains growing wage inequality in the United States) (135). Considering whether the skills mismatch derives from lagging educational attainment or increasing skill demands, Handel argues that more research is needed, stating, "There is little information on whether job demands are actually exceeding workers' capacities" (135).

Stoll, Holzer, and Ihlandfeldt's (2000) work is a prime example of the spatial mismatch perspective. The authors compared the spatial distribution of new jobs and people across sub-metropolitan areas in four major US cities. Their results demonstrated significant spatial mismatch (207). More recently, research has combined these two perspectives. For example, Stoll (2005) examines "geographical skills mismatch" in Los Angeles and Atlanta, finding that both are factors in unemployment (695). Houston (2005) also worked to reconcile the skills mismatch and spatial mismatch perspectives. His work concludes that skills and spatial mismatches reinforce each other and that the concept of employability may improve understanding of how job searchers and employers make decisions in situations of skills and/or spatial mismatch (221).

Boylan's (1993) early work on queues demonstrated that the number of diplomas do have an effect on the value of a diploma in a labor market (206). Kornrich's (2009) work is at the forefront of bringing queuing theory into urban research as he brought spatial mismatch theory into a framework built on queuing theory (1). He explains that queuing theory, "suggests that the ordering and composition of labor and job queues determine the matches between workers and jobs" (2). He argues that the "characteristics of labor and job queues significantly influence the extent of black-white inequality" (1).

If queues have such an impact on black-white inequality, a natural next question is to what extent queues may impact disparities between those with higher degrees and those without, i.e. does the value of a higher degree vary based on the queue, or local labor market, within which it is located? From this perspective, the value of a higher degree may be anticipated to decrease as the proportion of higher degrees (or the length of the queue) grows.

This queuing effect is not the expectation of all scholars. Moretti (2012), for instance, argues that in the new urban economy, a rising tide lifts all boats. As he explains:

> "A worker's education has an effect not just on his own salary, but on the entire community around him. The presence of many college-educated residents changes the local economy in profound ways, affecting both the kinds of jobs available and the productivity of every worker who lives there, including the less skilled. This results in high wages not just for skilled workers, but for most workers." (5).

As we will see, a worker's education does also boost the local economy around him. New economy jobs are attracted to places where locals have a high level of human capital. At the same time, though, we will see how competition for work in new economy jobs among those with a higher degree can reduce earnings through the queuing effect, contradicting Moretti's (2012) expectation.

While a queuing effect is expected to reduce the value of an individual's higher education, a clustering effect caused by growth in high-technology industries and creative class jobs in a worker's MSA is expected to boost the value of an individual's education. Scholars of the new urban economy widely agree that local growth in the economic sectors of the new economy (taken here as jobs in high-technology industries or jobs in creative class occupations) is propelled by a clustering effect where individuals working

in these sectors benefit from social connections and information sharing as the proportion of workers in in these sectors in their local labor markets increase (Nevarez, 2003; Florida, 2012, Moretti; 2012). According to Nevarez (2003), the new economy in US labor markets is different from that of the traditional with one example being that technology companies are clustering in urban areas based on their dependence on elite, talented workers. As he notes, firms in growing sectors of the new economy develop around a "flexible district" where firms come together around specific business projects (47). Furthermore, Nevarez recognizes that firms within these industries will often locate near each other, which results in specialization of urban areas. This argument suggests, then, that higher degrees demonstrating higher skills are more valuable in labor markets where such clustering has occurred.

But not all scholars agree on how the new economy impacts all workers in local labor markets. Richard Florida's creative class perspective argues in support of the expectation for clustering of highly-skilled workers, explaining that the world is becoming "spiky." This "spiky-"-ness leads to increased inequality both between and within metropolitan regions. As he (2008) states, "today's global economy is powered by a surprisingly small number of places. What's more, the tallest spikes—the cities and regions that drive the world economy—are growing ever higher" (19). In contrast, Moretti (2012) contends that clustering of workers in new economy jobs increases social interaction and information sharing, which leads to increased innovation. This payoff from clustering results in what he refers to as a multiplier effect. As Moretti explains, "Indeed, the key lesson of the multiplier effect is that the economy is a tightly interconnected system, and what is good for one group typically tends to be good for another. This is a case where the rising tide does lift all boast – at least those boats that

are in the same city" (2012: 63). From this perspective, then, the value of a higher degree may be anticipated to increase when it is situated in labor markets where clustering has occurred. Such clustering could be demonstrated by higher proportions of high-skilled workers in the labor market.

While these theoretical arguments are heavily debated, little has been done systematically explore their claims. In chapter 6 I will test several hypotheses at each of the levels of investigation may be extracted. These are delineated below. First, at the individual-level, I hypotheses that:

- Hypothesis 5A: Individual earnings will vary across MSA's in a statistically significant way.
- Hypothesis 5B: Holding a college degree or more will be associated with increased individual earnings.
- Hypothesis 5C: Being employed in a high-technology industry will be associated with increased individual earnings.
- Hypothesis 5D: Being employed in creative class occupations will be associated with increased individual earnings.

I also hypothesize that characteristics of a worker's MSA will have an impact on their earnings:

- Hypothesis 6A: An increase in the percentage of workers with a college degree in a worker's MSA will be associated with an increase in their individual earnings.
- Hypothesis 6B: An increase in the percentage of workers employed in high-technology industries will be associated with an increase in their individual earnings.
- Hypothesis 6C: An increase in the percentage of workers employed in creative class occupations in a worker's MSA will be associated with an increase in their individual earnings.

Finally, I am interested in how cross-level interactions between these factors impact a worker's earnings opportunities:

- Hypothesis 7A: The proportion of workers with a college degree in a worker's MSA will reduce the positive relationship between individual educational attainment and earnings.

- Hypothesis 7B: The proportion of workers employed in high-technology industries in a worker's MSA will reduce the positive relationship between individual educational attainment and earnings.
- Hypothesis 7C: The proportion of workers employed in creative class occupations in a worker's MSA will reduce the positive relationship between individual educational attainment and earnings.
- Hypothesis 8A: The proportion of workers with a college degree in a worker's MSA will reduce the strength of the relationship between being employed in a high-technology industry and earnings.
- Hypothesis 8B: The proportion of workers employed in high-technology industries in a worker's MSA will increase the relationship between being employed in a high-technology industry and earnings.
- Hypothesis 8C: The proportion of workers employed in creative class occupations in a worker's MSA will increase the relationship between being employed in high-technology industries and earnings.
- Hypothesis 9A: The proportion of workers with a college degree in a worker's MSA will reduce the positive relationship between an individual being employed in a creative class occupation and earnings.
- Hypothesis 9B: The proportion of workers employed in high-technology industries in a worker's MSA will reduce the positive relationship between an individual being employed in a creative class occupation and earnings.
- Hypothesis 9C: The proportion of workers employed in creative class occupations in a worker's MSA will reduce the positive relationship between an individual being employed in a creative class occupation and earnings.

This study is something of a foundational exercise, and as such it works to answer some of the most obvious questions. Many relevant and interesting questions will remain unanswered here, though. For example, while gender and race will be used as control variables in the statistical models below, the role of these characteristics in cross-level interactions are not investigated in depth in this study. Also, this study is explicitly interested in employed workers in MSA's, and as a result, does not consider those who are working outside of metropolitan statistical areas or in the informal economy.

Answering the descriptive questions and testing these hypotheses will provide a substantial test of the new urban economy model of modern economic growth elaborated here. The results will provide a cleared sense of the uneven geography of opportunities

for workers. They will also illuminate the role of MSA-level characteristics in shaping a worker's opportunities.

CHAPTER 3

DATA AND METHODS

This chapter will delineate the data and methods used in this study. This study involved the gathering of two very large data sets and a series of complex statistical analyses. Each of these will be described in detail below.

3.1 DATA

The analyses in this study use two data sets. Each data set is compiled from the 5% samples of the U.S. Census, one from 1990 and the other from 2000. These were acquired through the Integratged Public Use Microdata Series: Version 5.0 (IPUMS). At the time each data set was gathered, both were nationally representative, 1-in-20 random samples of the U.S. population.

3.2 SAMPLE

The sample includes individuals living in US MSA's within the 48 continental states, who are of prime age (25-59 years old), employed in the labor market and earning income from wages or salary, but not working in military occupations or industries.

In with a similar interest in "prime age" workers, he practice of imposing an age restriction on a sample is common. Cohn and Fossett (1995) restrict their data set to individuals 25-59 years old. Cohen (2001) restricts his data set to ages 25-54, a range he describes as "prime age" (152), and Sanders (2011) uses ages 25-59 as prime age. For this study, I also define prime age as 25-59, only including individuals within this age range in the sample.

The MSA is the geographic identifier in this study, and each individual is nested within one MSA. The MSA variable reports the MSA of residence for each respondent. The U.S. Census Bureau defines the concept of a metropolitan area as "a large population nucleus, together with adjacent communities having a high degree of social and economic integration with that core." In 1990 and 2000 Census definitions of metropolitan areas included three types – MSA's, as well as PMSA's (primary metropolitan statistical areas), and CMSA's (consolidated metropolitan statistical areas) (Census 2002). This data set actually includes a combination of MSA's and PMSA's, but excludes CMSA's. This means, for example that the Baltimore, MD PMSA and the Washington, DC PMSA are each in the data set as separate MSA's, but the combined CMSA of Washington-Baltimore is excluded.

The MSA is appropriate for use in this study because I am interested in how characteristics of labor markets of the wider areas surrounding cities influence inequality and individual decisions for geographic and occupational mobility. The MSA has a long history of use in academic studies in urban sociology and studies on labor markets, stratification, and inequality (Lorence, 1991; Cohn and Fossett, 1995; and Cohen, 2001). The MSA also takes into account the "deconcentrated" nature of many urban modern urban regions, as described by Gottdiener (1997: 9). A variable which reports the MSA of the respondent's place of work rather than residence was available, but this variable is difficult to use, because, as IPUMS reports, for this variable "many metropolitan areas are only partially identified, and a substantial share of individuals who worked in these metropolitan areas are not reported as part of the workforce" (IPUMS).

Because this study is interested in how individuals are able to leverage their human capital in the labor market and because individuals who are self-employed operate

under a different set of circumstances than individuals searching for work in the labor market, self-employed individuals and those who are not working for wages or salaries are excluded from all data sets. While many self-employed workers may be doing creative or high-technology work, this study is interested in how regional labor markets are structured by the new economy, and is therefore focused on individuals that have found their jobs through the labor market. As is the custom in similar studies, individuals working for the military are removed from the samples because they are not competing for work under the same labor market pressures. Because the research questions focus on earnings, individuals who are unemployed, but searching for work in the labor market were removed from the sample. For similar reasons, self-employed individuals also are not included in the sample. At the individual level the sample represents a target population of employed adults working in MSA's.

3.3 INDIVIDUAL-LEVEL VARIABLES

A variety of individual-level variables are used throughout this study. The earnings variable is particularly important because it is used as the outcome variable in the multi-level analysis in Chapter 5, and it is also used to calculate several MSA-level variables. Individual earnings are defined using the Census definition of wage and salary which "includes total money earnings received for work performed as an employee during the calendar year preceding each survey." (US Census Bureau 2008). This variable is used because it measures individual income from the primary sources from which individual income may be earned in their labor market, and opportunities for this kind of income are impacted by labor market competition and geographic space. Other forms of income, investment dividends for example, may occur outside of where the individual actually lives or works. The variable, then, was chosen because it is subject to

labor market effects. This variable is top-coded to protect the identity of the less common high earners (Census, 2008, p. 7-75).

The next important individual-level variable is educational attainment. In the original survey, educational attainment indicates the highest year of school or degree completed. When compiling this data set for this study, the detailed version of this variable, which includes all information available in each year, was used. This variable was then recoded into two dichotomous variables. The first of these is "Bachelor's Degree or More" with the comparison group being all individuals with less than a Bachelor's Degree. The second is "More than Bachelor's Degree," with the reference group being all individuals with a Bachelor's degree or less. Both are used for the analysis in Chapter 5, but only the first is used in Chapter 6.

Another important individual-level variable is geographic mobility. The geographic mobility variable is calculated by comparing the reported metropolitan area the respondent lived in five years prior to the survey their current MSA of residence. Each case where these variables do not match is considered geographically mobile. A small number of MSA's were excluded from the data set because they were not comparable between 1990 and 2000 on this variable, or because of problems some missing data on this variable within those MSA's.

Several indicators of the new economy are used in this analysis, and these are based on categories of employment at the individual level. The first is a dichotomous variable representing employment in high-technology industries. When aggregated at the MSA level, this variable represents the proportion of high-technology industries in each MSA. Hackler (2003) studies location of high-tech manufacturing firms, defining high-technology manufacturers as those employing at least a minimum proportion of workers

in certain occupations. Hecker's (2005) article from the Bureau of Labor Statistics defines high-technology industries based on a minimum threshold for the proportion of the industry's total employment in technology-oriented occupations. In this study, Hecker's (2005) definitions for high-technology industries were used, with those industries which were high-technology being aggregated by their North American Industry Classification System (NAICS) code. Some examples of jobs in these industries include computer and mathematical sciences, engineers, manufacturing in aerospace and medicine, and even wholesalers of high-technology goods like computers. NAICS codes were not available for the 1990 data set, however. To have the ability to compare the proportion of workers employed in high-technology industries in both 1990 and 2000, I created a new high-technology industry aggregation based on the 1990 Census Bureau industrial classification scheme, the variables for which were available in both data sets. Comparisons between the NAICS and the Census classification aggregations in the 2000 data revealed a high degree of similarity.

The second indicator of employment in the new economy is a dichotomous variable for employment in a creative class occupation, and also a dichotomous variable indicating employment in the smaller category of the super-creative core of the creative class. Both are aggregations of occupational codes from the Standard Occupation Classificaton System (OCCSOC) following the aggregation outlined by Florida (2002). The occupations aggregated in thesuper creative core are: computer and mathematical, architecture and engineering, life, physical, and social science, education, training, and library, arts, design, entertainment, sports, and media occupations. In addition to the super creative core, the broader creative class category also includes management, businesss and financial operations, legal, healthcare practitioners and technical, high-end

sales and sales management occupations. When aggregated at the MSA level, these each represent the proportion of employed workers employed in those occupational categories in each MSA. Florida (2002: 328-9, 2012: 401-2) and his colleagues Stolarick and Mellander define the creative class based on aggregations of the Standard Occupational Classification (SOC) system. Markusen, et al (2008) explores a variety of industry and occupational approaches to defining the creative class. As Reese, Faist, and Sands (2010) recognize, a variety of operationalizations of the creative class have proliferated in the literature. Some of these focus on the expected characteristics of creative workers, such as tolerance and diversity, while others, like Florida's are based simply on the worker's occupational category. For this analysis, I re-created Florida's occupational aggregations for the creative class and the super creative core. The super creative core is a direct recoding of four of the major SOC groups. Creating the aggregation for the more inclusive creative class aggregation was a bit more complicated because one group defined by Florida (high-end sales and sales management) takes only a few of the categories in sales, placing others sales categories in his service class group. I made my best informed guesses at recreating this group. Again, like the NAICS codes, the SOC system codes were not available in the 1990 data set, and so I created variables similar to them, based on the 1990 Census Bureau occupational classification scheme, which are comparable across decades.

Several other individual-level variables are used in this study, primarily as control variables in the analysis presented in Chapter 6. These include race, as well as some work and family variables. Race is divided into four categories – white, black, Hispanic, and other race. To create these dichotomous race variables, first, the detailed Hispanic variable was recoded into a dummy variable of Hispanic or non-Hispanic. Then, all non-

Hispanic cases were recoded into three dummy variables for race – non-Hispanic white (or not), non-Hispanic black (or not) and non-Hispanic other. Additional work variables include dichotomous variables for employment by the government, or in a non-profit organization (contrasted with employment in the private sector). They also include a dichotomous variable for working at least 40 hours per week, and working at least twenty-six weeks. Family variables include a dichotomous variable for being married and another for having children. An individual-level variable is also included for gender.

3.4 MSA-LEVEL VARIABLES

For each year (1990 and 2000) there are separate data sets for each level of analysis. Because the sample only had data for the individual-level, all variables at the MSA-level were calculated based on aggregations of all individuals within the final individual-level sample within each MSA. So, the MSA-level characteristics variables each represent the aggregation of all individuals in this sample within each MSA, not the overall population of the MSA.

The first MSA-level variable of interest is median earnings. A median earnings value is calculated for each MSA based on the earnings of individual in the sample in that MSA. After this, three indicators of MSA-level inequality were calculated. Like median earnings, the first two of these measures are based on wage and salary earnings of all cases within each MSA. The first inequality indicator is a 90 to 20 earnings ratio, comparable to the one used by Smeeding (2005) and Massey (2007). Massey (2007) adopted a 90 to 20 earnings ratio as a primary measure of inequality. This ratio measures the earnings distribution in each MSA by comparing the earnings at two different points in the distribution. For the 90/20 ratio, the ratio compares the 90^{th} percentile and 20^{th} percentile in the earnings distribution in each MSA. Because this measure uses the 90^{th}

percentile as a reference point, this measure of inequality is particularly sensitive to inequality caused by "stretching" of the earnings distribution by high-income earners.

The second indicator of inequality is the Gini coefficient. This was also calculated based on the earnings reported for each individual in the sample within each MSA. The Gini coefficient is commonly used to measure inequalities, from income inequality to inequality in university rankings (Shorrock, 1978; Halffman & Leydesdorf, 2010). This index compares earnings across the distribution of earnings in the sample. The index may range from 0 to 1, though the extremes are rarely reached. For this indicator, a 0 means complete equality and a 1 means perfect inequality; the lower the value, the more equal the distribution. In this study, the Gini index values were calculated in the statistical program R, using the computational package based on the work of Handcock and Morris (1999). While the 90 to 20 earnings ratio is particularly sensitive to high-income earners, the Gini coefficient is more sensitive to fluctuations in the proportion of middle-range income earners.

The third indicator of inequality used here is the low earner rate in each MSA. This measure is based on a variable in the survey which compared each individual's overall earnings to their local poverty level of income. The measure used here reports all individuals in the sample whose overall earnings were at or below 100% of their local poverty rate. Aggregated to the MSA-level, this indicator represents the proportion of workers in the sample earning at or below poverty-level income. This is not actually a measure of inequality because if 100% of the sample in an MSA had earnings at exactly the poverty rate, there would be a very high poverty rate, but no inequality in that MSA. Also, MSA-level values for the poverty rate in this study does not accurately represent the actual poverty rate for the entire population of an MSA, but rather the rate of low

earning employed individuals in this sample. The measure is a useful indicator here because it is sensitive to lower income levels, as it represents what percentages of workers are earning below a standard measure of low income.

After the variables described above, several MSA-level variables were calculated based on aggregations of the dichotomous individual level variables. MSA-level variables were calculated which report the percentage of workers in each MSA that work in high-technology industries or creative class occupations. MSA-level variables also report the percentage of individuals that are male, married, have children, worked at least 40 hours per week, worked at least 26 weeks the previous year, identify as each of the four race categories, and were geographically mobile. Average age was calculated for each MSA as well.

3.5 CORRELATION ANALYSIS METHODS

I used a variety of statistical methods in this analysis. Descriptive questions were answered using basic statistical techniques, including calculating median earnings for MSA's and the proportions of workers employed in new economy sectors in each MSA. But testing the hypotheses as is done in chapters 4 and 5 required several statistical techniques.

In Chapter 5, a correlation analysis is conducted examining associations between MSA-level characteristics in an effort that tests the MSA-level hypotheses in this study. Each of the MSA-Level hypotheses was tested using the MSA-level data from both the 2000 and 1990 data sets. A series of two-tailed Pearson correlation tests were conducted. Each tested for linear associations between the relevant MSA-level characteristics, and tests were run for both 2000 and 1990 data. The variables used in these tests are defined in detail in Chapter 3. Results of these correlation tests are reported in Tables 5.1 and 5.2.

Some of the hypotheses tested in chapter 5 examine whether the strength of the correlation between two MSA-level variables is stronger in 2000 than in 1990. A Fisher Z transformation test was conducted to test these hypotheses. The Fisher Z transformation test makes it possible to determine if the difference in strength between two different correlation results from two independent samples is statistically significant (Fisher 1915; Howell, 2004 cited in Pickering, 2004). The Fisher Z transformation test was conducted using two online calculators, with the same results emerging from both tests (Lowry 2013, Boersma 2013).

3.6 CROSS-LEVEL ANALYSIS METHODS AND VARIABLES

The analysis in chapter 6 relied on a multi-level analysis using hierarchical linear modeling. This part of the analysis focuses on examining how the relationship between individual characteristics, such as geographic mobility or educational attainment and earnings varies across MSA's. This portion of the study deals with nested data, individual's nested within MSA's, and therefore a multi-level modeling technique is appropriate for use in this analysis. Multi-level modeling techniques allow the researcher to avoid correlated error problems, associated with nested data, such as effects of local labor markets while also making it possible to test for statistical significance of factors at the appropriate level (and sample size) (Raudenbush and Bryk, 2002). When testing for correlation with earnings all predictor variables were centered on their group-mean, thus normalizing for the clustering of cases that are expected to have a greater than chance similarity by their spatial proximity (e.g. individuals working in the same MSA). This process allows the researcher to rigorously control for population differences in each aggregate, preventing the discovery of effects which are purely compositional. Furthermore, by multi-level modeling, this study removes variation attributed to

individual level effects that might also be due to compositional differences across MSA's.

The dependent variable examined in the models in Chapter 6 is individual earnings. In the models, the natural log of earnings is used to adjust for the distribution of earnings. The earnings variable is measured through wage and salary income. Wage and salary income is defined by the Census as income that "includes total money earnings received for work performed as an employee during the calendar year 1999. It includes wages, salary, armed forces pay, commissions, tips, piece-rate payments, and cash bonuses earned before deductions were made for taxes, bonds, pensions, union dues, etc." (US Census Bureau 2008). This variable is used because it measures individual income from the primary sources from which individual income may be earned in their labor market, and opportunities for this kind of income are shaped by labor market competition and geographic space. Other forms of income, investment dividends for example, may occur outside of where the individual actually lives or works. The variable, then, was chosen because it is subject to labor market effects. This variable is top-coded to protect the identity of the less common high earners (Census, 2008, p. 7-75). The additional variables used in the model are those described above.

CHAPTER 4

LANDSCAPE OF INEQUALITY: DESCRIPTIVE STATISTICS

This chapter will work to answer the descriptive questions that emerged in Chapter 2. While doing so, the chapter will explore the landscape of earnings inequality among employed wage earners across US metropolitan statistical areas (MSA's) in 2000 and 1990. This landscape, or uneven geography of earnings opportunities, will be surveyed using the data sets constructed for this study. Descriptive statistics for the both individual and MSA-level data sets will be reported, along with some views on the variation in MSA-level characteristics, particularly earnings, inequality, and rates of employment in high-technology industries and creative class occupations.

Descriptive statistics for both individual-level and MSA-level variables in both the 1990 and 2000 data set are reported in this Chapter. Tables 4.1 and 4.2 report MSA-Level descriptive statistics for the year 2000 and the year 1990, respectively. Table 4.3 reports descriptive statistic for the individual-level data set for the year 2000. Tables and figures are placed at the end of the chapter.

The first descriptive question asks to what extent earnings vary across MSA's. In 2000, median earnings across MSAs ranged from $17,000 to $46,700 with a mean of $28,964. The range had increased from 1990, when it ranged from $12,000 to $30,000, with a mean of $20,613. Stamford, CT ranked as the MSA with the highest median earnings in both decades (it was tied with two others in 1990), while the McAllen-Edinburgh-Pharr-Mission MSA, an MSA in Texas near the Mexico border, ranked at the

bottom in both decades. Tables 4.4 and 4.5 present data from 2000 for each MSA in this study, including new economy and inequality indicators.

Several figures map particular variables of interest in the study across US MSA's. Figure 4.1 shows median earnings across MSA's, and Figure 4.2 shows the same variable, but classifies MSA's by their standard deviation from the mean of median earnings ($28,964). Figure 4.3 relates the percentage of workers employed in the creative class in each MSA, and Figure 4.4 does the same for percentage employed in high-technology industries. Figure 4.5 shows the Gini coefficient by MSA, classified into 5 groups.

The next descriptive question asks to what extent do other characteristics such as geographic mobility of the labor force and educational attainment of labor force vary across MSA's? Considering these in reverse order, in 2000 on average 28.46% of this population in each MSA had a bachelor's degree or more. This characteristic varied widely across MSA's however, with some MSA's having nearly 60% of their wage earners holding a college degree or higher, while other MSA's had percentages in the low teens. This represented an increase in the percentage of the population with a college degree or more from 1990, when this characteristic ranged from 12% to 47% across the same MSA's, with an average of 25.05%. As for geographic mobility, in 2000 on average 30.34% of each MSA's population had been geographically mobile in the previous five years, and this is actually a small decrease from the 31.27% average in 1990. When counting only those individuals who have earned a higher degree beyond the Bachelor's, in 2000 the average percent of people in the workforce across MSA's with a higher degree was 9.86%. This represents slightly more than a 1% increase from the 1990 average. What may be of most interest here is the large range in educational attainment

across MSA's. By 2000, some MSA's had a workforce in which only 4% had earned a degree beyond the bachelors, while only 14% of the workforce had at least a bachelor's. Meanwhile, other MSA's had a workforce with nearly 60% holding at least a college degree and more than a quarter holding a degree beyond the bachelor's.

How indicators of the new economy vary across MSA's is the next question of interest. Using the BLS definition, employment in high-technology industries ranged from 5 to 40% across MSA's in 2000, with an average of 12.60 percent. These numbers are very similar in 2000 which using aggregation for high-technology industries which is comparable between 1990 and 2000, with a range of 5 to 42% and a slightly higher average of 12.87%. Looking back, this average is actually dropped from 13.32% in 1990. While the average dropped, it appears the high-technology industries may have become more dominant in several MSA's, as the MSA with the highest percent employed in high-technology industries was only 35% in 1990, 7% lower than that in 2000.

In contrast, proportions of earners in the creative class increased across the board from 1990 to 2000. Using the comparable measure, the average MSA had 31.60% working in creative class occupations with 10.96% in the super creative core in 1990. These figures increased to an average of 33.38% in the creative class in each MSA and 12.50% in the super creative core. Using the more standard measure of the creative class, we see slightly higher numbers in 2000, with an average of 36.96% of workers in each MSA employed in creative class occupations. Using this standard measure, we see that by 2000, some MSA's economies were dominated by the creative class, with some having nearly 60% of the workforce employed in creative class occupations. Even MSA's with the lowest proportion of workers in the creative class had nearly a quarter of its workforce employed in these occupations.

The next descriptive indicators of interest are those which assess inequality across MSA's, as we are interested in the extent to which inequality varies across MSA's. In 1990 we see that the average 90/20 earnings ratio was 4.03. This indicates that on average, earners in the 90th percentile earned about four times as much as earners in the 20th percentile across MSA's. This ratio ranged from 3.04 to 5.17 in 1990. In 2000, the average for this ratio was exactly the same across MSA's, but the range across MSAs was quite different. This ratio had dropped in some MSA's, with the lowest being 2.98, but the ratio had increased in others. In one MSA in particular (the high-earning Stamford, CT), the 90/20 earnings ratio had jumped all the way to 16.09.

The next indicator of inequality is the Gini coefficient. Unlike the 90/20 earnings ratio, the Gini reports an increase in average MSA inequality from 1990 to 2000 as the index increased from .369 in 1990 to .383 in 2000. Again, what's most interesting with this measure is that the range increased during this decade. In 1990 the Gini ranged from .304 to .423 in 1990 but widened by 2000, as it stretched from .330 to .539.

Looking at the percent of low earners in the workforce, we see that the average percent dropped from 4.37% in 1990 to 3.97% by 2000. The range for this measure also decreased between 1990 and 2000, as it ranged from 1 to 22% in 1990, but only 1 to 19% in 2000.

The last descriptive question asked here is what important changes may be observed among these characteristics between 1990 and 2000? While the averages of these indicators across MSA's have not seen dramatic fluctuations, the ranges of many of these indicators have expanded noticeably. While low earner rates lowered during this period, with the ranges being suppressed as well, other indicators of inequality saw increases in their range between 1990 and 2000. Both the 90/20 earnings ratio and the

Gini coefficient saw increases in their range. This suggests that while economic growth during this period may have helped reduce low earner rates, inequality continued to grow.

Also from this data, we see that there have only been modest changes in the average of employment in these sectors between 1990 and 2000. However, one should also note that the range in these indicators has grown more substantially. In fact, the most compelling finding here is the dramatic ranges seen in some of these indicators across MSA's. By 2000 we see that some MSA's were deeply involved in the new economy, by whatever measure one chooses. At the same time, others existed with very small proportions employed in high-technology industries or working in super creative core occupations. Employment in high-technology industries has come to represent more than two fifths of all employment in some MSA's by 2000. Also, by 2000 nearly three fifths of some MSA's workforces were employed in the creative class, according to the standard measure.

4.3 DISCUSSION

We see a wide variation in many of the MSA-level characteristics which are of interest to this study. Median earnings, levels of inequality, and proportions of employment in new economy sectors vary widely. In the next chapter, we will see how variations in these MSA-level characteristics are associated with each other.

TABLE 4.1 MSA-Level Descriptive Statistics (2000) N=225

Variable	***Mean***	***SD***	***Min***	***Max***
Mean of MA Median Earnings	28,964	4,108	17,000	46,700
% High-Tech Industry	12.60	4.78	5	40
% High-Tech Industry (Comp)	12.87	4.88	5	42
% Creative Class Occupations	36.96	6.31	24	59
% Creative Class Occs. (Comp)	33.38	5.69	22	56
% Creative Core Occupations	13.45	3.32	8	26
% Creative Core Occs. (Comp)	12.50	2.72	8	25
90/20 Earnings Ratio	4.03	.93	2.98	16.09
Gini Coefficient	.383	0.03	.330	.539
% Low Earner	3.97	2.03	1	19
% Bachelor's Degree or More	28.46	7.83	14	58
% More than Bachelor's Degree	9.86	3.99	4	26
% Geographically Mobile	30.34	4.03	9	39
% Government Employee	18.47	5.91	9	38
% Non-profit Employee	8.62	2.57	2	29
Age	40.85	.61	38.46	42.63
Male	51.73	1.88	46	59
Married	66.14	3.99	57	77
One or More Children	53.86	4.27	43	70
White, non-Hispanic	78.64	15.04	10	98
Black, non-Hispanic	8.71	8.72	0	41
Hispanic	8.59	13.21	0	88
Other Race	8.59	13.21	0	88

TABLE 4.2 MSA-Level Data Descriptive Statistics (1990). N=225

Variable	***Mean***	***SD***	***Min***	***Max***
Mean of MA Median Earnings	20,613	2,941	12,000	30,000
% High-Tech Industry (Comp)	13.32	4.94	4	35
% Creative Class Occs. (Comp)	31.60	5.46	19	49
% Creative Core Occs. (Comp)	10.96	2.55	6	21
% Eds and Meds Occs. (Comp)	12.46	2.51	6	24
90/20 Earnings Ratio	4.03	0.40	3.04	5.17
Gini Coefficient	0.369	0.019	0.304	0.423
% Low Earner	4.37	2.54	1	22
% Bachelor's Degree or More	25.05	6.94	12	47
% More than Bachelor's Degree	8.70	3.53	3	23
% Geographically Mobile	31.27	5.82	0	41
% Government Employee	19.42	6.93	8	44
Male	52.85	2.11	45	62
Married	69.55	4.51	57	80
One or More Children	57.55	4.79	41	73
White, non-Hispanic	83.12	13.54	14	99
Black, non-Hispanic	8.27	5.25	0	46
Hispanic	6.40	11.80	0	85
Other	1.67	2.06	0	17

TABLE 4.3 Individual-Level Descriptive Statistics (2000). N=2,943,194

Variable	***Mean***	***SD***	***Min***	***Max***
Earnings	40,138.08	40,644	4	354,000
Earnings (Ln)	10.27	0.87	1.39	3,481
Bachelor's Degree or More	0.33	0.47	0	1
More than Bachelor's Degree	0.12	0.32	0	1
Geographically Mobile	0.32	0.47	0	1
Creative Class	0.40	0.49	0	1
Creative Class (comparable)	0.37	0.48	0	1
Creative Core	0.15	0.35	0	1
Creative Core (comparable)	0.13	0.34	0	1
High-Technology	0.15	0.36	0	1
High-Technology (comparable)	0.16	0.36	0	1
Government Employee	0.17	0.38	0	1
Non-profit Employee	0.08	0.28	0	1
Worked less than 40 hours/week	0.18	0.38	0	1
Worked less than 26 weeks	0.05	0.23	0	1
Male	0.52	0.50	0	1
Age	40.63	9.29	25	59
Married	0.64	0.48	0	1
Children, one or more	0.52	0.50	0	1
Black	0.11	0.31	1	1
Hispanic	0.11	0.32	0	1
Other	0.06	0.24	0	1

TABLE 4.4 MSA New Economy Indicators, Ranked by Median Earnings (2000)

MSA	Earnings (Median)	High-Tech(%)	High-Tech % (Comp)	Creative Class (%)	Creative Class (comp)	Creative Core	Creative Core (comp)	Bachelor's or More (%)	More Than Bachelor's (%)	Geographically Mobile (%)
Stamford, CT	46700	26	27	59	56	16	14	58	26	24
San Jose, CA	45000	40	42	54	46	26	19	49	20	30
Danbury, CT	43000	22	22	53	50	17	15	50	19	20
Washington, DC/MD/VA	40000	18	19	54	49	22	18	49	22	34
San Francisco-Oakland-Vallejo, CA	39800	21	22	48	43	18	15	45	16	29
Ann Arbor, MI	39000	13	13	50	46	23	21	46	21	25
Monmouth-Ocean, NJ	38000	17	18	45	40	16	14	36	12	26
Trenton, NJ	38000	18	18	49	44	20	18	43	20	24
Boston, MA-NH	37000	22	23	51	46	19	17	48	20	31
Bridgeport, CT	37000	20	20	44	41	14	13	38	16	26
New York-Northeastern NJ	36000	16	17	44	40	15	14	40	17	28
Seattle-Everett, WA	36000	23	23	47	42	18	15	42	14	35
Detroit, MI	35800	11	11	38	34	14	13	29	11	35
Wilmington, DE/NJ/MD	35500	25	25	45	41	17	15	36	13	30
Baltimore, MD	35000	14	14	45	41	17	15	37	15	32
Chicago, IL	35000	16	17	41	38	14	12	37	13	36
Hartford-Bristol-Middleton- New Britain, CT	35000	15	16	44	39	15	14	38	15	30
Minneapolis-St. Paul, MN	35000	17	18	44	39	16	14	37	11	34
Nashua, NH	35000	29	29	47	41	20	16	37	12	20
New Haven-Meriden, CT	35000	15	15	43	39	17	16	37	18	25
Philadelphia, PA/NJ	35000	17	17	43	39	15	14	36	13	31
Ventura-Oxnard-Simi Valley, CA	35000	18	19	41	38	15	14	31	10	31
Brockton, MA	34000	14	14	38	34	12	11	28	8	20
Santa Rosa-Petaluma, CA	34000	14	14	40	36	14	13	31	9	32
Atlanta, GA	33000	17	18	44	40	15	13	38	12	35
Galveston-Texas City, TX	33000	19	18	42	38	16	15	29	10	26
Hamilton-Middleton, OH	33000	15	14	40	36	14	13	29	10	28
Milwaukee, WI	33000	15	17	41	37	14	13	33	10	37
Sacramento, CA	33000	14	14	43	39	16	14	33	10	35
Worcester, MA	33000	16	16	42	38	16	14	37	14	25
Lansing-E. Lansing, MI	32700	7	7	37	34	15	14	30	12	30
Racine, WI	32050	14	15	34	31	12	11	24	7	26
Austin, TX	32000	23	23	49	43	21	17	42	14	35
Bloomington-Normal, IL	32000	8	8	43	39	17	15	39	11	30
Bremerton, WA	32000	12	10	40	36	16	15	30	9	24
Columbus, OH	32000	15	15	42	38	15	13	35	11	37
Dallas-Fort Worth, TX	32000	20	20	42	38	15	13	33	10	36
Kansas City, MO-KS	32000	16	15	41	37	14	12	34	11	34

TABLE 4.4 CONTINUED

Kenosha, WI	32000	17	18	32	30	12	11	23	7	26
Madison, WI	32000	12	12	49	43	20	18	43	16	32
Portland, OR-WA	32000	17	17	40	37	15	13	34	11	37
Raleigh-Durham, NC	32000	23	23	49	43	21	17	44	16	31
Santa Cruz, CA	32000	19	19	45	41	20	18	38	14	30
Rochester, MN	31800	16	15	47	37	17	14	36	12	24
Tacoma, WA	31800	13	13	34	31	12	11	25	8	28
Olympia, WA	31500	8	7	41	37	15	14	34	13	28
Indianapolis, IN	31200	14	14	39	34	12	11	31	10	37
Albany-Schenectady-Troy, NY	31100	11	12	43	38	16	14	35	15	31
Cincinnati-Hamilton, OH/KY/IN	31100	15	15	40	36	14	12	32	11	34
Des Moines, IA	31000	10	10	43	38	14	13	34	9	32
Houston-Brazoria, TX	31000	18	19	40	36	15	14	31	10	36
Richmond-Petersburg, VA	31000	15	15	43	39	14	13	36	12	33
San Diego, CA	30900	17	17	43	38	16	15	35	12	39
Cleveland, OH	30600	14	15	37	34	12	11	30	11	34
St. Louis, MO-IL	30300	15	15	39	35	14	12	31	11	36
Cedar Rapids, IA	30200	22	23	39	35	15	13	30	7	32
Jackson, MI	30200	10	12	31	29	11	11	22	6	28
Grand Rapids, MI	30150	11	10	35	32	13	12	29	9	34
Akron, OH	30000	13	14	37	33	13	12	29	9	29
Allentown-Bethlehem-Easton, PA/NJ	30000	15	15	35	31	13	12	26	9	28
Appleton-Oshkosh-Neenah, WI	30000	10	12	32	28	12	11	25	6	30
Atlantic City, NJ	30000	6	6	31	29	11	10	25	7	30
Birmingham, AL	30000	15	15	41	37	13	12	34	11	33
Charlotte-Gastonia-Rock Hill, NC-SC	30000	17	17	38	35	13	12	32	9	31
Dayton-Springfield, OH	30000	12	13	37	33	13	12	27	10	35
Decatur, IL	30000	11	10	31	27	11	10	22	7	30
Fort Lauderdale-Hollywood-Pompano Beach, FL	30000	11	13	41	37	11	11	30	10	31
Green Bay, WI	30000	11	10	33	30	12	11	26	6	33
Harrisburg-Lebanon--Carlisle, PA	30000	10	10	34	30	12	11	25	9	28
Janesville-Beloit, WI	30000	10	11	27	25	9	9	19	6	28
Kalamazoo-Portage, MI	30000	11	12	33	30	12	11	25	9	31
Lancaster, PA	30000	12	11	30	27	10	10	24	8	29
Lincoln, NE	30000	14	15	44	39	17	15	40	12	37
Los Angeles-Long Beach, CA	30000	14	16	39	36	15	13	32	11	38
Louisville, KY/IN	30000	11	11	39	35	12	11	32	12	35
Memphis, TN/AR/MS	30000	12	11	39	35	13	12	31	10	36
Nashville, TN	30000	11	12	40	36	13	12	32	10	35
Omaha, NE/IA	30000	13	15	42	37	15	12	36	11	27
Peoria, IL	30000	8	9	37	33	14	13	26	8	31
Phoenix, AZ	30000	17	18	40	36	14	12	30	10	38
Providence-Fall River-Pawtucket, MA/RI	30000	12	13	36	33	13	12	29	10	31
Provo-Orem, UT	30000	14	17	45	39	19	15	34	10	34
Reading, PA	30000	17	16	32	28	12	11	23	7	27
Reno, NV	30000	9	10	34	32	10	9	27	8	35
Richland-Kennewick-Pasco, WA	30000	21	14	39	36	18	17	28	11	30

TABLE 4.4 CONTINUED

Riverside-San Bernardino,CA	30000	10	10	33	30	11	11	21	7	34
Rochester, NY	30000	20	14	41	36	17	16	33	13	33
Rockford, IL	30000	15	18	33	30	11	11	23	7	31
Salt Lake City-Ogden, UT	30000	14	15	40	36	15	13	30	10	35
Santa Barbara-Santa Maria-Lompoc, CA	30000	14	14	39	36	17	16	33	13	34
Santa Fe, NM	30000	10	8	51	47	23	20	45	21	24
Sheboygan, WI	30000	11	10	29	27	12	11	22	6	28
Springfield-Holyoke-Chicopee, MA	30000	10	11	38	35	16	15	32	13	32
Stockton, CA	30000	11	11	31	29	11	11	19	5	30
Toledo, OH/MI	30000	9	9	33	30	12	11	25	9	35
Waterbury, CT	30000	13	14	28	24	9	8	20	7	27
West Palm Beach-Boca Raton-Delray Beach, FL	30000	13	13	41	38	13	12	31	10	31
Wichita, KS	30000	27	27	36	33	14	13	29	8	35
York, PA	30000	14	14	32	28	11	10	22	7	26
South Bend-Mishawaka, IN	29900	9	10	36	33	14	13	30	11	28
Champaign-Urbana-Rantoul, IL	29850	9	9	46	41	23	21	39	19	30
Saginaw-Bay City-Midland, MI	29800	14	15	30	27	12	11	22	6	28
Greeley, CO	29600	14	15	33	29	12	11	24	7	25
Manchester, NH	29600	16	16	35	32	12	12	26	7	28
Syracuse, NY	29400	14	14	37	34	15	14	28	12	31
Fort Wayne, IN	29300	13	13	33	29	11	10	23	8	33
Buffalo-Niagara Falls, NY	29200	12	12	37	34	13	13	31	12	32
Colorado Springs, CO	29200	22	19	43	37	19	16	35	13	30
Baton Rouge, LA	29000	17	16	38	34	14	13	29	10	33
Columbia, SC	29000	12	11	43	38	15	14	35	13	30
Jacksonville, FL	29000	12	13	38	35	12	11	26	8	32
Lafayette-W. Lafayette, IN	29000	11	12	37	34	17	16	31	14	31
Las Vegas, NV	29000	7	7	28	28	8	8	20	6	36
Lexington-Fayette, KY	29000	13	13	46	42	17	16	43	18	33
Modesto, CA	29000	7	7	30	27	11	11	20	5	32
Duluth-Superior, MN/WI	28800	8	8	33	29	12	12	27	8	23
Pittsburgh, PA	28600	14	14	37	34	12	11	31	11	25
Hagerstown, MD	28550	11	11	29	26	10	9	19	7	26
Beaumont-Port Arthur-Orange,TX	28500	18	18	32	28	11	11	20	5	29
Wausau, WI	28450	9	9	33	29	11	10	21	6	26
Davenport, IA-Rock Island - Moline, IL	28100	8	8	34	31	12	11	26	8	19
Bellingham, WA	28000	11	10	34	32	12	11	29	9	30
Benton Harbor, MI	28000	12	12	32	30	12	11	24	9	27
Decatur, AL	28000	17	16	28	26	10	10	19	5	30
Elkhart-Goshen, IN	28000	7	7	27	25	9	9	19	7	32
Greensboro-Winston Salem-High Point, NC	28000	12	12	34	31	11	10	26	8	31
Greenville-Spartanburg-Anderson SC	28000	13	13	34	31	12	11	26	9	30
Lima, OH	28000	12	11	28	25	10	9	17	6	28
Macon-Warner Robins, GA	28000	9	9	36	31	12	11	25	8	32

TABLE 4.4 CONTINUED

Melbourne-Titusville-Cocoa-Palm Bay, FL	28000	22	21	41	36	17	15	29	10	29
New Bedford, MA	28000	10	10	30	28	11	11	22	7	27
Norfolk-VA Beach--Newport News, VA	28000	11	10	39	36	15	14	29	10	35
Orlando, FL	28000	13	13	40	36	13	11	30	9	33
Savannah, GA	28000	12	12	38	35	13	12	31	11	30
Tampa-St. Petersburg-Clearwater, FL	28000	14	15	40	35	12	11	27	9	35
Tuscaloosa, AL	28000	8	8	36	33	16	15	30	13	31
Vineland-Milville-Bridgetown, NJ	28000	7	8	26	23	10	10	17	4	28
St. Cloud, MN	27700	9	10	31	29	11	11	22	7	24
Chattanooga, TN/GA	27650	11	10	37	33	12	11	26	8	9
Boise City, ID	27600	18	18	38	35	14	13	30	9	33
State College, PA	27400	12	13	41	38	21	19	36	17	25
Montgomery, AL	27350	10	9	40	36	14	13	32	12	33
Salem, OR	27350	9	9	34	31	11	11	24	7	32
Albuquerque, NM	27300	17	17	42	38	16	15	33	13	33
Augusta-Aiken, GA-SC	27000	15	15	37	33	14	13	26	9	30
Bakersfield, CA	27000	9	11	30	27	12	12	19	6	36
Bloomington, IN	27000	8	8	48	45	25	25	49	25	28
Bryan-College Station, TX	27000	9	10	48	45	24	22	44	21	32
Canton, OH	27000	9	10	29	26	10	9	21	7	30
Erie, PA	27000	9	10	30	28	11	11	25	9	31
Knoxville, TN	27000	13	12	39	35	14	13	31	12	32
Little Rock--North Little Rock, AR	27000	12	13	38	33	12	11	29	9	34
Muncie, IN	27000	7	8	34	31	13	13	26	11	28
New Orleans, LA	27000	12	13	37	34	13	12	29	10	30
Spokane, WA	27000	11	11	38	34	12	12	31	11	33
Tyler, TX	27000	13	13	36	32	10	10	26	8	30
Waterloo-Cedar Falls, IA	27000	6	8	35	31	13	12	26	8	27
Youngstown-Warren, OH-PA	27000	8	9	27	24	9	9	20	6	30
Jackson, MS	26650	12	11	40	36	13	12	33	11	36
Charleston-N.Charleston,SC	26600	9	8	38	35	13	12	32	11	28
Columbia, MO	26500	10	9	48	43	18	17	46	19	32
Eau Claire, WI	26450	12	12	30	27	11	10	23	7	27
Redding, CA	26450	8	7	36	34	13	13	24	7	30
Eugene-Springfield, OR	26400	11	11	37	34	15	14	29	10	35
Binghamton, NY	26300	19	20	38	33	16	14	27	12	28
Houma-Thibodoux, LA	26200	7	18	29	25	9	8	14	4	29
Sarasota, FL	26200	10	11	37	33	11	10	26	8	31
Scranton-Wilkes-Barre, PA	26100	11	11	32	28	10	10	24	8	26
Utica-Rome, NY	26100	11	11	33	30	12	12	23	9	27
Amarillo, TX	26000	9	10	36	32	13	12	26	8	36
Biloxi-Gulfport, MS	26000	8	8	32	31	11	11	22	7	30
Fort Myers-Cape Coral, FL	26000	8	8	34	31	9	9	22	7	28
Gainesville, FL	26000	9	7	49	44	22	21	42	20	29
Longview-Marshall, TX	26000	15	17	32	28	11	10	23	7	29
Mansfield, OH	26000	13	14	26	24	9	9	15	5	30
Odessa, TX	26000	13	22	35	32	12	12	22	5	33
San Antonio, TX	26000	12	12	39	35	13	13	28	10	34

TABLE 4.4 CONTINUED

Tucson, AZ	26000	14	14	39	36	16	15	31	12	34
Lafayette, LA	25650	10	20	37	33	12	12	27	8	30
Lakeland-Winterhaven, FL	25300	8	8	31	27	10	9	19	6	31
Mobile, AL	25200	13	13	33	30	12	11	24	8	32
Chico, CA	25100	7	7	36	33	14	14	28	8	31
Sharon, PA	25100	9	9	29	27	8	8	23	7	21
Altoona, PA	25000	9	9	28	26	8	8	18	6	26
Anniston, AL	25000	8	8	29	26	11	11	20	9	28
Asheville, NC	25000	14	14	35	32	11	11	28	9	29
Billings, MT	25000	12	13	37	34	11	11	33	7	30
Clarksville- Hopkinsville, TN/KY	25000	10	10	31	29	12	12	22	7	28
Daytona Beach, FL	25000	9	10	34	31	10	10	21	7	29
Fayetteville, NC	25000	8	8	34	30	13	13	22	7	26
Fayetteville-Springdale, AR	25000	9	8	35	30	11	10	24	8	34
Florence, AL	25000	12	11	31	28	11	11	23	9	31
Fort Pierce, FL	25000	11	11	34	31	10	10	22	7	27
Fresno, CA	25000	7	6	32	30	12	12	22	7	36
Hickory-Morgantown, NC	25000	10	9	24	22	8	8	16	5	29
Jamestown-Dunkirk, NY	25000	7	8	29	27	12	12	20	8	26
Johnson City-Kingsport--Bristol, TN/VA	25000	17	17	32	28	11	10	23	8	30
Kileen-Temple, TX	25000	8	8	35	31	13	13	22	7	29
Lubbock, TX	25000	10	10	40	37	14	14	30	10	34
Medford, OR	25000	9	10	36	33	14	13	26	9	34
Monroe, LA	25000	8	9	34	30	11	11	27	9	32
Pensacola, FL	25000	11	11	37	32	12	11	25	8	31
Shreveport, LA	25000	9	10	33	31	11	11	23	8	34
Springfield, MO	25000	11	11	33	30	11	11	26	8	36
Terre Haute, IN	25000	12	11	29	26	11	11	21	9	29
Waco, TX	25000	10	12	32	29	12	12	21	7	34
Williamsport, PA	25000	11	11	25	22	9	8	18	5	26
Wilmington, NC	25000	15	14	36	33	12	11	28	8	27
Yuba City, CA	25000	8	8	29	26	11	11	17	4	29
Yakima, WA	24100	7	6	29	27	11	11	19	7	34
Danville, VA	24000	7	7	25	22	9	8	15	6	27
Ocala, FL	24000	9	8	33	30	9	9	17	6	28
Wichita Falls, TX	24000	9	10	32	29	12	12	25	7	31
Merced, CA	23800	6	6	28	24	11	11	15	4	29
Joplin, MO	23400	11	12	30	27	9	9	20	7	31
Abilene, TX	23000	9	10	36	33	12	13	26	8	29
Alexandria, LA	23000	7	6	34	30	11	11	21	6	30
Johnstown, PA	23000	8	8	27	24	8	8	17	5	22
Jacksonville, NC	22000	6	7	33	30	12	13	19	6	22
Visalia-Tulare-Porterville, CA	22000	5	5	26	23	10	10	15	5	34
Yuma, AZ	22000	5	5	28	26	11	11	16	6	33
El Paso, TX	21000	8	9	33	30	13	13	22	7	33
Las Cruces, NM	20100	9	8	37	34	17	17	28	11	31
Brownsville-Harlingen-San Benito, TX	18600	6	6	33	30	14	14	20	7	31
McAllen-Edinburg-Pharr-Mission, TX	17000	5	6	31	29	14	14	20	6	30

TABLE 4.5. MSA Characteristics and Inequality Indicators, Ranked by Median Earnings (2000)

MSA	Earnings (median)	Bachelor's or More	More than Bachelor's	90/20 Earnings Ratio	Gini Index	Percent Low Earners
Stamford, CT	46700	58.06	26.31	16.09	0.539	2.29
San Jose, CA	45000	48.57	20.29	4.96	0.431	2.11
Danbury, CT	43000	49.75	18.96	5.15	0.477	1.72
Washington, DC/MD/VA	40000	48.92	22.11	4.29	0.395	2.08
San Francisco-Oakland-Vallejo, CA	39800	44.94	16.44	4.60	0.427	2.48
Ann Arbor, MI	39000	46.34	20.89	4.25	0.394	2.05
Monmouth-Ocean, NJ	38000	36.26	12.18	4.51	0.421	1.94
Trenton, NJ	38000	43.29	19.71	4.50	0.432	2.61
Boston, MA-NH	37000	47.59	20.19	4.30	0.421	2.15
Bridgeport, CT	37000	37.73	15.84	4.35	0.457	2.52
New York-Northeastern NJ	36000	40.19	16.58	4.83	0.446	3.52
Seattle-Everett, WA	36000	42.02	13.63	3.80	0.394	2.29
Detroit, MI	35800	29.47	10.70	4.44	0.398	3.01
Wilmington, DE/NJ/MD	35500	36.44	13.43	3.75	0.377	1.97
Baltimore, MD	35000	36.72	14.99	3.70	0.378	2.24
Chicago, IL	35000	36.82	13.49	4.44	0.414	2.78
Hartford-Bristol-Middleton-New Britain, CT	35000	37.59	15.16	3.75	0.403	2.58
Minneapolis-St. Paul, MN	35000	37.21	11.27	3.60	0.380	2.00
Nashua, NH	35000	36.61	12.24	4.00	0.368	1.34
New Haven-Meriden, CT	35000	37.36	18.45	3.55	0.382	2.40
Philadelphia, PA/NJ	35000	35.65	13.13	3.95	0.398	2.61
Ventura-Oxnard-Simi Valley, CA	35000	31.04	10.36	5.00	0.423	3.54
Brockton, MA	34000	27.85	8.27	3.42	0.350	1.71
Santa Rosa-Petaluma, CA	34000	31.40	9.07	4.31	0.393	2.67
Atlanta, GA	33000	37.67	12.25	4.18	0.407	2.95
Galveston-Texas City, TX	33000	28.83	10.00	4.36	0.390	4.17
Hamilton-Middleton, OH	33000	28.80	10.01	3.72	0.373	2.13
Milwaukee, WI	33000	33.40	10.27	3.60	0.383	2.74
Sacramento, CA	33000	32.63	9.85	3.91	0.381	3.59
Worcester, MA	33000	36.59	13.83	3.72	0.363	2.36
Lansing-E. Lansing, MI	32700	30.00	11.52	3.72	0.358	2.76
Racine, WI	32050	24.34	7.32	3.56	0.366	1.36
Austin, TX	32000	42.26	14.20	4.28	0.418	3.12
Bloomington-Normal, IL	32000	38.66	10.87	3.68	0.367	2.39
Bremerton, WA	32000	29.96	8.88	4.06	0.379	3.18
Columbus, OH	32000	35.00	11.47	3.72	0.379	2.75
Dallas-Fort Worth, TX	32000	33.39	10.04	4.45	0.419	3.43
Kansas City, MO-KS	32000	33.97	10.89	3.72	0.370	2.21
Kenosha, WI	32000	22.59	7.17	3.61	0.351	2.35

TABLE 4.5 CONTINUED

Madison, WI	32000	42.97	16.41	3.23	0.356	1.92
Portland, OR-WA	32000	34.37	10.96	4.12	0.389	3.25
Raleigh-Durham, NC	32000	43.75	15.60	4.17	0.391	2.76
Santa Cruz, CA	32000	38.23	13.72	5.87	0.450	4.22
Rochester, MN	31800	35.74	12.35	3.71	0.385	1.66
Tacoma, WA	31800	25.02	7.79	3.65	0.359	3.31
Olympia, WA	31500	33.69	12.87	3.57	0.364	3.41
Indianapolis, IN	31200	30.84	9.99	3.78	0.374	2.50
Albany-Schenectady-Troy, NY	31100	34.97	15.28	3.61	0.365	2.34
Cincinnati-Hamilton, OH/KY/IN	31100	31.52	11.21	3.89	0.396	2.53
Des Moines, IA	31000	34.50	9.28	3.28	0.365	1.69
Houston-Brazoria, TX	31000	31.39	10.18	4.69	0.425	4.57
Richmond-Petersburg, VA	31000	36.17	11.65	3.72	0.384	2.52
San Diego, CA	30900	35.18	12.36	4.80	0.420	4.32
Cleveland, OH	30600	29.72	10.54	3.88	0.392	3.01
St. Louis, MO-IL	30300	30.80	10.84	3.78	0.384	2.75
Cedar Rapids, IA	30200	30.42	7.40	3.44	0.352	2.17
Jackson, MI	30200	21.53	6.39	3.55	0.350	2.65
Grand Rapids, MI	30150	28.52	8.70	3.69	0.374	2.68
Akron, OH	30000	29.01	9.17	3.90	0.386	3.10
Allentown-Bethlehem-Easton, PA/NJ	30000	26.39	9.17	3.89	0.372	2.48
Appleton-Oshkosh-Neenah, WI	30000	24.90	6.39	3.18	0.330	1.65
Atlantic City, NJ	30000	25.33	6.89	3.75	0.375	3.27
Birmingham, AL	30000	33.86	11.30	4.05	0.401	3.47
Charlotte-Gastonia-Rock Hill, NC-SC	30000	31.51	8.80	3.83	0.401	2.66
Dayton-Springfield, OH	30000	27.03	10.15	3.75	0.368	3.02
Decatur, IL	30000	21.69	6.66	4.00	0.375	3.22
Fort Lauderdale-Hollywood-Pompano Beach, FL	30000	30.37	10.21	4.38	0.407	4.07
Green Bay, WI	30000	26.27	5.87	3.33	0.366	2.00
Harrisburg-Lebanon--Carlisle, PA	30000	25.33	8.75	3.47	0.354	2.53
Janesville-Beloit, WI	30000	19.29	6.16	3.33	0.342	1.46
Kalamazoo-Portage, MI	30000	25.24	8.62	3.79	0.374	3.41
Lancaster, PA	30000	24.29	7.56	3.56	0.357	2.23
Lincoln, NE	30000	39.63	12.15	3.41	0.361	3.01
Los Angeles-Long Beach, CA	30000	32.05	10.66	5.36	0.445	5.67
Louisville, KY/IN	30000	31.53	11.86	3.96	0.393	2.94
Memphis, TN/AR/MS	30000	30.96	10.47	4.00	0.409	4.51
Nashville, TN	30000	31.99	9.61	3.61	0.386	2.76
Omaha, NE/IA	30000	35.78	10.66	3.72	0.378	2.51
Peoria, IL	30000	26.13	8.45	4.00	0.374	2.68
Phoenix, AZ	30000	30.28	9.61	4.12	0.396	3.92

TABLE 4.5 CONTINUED

Providence-Fall River-Pawtucket, MA/RI	30000	28.75	10.12	3.75	0.368	2.84
Provo-Orem, UT	30000	33.83	9.74	4.89	0.405	3.98
Reading, PA	30000	22.52	6.85	3.47	0.353	2.22
Reno, NV	30000	26.84	8.08	3.88	0.390	3.45
Richland-Kennewick-Pasco, WA	30000	28.42	10.52	4.64	0.388	4.68
Riverside-San Bernardino,CA	30000	20.61	6.88	4.45	0.389	5.48
Rochester, NY	30000	32.88	13.39	3.94	0.373	3.15
Rockford, IL	30000	22.60	6.79	3.79	0.367	2.97
Salt Lake City-Ogden, UT	30000	30.27	9.90	4.06	0.384	2.83
Santa Barbara-Santa Maria-Lompoc, CA	30000	33.36	12.57	5.00	0.433	4.61
Santa Fe, NM	30000	44.60	21.38	4.87	0.402	4.04
Sheboygan, WI	30000	22.03	5.52	3.22	0.333	1.27
Springfield-Holyoke-Chicopee, MA	30000	31.80	13.03	3.66	0.360	3.45
Stockton, CA	30000	18.65	5.28	4.33	0.382	5.40
Toledo, OH/MI	30000	25.11	8.82	3.91	0.374	3.54
Waterbury, CT	30000	19.79	6.66	3.59	0.341	4.31
West Palm Beach-Boca Raton-Delray Beach, FL	30000	31.44	9.95	4.50	0.427	3.72
Wichita, KS	30000	29.09	8.45	3.61	0.346	2.94
York, PA	30000	22.23	6.84	3.28	0.337	1.96
South Bend-Mishawaka, IN	29900	29.66	11.40	3.75	0.369	2.91
Champaign-Urbana-Rantoul, IL	29850	39.31	19.39	3.69	0.366	3.49
Saginaw-Bay City-Midland, MI	29800	21.57	6.29	4.48	0.383	3.37
Greeley, CO	29600	24.28	7.06	3.63	0.362	3.49
Manchester, NH	29600	26.33	7.29	3.41	0.344	2.41
Syracuse, NY	29400	28.05	11.57	3.80	0.371	3.55
Fort Wayne, IN	29300	22.85	7.61	3.53	0.356	2.81
Buffalo-Niagara Falls, NY	29200	30.61	12.26	4.27	0.387	3.24
Colorado Springs, CO	29200	34.93	12.60	4.13	0.391	2.85
Baton Rouge, LA	29000	28.80	10.31	4.13	0.379	4.84
Columbia, SC	29000	35.34	12.64	3.64	0.372	3.84
Jacksonville, FL	29000	26.24	7.94	3.78	0.393	3.54
Lafayette-W. Lafayette, IN	29000	31.29	13.86	3.75	0.375	4.13
Las Vegas, NV	29000	19.79	6.18	3.53	0.373	3.63
Lexington-Fayette, KY	29000	42.59	17.52	4.19	0.412	4.28
Modesto, CA	29000	19.61	5.44	4.41	0.389	5.26
Duluth-Superior, MN/WI	28800	26.75	8.37	3.93	0.366	3.57
Pittsburgh, PA	28600	31.15	10.91	4.20	0.403	3.19
Hagerstown, MD	28550	19.11	7.38	3.40	0.341	3.06
Beaumont-Port Arthur-Orange,TX	28500	19.98	4.83	4.43	0.379	5.71
Wausau, WI	28450	21.26	5.61	2.98	0.343	1.87
Davenport, IA-Rock Island -Moline, IL	28100	25.52	8.01	4.00	0.372	3.39

TABLE 4.5 CONTINUED

Bellingham, WA	28000	28.97	8.76	4.21	0.371	4.57
Benton Harbor, MI	28000	23.71	8.95	4.00	0.393	3.95
Decatur, AL	28000	19.29	5.13	4.00	0.377	3.69
Elkhart-Goshen, IN	28000	18.51	6.66	3.25	0.359	2.61
Greensboro-Winston Salem-High Point, NC	28000	26.50	7.73	3.73	0.378	3.15
Greenville-Spartanburg-Anderson SC	28000	25.98	8.54	3.85	0.378	3.69
Lima, OH	28000	16.84	5.70	3.67	0.343	2.61
Macon-Warner Robins, GA	28000	24.79	8.49	3.80	0.376	4.91
Melbourne-Titusville-Cocoa-Palm Bay, FL	28000	29.16	9.57	4.25	0.389	3.98
New Bedford, MA	28000	21.97	7.05	3.73	0.374	4.27
Norfolk-VA Beach--Newport News, VA	28000	28.90	10.23	3.93	0.383	3.83
Orlando, FL	28000	29.95	8.61	4.00	0.401	3.50
Savannah, GA	28000	30.84	10.92	4.08	0.404	4.33
Tampa-St. Petersburg-Clearwater, FL	28000	27.34	8.60	3.97	0.400	3.79
Tuscaloosa, AL	28000	30.10	12.89	3.93	0.357	3.47
Vineland-Milville-Bridgetown, NJ	28000	16.61	4.36	3.72	0.351	5.01
St. Cloud, MN	27700	22.33	6.52	3.08	0.333	1.80
Chattanooga, TN/GA	27650	26.17	8.32	3.69	0.384	3.68
Boise City, ID	27600	29.52	8.85	4.00	0.383	3.83
State College, PA	27400	35.76	16.59	3.87	0.374	3.05
Montgomery, AL	27350	32.23	11.91	4.00	0.376	3.84
Salem, OR	27350	23.81	7.14	3.67	0.357	4.44
Albuquerque, NM	27300	32.89	13.30	4.19	0.394	5.03
Augusta-Aiken, GA-SC	27000	26.02	8.99	4.36	0.384	5.06
Bakersfield, CA	27000	18.74	5.75	5.08	0.403	7.69
Bloomington, IN	27000	48.54	25.22	4.44	0.398	5.22
Bryan-College Station, TX	27000	43.87	20.66	4.75	0.414	6.78
Canton, OH	27000	20.54	6.55	3.67	0.374	2.97
Erie, PA	27000	24.68	8.60	3.79	0.358	3.92
Knoxville, TN	27000	31.50	11.65	4.00	0.388	3.29
Little Rock--North Little Rock, AR	27000	29.19	9.31	3.61	0.376	3.88
Muncie, IN	27000	25.77	10.80	4.39	0.375	4.74
New Orleans, LA	27000	28.72	9.88	4.29	0.398	6.10
Spokane, WA	27000	30.84	10.93	3.93	0.382	4.08
Tyler, TX	27000	25.87	8.13	3.96	0.384	4.24
Waterloo-Cedar Falls, IA	27000	26.12	7.81	3.53	0.352	3.48
Youngstown-Warren, OH-PA	27000	20.43	6.40	3.93	0.371	3.69
Jackson, MS	26650	32.98	10.69	3.93	0.392	5.40
Charleston-N.Charleston,SC	26600	32.27	11.37	4.00	0.413	5.01
Columbia, MO	26500	45.92	19.25	3.64	0.374	3.68
Eau Claire, WI	26450	22.71	6.57	3.34	0.343	2.46
Redding, CA	26450	24.22	6.76	4.46	0.389	5.04

TABLE 4.5 CONTINUED

Eugene-Springfield, OR	26400	29.40	10.49	4.09	0.374	4.70
Binghamton, NY	26300	27.28	12.13	4.29	0.384	4.21
Houma-Thibodoux, LA	26200	14.47	3.75	4.42	0.383	6.63
Sarasota, FL	26200	25.78	8.20	4.00	0.404	3.21
Scranton-Wilkes-Barre, PA	26100	24.27	8.45	3.82	0.371	3.12
Utica-Rome, NY	26100	23.35	9.06	3.47	0.343	3.92
Amarillo, TX	26000	25.60	7.95	4.00	0.378	5.25
Biloxi-Gulfport, MS	26000	21.52	6.71	3.61	0.367	5.14
Fort Myers-Cape Coral, FL	26000	21.88	6.59	3.53	0.384	4.04
Gainesville, FL	26000	42.37	20.43	4.00	0.403	5.43
Longview-Marshall, TX	26000	23.10	7.11	4.15	0.396	5.31
Mansfield, OH	26000	15.13	4.64	3.55	0.352	3.43
Odessa, TX	26000	21.86	5.38	4.39	0.398	6.24
San Antonio, TX	26000	27.83	9.56	4.29	0.401	5.40
Tucson, AZ	26000	30.87	12.20	4.29	0.399	5.35
Lafayette, LA	25650	27.43	8.05	4.62	0.410	6.56
Lakeland-Winterhaven, FL	25300	18.70	5.55	3.47	0.364	4.17
Mobile, AL	25200	24.01	8.35	4.14	0.394	5.49
Chico, CA	25100	27.54	7.98	4.83	0.411	7.16
Sharon, PA	25100	22.82	7.50	3.92	0.359	4.06
Altoona, PA	25000	17.98	5.53	3.82	0.342	3.75
Anniston, AL	25000	19.96	8.51	3.63	0.352	3.88
Asheville, NC	25000	28.30	8.74	3.33	0.376	4.29
Billings, MT	25000	32.56	6.88	4.23	0.399	4.37
Clarksville- Hopkinsville, TN/KY	25000	22.40	7.49	3.71	0.359	4.18
Daytona Beach, FL	25000	20.72	6.72	3.71	0.379	4.77
Fayetteville, NC	25000	22.08	7.30	3.76	0.366	4.77
Fayetteville-Springdale, AR	25000	23.90	7.54	3.47	0.379	3.96
Florence, AL	25000	22.82	8.55	4.00	0.377	4.25
Fort Pierce, FL	25000	21.93	7.23	4.18	0.415	3.84
Fresno, CA	25000	22.48	6.93	4.75	0.405	8.32
Hickory-Morgantown, NC	25000	15.97	4.65	3.00	0.332	2.49
Jamestown-Dunkirk, NY	25000	19.97	8.20	3.85	0.354	4.45
Johnson City-Kingsport--Bristol, TN/VA	25000	22.96	7.75	3.80	0.376	3.85
Kileen-Temple, TX	25000	21.82	7.18	3.67	0.377	4.89
Lubbock, TX	25000	29.81	10.26	4.16	0.405	5.95
Medford, OR	25000	26.12	8.52	4.15	0.384	5.68
Monroe, LA	25000	26.79	8.81	4.08	0.408	7.26
Pensacola, FL	25000	25.06	8.18	4.31	0.401	4.70
Shreveport, LA	25000	23.26	7.73	4.23	0.392	6.33
Springfield, MO	25000	26.41	7.96	3.45	0.373	4.33
Terre Haute, IN	25000	21.47	8.91	3.86	0.381	3.27
Waco, TX	25000	20.51	7.02	3.66	0.388	4.65
Williamsport, PA	25000	17.72	5.25	3.46	0.347	2.99
Wilmington, NC	25000	28.45	8.03	4.29	0.403	4.95
Yuba City, CA	25000	16.80	4.49	4.69	0.399	6.69
Yakima, WA	24100	18.70	6.80	4.07	0.373	7.82
Danville, VA	24000	15.07	5.58	3.38	0.347	4.75
Ocala, FL	24000	16.72	5.79	3.51	0.371	5.26

TABLE 4.5 CONTINUED

Wichita Falls, TX	24000	24.64	6.52	4.08	0.373	5.57
Merced, CA	23800	14.98	3.75	4.69	0.387	8.70
Joplin, MO	23400	20.08	6.54	3.54	0.364	4.87
Abilene, TX	23000	25.92	8.04	4.05	0.389	6.37
Alexandria, LA	23000	20.91	6.43	4.17	0.385	7.52
Johnstown, PA	23000	16.64	5.11	3.92	0.367	3.86
Jacksonville, NC	22000	19.34	6.29	3.67	0.350	5.21
Visalia-Tulare-Porterville, CA	22000	15.06	4.84	5.20	0.410	11.28
Yuma, AZ	22000	16.04	6.44	4.17	0.384	9.17
El Paso, TX	21000	22.37	6.84	4.43	0.410	9.86
Las Cruces, NM	20100	28.47	11.34	4.73	0.406	11.34
Brownsville-Harlingen-San Benito, TX	18600	20.48	6.70	4.73	0.414	14.05
McAllen-Edinburg-Pharr-Mission, TX	17000	19.53	6.01	5.00	0.423	18.80

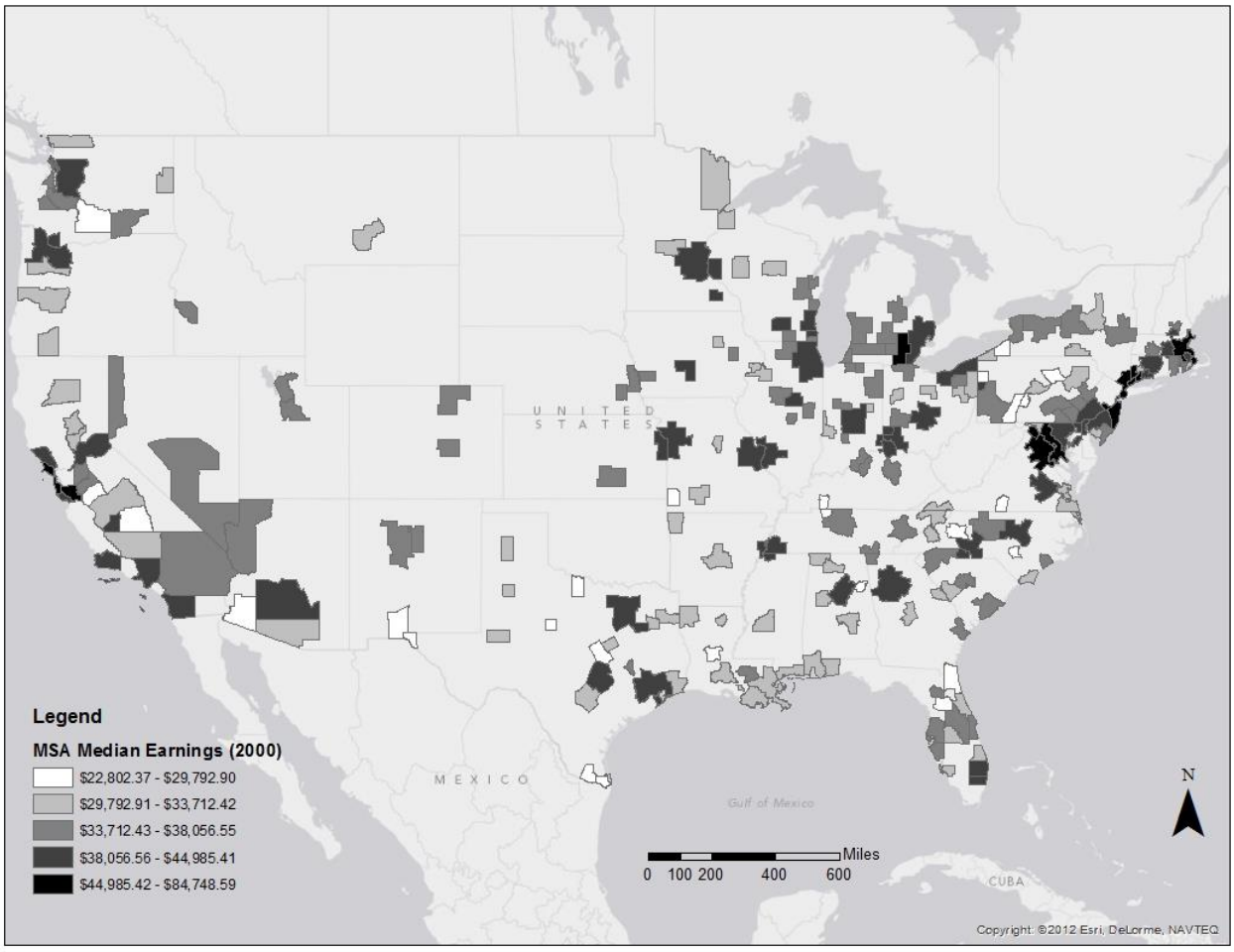

FIGURE 4.1 Median Earnings across MSA's (2000)

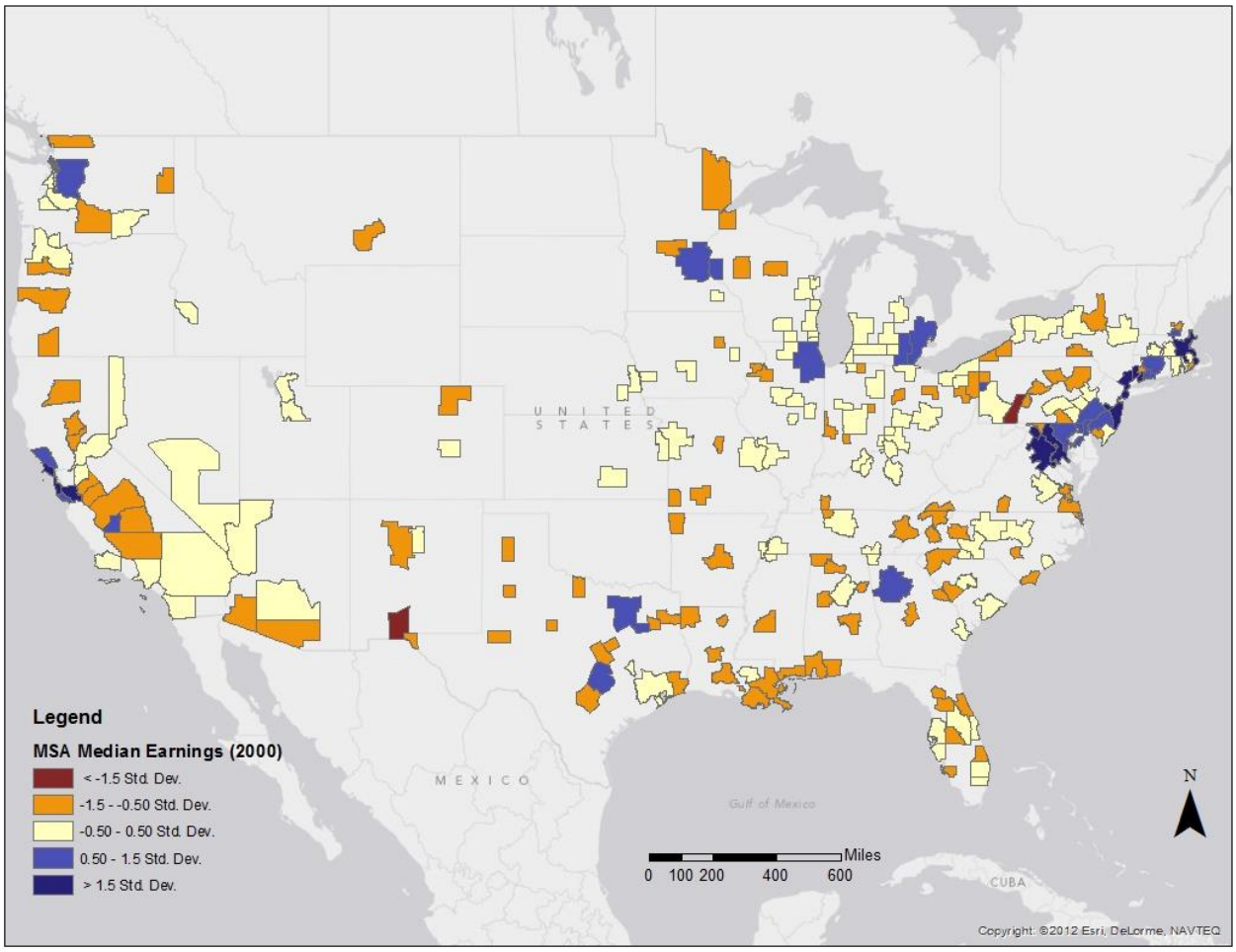

FIGURE 4.2 Median Earnings across MSA's by Standard Deviations (2000)

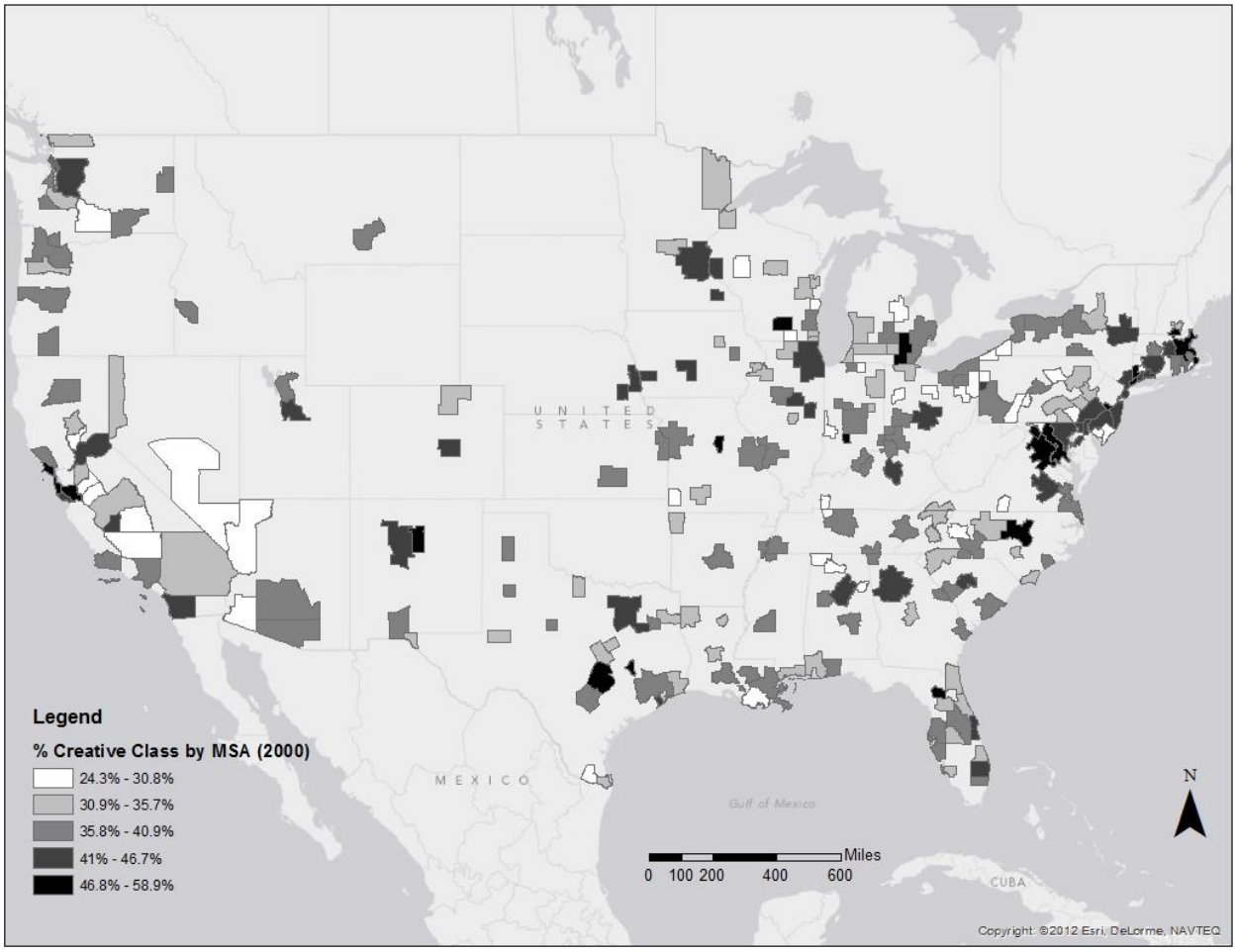

FIGURE 4.3 Percent Employed in Creative Class Occupations by MSA (2000)

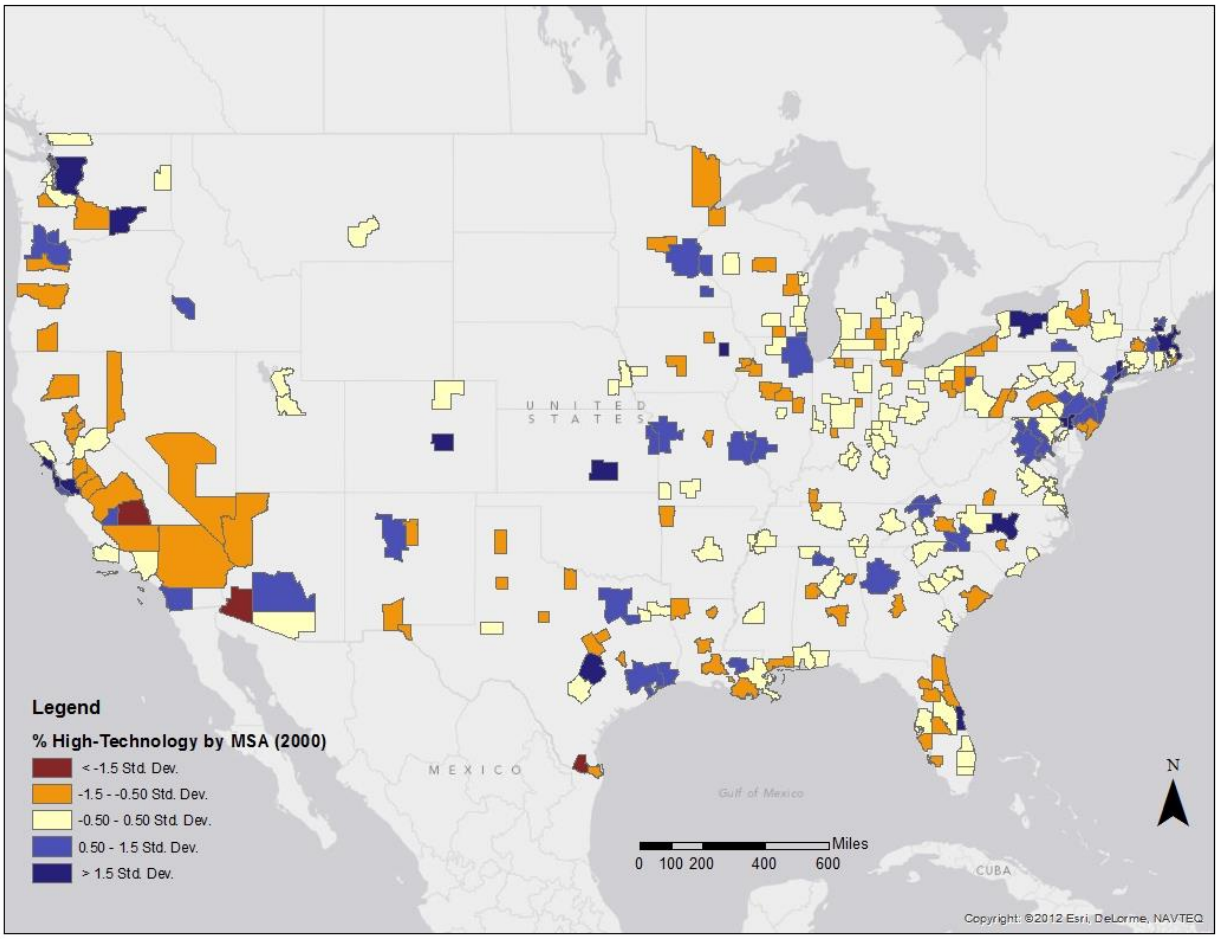

Figure 4.4 Percent Employed in High-Technology Industries by MSA, Standard Deviations (2000)

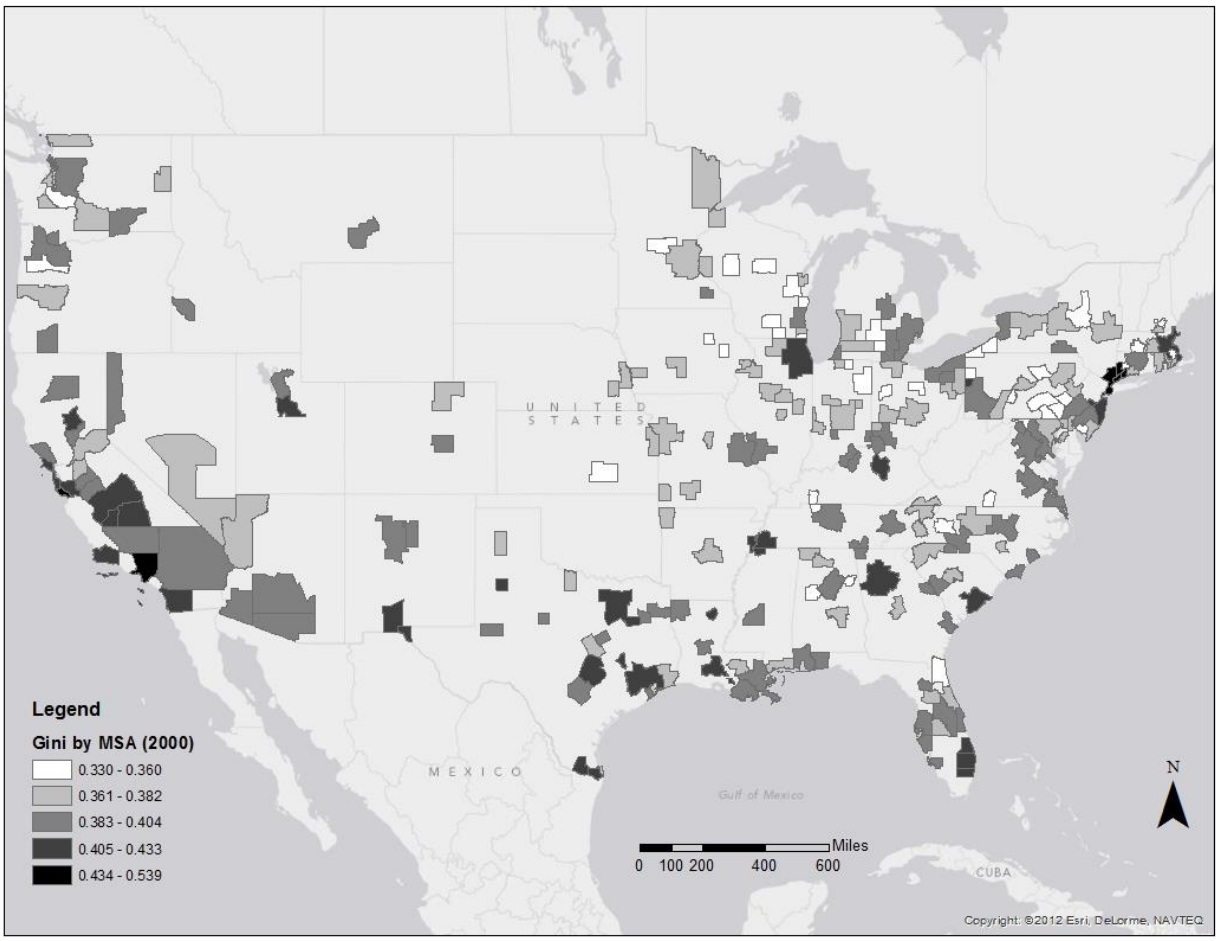

Figure 4.5 Gini Index by MSA (2000)

CHAPTER 5

EARNINGS AND INEQUALITY ACROSS MSA'S: CORRELATION ANALYSIS

Having established a descriptive understanding of the landscape of MSA-level inequality in the previous chapter, this chapter will examine associations between MSA-level characteristics. In this chapter, I will test the MSA-level hypotheses developed in Chapter 2. Each of these hypotheses refers to how MSA-level characteristics are expected to be associated to one another in the new urban economy. The analysis described in this chapter tests these hypotheses.

Tests of these hypotheses will provide evidence for how MSA's work as structures of the new urban economy. Chapter4 elaborated the ways in which MSA's vary by earnings, inequality, and presence of workers in the new economy. This chapter will examine some of the ways by which those MSA-level characteristics are related with each other.

Broadly, the analysis revealed substantial support for many, but not all, of the hypotheses elaborated in this chapter. At the MSA-level, new economy employment is found to be associated with median earnings and some indicators of inequality. As we will see, the story is a bit more complex for geographic mobility and for patterns of change over time.

5.1 TESTS OF EARNINGS HYPOTHESES

The first set of hypotheses tests how various MSA-level characteristics relate to median earnings. Hypothesis 1A argues that rates of educational attainment will be positively associated with earnings at the MSA-level. It should not come as a surprise

that strong support for this hypothesis was found. Tables are placed at the end of the chapter. As reported in Table 5.1, in 2000, the proportion of earners with at least a Bachelor's degree is strongly positively associated with MSA-level median earnings, with an *r* of 0.687 which is statistically significant at the .01 level. The proportion of workers with a degree beyond the Bachelor's is also strongly and positively associated with median earnings, with a correlation of .597 in 2000 (significant at the .01 level). This confirms that at that MSA-level, as the proportion of earners with at least a college degree increases, the median earnings increases across that MSA. This test functions to confirm the correlation between education and earnings functions at the MSA-level and gives us a measure of the strength of that correlation.

Hypothesis 1B examines the association between new economy employment and median earnings at the MSA-level. Recall that MSA-level indicators of the new economy used here are the proportion of workers in high-technology industries, the proportion of workers in creative class occupations, and the proportion of workers in super-creative core occupations. Examining the results of the correlation tests using each of these indicators, we find support for hypothesis two. Using the standard variable definitions, the proportion of workers employed in high-technology industries is found to have a strong, positive correlation with median earnings with a correlation of .669. Similarly, the correlation between the proportion of workers in the creative class and median earnings is found to be .665 and also statistically significant at the .01 level. This association is slightly less strong, but still present and significant, for the super creative core. Using definitions of these indicators that are comparable between 2000 and 1990, we see very similar results. These findings provide support for the second hypothesis. At the MSA-

level, the proportion of employment in both high-technology industries and creative class occupations is strongly associated with higher earnings in those MSA's.

Hypothesis 1C examines the association between the proportion of geographically mobile workers in a metropolitan area and median earnings. The results of the correlation tests of this hypothesis revealed, however, that there was not a statistically significant association between the proportion of workers who had relocated in the previous five years and median earnings in metropolitan areas. The result of the correlation test was a very weak and not statistically significant *r* of -.041. This may be because no relationship exists between geographic mobility and earnings at the MSA-level or it may be that the indicator does not reflect a relationship that does exist. Either way, this test does not demonstrate support for the third hypothesis.

5.2 INEQUALITY HYPOTHESES

The next set of hypotheses examined relationships between measures of educational attainment, new economy employment, and geographic mobility, and indicators of inequality at the MSA-level. Results of the correlation tests used to test these hypotheses are reported in Table 4.2.

Hypothesis 2A examines the association between rates of educational attainment and the indicators of inequality. These tests revealed varying results. The proportion of workers in an MSA with at least a college degree demonstrates a moderate-to-strong, positive, and statistically significant correlation with both the Gini coefficient and the 90/20 earnings ratio. At the same time, this proportion is negatively associated with low earner rates. In 2000, the proportion of earners in an MSA with at least a college degree has a .338 correlation with the 90/20 earnings ratio and a .523 correlation with the Gini coefficient, both of which were statistically significant at the .01 level. In contrast, the

proportion of workers with at least a college degree in each MSA has a moderately strong negative relationship with MSA-level low earner rates in 2000.

Using the proportion of workers with degrees beyond a college degree, we see very similar results. This measure of educational attainment had a .361 correlation with the 90/20 earnings ratio and a .487 correlation with the Gini coefficient, both statistically significant at the .01 level. The proportion of individuals in an MSA with a degree beyond the college degree has a correlation of -.252 with the low earner rate of employed individuals in the MSA.

From these results we can see that a higher MSA-level rate of educational attainment is associated with higher inequality when looking at employed workers in MSA's. This pattern is moderately strong when using the 90/20 earnings ratio as the indicator of inequality, but is particularly pronounced when measured by the Gini coefficient. At the same time, these higher rates of educational attainment are associated with reduced low earnerrates among those who are employed in those MSA's. For an individual MSA, having higher rates of educational attainment does seem to move employed workers out of poverty, but it is also associated with higher levels of overall inequality.

Next, we examine the tests of hypothesis 2B. These tests examine correlations between rates of new economy employment and these indicators of inequality. Using the standard definitions of high-technology industries and creative class occupations and the 2000 data, we find support for the fifth hypothesis. Rates of employment in high-technology industries is positively associated with both the 90/20 earnings ratio and the Gini coefficient (.247 and .338, respectively, both statistically significant at the .01 level). Rates of employment in the creative class demonstrate even stronger correlations with

both indicators of inequality (.345 and .559, respectively, both statistically significant at the .01 level). These correlations are more moderate for rates of employment in the super-creative core, but still moderately strong (.217 and .386 respectively), positive, and significant at the .01 level. Consistently, these correlations are stronger for rates of employment in the creative class than for rates of employment in high-technology industries.

Interestingly, while these measures of inequality are associated with rates of new economy employment, we see very different results for tests involving the low earner rate. Each of these indicators of the new economy demonstrate moderate to strong correlations with low earner rates at the MSA-level. The proportion of workers employed in high-technology industries is has a statistically significant correlation of -.427 with low earner rates, and the proportion of workers employed in the creative class also has a statistically significant and negative correlation with low earner rates, at -.287. For all of these tests, very similar results are seen when using the variable definitions which are comparable between 2000 and 1990.

These results suggest several things. First, these correlation tests lend support to hypothesis five in that rates of employment in the new economy is associated with higher levels of inequality as measured by the 90/20 earnings ratio and the Gini Coefficient. At the same time, rates of employment in the new economy are also associated with reduced low earner rates. So, among those workers who are employed in these MSA's, increases in new economy employment would seem to lift some of those workers out of poverty, but measures of overall inequality in these regions also increase.

Also, it should be noted that the correlations are higher for the Gini Coefficient than the 90/20 earnings ratio. As explained in Chapter 3, we can think of the Gini

Coefficient as an assessment of inequality with an eye towards the middle of the earnings distribution, while the 90/20 ratio measures inequality with a greater focus on how the earnings distribution is stretched by high-income earners. From this pattern, then, we may conclude rates of employment in the new economy is associated with greater inequality generally, but particularly, it is associated with income inequality due to having less middle-income earners in the region.

Hypothesis 2C examines correlations between rates of geographic mobility in MSA's with these same indicators of inequality. No statistically significant linear correlation is found between rates of geographic mobility and the 90/20earnings ratio. A weak positive correlation is found between rates of geographic mobility and the Gini coefficient, with a correlation of .170, statistically significant at the .05 level. A very comparable correlation is also found between rates of geographic mobility and low earner rates. This evidence is inconclusive in regards to the sixth hypothesis. There is some weak support for the argument that rates of geographic mobility are associated with higher inequality, but it is very weak and inconsistent support.

5.3 CHANGE OVER TIME

Hypothesis 3 examines whether those correlations tested in hypotheses one through six are stronger in 2000 than in 1990. To test this hypothesis, we will use the definitions for the new economy variables which are comparable between 2000 and 1990. Comparing the standard variables with the comparable variables, the results for all of these correlations were very similar in 2000, which should assure us that the comparable variable definitions will give meaningful results.

We can test this hypothesis for the first set of hypotheses by looking at Table 5.1. Here we see that the correlation tests between rates of education and new economy

employment were slightly stronger in 2000 than in 1990, with all of these correlations showing an increase in about .1 in the strength of the correlation. A Fisher Z transformation test was conducted for each of these. The Fisher Z transformation test makes it possible to determine if the difference in strength between two different correlation results from two independent samples is statistically significant (Fisher 1915; Howell, 2004). If we set the threshold at the .05 level for statistical significance, then a result of less than .05 would mean that the difference in strength between 1990 and 2000 is statistically significantly different. Using this metric, we can say that the impact of rates of educational attainment is significant stronger in 2000 than in 1990, as the results of the Fisher Z test are .021 and .036 for rates of at least a Bachelor's degree, and rates of attainment of more than a Bachelor's degree, respectively.

The results for this test with rates of new economy employment are more complex. The impact of the super-creative core is not significantly different across time. Rates of employment in both high-technology industries and creative class occupations show a result near the fringe of statistical significance. The impact of employment in high-technology industries on median earnings is stronger in 2000 than in 1990, but the Fisher Z transformation result shows that that difference has more than a 6-in-100 chance of having happened randomly. The difference in the strength of the correlation between rates of employment in the creative class and median earnings, however, is shown to be statistically significant, with a Fisher Z transformation result of .043, below the .05 threshold.

So, here we do find some support for hypothesis 3. Correlations between educational attainment and earnings are demonstrated to have grown stronger over time,

and the correlation between rates of creative class employment and earnings has grown over the decade from 1990 to 2000.

Moving to Table 5.2, we can test the hypothesis 3 in reference to hypotheses 2A through 2C. While Table 5.1 revealed that the correlations tested there had similar, but slightly weaker, results, Table 5.2 shows that many of the correlations found to exist in 2000 by these tests did not exist in 1990. For example, in 1990 there is no statistically significant relationship between educational attainment and the 90/20 earnings ratio. The correlation between educational attainment and the Gini coefficient is found to exist in 1990. But, the Fisher Z test confirms that all of these correlations were significantly stronger in 2000 than in 1990. In contrast, no evidence is found that the negative association between rates of educational attainment and low earner rates differed in 2000 from 1990.

The most interesting point at which to test hypothesis 3, though, is in regards to hypothesis 2B, and the expectation of a increasingly strong relationship between rates of employment in the new economy and the 90/20 earnings ratio and the Gini coefficient. As table 5.2 reveals, the correlations between rates of employment in high-technology industries and creative class occupations was significantly stronger in 2000 than in 1990. In fact, rates of employment in high-technology industries was not associated to the 90/20 earnings ratio or the Gini coefficient in 1990. The proportion of workers employed in creative class occupations was associated with the Gini coefficient in 1990 (with a correlation of .323), but, even here the correlation was statistically significant stronger in 2000 than in 1990. These data points lend substantial support to hypothesis 3.

The results are different for low earner rates, however, as the strength of the correlations between rates of employment in these sectors and low earner rates was not

found to be different in 1990 than in 2000. Also, while rates of geographic mobility were not strongly associated with inequality in 2000, we do find that it was associated with all three indicators of inequality in 1990. However, we note that this change over time was only significantly different for the correlation between the rate of geographic mobility and the 90/20 earnings ratio.

5.4 CORRELATIONS WITH MSA-LEVEL SECTORAL CHANGE

Given the support found for hypothesis 3, we might expect that as cities experience increasing rates of employment in the new economy sectors, then those cities should see higher earnings and increased inequality. Hypotheses 4A and 4B examine this expectation, testing whether changes in rates of employment in the new economy over time are associated with higher earnings and higher inequality in those MSA's. Table 5.3 reports the results of a series of correlation tests which examined the potential associations between changes in rates of employment in new economy sectors between 1990 and 2000 in MSA's and earnings and inequality in those MSA's.

I find that positive and significant correlations exist between change in proportions of workers employed in high-technology, creative class, and super-creative core occupations and median earnings. All three of these correlations are statistically significant (at the .01 level), and range from .280, to .249, to .205, respectively. Of these measures, change in the proportion of workers employed in high-technology industries is the most strongly associated with median earnings. These findings lend support to hypothesis 4A.

Moving further down Table 5.3, we see less support for hypothesis 4B. Among all of the correlations tested between change in rates of new economy employment and the 90/20earnings ratio and the Gini coefficient, none of these were found to have a linear

correlation. Changes in rates of new economy employment are found to have negative correlations with low earner rates, though. Again, rates of high-technology industry employment are the strongest correlation, in this instance with a correlation of -.200. These findings do not provide support for hypotheses 4A and 4B.

In examining change in rates of employment in these sectors over time, these tests demonstrate that increases in rates of employment in these industries is associated with higher median earnings, but not with high levels of inequality, between 1990 and 2000. These increases are also found to be associated with lower low earner rates among those who are employed in these MSA's. Change in rates of employment in high-technology industries is found to be the strongest among these correlations.

5.5 DISCUSSION

In the results detailed above there is strong support for many of the hypotheses, but little or no support for others. Employment in new economy sectors and higher rates of educational attainment are both associated with increases in median earnings, and also increases in measures of inequality. Recall from Chapter 3 that the 90 to 20 earnings ratio is more sensitive to inequality caused by higher-income earners and the Gini coefficient is more sensitive to inequality caused by fluctuations among middle-income earners. With this in mind, it is interesting to note that growth in the new economy sectors is more strongly associated with the Gini coefficient than the earnings ratio. Rather than driving up inequality by stretching out the earnings distributions of labor markets, new economy growth seems to increase inequality by having a bi-modal impact on the earnings distribution. This supports Florida's argument that inequality in the new economy is caused by interdependence between high-paying new economy jobs and lower paying service class jobs, and it aligns with expectations from the new structuralists.

While inequality appears to be positively associated with these factors, low earner rates are found to be negatively associated with the same factors. This suggests that while inequality is growing, it grows despite a reduction in the low earner rate. The reader should keep in mind, though, that these low earner rates are based on a sample of employed individuals only. So, growth in new economy sectors moves employed people out of poverty, but we have no evidence here for what it means for those who are unemployed or working in informal economies.

Little evidence is found that rates of geographic mobility play the expected role. This may be because the variable used to measure geographic mobility is less than ideal. This variable is based on a variable which only measures if a person lived in the same MSA five years prior, so it is a very limited window on geographic mobility.

This examination does find strong evidence that these relationships are growing stronger over time. This suggests that the new economy is becoming a more important force in urban regions. While this does not lend direct support to Florida's causal argument that the creative class is the economic drivers in the modern economy, it does suggest that the presence of the creative class is, over time, becoming a more important factor in earnings and inequality at the metropolitan area level.

These findings suggest important new questions, especially about how these structural characteristics impact individual earnings. These questions will be explored in Chapter 6.

Table 5.1 MSA-Level Correlation Analyses Results for Median Earnings

	2000Γ	2000+	1990+	Fisher Z Test
Education				
% Bachelors or More & Median Earnings	-	.687**	.553**	.021
% More than Bachelors & Median Earnings	-	.597**	.454**	.036
New Economy				
% High-Tech & Median Earnings	.669**	.651**	.538**	.064
% Creative Class & Median Earnings	.665**	.661**	.539**	.043
% Super-Creative Core & Median Earnings	.502**	.384**	.279**	.215
Geographic Mobility				
% Geographically Mobile & Median Earnings	-	-.041	-.052	.905

Γ using the 2000 standard definitions, rather than comparable to 1990 definitions
+Using the 1990-comparable variables
* Correlation is significant at the .05 level (2-tailed)
**Correlation is significant at the .01 level (2-tailed)

Table 5.2 MSA-Level Correlation Analyses Results for Inequality Indicators

	2000Γ	2000+	1990+	Fisher Z Test
Education				
% Bachelors or More & 90/20	-	.338**	.048	.001
% Bachelors or More & Gini	-	.523**	.265**	.001
% Bachelors or More & % Low Earner	-	-.342**	-.251**	.293
% More than Bachelors & 90/20	-	.361**	.041	.000
% More than Bachelors & Gini	-	.487**	.205**	.001
% More than Bachelors & % Low Earner	-	-.252**	-.197**	.542
New Economy				
% High-Tech & 90/20	.247**	.269**	-.049	.000
% High-Tech & Gini	.338**	.353**	.033	.000
% High-Tech & % Low Earner	-.427**	-.386**	-.304**	.326
% Creative Class & 90/20	.345**	.381**	.083	.000
% Creative Class & Gini	.559**	.584**	.323**	.000
% Creative Class & Low Earner	-.287**	-.267**	-.214**	.555
% Super-Creative Core & 90/20	.217**	.227**	.300**	.407
% Super-Creative Core & Gini	.386**	.380**	.320**	.472
% Super-Creative Core & Low Earner	-.131*	-.017	.045	.516
Geographic Mobility				
% Geographically Mobile & 90/20	-	-.010	.227**	.011
% Geographically Mobile & Gini	-	.170*	.316**	.101
% Geographically Mobile & % Low Earner		.156*	.139*	.857

Γ using the 2000 standard definitions, rather than comparable to 1990 definitions
+Using the 1990-comparable variables
* Correlation is significant at the .05 level (2-tailed)
**Correlation is significant at the .01 level (2-tailed)

Table 5.3 MSA-Level Correlation Analyses Results for Change over time

	r
Earnings	
Change in % High-Tech & Median Earnings	.280**
Change in % Creative Class & Median Earnings	.249**
Change in % Super-Creative Core & Median Earnings	.205**
Inequality	
Change in % High-Tech & 90/20	.075
Change in % High-Tech & Gini	.101
Change in % High-Tech & % Low Earner	-.200**
Change in % Creative Class & 90/20	.106
Change in % Creative Class & Gini	.068
Change in % Creative Class & % Low Earner	-.185**
Change in % Super-Creative Core & 90/20	-.020
Change in % Super-Creative Core & Gini	-.006
Change in % Super-Creative Core & % Low Earner	-.152*

CHAPTER 6

INDIVIDUAL WORKERS IN AN UNEQUAL LANDSCAPE: VARIATIONS IN EARNINGS ACROSS MSAS

This chapter will examine what factors contribute to how an individual's earnings vary across MSA's. Human capital, measured here through educational, as well as employment in high-technology industries, and employment in creative class occupations has a positive relationship with individual earnings. These relationships vary across metropolitan areas based on characteristics of those metropolitan areas. This chapter will examine how the impact of individual educational attainment varies across MSA's based on those characteristics. The hypotheses driving this investigation were delineated in Chapter 2 and the data and methods of analysis were elaborated in Chapter 3.

6.1 ANALYSIS AND FINDINGS

Because the distribution of earnings in the sample was skewed, the following models were estimated using the natural log of earnings. Each of the models discussed in this paper model the natural log of earnings. An unconditional model, with no predictors included, was created for the outcome variable. This model revealed that the earnings differed significantly between MSA's, which was indicated by the individual-level model intercept having a p-value of <.001. For this unconditional model, the interclass correlation coefficient reports that 2.6% of the variation in earnings can be explained at the aggregate level. By subtracting this value from 100%, this calculation also implies that 97.4% of the variation in earnings may be explained by individual-level factors. Individual characteristics are a major predictor of individual earnings, but some processes

impacting individual earnings do operate through the MSA-level, and the focus in this examination is on how the impact of individual-level factors are impact by characteristics of the individual's MSA. The reliability of the unconditional model was .991which is particularly high.

Next, an analysis was conducted to determine a strong individual-level model. First, a model was created allowing each of the individual-level factors to vary randomly across MSA's. All of the factors except employment in the government were significant at the $p<.001$ level, which means it could be of interest to continue to allow all of these variables to vary randomly in subsequent models. Because the focus of this examination is on educational attainment, employment in high-technology industries, and employment in creative class occupations, the control variable factors were included as fixed effects in subsequent models in order to avoid jeopardizing the stability of subsequent models. With the individual-level factors set, a revised individual-level model was estimated with only the education and employment sector variables varying randomly across MSA's. Allowing these three educational attainment factors to vary randomly, it is possible later to look for explanations for why and how these factors vary randomly across MSA's by examining the cross-level interaction effects between these factors and the MSA-level predictors. In this final level-1 model, the reliability estimates were strong (> .75) for all three randomly varying factors. In this model the coefficients for nearly all of the factors in the model were significant at the $p <.001$ level (excluding only government employment). The results of the final level-1 model are reported in Table 6.1, and all tables in this chapter are placed at the end of the chapter.

In this model, each of the factors considered are significantly associated with individual earnings, except for employment in government. As expected, the relationship

between individual educational attainment, high-technology employment, and creative class employment, and earnings varies significantly across MSA's. Factors such as age, being married, having children, along with weeks and hours worked are all positively associated with earnings as expected from theory and previous work (Huffman and Cohen, 2004). Being geographically mobile (in this sample, this means having relocated within the previous five years) has a weak but significant positive relationship on individual earnings. Meanwhile, controlling for all other factors, being a minority race is negatively associated with earnings in this model.

The next step in this study then, is to estimate both the individual-level and MSA-level main effects. To do this, a level-2 (or MSA-level) model was estimated with all individual-level factors as fixed effects except for the educational attainment, high-technology employment, and creative class employment variable, which were found to vary strongly across MSA's, and the several MSA-level factors of interest. This model is also reported in Table 6.1.

In this model with both individual- and MSA-level factors, several MSA-level factors were found to have statistically significant impacts on individual earnings. The percentage of workers in an MSA with at least a college degree, as well as the percentage of workers that were married, had children, employed by the government or non-profit organization, low earner, or in the creative class, all have a statistically significant impact on individual earnings. The percentage of Blacks in the workforce did not have a significant impact on earnings, but the percentage of Hispanics or other race individuals did have a statistically significant impact. Comparing the coefficients of individual-level factors between this model and the final level-1 model, there is very little change, but the standard errors on nearly every factor improved in this model.

Because the major research endeavor in this study is explaining the across-MSA variation of the impact of education on individual's earnings, the next model that examines individual and MSA level factors as well as cross-level interactions. This model includes all of the previously discussed individual-level and MSA-level variables, but also includes cross-level interactions of the two MSA-level variables on the individual-level factors which varied significantly across MSA's. The results of this model are reported in Table 6.2.

In this final model, all of the non-interacted individual level and MSA-level factors report little change in coefficients or significance from Models 1 and 2. The direction of the effect of factors of interest are as expected, with age, geographic mobility, being male, married, and having children, as well as being a government employee all being positively associated with earnings. Conversely, being non-white is associated lower earnings, as is working less than 40 hours per week, less than half of the weeks that year, being a non-profit employee. At the MSA level, the strongest impact on individual earnings is the percentage of low earning workers. The percentage of Black workers is not statistically significant, but the proportion of Hispanic and other race workers is significant. The Gini coefficient does not have a significant impact, nor does the percentage of high-technology industries workers have a direct impact on individual earnings. The proportion of workers with children does have a significant and positive impact on individual earnings, but the proportion of married individuals in an MSA has a significant negative impact on individual earnings. Perhaps this second point corresponds with Florida (2012) and Moretti's (2012) arguments that the creative class or innovation workers rely on social interaction to stimulate their innovation, and as the proportion of

workers in an MSA who are married increases, that sort of social interaction is suppressed.

First, let's consider whether this final model lends support to the hypotheses delineated in Chapter 2. The first set of hypotheses tested in this chapter's analysis examines the individual-level. Hypothesis 5A expected that individual earnings would vary across MSA's in a statistically significant way, and the models elaborated here demonstrate substantial support for that hypothesis. Hypothesis 5B contended that holding a college degree or more would be associated with increased individual earnings, and the models elaborated here also support this hypothesis. Specifically, holding at least a college degree is associated with a 29% increase in individual earnings, controlling for all other factors. Hypothesis 5C anticipated that being employed in a high-technology industry would be associated with increased individual earnings, and support for this was also found. Being employed in a high-technology industry is associated with a 15% increase in earnings, controlling for all other factors. Hypothesis 5D expected that being employed in a creative class occupation would be associated with increased individual earnings, and it is, as the models show a 29% increase in earnings being associated with having a job in this occupational category.

Next, let's look at the tests for support of the set of hypothesis that examine the MSA-level. While each of the independent variables investigated here is considered in the examination of cross-level interaction effects, these hypotheses each anticipate that these factors will also function as predictors of earning on their own at the MSA level. Hypothesis 6A expects that an increase in the percentage of workers with a college degree in a worker's MSA will be associated with an increase in their individual earnings. As we see from the final model in Table 6.2, each percentage increase in the

proportion of workers with at least a Bachelor's degree is associated with a .61% increase in individual earnings, controlling for all other factors. Hypothesis 6B argued that an increase in the percentage of workers employed in high-technology industries would be associated with an increase in their individual earnings. Support was not found for this hypothesis, as the percentage of workers employed in high-technology industries did not have a statistically significant association with individual earnings in the final model. Hypothesis 6C expects that an increase in the percentage of workers employed in creative class occupations in a worker's MSA will be associated with an increase in their individual earnings. Support was found for this hypothesis, as each percentage increase in the proportion of workers employed in creative class occupations in a person's MSA is associated with a .34% increase in earnings. This finding was only marginally significant, though, at the .05 level.

Of particular interest in this final model, though, is what we may learn from the examination of the cross-level interactions effects in this model. The effects of these cross-level interactions are predicted by hypotheses 7A through 9C. Recall that in earlier models the effect of having at least a Bachelor's degree (compared to having less than a Bachelor's degree) on earnings is positive, and the effect of this variable was found to vary randomly across MSA's. This is also true for the effect on individual earnings of being employed in high-technology industries and being employed in creative class occupations. The cross-level interaction model is used to investigate how the effect of each of these three variables earnings changes across MSA's, based on the MSA-level characteristics that are interacted with them.

First, we examine the cross-level interactions on the individual holding a bachelor's degree or more. In this final model, holding at least a Bachelor's degree is

associated with a 29% increase in earnings, for an individual, but that relationship changes based on some MSA-level characteristics. Hypothesis 7A expects that the proportion of workers with a college degree in a worker's MSA will have a negative effect on the relationship between individual educational attainment and earnings. From the final model, we see that as the proportion of individuals holding at least a Bachelor's degree increases the value of an individual's college degree decreases. This supports hypothesis 7A. Specifically, each percentage increase in the proportion of workers holding at least a Bachelor's degree in a worker's MSA reduces the impact of holding at least a college degree on their earnings of .49%. Hypothesis 7B expects that the proportion of workers employed in high-technology industries in a worker's MSA reduces the positive relationship between individual educational attainment and earnings. In this final model, the proportion of people employed in high-technology industries does not have a significant cross-level impact on the relationship between an individual's educational attainment and their earnings, so no support is found for hypothesis nine. Hypothesis 7C anticipates that the proportion of workers employed in creative class occupations in a worker's MSA reduces the relationship between individual educational attainment and earnings. The final model shows that as the proportion of people employed in creative class occupations increases, the value to an individual of their college degree increases. Specifically, each percentage increase in the proportion of workers employed in creative class occupations in a worker's MSA is associated with an increase in the impact of holding at least a college degree on their earnings of .48%. So, here we see evidence of the queuing effect – a higher education becomes less valuable to a worker as they compete in a labor market with an increasing proportion of workers with higher educations. This supports hypothesis 7C and the contention that the proportion of

workers employed in the creative class has a meaningful and positive impact on individual earnings.

Next, I investigate the cross-level interactions on the individual-level relationship between being employed in high-technology industries and individual earnings. Examining the cross-level model, I find that for an individual, being employed in a high-technology industry is associated with a 15% increase in earnings, but that relationship varies based on the MSA-level characteristics which interact with it. Hypothesis 8A contends that the proportion of workers with a college degree in a worker's MSA will have a negative effect on the relationship between being employed in a high-technology industry and earnings. As the proportion of individuals holding at least a Bachelor's degree increases in that worker's MSA, the value of being employed in a high-technology industry decreases. Specifically, each percentage increase in the proportion of workers holding at least a Bachelor's degree in a worker's MSA is associated with a decrease in the impact of being employed in a high-technology industry on their earnings of .82%. This provides support for hypothesis 8A.

What about the cross-level impact of rates of employment in high-technology industries on the relationship between an individual's employment in that industry and their earnings? Hypothesis 8B expects that the proportion of workers employed in high-technology industries in a worker's MSA will strengthen the relationship between being employed in a high-technology industry and earnings. From this model, we observe that as the proportion of individuals employed in high-technology industries in that worker's MSA increases, the value of being employed in a high-technology industry also increases. Specifically, each percentage increase in the proportion of workers employed in a high-technology industry in a worker's MSA is associated with an increase in the

impact of being employed in a high-technology industry on their earnings of .69%. This provides direct support for hypothesis 8B and Moretti's (2012) argument on the "clustering effect" of innovation workers, if they are understood to be high-technology workers.

Hypothesis 8C expects that the proportion of workers employed in creative class occupations in a worker's MSA will have a positive effect on the relationship between being employed in high-technology industries and earnings. I also find evidence supporting this hypothesis, because in the final model we see that as the proportion of people employed in creative class occupations increases, the value to an individual of being employed in a high-technology industry also increases. Specifically, each percentage increase in the proportion of workers employed in creative class occupations in a worker's MSA is associated with a .98% increase in the impact of being employed in a high-technology industry on earnings. Here there is evidence of what we might call a "spillover effect" – if a person works in a high-technology industry, their earnings are improved by increases in rates of employment in both high-technology industries and in creative class occupations.

As for the next set of cross-level interactions, we see that for an individual, being employed in a creative class occupation is associated with a 29% increase in earnings. But does this relationship vary based on the cross-level impacts of MSA-level characteristics? Examining the cross-level interactions, we find that this relationship is not significantly modified by any of these three cross-level interactions. Therefore, we find no evidence in support of hypotheses 9A, 9B, or 9C. The proportion of individuals with a at least a college degree, employed in high-technology industries, or employed in creative class occupations, does not have a significant cross-level impact on the increased

earnings an individual receives in working in a creative class occupation. For an individual, the value of working in a creative class occupation does not change based on these MSA-level characteristics.

Examining the final cross-level model, I found support for most of the hypotheses delineated in this chapter. Individual educational attainment and employment in either high-technology industries or creative class occupations are all associated with increased earnings. Also, the relationships between an individual's educational attainment and their earnings, and employment in high-technology industries and earnings, are both significantly impacted by cross-level factors. The impact of being employed in a creative class occupation on earnings, however, is not impacted by these cross-level factors.

In this study, estimated models of earnings demonstrate that the value of a higher degree, and employment in either high-technology industries or creative class occupations, varies significantly across MSA's. In working to account for this variation, this investigation found several things. First, the positive association between higher education and earnings is strengthened as the proportion of individuals employed in the creative class, but not in high-technology industries, increases. At the same time, the positive association between education attainment and earnings is reduced by increasing rates of educational attainment in a worker's MSA. Next, the positive association between employment in high-technology industries and earnings is strengthened by both the proportion of workers working in high-technology industries and creative class occupations, but it is reduced by the proportion of workers with at least a college degree. Finally, while there is a positive relationship between an individual's employment in a creative class occupation and their earnings, this relationship is not impacted by any of these three cross-level factors.

These findings support both theoretical arguments explored in this chapter. A queuing effect exists in the new urban economy, where the value of an individual's higher education is reduced by the presence of other workers with a higher education in their MSA. At the same time, clustering effects do emerge. Moretti's (2012) argument for a clustering effect finds support as workers in high-technology occupations see increased earnings as the proportion of creative class and high-technology workers increases in their MSA's. While Florida (2002) was one of the first to argue that in this new economy, where you work matters more, not less, this evidence shows that for those in the creative class, the presence of creative class workers in their MSA has no discernible effect on their own earnings.

TABLE 6.1. Models 1 and 2: Level-1 and Level-1 and 2 Models of Earnings (Ln)

	Model 1 Individual-Level		Model 2 Individual and MSA Level	
Level-1 Factors	Coefficient	se	Coefficient	Se
Intercept	10.17**	0.01	10.17**	0.00
Education Variables				
Bachelor's Degree or More[a]	*0.29***	*0.00*	*0.29***	*0.00*
Work Variables				
High-Technology Industry	*0.15***	*0.01*	*0.15***	*0.01*
Creative Class Occupation	*0.29***	*0.00*	*0.29***	*0.00*
Worked less than 40 hrs/week	-0.68**	0.02	-0.68**	0.02
Worked 26 weeks or less	-1.27**	0.01	-1.27**	0.01
Government Employee[b]	0.02	0.01	0.03	0.01
Non-profit Employee[b]	-0.10**	0.00	-0.10	0.00
Geographically Mobile	0.02**	0.00	-0.04**	0.00
Race[c]				
Black	-0.12**	0.01	-0.12**	0.01
Hispanic	-0.21**	0.02	-0.28**	0.02
Other	-0.13**	0.02	-0.21**	0.01
Age	0.01**	0.00	0.01**	0.00
Male	0.29**	0.00	0.29**	0.01
Family Variables				
Married	0.08**	0.00	0.08**	0.00
One or More Children in Home	0.06**	0.00	0.06**	0.00
Level-2 Factors	Coefficient	se	Coefficient	Se
Percent Bachelor's or More	-	-	0.62**	0.14
Percent High-Technology Industry	-	-	0.09	0.10
Percent Creative Class Occupation	-	-	0.33	0.20
Percent Geographically Mobile	-	-	-0.17	0.09
Percent Low Earner	-	-	-5.28**	0.48
Gini Coefficient	-	-	0.45	0.25
Percent Employed in non-profit	-	-	-0.53*	0.17
Percent Employed in Government	-	-	-0.31*	0.11
Percent Married	-	-	-0.68**	0.16
Percent One or More Children	-	-	0.85**	0.16
Percent Black	-	-	0.07	0.05
Percent Hispanic	-	-	0.15	0.06
Percent Other Race	-	-	0.49**	0.15

TABLE 6.1 CONTINUED BELOW

TABLE 6.1 CONTINUED

Variance Components	Level-1 Model		Level-1 and -2 Model	
Random Effect	Variance Component	Df	Variance Component	Df
Intercept	0.02002**	224	0.00204**	210
Bachelor's or More	0.00214**	224	0.00207**	224
High-Technology Industry	0.00393**	224	0.00394**	224
Creative Class Occupation	0.00143**	224	0.00143**	224

Estimation with Robust Standard Errors reported
[a] Coefficients in italics vary randomly across MSA's.
[b] reference category is employed in private sector
[c] reference category is white, non-Hispanic
** p-value < 0.001
*p-value <0.01

Table 6.2. Model 3: Cross-Level Model of Earnings (Ln)

Cross-Level Interactions	Coefficient	Se
Bachelor's Degree or More	0.29**	0.00
by MSA % Bachelor's or More	-0.49*	0.15
by MSA Percent High-Tech	0.07	0.09
by MSA Percent Creative Class	0.48*	0.17
High-Technology Industry	0.15**	0.01
by MSA % Bachelor's or More	-0.82**	0.18
by MSA Percent High-Tech	0.69**	0.13
by MSA Percent Creative Class	0.98**	0.20
Creative Class Occupation	0.29**	0.00
by MSA % Bachelor's or More	0.08	0.14
by MSA Percent High-Tech	0.06	0.08
by MSA Percent Creative Class	0.16	0.17
Individual-Level Factors	**Coefficient**	**Se**
Work Variables		
Worked less than 40 hrs/week	-0.68**	0.02
Worked 26 weeks or less	-1.27**	0.00
Government Employee[a]	0.02	0.01
Non-profit Employee[a]	-0.10**	0.01
Geographically Mobile	0.02**	0.02
Race[b]		
Black	-0.12**	0.00
Hispanic	-0.28**	0.02
Other	-0.21**	0.02
Age	0.04**	0.00
Male	0.29**	0.01
Family Variables		
Married	0.08**	0.00
One or More Children in Home	0.06**	0.00
MSA-Level Factors	**Coefficient**	**se[a]**
Percent Bachelor's or More	0.61**	0.14
Percent High-Technology	0.05	0.09
Percent Creative Class	0.34	0.20
Percent Geographically Mobile	-0.17	0.09
Percent Low Earner	-5.31**	0.48
Gini Coefficient	0.46	0.00
Percent Employed in non-profit	-0.53*	0.17
Percent Employed in Government	-0.32*	0.11
Percent Married	-0.68**	0.16
Percent One or More Children	0.85**	0.16
Percent Black	0.07	0.05
Percent Hispanic	0.15	0.06
Percent Other Race	0.49**	0.15

TABLE 6.2 CONTINUED BELOW

TABLE 6.2 CONTINUED

Variance Components	Cross-Level Model	
Random Effect	Variance Component	Df
Intercept	0.00203**	210
Bachelor's Degree or More	0.00207**	221
Creative Class Occupations	0.00114**	221
High-Technology Industries	0.00250**	221

Robust Standard Errors reported
[a] reference category is employed in private sector
[b] reference category is white, non-Hispanic
** p-value < 0.001
*p-value <0.01

CHAPTER 7

CONCLUSION

The rise of the new urban economy has been associated with dramatic changes for earnings opportunities for workers in regional labor markets. These changes have meant increased inequality both between MSA's and within MSA's. MSA's with higher rates of employment in new economy sectors see higher earnings, and increased inequality. For wage earning individuals in this uneven geography, their earnings are shaped not only by their own characteristics, but also by characteristics of their MSA.

In this new urban economy, the social structures of place and inequality emerge as major factors in determining an individual's earnings opportunities. One of the major contributions of the scholars of the new urban economy is a renewed emphasis on how social structures shape individual opportunity. While educational attainment has emerged as a strong factor in individual earnings, social structures including the characteristics of the region that a person works in area also major factors in shaping a worker's opportunities.

In Chapter 4 we saw how both inequality in earnings within MSA's and inequality in median earnings between MSA's had grown in the decade from 1990 to 2000. We also saw that inequality between MSA's in the proportions of workers employed in new economy industries and occupations had grown during this decade. With these structural shifts taking place, of course these structures will exert some influence over individual earning opportunities.

In Chapter 5 we saw much evidence supporting hypotheses derived from the new urban economy literature about how MSA-level characteristics are associated. For MSA's, the proportion of workers employed in new economy sectors is associated with both higher earnings and with increases in inequality. Increasing presence of new economy employment does seem to reduce low earner rates as it lifts employed workers out of poverty. Even in cities with high proportions of new economy employment, though, workers at the bottom of the earnings distribution, however, find themselves in increasingly unequal MSA's. As labor markets see rates of employment in new economy sectors increase, the structure of their employment opportunities are becoming more bi-modal. Even among those who are finding work, there is a division between those with "good" jobs in the new economy, and those who are working in (typically) service sector jobs supporting the growing sectors.

Reflecting on the results of the final cross-level model in the previous chapter, this study finds support for many of the hypotheses delineated for this portion of the study as well. I found that individual educational attainment and employment in either high-technology industries or creative class occupations are all associated with increased earnings. We also see that the relationships between an individual's educational attainment and their earnings, and employment in high-technology industries and earnings, are both significantly impacted by cross-level factors. The impact of being employed in a creative class occupation on earnings, however, is not impacted by these cross-level factors.

These findings support the argument that the value of a higher degree towards improving an individual's earnings varies significantly based on the characteristics of

labor market in which the individual is working. The same is true for the value of working in a high-technology industry.

What is interesting here is that we see strong, consistent evidence in support of queuing theory. Competing for work in labor markets where many other workers have a higher degree, suppresses the impact of an individual's higher degree on their earnings. This suggests that even in an innovation economy, laws of suppy and demand, or the queuing effect, will cause a reduction in the value of skills as a result of competition among fellow skilled workers.. This also suggests that while clustering effects may be real (more on this below), the clustering effect does not work through the clustering of highly educated workers. This evidence should not suggest to readers, however, that educational attainment does not play an important role in an individual's earnings. The opposite is the case. An individual's educational attainment does play a very large role in an individual's earnings. Especially in this new urban economy, increasing your educational attainment is one of the most direct means by which to increase your earnings.

What is the role of employment in high-technology industries? For an individual, being employed in the high-technology industry is associated with higher earnings. But also, working in an MSA with a higher proportion of workers employed in high-technology industries also increases your earnings. Here we see evidence for Moretti's (2012) "clustering effect." While the strength of this relationship is reduced as the proportion of college educated workers increases, the higher the proportion of workers in high-technology industries in your MSA, the higher your earnings are likely to be. So, employment in high-technology industries is a driver of higher earnings.

Employment in the creative class also plays an interesting role. Being employed in the creative class is associated with higher earnings. This relationship is not impacted by the cross-level effects examined here. Rates of employment in the creative class, however, do enhance the positive relationship between both individual education attainment and earnings and individual employment in high-technology industries and earnings. From this perspective we see that Florida gets at least part of the argument about the creative class correct – individuals with a college degree and individuals working in high-technology industries all benefit when there are more creative class workers around. Unfortunately for creative class members, they would not see their earnings increase by increasing the numbers of their class's ranks in their local MSA.

This study also demonstrates how both the high-technology industry employment and creative class occupation employment are independently useful indicators of the new urban economy. As Florida (2012) goes at length to demonstrate, the creative class is not a monolith. It is comprised of people working in a variety of occupations, with a wide range of training and skills, and with a wide range of earnings. Despite the diversity of its membership, though, MSA-level rates of employment in this class of occupations is highly correlated with MSA-level indicators of inequality. But the creative class is not the only useful measure of the new economy, as the high-technology industry employment measures applied in this study demonstrate equally interesting patterns. Both categories function independently as structural forces in local MSA's. While the positive impact on individual earnings from employment in the creative class is not altered by the proportion of workers in the creative class or in high-technology industries in their MSA, the positive impact on an individual earnings associated with being employed in a high-

technology industry is increased as rates of employment in creative class occupations and high-technology industries increase in their MSA.

In this new economy, the characteristics of workers' MSAs unequally structure earnings opportunities. As the rate of employment in new economy sectors increases in a worker's MSA, their earnings may be expected to increase. These patterns also emphasize how work opportunities in regional labor markets are becoming increasingly split. Working in either a creative class occupation or a high-technology industry is associated with much higher earnings, on average, leaving those not employed in new economy sectors with more challenging outlook to increase their earnings. As earnings becomes increasingly positively associated with employment in either of these two new economy sectors, those who are unable to find work in these sectors are increasingly pushed toward work that supports these sectors and pays less well.

Emphasizing this structural perspective is an important contribution of this research. Like Mills (1959), we must recognize that the opportunities available to workers are structured by their situation. It's not only their own skills and trainings that are important, but also where they work and the characteristics of that place. The new urban economy is a social structure which has re-shaped metropolitan regions, and also works across and within metropolitan regions to shape individual earnings.

Some weaknesses of this study should be noted. Some variables are not present in the model which likely would have improved the final model. For example a measure of cost of living in each MSA would have been a great addition to the model, but was not available for the data set used. Some of the impact in range of costs of living across MSA's is controlled for by including low earner rates and the Gini coefficient as a measure of inequality, but a clear cut measure of cost of living would have improved the

model, as cost of living likely has a substantial impact on earnings. Another weakness to consider is what is not available from the variables at hand. For example, there is no measure of the diversity of each worker's social network. There is also no measure of what kind of institution their higher degrees are from, or if the disciplines of those degrees match the workers' fields of employment.

An important limitation of this study is that it examines only employed individuals within MSA's. As Sassen (2012) and others demonstrate, the informal economy is an increasingly relevant area of study in understanding urban economic dynamics. The informal economy, however, could not be brought within the scope of this study. Another weakness is that the data used here is more than a decade old. The new economy had established itself in the modern urban economy by 2000, but it will be great to have access to the equivalent 2010 census data when it becomes available.

A related limitation is that self-employed individuals are not included in the sample in this study. While self-employed workers are certainly competing with others in their labor markets to earn income, their employment is not subject to the same marketplace forces as those competing in the traditional labor market. It is true, though, that a relatively high proportion of creative class and high-technology workers are self-employed. So, excluding self-employed earners from the sample reduces representation of workers doing creative or high-technology work. Further, excluding self-employed individuals may stabilize the data some, as self-employment is often associated with wide annual variations in earnings.

Also, there are two important factors which deserve more in-depth scrutiny in future studies: gender and race/ethnicity. Both of these variables were examined as control variables in this study, but future work should do more. We know that both play a

very interesting role in an individual's earnings. Also, a variety of interesting dynamics related to each of these variables are playing out in the new urban economy. The 2008 recession disproportionately affected employment in particular sectors of the economy, and the gender and racial makeup of employment in those sectors were not balanced. This implies that the recession likely had a disproportionate effect on certain gender and racial categories through MSA-level structures. Future studies should explore how the impact of each of these factors varies across MSA's

The new urban economy has created an uneven geography of opportunity for workers across the US. The influence of social structures on individual opportunities has re-emerged as major determinants of individual earnings. For individuals, earning a higher degree, and finding work in either a high-technology industry, or creative class occupation, or both, are strong strategies for increasing your individual income. But, the individual might be tempted not to encourage their peers to pursue a higher degree, so that they will then face less competition on the labor market. For political and economic leaders of metropolitan regions who are looking to increase earnings for workers in their labor market, there is a real dilemma. Popular wisdom holds that increasing the human capital in a metropolitan region will attract high-technology industries and creative class occupations, thereby increasing earnings across the labor market. While this is a strategy for growth in a metropolitan region, the positive effect of attracting such jobs in the long term, may be undercut in the short term as individuals with high human capital compete over jobs and see associated reductions in their earnings

REFERENCES

Baron, James N. and William T. Bielby. 1980. "Bringing the Firms Back In: Stratification, Segmentation, and the Organization of Work." *American Sociological Review*. 45:737-765.

--. 1984. "The Organization of Work in a Segmented Economy." *American Sociological Review*. 49:454-473.

Beck, E. M., Patrick M. Horan, and, Charles M. Tolbert II. 1978. "Stratification in a Dual Economy: A Sectoral Model of Earnings Determination." *American Sociological Review*. 43: 704-720.

Blau, Peter M. and Otis Dudley Duncan. 1967. *The American Occupational Structure*. New York: The Free Press.

Boersma, Paul. 2013. "Two Correlation Coefficients." Retrieved from <http://www.fon.hum.uva.nl/Service/Statistics/Two_Correlations.html> on 24 Mar 2013.

Borjas, George J. 2006. "Native Internal Migration and the Labor Market Impact of Immigration." *The Journal of Human Resources*, 41(2):221-258.

Boylan, Ross D. "The Effect of the Number of Diplomas on Their Value." *Sociology of Education*, 66(3):206-221.

Bozick, Robert. 2009. "Job Opprtunities, Economic Resources, and the Postsecondary Destinations of American Youth." *Demography*, 46(3):493-512.

Brooks, David. 2000. *Bobos in Paradise: the New Upper Class and How They Got There.* New York: Simon and Schuster.

Brown, Rick. 2012. "'Smartest' US Cities Have a Rusty Tint." *Rustwire*. Retrieved from: http://rustwire.com/2012/06/11/smartest-us-cities-have-a-rusty-tint/

Brueckner, J. K. 1985. "A Note on the determinants of metropolitan airline traffic." *International Journal of Transport Economics,* 12: 175-184.

Centner, Ryan. 2008. "Places of Priveleged Consumption Practices: Spatial Capital, the Dot-Com Habitus, and San Francisco's Internet Boom." *City and Community*, 7(3):193-223.

Clark, Terry Nichols, Richard Lloyd, Kenneth Wong, Pushpam K. Jain. 2002. "Amenities Drive Urban Growth." *Journal of Urban Affairs* 24: 493-515.

Clarke, Susan E. and Gary L. Gaile. 1998. *The Work of Cities*. University of Minnesota Press: Minneapolis.

Cohen, Philip N. 2001. "Race, Class, and Labor Markets: The White Working Class and Racial Composition of U.S. Metropolitan Areas." *Social Science Research,* 30:146-169.

Cohn, Samuel, and Mark Fossett. 1995. "Why Racial Employment Inequality is Greater in Northern Labor Markets: Regional Differences in White-Black Employment Differentials." *Social Forces,* 74(2):511-542.

Comunian, Roberta. 2011. "Rethinking the Creative City: The Role of Complexity, Networks and Interactions in the Urban Creative Economy." *Urban Studies,* 48(6): 1157-1179.

Cotter, David A. et al. 1997. "All Women Benefit: The Macro-Level Effect of Occupational Integration on Gender Earnings Equality." American Sociological Review, 62(5):714-734.

Debbage, K. G. and D. Delk. 2001. "The geography of air passenger volume and local employment patterns by US metropolitan core area: 1973-1996." *Journal of Air Transport Management*, 7(3):159-167.

Dreher, Christopher. 2005. "The Gay/Hipster Index." *Salon*. Retrieved from: http://www.salon.com/2005/04/21/florida_32/

Dumais, S., (2002) "Cultural Capital, Gender, and School Success: the role of habitus" in *Sociology of Education*, v.75, i.1, pp. 44–68

Evans, Graeme. 2009. "Creative Cities, Creative Spaces and Urban Policy." *Urban Studies,* 46(5&6): 1003-1040.

Featherman, David and Robert Hauser. 1976. "Changes in the Socioeconomic Stratification of the Races, 1962-73." *American Journal of Sociology*, 82(3):621-651.

Fisher, R. A. 1915. "Frequency Distribution of the Values of the Correlation Coefficient in Samples from an Indefinitely Large Population." Biometrika, 10(4): 507-521.

Florida, Richard. 2002. *The Rise of the Creative Class and How It's Transforming Work, Leisure and Everyday Life*. New York: Basic Books.

Florida, Richard. 2002. *The Rise of the Creative Class and How It's Transforming Work, Leisure and Everyday Life*. Basic Books: New York, NY.

Florida, Richard. 2003. "Cities and the Creative Class." *City and Community*, 2(1):3-19.

Florida, Richard. 2005. *Cities and the Creative Class.* New York: Routledge.

--. 2008. *Who's Your City?: How the Creative Economy is Making Where to Live the Most Important Decision of Your Life*. Philadelphia: Basic Books.

--. 2010. The Great Reset: *How New Ways of Living and Working Drive Post-Crash Prosperity*, 2010. New York: HarperCollins.

--. 2012. *The Rise of the Creative Class Revisited*. New York: Basic Books.

Florida, Richard, Charlotta Mellander, and Kevin Stolarick. 2008. "Inside the Black Box of Regional Development – Human Capital, the Creative Class and Tolerance." *Journal of Economic Geography* 8(5): 615-649.

Frey, William H. 1996. "Immigration, Domestic Migration, and Demographic Balkanization in America: New Evidence for the 1990s." *Population and Development Review*, 22(4):741-763.

Frey, William H. 1987. "Migration and Depopulation of the Metropolis: Regional Restructuring or Rural Reneissance?" *American Sociological Review*, 52(2): 240-257.

Frey, William H. 2009. "The Great American Migration Slowdown: Regional and Metropolitan Dimensions." *Metropolitan Policy Program at the Brookings Institution*.

Fussell, Paul. 1983. *Class: A guide Through the American Status System.* New York: Summit.

Gabe, Todd. 2011. "The Value of Creativity." In *Handbook of Creative Cities*, Andersson, Andresson, and Mellander, eds. UK: Edward Elgar.

Glaeser, Edward L. 2005. "Review of Richard Florida's The Rise of the Creative Class." *Regional Science and Urban Economics* 35(5): 593-596.

Glaeser, Edward L. 2011. *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier.* The Penguin Press: New York.

Goetz, A. R. 1992. "Air passenger transportation and growth in the U.S. urban system, 1950-1987." *Growth and Change*, 23:217-238.

Gottdiener, Mark. 1997. *The Social Production of Urban Space*, 2nd ed. University of Texas Press: Austin.

Grusky, David B. and Jesper B. Sorensen. 1998. “Can Class Analysis be Salvaged?” *American Journal of Sociology,* 103:1187-1234.

Hackler, Darrene. 2003. “High-Tech Location in Five Metropolitan Areas.” *Journal of Urban* Affairs 25(5): 625-640.

Hackler, Darrene, and Heike Mayer. 2008. “Diversity, Entrepreneurship, and the Urban Environment.” *Journal of urban Affairs,* 30(3):273-307.

Halffman, Willem and Loet Leydesdorff. 2010. “Is Inequality Among Universities Increasing? Gini Coefficients and the Elusive Rise of Elite Universities.” Minerva, 48(1):55-72.

Hamer, Jennifer F. 2011. *Abandoned in the Heartland: Work, Family, and Living in East St. Louis.* University of California Press: Berkeley.

Handcock, Mark S. and Martina Morris. 1999. *Relative Distribution Methods in the Social Sciences.* Springer-Verlag, Inc.: New York.

Handel, Michael J. 2003. “Skills Mismatch in the Labor Market.” *Annual Review of Sociology* 29: 135-65.

Hanson, Susan and Geraldine Pratt.”Dynamic Dependencies: A Geographic Investigation of Local Labor Markets.” *Economic Geography,* 68(4):373-405.

Harvey, David. 2006. *Spaces of Global Capitalism: Towards a Theory of Uneven Development*. Verso: New York.

--. 1989. *The Condition of Postmodernity: An Inquiry into the Conditions of Cultural Change.* Oxford: Blackwell.

--. 1990. “Flexible Accumulation through Urbanization: Reflections on ‘Post-Modernism’ in the American City.” *Perspecta,* 26: 251-272.

Hecker, Daniel. 2005. “High-Technology Employment: a NAICS-based Update.” Monthly Labor Review. Bureau of Labor Statistics. Retrieved from < http://www.bls.gov/opub/mlr/2005/07/art6full.pdf> on Jan 22 2012.

Hodson, Randy. 1978. “Labor in the Monopoly, Competitive, and State Sectors of Production.” *Politics and Socety*, 8:429-480.

Hodson, Randy and Robert L. Kaufman. 1982. “Economic Dualism: A Critical Review.” *American Sociological Review*. 47:727-739.

Houston, Donald. (2005). “Employability, Skills Mismatch and Spatial Mismatch in Metropolitan Labour Markets.” *Urban Studies* 42(2):221-243.

Howell, David C. 2004. Fundamental Statistics for Behavorial Sciences, 5th ed. Duxbury Press.

Hoyman, Michele and Christopher Faricy. 2009. "It Takes a Village: A Test of the Creative Class, Social Capital and Human Capital Theories." *Urban Affairs Review*, 44:311-333.

Huffman, Matt L., and Cohen, Philip N. 2004. Racial Wage Inequality: Job Segregation and Devaluation across U.S. Labor Markets. *The American Journal of Sociology* 109(4):902-936.

Hunt, Larry L., Matthew O.Hunt, and William W. Falk. 2008. "Who is Headed South? U.S. Migration Trends in Black and White, 1970-2000." *Social Forces*, 87(1):95-119.

Hutton, Thomas A. 2009. "Trajectories of the New Economy: Regeneration and Dislocation in the Inner City." *Urban Studies*, 46(5&6): 987-1001.

Hyra, Derek. 2008. *The New Urban Renewal: The Economic Transformation of Harlem and Bronzeville*. Chicago: University of Chicago Press.

Irwin, M. D. and J. D. Kasarda. 1991. "Air passenger linkages and employment growth in U.S. metropolitan areas. *American Sociological Review*, 56(4):524-537.

Juett, Lorna. 2012. "The State of Craft Beer in Illinois: Can We Avoid Bursting the Bubble." *Chicagoist*. Retrieved from: http://chicagoist.com/2012/08/28/richard_florida_of_the_atlantic.php

Kasarda, John D. 1989. "Urban Industrial Transition and the Underclass." Annals of the American Academy of Political and Social Science, Vol. 501, *The Ghetto Underclass: Social Science Perspectives* (Jan., 1989), pp. 26-47

Kefalas, Maria. 2003. *Working-Class Heroes: Protecting Home, Community and a Nation in a Chicago Neighborhood*. University of California Press.

Kefalas, Maria. 2007. "Looking for the Lower Middle Class." *City and Community*, 6(1):63-68.

Kilborn, Peter T. 2009. *Next Stop, Reloville: Life Inside America's New Rootless Professional Class*. Times Books: New York.

Kimelberg, Shelley McDonough. 2011. "Inside the Growth Machine: Real Estate Professionals on the Perceived Challenges of Urban Development." *City and Community*, 10(1):76-99.

Kingston, P., (2001) "The Unfulfilled Promise of Cultural Capital Theory" in *Sociology of Education*, Extra Issue, pp. 88–99

Koritz, Douglas. 1991. “Restructuring or *De*structuring? Deindustrialization in Two Industrial Heartland Cities.” *Urban Affairs Quarterly* 26: 497-511.

Kornrich, Sabino. 2009. "Labor Queues, Job Queues, and Racial Composition: Combining Theories of Labor Market Processes with Theories of Racial Preferences." *American Journal of Sociology* 115(1): 1-38.

Leete, Laura, and Neil Bania. “The Impact of Welfare Reform on Local Labor Markets.” *Journal of Policy Analysis and Management*, 18(1):50-76.

Lewis, National M., and Betsy Donald. 2009. “A New Rubric for ‘Creative City’ Potential in Canada’s Smaller Cities.” *Urban Studies*, 47(1):29-54.

Logan, John and Harvey Molotch. 1987. *Urban Fortunes: the Political Economy of Place*. Berkeley, CA: University of California Press.

Lloyd, Richard. 2005. *Neo-Bohemia: Art and Commerce in the Postindustrial City*. New York: Routledge.

Lorence, Jon. 1991. “Growth in Service Sector Employment and MSA Gender Earnings Inequality: 1970-1980. *Social Forces*, 69(3): 763-783.

Lowry, Richard. 2013. “Significance of the Difference Between Two Correlation Coefficients.” *VassarStats: Website for Statistical Computation*. Retreived from <http://www.vassarstats.net/rdiff.html> on 24 Mar 2013.

Massey, Douglas S. 2007. *Categorically Unequal: the American Stratification System*. New York: Russell Sage.

Markusen, Ann, Gregory Wassall, Douglas DeNatale, and Randy Cohen. 2008. “Defining the Creative Economy: Industry and Occupational Approaches.” *Economic Development Quarterly*.

Markusen, A. 2006. “Urban development and the politics of the creative class: Evidence from the study of artists.” *Environment and Planning A*, 38(1):1921-1940.

Markusen, Ann, Gregory Wassall, Douglas DeNatale, and Randy Cohen. 2008. “Defining the Creative Economy: Industry and Occupational Approaches.” *Economic Development Quarterly*.

Mills, C. Wright. 1959. *The Sociological Imagination*. Oxford University Press.

Milligan, Melinda J. 2003. “The Individual and City Life: A Commentary on Richard Florida’s “Cities and the Creative Class.” *City and Community*, 2(1):21-26.

Molotch, H.L. and D. Boden. 1994. “The Compulsion of Proximity.” In *Now Here: Space, Time and Modernity*, D. Boden and R. Friedland, eds. Berkeley:University of California Press.

Molotch, Harvey. 1976. “The City as a Growth Machine: Toward a Political Economy of Place.” *American Journal of Sociology*, 82(2):309-322.

Montgomery, J. (2005). Beware ‘the Creative Class’. Creativity and Wealth Creation Revisited. *Local Economy*, 20(4): 337–343.

Moretti, Enrico. 2012. *The New Geograhy of Jobs.* Houghton Mifflin Harcourt: New York.

Morris, Martina, Annette, D. Bernhardt, Mark S. Handcock. 1994. “Economic Inequality: New Methods for New Trends.” *American Sociological Review*, 59(2): 205-219.

Neal, Zachary P. 2011. “The Causal Relationship between Employment and Business Networks in U.S. Cities.” *Journal of Urban Affairs*, 33(2): 167-184.

Nevarez, Leonard. 2003. *New Money, Nice Town: How Capital Works in the New Economy*. New York: Routledge.

O’Connor, James. 1973. Chapter 1: “An Anatomy of American State Capitalism.” In *The Fiscal Crisis of the State*. St. Martin’s Press.

Pais, Jeremy. 2010. “Competing Sources of Earnings inequality: A comparison of Variance Components.” *Research in Social Stratification and Mobility* 28(3): 359-373.

Pastor, Manuel, T. William Lester, and Justin Scoggins. 2009. “Why Regions? Why Now? Who Cares?” *Journal of Urban Affairs* 31(3): 269-296.

Paulsen, Krista E. 2004. “Making Character Concrete: Empirical Strategies for Studying Place Distinction.” *City and Community*, 3(3):243-262.

Peck, J. 2005. “Struggling with the Creative Class.” *International Journal of Urban and Regional Research*, 29(4):740-770.

Ponzini, Davide, and Ugo Rossi. 2010. “Becoming a Creative City: The Entrepreneurial Mayor, Network Politics and the Promise of an Urban Renaissance.” *Urban Studies*, 47(5):1037-1057.

Pickering, Alan. 2004. “Comparing Correlations and Regressions.” Retrieved online from <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CDUQFjAA&url=http%3A%2F%2Fhomepages.gold.ac.uk%2Faphome%2Fcorrelnotes.doc&ei=s0dPUbKODYbc9ATpgYHwCg&usg=AFQjCNFz5AgQC-jOwoAtmznSA3uwO2Ocpw&sig2=GJ9TNaIWhaS0z8CvHducVg&bvm=bv.44158598,d.eWU&cad=rja> 24 Mar 2013.

Rausch, Stephen, and Cynthia Negrey. 2006. “Does the Creative Engine Run? A Consideration of the effect of Creative Class on Economic Strength and Growth.” *Journal of Urban Affairs*, 28(5):473-489.

Raudenbush, Stephen W., and Anthony S. Bryk. 2002. *Hiearchical Linear Models: Applications and Data Analysis Methods*, 2nd ed. Thousand Oaks: Sage.

Reese, Laura A., Jessica M. Faist, and Gary Sands. 2010. "Measuring the Creative Class: Do We Know it When We See It?" *Journal of Urban Affairs*, 33(3):345-366.

Ruggles, Steven, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. Integrated Public Use Microdata Series: Version 4.0 [Machine-readable database]. Minneapolis, MN: Minnesota Population Center [producer and distributor], 2009. IPUMS Url: <http://usa.ipums.org/usa/>.

Sanders, Jimy. 2012. "Complement or Competition: Latino Employment in a non-traditional Settlement Area." *Social Science Research*, 41(1):48-60.

Sassen, Saskia. 2001. *The Global City: New York, London, Tokyo*. Princeton: Princeton University Press.

Sassen, Saski. 2012. *Cities in a World Economy: 4th ed*. Washington, DC: Pine Forge Press.

Scott, Allen J. 2006. "Creative Cities: Conceptual Issues and Policy Questions." *Journal of Urban Affairs*, 28(1):1-17.

Shorrocks, Anthony. 1978. "Income Inequality and income mobility." *Journal of Economic Theory*, 19(2): 376-393.

Smeeding, Timoth M. 2005. "Public Policy, Economic Inequality, and Poverty: The United States in Comparative Perspective. *Social Science Quarterly* 86(5): 955-83.

Stolarick, Kevin and Elizabeth Currid-Halkett. 2012. "Creativity and the Crisis: the Impact of Creative Workers on Regional Unemployment." *Cities: The International Journal of Urban Policy and Planning*, 90(2): 107-117.

Stoll, Michael A., Harry J. Holzer and Keith R. Ihlandfeldt. 2000. "Within Cities and Suburbs: Racial Residential Concentration and the Spatial Distribution of Employment Opportunities across Sub-Metropolitan Areas*." Journal of Policy Analysis and Management* 19(2) 207-231.

Tickamyer, Ann R. 2000. "Space Matters! Spatial Inequality in Future Sociology." *Contemporary Sociology*, 29(6):805-813.

Tomaskovic-Devey, Donald, Melvin Thomas, and Kecia Johnson. 2005. "Race and the Accumulation of Capital across the Career: A Theoretical Model and Fixed-Effects Application." *The American Journal of Sociology*: 111(1):58-89.

US Census Bureau. 2008. “Public Use Microdata Sample. Retrieved from <http://www.census.gov/prod/cen2000/doc/pums.pdf> on September 27, 2010.

U.S. Census Bureau. 2002. “Metropolitan Areas and Components, 1999, with FIPS Codes.” Retrieved from: http://www.census.gov/population/metro/files/lists/historical/99mfips.txt on 8 Sep 2012.

U.S. Census Bureua. 2011. “Metropolitan Statistical Area. Retrieved from: <http://quickfacts.census.gov/qfd/meta/long_metro.htm>

U.S. Census Bureau, Current Population Survey, 2011 Annual Social and Economic Supplement.

Waitt, Gordon, and Chris Gibson. 2009. “Creative Small Cities: Rethinking the Creative Economy in Place.” *Urban Studies*, 46(5&6):1223-1246.

Wright, Richard A., Mark Ellis, Michael Reibel. 1997. “The Linkage between Immigration and Internal Migration in Large Metropolitan Areas in the United States.” *Economic Geography*, 73(2): 234-254.

Weber, Max. 1946. “Class, Status, Party.” Pp. 180-195. *Max Weber: Essays in Sociology*, H. H. Girth and C. Wright Mills (eds.). New York: Oxford University.

Weeden, Kim A. and David B. Grusky. 2005. “The Case for a New Class Map.” *American Journal of Sociology*, 111(1):141-212.

Williams, L. Susan. 2002. “The Prophecy of Place: A Labor Market Study of Young Women and Education.” *American Journal of Economics and Sociology*, 61(3):681-712.

Wilson, William Julius. 1987. *The Truly Disadvantaged: the Inner City, the Underclass, and Public Policy.* Chicago: University of Chicago Press.

--. 1996. *When Work Disappears: the World of the New Urban Poor*. Vintage.

Wright, Eric O. et al. 1982. “The American Class Structure”. *American Sociological Review*, 47:709-726.