Georgia State University
Digital Archive @ GSU

Sociology Theses | Department of Sociology

6-9-2006

Black Employment Opportunities: The Role of Immigrant Job Concentrations

Jim Baird
jimbaird@bellsouth.net

Follow this and additional works at: http://digitalarchive.gsu.edu/sociology_theses

Recommended Citation
Baird, Jim, "Black Employment Opportunities: The Role of Immigrant Job Concentrations" (2006). *Sociology Theses.* Paper 6.

This Thesis is brought to you for free and open access by the Department of Sociology at Digital Archive @ GSU. It has been accepted for inclusion in Sociology Theses by an authorized administrator of Digital Archive @ GSU. For more information, please contact digitalarchive@gsu.edu.

BLACK EMPLOYMENT OPPORTUNITIES:

THE ROLE OF IMMIGRANT JOB CONCENTRATIONS

by

JIM BAIRD

Under the Direction of Robert Adelman

ABSTRACT

Recent, post-1980, immigration patterns have had a dramatic effect on U.S. labor markets, leading to considerable debate about the impact of immigration on native-born black workers. This research examines immigrant and black labor markets, across metropolitan areas, using Public Use Microdata and Summary File data from Census 2000 to generate low, mid, and high classifications of immigrant and black occupations based on socio-economic index (SEI). Multivariate findings indicate that the effect of recent immigration on black labor market outcomes differs by occupational level. Competition for low-skilled jobs is identified for native-born blacks in low-level jobs while a "bump-up" effect is identified for blacks in mid-level jobs. For example, production occupations with low language and skill requirements are shown to be contested among the groups. On the other hand, service and administrative functions emerge as bump-up mechanisms that create opportunity for black workers who amass the human capital required of these occupations. Thus, the ramifications of immigration for native-born blacks are shown to be quite different for low- and mid-SEI jobs.

INDEX WORDS: Immigrants, Native-born black workers, Occupational odds ratios

BLACK EMPLOYMENT OPPORTUNITIES:

THE ROLE OF IMMIGRANT JOB CONCENTRATIONS

by

JIM BAIRD

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

In the College of Arts and Sciences

Georgia State University

2006

Copyright by
George James Baird
2006

BLACK EMPLOYMENT OPPORTUNITIES:

THE ROLE OF IMMIGRANT JOB CONCENTRATIONS

by

JIM BAIRD

Major Professor: Robert Adelman
Committee: Charles Jaret
Lesley Reid

Electronic Version Approved:

Office of Graduate Studies
College of Arts and Sciences
Georgia State University
May 2006

DEDICATION PAGE

This thesis is dedicated to my mother, Jean Audrey Baird, as a symbol of the value she placed on learning. Her sacrifices made college a possibility for me and ingrained the importance of educational attainment; her youthful spirit exemplified that it wasn't too late to pursue the degree culminated by this work. Thanks Mom. I wish you were here to lead the celebration.

ACKNOWLEDGEMENTS

I'd like to thank my family for their unwavering support during this endeavor: Deepest appreciation to my wife, Laurie, who embraced my dreams and offered love and encouragement when I jumped off of the corporate ladder into the uncertainties of academia. Her support has been steadfast and essential and her critiques kindly limited primarily to grammar. Also, to my children, Lisa and Brian, who have never questioned my aspirations or motives. Finally, I'm grateful to my committee, Robert Adelman, Charlie Jaret, and Lesley Reid, for their extraordinary insights and positive approach. Special thanks to Robert, whose door was always open and whose role selflessly transcended that of thesis chair.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS…… vi

LIST OF TABLES…… viii

CHAPTER

1 INTRODUCTION…… 1

Statement of Purpose …… 1

Research Objectives and Questions…… 2

2 REVIEW OF THE LITERATURE…… 5

Literature Background……. 5

Economic Impacts of the New Immigration…… 7

Additional Literature…… 12

Foundational Research for this Project…… 14

Theoretical Framework…… 15

3 DATA AND METHODS…… 18

PUMS Data and Methods…… 20

Summary File Data and Methods…… 24

Diagnostics……... 28

Hypotheses…… 30

4 FINDINGS AND DISCUSSION…… 35

Univariate and Descriptive Results 35

Bivariate and Multivariate Results 43

5 CONCLUSION…… 80

REFERENCES……... 89

APPENDIX…… 95

LIST OF TABLES

Table	Title	Page
3.1	Occupation Categories…….	32
3.2	Calculation of Odds Ratios……..	33
3.3	Metropolitan Area Sample……...	34
4.1	Descriptive Statistics for 144 Metropolitan Areas, 2000…….	63
4.2	Occupation Categories by Race/Ethnicity……...	64
4.3	Metropolitan Areas with the Highest and Lowest BOCs……	65
4.4	Metropolitan Areas with the Highest and Lowest IJCs……...	66
4.5	Mean Black Odds Ratios by Occupation Category…….	67
4.6	Mean Immigrant Odds Ratios by Occupation Category……..	68
4.7	Bivariate Correlations……..	69
4.8	Mid BJC Multivariate Results…….	70
4.9	Ranking of Metropolitan Areas by Combined Mid-BOC and IJC…..	71
4.10	Low IJC/Mid BOC Analysis……	72
4.11	Mid IJC/Mid BOC Analysis……	73
4.12	High IJC/Mid BOC Analysis……...	74
4.13	Low BOC Multivariate Results……...	75
4.14	Ranking of Metropolitan Areas by Combined Low-BOC and IJC….	76
4.15	Low IJC/Low BOC Analysis……...	77
4.16	Mid IJC/Low BOC Analysis……	78
4.17	High BOC Multivariate Results……..	79

CHAPTER 1: INTRODUCTION

During the last two decades of the twentieth century, new immigration patterns have altered American life by redefining the ethnic and cultural make-up of the U.S. population (Castles and Miller 2003; Heer 1996). These changes have had a dramatic and visible effect on U.S. labor markets, often leaving workers marginalized. Many consider immigration to be the primary cause of the new labor economy rather than perceiving other economic processes as dominant forces. Misconceptions and complexity have led to contentious debate among the public at large and to a lack of consensus among scholars. Much of the confusion regarding immigrants and labor markets is due to complex, and often counterintuitive, real world economic behavior that is not adequately explained by classic economics models. For example, the laws of supply and demand state that an increase in the supply of low-skilled labor, such as that provided by migrant workers, will reduce the jobs and wages offered to low-skilled workers (Kaufman and Hotchkiss 2003). Further, common sense suggests that the quantity of available jobs is limited; therefore an influx of low-skilled labor is expected to increase unemployment. Because native-born blacks are overrepresented in low-skilled jobs, reduced wages and higher unemployment are expected among black workers. Primarily as a result of these factors, considerable study has been conducted on the subject.

Statement of Purpose

A large body of sociological literature exists regarding the relationship between immigration and native-born labor market outcomes (e.g., Borjas, Freeman, and Katz

1996; Card 1990; Filer 1992; Logan, Alba, and McNulty 1994; Moss and Tilly 2001; Waldinger 1996, 1997). The typical finding is that immigration does not negatively affect native-born wages and unemployment. Disagreement centers upon the effects of native-born labor market participation and whether or not there is an impact specifically on low-wage, low-skilled native-born outcomes, issues that seem to have captured the imagination of researchers working in this area.

However, very little research explores the potential positive relationship between immigrant and native-born labor markets. The question of whether or not immigrant labor market supply creates immigrant labor market demand has been addressed in the immigrant enclave literature (see Light and Rosenstein 1995; Portes 1995; Rosenfield and Tienda 1999), however the possibility that immigrant supply actually creates native-born job opportunities has only recently been raised (see Adelman et al. 2005; Bean, Van Hook, and Fossett 1999; Linton 2002). This thesis focuses on the relationship between immigration and native-born black workers, an appropriate starting point because both immigrants and blacks tend to overlap in lower-wage jobs. My research further explores this relationship by building on recent research and by directly investigating the parallel relationship between immigrant and black job concentrations within U.S. metropolitan areas.

Research Objectives and Questions

The research objective for this thesis is to provide a systematic analysis of the interrelationships that exist across metropolitan areas between black and immigrant concentrations within the labor force. Because labor market characteristics vary among metropolitan areas, these areas are the appropriate level of analysis for assessing the

associations that exist between occupations in which immigrants and blacks are concentrated. For example, how do recent immigrants in low-level occupations affect native-born blacks in similar low-level jobs? What is the relationship across a sample of metropolitan areas? What metropolitan areas have the strongest and weakest association between these groups? What occupational categories form the foundation of the relationship? In pursuit of this objective, four research questions are addressed.

The primary research question that I pose is: Does a positive relationship exist between lower-level jobs in which immigrants are overrepresented (concentrated) and middle-class jobs in which blacks are concentrated? Such a relationship between job concentrations is suggested in the literature because immigrants create economic activity (Friedberg and Hunt 1995) that necessitates incremental administrative (e.g., scheduling, billing) and service (e.g., bus drivers, government clerks) jobs (Adelman et al. 2005; Rosenfeld and Tienda 1999). To a large extent, these administrative and service jobs (e.g., postal workers) require English proficiency and many require Civil Service credentials. Blacks are well positioned for these middle-class jobs, leading to the possibility of a "bump up" effect among blacks in areas of high immigrant concentrations where higher wage opportunities replace low-wage jobs for blacks and where immigrants are largely limited to low-wage jobs. Exploring this relationship between immigrant job concentrations and black occupational concentrations is the primary focus of this work. I add additional breadth by assessing low, mid, and high-level concentrations for both immigrants and blacks for a total of nine relationships under investigation.

Several further, secondary, research questions are also addressed. First, are there particular metropolitan areas where the relationship is stronger, and, if so, what are the

characteristics of these metropolitan areas? Second, is this effect more pronounced in metropolitan areas that are considered “global cities” where the literature shows a coexistence of high salary white-collar jobs with low-wage service sector jobs (Sassen 2000, 2001)? Third, do cities with higher levels of disadvantage (i.e., poverty, unemployment, and female heads of-household) impact the effect? Finally, where immigrant and black occupational classifications are related, what specific jobs contribute to the relationship and what explanatory insight does their analysis provide?

CHAPTER 2: REVIEW OF THE LITERATURE

Considering public opinion on immigration, Butcher (1998:149) notes "the effect of immigration on the labor-market outcomes of the native born has historically been the most contentious issue surrounding the debate about [immigration]." The impact of immigration on native-born workers clearly constitutes the majority of the literature on the economics of immigration. Much of the research focuses on cross-sectional studies of the primary immigration centers: Los Angeles, New York City, and Miami. A few studies consider the entire U.S. economy (e.g., Borjas 1999) and several longitudinal (e.g., Johannson and Weiler 2004) and qualitative (e.g., Waldinger 1997) studies complement the main body of work.

Immigration Literature Background

Massey (1995:633) identifies three major phases of twentieth century immigration: (1) the classic era of mass European immigration that occurred from 1901 to 1930; (2) a long hiatus where immigration was minimal from 1931 to 1970; and (3) a new regime of substantial non-European immigration from 1970 to the present. The classic era was an extension of nineteenth century inflows that began in 1880 and brought approximately 28 million Europeans to the United States. In contrast to America's founders and those that comprised the population during its first century, these immigrants were primarily Southern and Eastern European instead of Northern and Western European.

The classic era immigrants fueled the U.S. industrial revolution, providing necessary labor and stimulating significant economic growth. These new Americans, for the most part, began their time in the New World as economically disadvantaged,

afforded only the least desirable jobs. However, over time they, or their descendants, moved up in income and status, sometimes equaling or surpassing the earnings of pre-1880 “white” Americans. The upward mobility of classic era immigrants, or that of second and third generations, was in part due to the labor union movement, which gained strength during this period (Lichtenstein 2002).

The long hiatus was not a complete elimination of immigration, but a dramatic reduction due to the enactment of laws that restricted the number of immigrants allowed to enter the United States. During the forty-year period, 7.4 million people immigrated to the United States, but their point of origin shifted from Europe to the Americas. The hiatus created an environment for the cultural assimilation of the classic era population, in part due to a lack of a constant influx of ethnic rejuvenation via new immigrants. The hiatus may have also provided time for an economic equilibrium to be obtained (Massey 1995). In any case, a massive wave of immigrants was not only absorbed by the U.S. economy, it provided the impetus for the economy to grow. Over the long run, jobs did not disappear, wages did not decline, and labor force participation did not decrease; the opposite occurred.

Castles and Miller (2003) characterize the new immigrants, those from the new regime, as being the product of the age of migration. The percentage of foreign-born residents in the United States has increased from 4.7% of the population in 1970 to 11.2% in 2000, and comprises higher percentages of the workforce. Immigration’s impact on the workforce is growing; in the 1970s the foreign-born added 2.5 million people to the workforce (LaLonde and Topel 1991), but during the 1980s and 1990s the foreign-born added 13 to 15 million employees (Carmarota 1997). The new immigrants are

predominantly Hispanic and Asian in origin and are entering the country at a legal rate now exceeding one million people per year. The new immigrants' educational levels follow a differentiated bimodal distribution, with a smaller group that is highly educated and skilled and a dominant group that is uneducated and unskilled. Further, they differ dramatically from the classic era immigrant in ethnic origin and in the fact that there does not appear to be a reduction in their inflow similar to the long hiatus described above (Friedberg and Hunt 1995; U.S. Census Bureau 2002).

Economic Impacts of the New Immigration

The starting point for much of the research on the economic impacts of the new immigration concerns whether immigrants and native workers are substitutes or complements in the labor market. This conceptual issue originates from classic economic labor market theory, which predicts that substitute sources of labor create a competitive situation that lowers wages and that complementary sources of labor do not compete in the labor market (Kaufman and Hotchkiss 2003). Since many of the new immigrants are lower skilled and because blacks are disproportionately lower skilled, much of the literature focuses on the extent to which immigrants and blacks are substitutes in the labor market and whether black labor market outcomes are compromised by immigration.

One of the landmark studies of immigration labor market effects is David Card's (1990) research on the impact of the Mariel boatlift on the Miami labor market (see also Portes and Stepick 1993). In April 1980, Fidel Castro declared that Cubans were free to emigrate to the United States from the port of Mariel. Between May and September 1980, approximately 125,000 Cubans made the ninety-mile voyage to Florida. Half of the Cuban immigrants settled permanently in Miami, creating a near instantaneous seven

percent increase in the Miami labor supply. Good fortune created a natural experiment with available data from the April 1980 Census, a relatively large Current Population Survey (CPS) Miami sample of 1,200, and a CPS questionnaire that separately identifies Cubans. Furthermore, at the time, Miami had the largest U.S. foreign-born population (35.5 percent) and a significant black population (17.3 percent).

Card (1990:255) finds "first, that the Mariel immigration had essentially no effect on the wages or employment outcomes of non-Cuban workers in the Miami labor market. Second, and perhaps even more surprising, the Mariel immigration had no strong effect on the wages of other Cubans." He offers two theories for how this was possible. First, he argues, is the high number and relative growth of industries that use low-skilled labor, such as apparel and textiles, agriculture, and services, in the Miami area. These industries may uniquely position Miami to absorb a sudden influx of low-skilled labor. A second possibility, one that the data more directly support, is that fewer native-born workers migrated to Miami because of the Mariel immigration. In other words, normal migration flows into Miami may have been reduced because of job competition occurring as a result of the Mariel influx. This allowed the Miami labor market to better absorb the Mariel workers. Miami had a pre-Mariel annual population growth rate of 2.5 percent compared to 3.9 percent for the rest of Florida. Post-Mariel, the Miami rate dropped to 1.4 percent while the rest of Florida maintained a 3.4 percent rate (Card 1990). This indicates that labor markets may react on a larger scale than the bounds of the local level (see Borjas 1999).

A potential weakness in Card's work is that he considers only wages and unemployment and does not consider labor market participation rates.[1] In the case of Card's Mariel research, it is possible that native workers became discouraged and dropped out of the labor force (Johannson and Weiler 2004). As non-participants in the labor force, these "drop-outs" are not included in data depicting reduced wages or unemployment.

Filer (1992) and Frey (1999) support Card's thoughts that native workers may avoid, or out-migrate from, an area of concentrated immigration. Filer notes a "strong relation between the arrival of immigrants in a local labor market and the mobility patterns of native workers" (1992:267), particularly those with lower skills and education levels. His data show differences in the response of native-born white workers and native-born black workers to the labor market pressures of immigration. Filer suggests that white workers may respond by moving out of an area experiencing an influx of immigrants, choosing to bear the cost of increased mobility, while blacks tend to choose, or be forced by discriminatory barriers, to stay in the same location and deal with the costs of a temporarily worsened labor market. Rather than conclude that blacks are disproportionately affected by immigration, he proposes that the difference may be understood in terms of spatial mobility. Along similar lines, Frey (1999) suggests that lack out-migration from areas of immigrant concentration have created a reverse black

[1] Unemployment and participation rates are different classifications defined by the CPS. The CPS performs monthly interviews of approximately 60,000 households, the 'household survey,' to categorize the population into five categories. The non-institutional population consists of the total population less those in institutions such as prison, mental hospitals, or the military. The 'household survey' determines the quantity of people not in the labor force based on whether a respondent is unable to take a job or has not looked for work in the last four weeks. People are considered unemployed only if they have sought a job in the past four weeks. The CPS considers the labor force as consisting of only the employed and the unemployed. If a person becomes discouraged, even temporarily (4 weeks or more) from finding work, they are considered a non-participant in the labor force (Kaufman and Hotchkiss 2003).

migration, away from the north and west, back to the south.

Research that considers the different scale, ranging from the local level to the national level, that the labor market impact of immigration can be studied is found in the work of George Borjas. He has been a major figure in this area of research for the past two decades. In his 1992 study for the National Bureau of Economic Research (NBER), he notes that the concentration of immigrants in a relatively few destination cities such as Los Angeles, New York City, and Miami, has led to considerable research on the effects of immigration on the U.S. native labor market. Along with Freeman, he concludes "these studies, for the most part, find an insignificant correlation between the presence of immigrants in a locality and the earnings of natives in that locality" (Borjas and Freeman 1992:11). Thus, early research conflicts with classic economic theory by providing empirical data showing minimal effects of immigration on native labor markets (Altonji and Card 1991; Card 1990; Grossman 1982; LaLonde and Topel 1991).

Borjas (1993:217) asserts that the research up to that point, buoyed by the availability of rich data sets and advancement in econometrics, points to "a consensus on both the direction and magnitude of the labour market impact of immigration." He claims that neither theory nor empirical evidence support any other conclusion than that immigrants have negligible, if any, significant or substantive effect on native earnings or employment levels in the U.S. labor market.

Borjas (1995) further solidifies his position, theorizing that immigrants were not substitutes for low-skilled native workers, but complements with non-interchangeable skills in the production process. If, for example, immigrant workers have a comparative advantage in agricultural production, then native workers are freed to pursue higher-

skilled jobs. He suggests that a situation would then be created in which employers must compete for resources in the native labor market resulting in higher wages for native workers. Borjas (1995:35) argues,

> The overwhelming consensus of the literature seems to be that immigrants and practically all native groups are, at worse, very weak substitutes in production. It is fair to conclude that the cross-city correlations have not established a single instance in which the earnings of US-born workers have been strongly and adversely affected by the increase in the supply of immigrants.

However, by 1999, Borjas was offering a different interpretation of the issue. He raised several pertinent issues in *Heaven's Door* that bear directly on the research in this thesis. First, he concluded that the issue of immigrant impacts on native-born workers must be viewed at the national level (i.e., a spatial correlation approach) because native-born workers do move away or avoid economic areas with high immigrant densities. But, whether or not native workers avoid high immigration areas remains controversial and Borjas admits, "it is worth noting that we still do not fully understand *why* the spatial correlation approach fails to find [significantly negative] effects" (Borjas 2003:1370).

Borjas (1998, 1999) also highlights a disproportionate effect of immigration on blacks that is new to his work. He cites two reasons why blacks are likely to be negatively affected. One, since the new immigrants are likely to be low skilled, they tend to compete most directly with black workers. Two, since the benefits of immigration, in the form of lower wages and capital accumulation, accrue to employers, and since blacks are underrepresented in terms of capital and business ownership, they have less to gain from immigration. He contradicts previous empirical evidence on this issue, but gives credibility to the long-standing belief that blacks and immigrants are competitors.

Borjas' (2003) latest work concludes that taking both skill level and experience as a criterion for identifying immigrant and black competitors in the labor market provides a

more accurate view of the situation. He (2003:1336) suggests that "by using the insight that both schooling *and* work experience play a role in defining a skill group—one can make substantial progress in determining whether immigration influences the employment opportunities of native workers." His analysis predicts a three to four percent decline in native-born wages when immigration, comprised of individuals with similar education and experience, increases by ten percent in an area.

Additional Literature

Beyond the defining work of Card and Borjas, studies conducted to assess the impact of immigration on U.S. labor markets fall into three primary categories: (1) impact on native wages, (2) employment opportunity effects, and (3) occupational distribution. Studies of the impact on native wages are typically directed to local or regional labor markets such as cities or states. This research generally finds negligible effects on native wages (Altonji and Card 1991; Borjas, Freeman and Katz 1996; Grossman 1982; LaLonde and Topel 1991). Critics (see Steinberg 2005) counter that the areas under study are not spatially closed markets; workers and capital easily move beyond the area of study allowing native workers to relocate away from immigration centers and capital to relocate into immigration centers. These movements may equalize wages and cause area-based studies to miss the immigration impact. On the other hand, some researchers investigate larger geographical areas, such as Borjas, Freeman and Katz's (1996, 1997) national analyses. However, investigating a larger area necessarily assumes that labor markets react instantaneously (e.g., using national census data assumes that labor market changes are reflected in a set of data that is simultaneously

collected from all metropolitan areas). These studies are open to criticism that their assumption of instantaneous labor market reactions is unreasonable (Linton 2002).

A variant on the wage-impact research are studies that assess employment opportunity effects such as unemployment rates. Again, most conclude that immigrants have little or no impact on native employment, including low-wage, low-skill sectors (Altonji and Card 1991; Card 1990; Winegarden and Khor 1991). These studies have the same limitations and criticisms, such as a failure to account for the complexities of time and space, as discussed above for wage-based studies. Only recently has work assessing employment opportunity effects considered the potential of a positive effect; one in which immigration results in the creation of improved jobs for native-born workers (Adelman et al. 2005; Linton 2002).

The third type of research examines immigrant's occupational distribution. These studies generally focus on the complementary nature of immigrant and native jobs. By showing that the two groups occupy different labor market sectors, implications are deduced regarding the level of competition. The results of these types of studies are inconclusive. Most of this research assumes that labor supply and labor demand operate independently (i.e., increased supply acts to decrease wages and increased demand acts to increase wages, but these effects are mutually exclusive). This does not allow for the possibility of a synergistic effect between labor supply and labor demand such that immigration increases the relative size of labor market sectors in local markets (Camarota 1997; Light and Rosenstein 1995; Moss and Tilly 2001). In other words, immigration into a locality may increase the number of jobs in that locality and wages will be

determined by an interaction between the wage effects of labor supply and labor demand (Linton 2002).

Foundational Research for this Proposal

Two studies are particularly relevant to this thesis. First, Linton (2002) addresses the issue of interdependent supply and demand by investigating the effect of immigration on the 1990 composition of metropolitan labor markets and on the change in metropolitan labor force size from 1980 to 1990. She finds that "There is a clear, positive association between the relative size of a metropolitan area's immigrant population and the size of the immigrant job sector [i.e., jobs in which immigrants are overrepresented by at least a factor of two]" (2002: 66-67). Moreover, that cities with significantly larger immigrant populations have proportionally larger immigrant job sectors suggests that immigrants create particular types of jobs and that supply creates demand, supporting a relationship between supply and demand. She further concludes that immigration contributes to the economy due to the differences between immigrant and native populations. This difference is supported by the concentration of immigrants in specific labor market sectors.

Linton's work provides interesting empirical data to indicate that supply does in fact create demand in labor markets. Her study is limited to changes within jobs characterized as being within the immigrant sector. However, it raises the question of whether immigrant supply creates labor demand in non-immigrant sectors. Rosenfeld and Tienda (1999) consider occupations from which immigrants are largely excluded, finding that jobs such as postal clerk, security guard, and teacher are positions disproportionately

filled by blacks, suggesting the possibility of occupational upgrading for blacks earning low wages.

Second, Adelman et al. (2005), by combining wage-impact and occupational distribution approaches, although finding a significant negative relationship with black labor force participation and black poverty, determine that the quantity of recent immigrants positively affects black median earnings and specific types of jobs in which blacks are highly represented. They also investigate the types of jobs in which blacks fair well in both high and low immigration areas. Their results indicate a duality in which, in areas of high immigration, blacks are underrepresented in lower-skill jobs, but are over-represented in 'better' occupations such as office and administrative support. These findings support a variation on supply and demand interaction concepts, where an increased supply of low-skilled labor creates an increase in demand for a somewhat higher (e.g., administration vs. janitorial) labor sector. Thus, a 'bump-up' in employment outcomes for blacks is observed, in which new, higher paying jobs become available as the result of recent immigration (see also Rosenfield and Tienda 1999).

Theoretical Framework

Most of the research regarding the impact of immigration on native labor markets is based on classic economic theories of substitution and complementarities of workers within a supply and demand framework. Studies seek to determine the extent to which the skills and/or desirability of immigrant workers either substitutes for, or complements, the skills, and/or desirability, of native workers. If the two types of workers are substitutes in the labor market, the theory predicts that an influx of immigrant workers will create a surplus supply within the labor market that will depress wages and increase

unemployment. If, on the other hand, the two are complements, there will not be negative consequences affecting wages, and unemployment will not increase in the labor market (Kaufman and Hotchkiss 2003).

Although classic economic theory is very limited in how well it predicts real-world labor market outcomes, it remains the dominant foundational framework in use today for immigration studies. Econometrics uses statistical techniques to improve the usefulness of classic economic theory as a predictor (Kennedy 1998) and has been applied extensively to immigration research (see Borjas 1993, 1995, 1998, 1999, 2003). Census data have also been extensively mined in studies of the economic impact of immigration. In essence, econometrics and other analyses of census data represent techniques that are used to augment classic economics, but are theoretically framed in classic economic theory. Some research (see Light and Rosenstein 1995; Linton 2002) moves beyond classic economic theory by considering effects other than complementarity and substitution, such as joint or interdependent outcomes like the "bump-up" effect (Adelman et al. 2005).

Sociologically, the currently relevant theories fit within a political economy conflict perspective. Traditional Marxist (Castells 1985b) and world systems (Portes and Walton 1981) theories dominate this area. Both view immigration as an integral facet of a worldwide capitalist system that is characterized by inequality and domination. In this framework, migration supports the system by providing low-cost labor in the receiving country and, in the sending country, relieves political pressure, at a cost of continued dependence on leading economic countries (Heisler 1999).

Heisler (1999: 623), while noting that immigration "has been the focus of increased attention and the literature is growing in leaps and bounds, practitioners and scholars interested in this topic continue to bemoan its prevailing theoretical paucity." She groups the numerous models of immigration incorporation, within the structural/conflict perspective, under the title of enclave theory. Enclave theories are primarily concerned with inequality and competition within the economic market. Competition for jobs is considered the impetus that excludes the weakest ethnic or racial groups leading to highly segmented labor markets. Enclave theory is based on a premise that there are winners and losers in the labor market outcomes that result from immigration. This dominant theory would be expected to result in labor markets in which either low-skilled immigrants or low-skilled native workers are excluded or marginalized through unemployment or low wages. Empirical data support some aspects of enclave theory, but fail to demonstrate that the theory fully captures the economic realities of immigration. While this thesis uses the conflict perspective as a starting point, and accepts Heisler's (1999) enclave theory as defining the minimal theory that has been developed in this area, I also explore the possibility that immigrant and native-born black labor market outcomes are not a zero-sum game.

CHAPTER 3: DATA AND METHODS

The primary focus of this research is the relationship between lower-level occupations in which immigrants are overrepresented (concentrated) and low- and middle-level jobs in which blacks are concentrated. Competition between the two groups in lower wage/status occupations is frequently predicted and largely refuted in the literature (see Altonji and Card 1991; Borjas and Freeman 1992:11; Card 1990; Grossman 1982; LaLonde and Topel 1991), yet there is sufficient uncertainty to warrant additional analysis of the implications of low-skilled immigrants on native-born blacks. Further, the ramifications of low-level immigrant concentrations on middle-level black job opportunities is just beginning to be explored in the literature and thus requires additional study.

This latter relationship between job concentrations is suggested because immigrants create economic activity (Friedberg and Hunt 1995) that necessitates incremental administrative (e.g., scheduling, billing) and service (e.g., bus drivers, government clerks) job functions and has been indicated in prior research (Adelman et al. 2005; Rosenfeld and Tienda 1999). Because these administrative and service jobs require English proficiency and many require Civil Service credentials (e.g., postal workers), many native-born blacks are well positioned for these middle-class jobs. This leads to the possibility of a “bump up” effect among blacks in areas of high immigrant concentrations where higher wage opportunities replace low-wage jobs for blacks and where immigrants are largely limited to low-wage jobs. Such a bump up is of particular interest for its potential to provide blacks, who have the necessary education, to obtain jobs that pay somewhat higher wages and often offer health insurance. Rather than the possibility of

competition for low-level jobs, or worse, a “leap frog” effect where immigrants fare better in the labor force than native-born blacks, clarification of a bump up effect would suggest nominal, but obtainable opportunities for black workers. It is the exploration of this potential relationship between immigrant job concentrations (IJCs) and black occupational concentrations (BOCs) that is at the center of this research.

The methodological starting point is the determination of the proportional size of the IJCs and BOCs, for a sample of 150 metropolitan areas (MAs), in each of three levels (low, mid, and high socio-economic status). For purposes of this study, blacks are native-born individuals that identify as black (one-race) on the census questionnaire and immigrants are all foreign-born individuals that entered the United States during 1980 or after. The concentration proportions then are used as variables in multivariate analyses that depict the relationship between the job concentrations as well as MA characteristics and controls. For example, the relationship between the mid-BOC and the low-IJC is assessed to investigate the effect of low-level immigrant concentrations on overrepresentations of mid-level black occupations across metropolitan areas. The additional variables are grouped by MA characteristic as those involving labor force, disadvantage, and global city attributes. These are described in detail below.

Two different sets of Census 2000 data must be used to obtain information about individuals and their occupations, and those occupations at the metropolitan level of analysis. Summary Files (SFs) are used to obtain metropolitan level data, but do not produce the occupational detail necessary for this study. On the other hand, Public-Use Microdata Sample (PUMS) data, based on long-form census surveys that are conducted on a sample basis, do provide detailed occupational information. For this study, PUMS

data are used to establish which job categories are overrepresented, for blacks and immigrants, within each of the metropolitan areas. The overrepresented occupational categories are then consolidated, based on socio-economic prestige, into low, middle, and high job classifications. The result is three black and three immigrant concentrations that indicate the proportion of the population in each MA that work in each occupational classification. For example, a low-IJC of 0.426 for El Paso denotes that 42.6% of those sampled are employed in low-level jobs in which immigrants are overrepresented in El Paso. The three BOCs are then the dependent variable in separate OLS regression analyses in which the independent variables are either the IJCs or variables extracted from SFs. In other words, the concentrations derived from individual-level PUMS sample data are assumed to represent the proportion in the entire MA.

PUMS Data and Methods

Because data delineating the proportion of immigrants and blacks employed in jobs that have an occupational overrepresentation of either immigrants or blacks within the MA are not directly available in the SFs, these measures are computed with PUMS data (see Linton 2002). More specifically, data are used from the 2000 Integrated Public Use Microdata Series (IPUMS), compiled by researchers at the Minnesota Population Center (Ruggles et al. 2003).[2]

First, PUMS data are used to determine which of thirty-one job categories are overrepresented by blacks or immigrants in each MA in the analysis. The thirty-one categories are an expansion of twenty-one categories used by the U.S. Census Bureau to

[2] Of note, PUMS data are not available for six of the 150 MAs used in this analysis due to guidelines that prohibit the collection of data in geographical areas that are too small to guarantee anonymity for those completing the census long form. For this reason, Burlington, VT, Charleston, WV, New London, CT, Pittsfield, MA, Portsmouth, NH, and Wheeling, WV were eliminated, making the final sample 144 MAs.

aggregate the 496 (excluding agriculture and military) occupational codes that are tracked. The fundamental approach to grouping of the occupations used by the Census Bureau is maintained in this analysis, but categories that include occupations of different statuses are further divided such that they can be classified as high, medium, or low socioeconomic status. For example, where the Census Bureau groups lawyers, judges, paralegals, and legal support personnel into the same category (Legal Occupations), these are sub-divided into high and mid-level Legal Occupations in this analysis. Continuing this example, Lawyers (identifier 210-see Appendix) and Judges, Magistrates, and Other Judicial Workers (211) have a Duncan Socio-Economic Index (SEI) of 93 (see below). Paralegals and Legal Assistants and Miscellaneous Legal Support Workers each have an SEI of 44. Leaving these four occupations in the same category would provide insufficient differentiation and blur the lines between mid-level and high-level legal workers, necessitating an additional category.

The Duncan SEI provides a measure of occupational status, on a scale of one to one-hundred, based upon the income level and educational attainment associated with each occupation (Duncan 1961).[3] The SEI values for the 496 occupations tracked by the Census Bureau range from 8 to 93. An analysis of the SEI for each identified occupation was conducted with two related objectives. The first goal was to provide a systematic basis for assessing the jobs within the categories and separating those with too wide a range of SEIs into multiple categories. The second goal was to provide an equivalent basis for assigning the new job categories to one of the three classification levels. Each of

[3] Each decennial census uses different occupational classifications; however, a common classification scheme is used that references the 1950 census classifications. The Duncan index provides SEI data for the 1950 occupations, whereas more recent measures of occupational status do not. Because an occupational

the 496 occupations were rank-ordered by SEI and, as a first cut, divided into three equal groups. The dividing lines between high and middle and between middle and low status jobs was then adjusted slightly to assure that similar type occupations were in the same group. For example, the break-point between high and middle was established with 53 in the middle and 54 in the high, allowing all technician occupations to fall in the middle classification and all professional occupations to fall in the high classification. Using the same approach, the break between middle and low was set such that occupations with an SEI of 22 or less were in the low classification and those between 23 and 53 were in the middle classification. The result was 151 occupations in the high, 175 in the middle, and 170 in the low classification that provide face validity in that the resultant classifications represent an occupational grouping that meets common perceptions of job status.

The three SEI classifications were then analyzed, similarly to the Legal Occupations example above, by listing all of the SEI ratings within each category. My goal was to have as few categories as possible (such that small MA samples would be useable) while maintaining categories that were comprised mostly of the same SEI classification.[4] This highlighted ten categories that had an SEI range or distribution that indicated that the category needed to be sub-divided, resulting in a reasonable trade-off between the number of categories and the SEI homogeneity of the categories. The final distribution was 31 categories: 12 high, 11 mid, and 8 low. The thirty-one occupational categories and the associated ranking as high, mid, or low socioeconomic status are shown in Table 3.1. The appendix lists the individual jobs that are grouped into each

---

status study for 2000 census classifications is not available, using the older Duncan index is the only alternative.

[4] Sub-dividing the occupations into more than 31 categories does not provide sufficient cases in each group for many MAs, therefore additional granularity is not possible using PUMS data.

occupational category and denotes the corresponding census identification.

For each occupational category, I calculated odds ratios to determine immigrant overrepresentation and black overrepresentation as is shown in Table 3.2 (for a detailed explanation of the application of odds ratios, see Lim [2001] and Rosenfeld and Tienda [1999]). These odds ratios indicate the relative frequency of members of a group in a specific occupation (versus those in all other occupations) compared to the relative frequency of non-members of that group who hold that same occupation (versus those in all other occupations). An odds ratio equal to or greater than 1.5 designates an occupational category as being part of either the immigrant or black job concentration for a particular MA. For each overrepresented occupational category (odds ratio > 1.5), the number of blacks or immigrants in the category as a proportion of the total number of blacks or immigrants in the MA is calculated. This provides a BOC or IJC for each overrepresented occupational category.

In order to calculate the odds ratios for each MA, IPUMS file extractions are defined that select on variables as follows:

1. Age is used to select only members of an MA who are working age (i.e., sixteen or older and sixty-five or younger).
2. Employment status is used to select only members of an MA who are labor force participants (i.e., employed and unemployed participants).
3. Birthplace is used to select those who are foreign-born in determining the IJCs and to select blacks that are native-born in determining the BJCs.
4. Year of immigration is used to select foreign-born Hispanics and Asians that immigrated recently (i.e., 1980 and after).

5. Race is used to determine a member of white, non-Hispanic black and Asian groups.
6. Hispanic is used to determine a member of the Hispanic group.

144 samples are extracted from the IPUMS and used to compute the odds ratios. The size of each job category that is overrepresented, for blacks or immigrants, by an odds ratio of 1.5 or higher is then summed to create six job concentrations, three each (low, mid, and high) for blacks and immigrants; forming the BOCs and IJCs.

Summary File Data and Methods

The six concentrations are calculated for each of 144 MAs, a stratified, random sample of Metropolitan Statistical Areas and Primary Metropolitan Statistical Areas as defined by the 2000 census. The sample is stratified based on region and population size, resulting in a sample that represents the regional distribution of U.S. MAs.[5] The sample includes all 50 MAs with a population of one million or more persons. One hundred additional MAs are then randomly selected from the remaining MAs, with a population between 80,000 and 1,000,000. As noted above, Burlington, Charleston, New London, Pittsfield, Portsmouth, and Wheeling were then eliminated from the sample due to insufficient PUMS data, resulting in the 144 MA sample. The MAs in the final sample are listed in Table 4.3.[6]

---

[5] The 2000 Census indicates that the Northeast comprises 21% of all MAs while the Midwest, South, and West include 21%, 38%, and 20% respectively (Adelman et al. 2005). The 144 MAs in this sample include 19%, 25%, 37%, and 19% respectively.

[6] The PUMS data for several MAs is based on a somewhat different geographical area than the SF data due to confidentiality requirements for the long-form on which PUMS data is based. For some MAs, occupational odds ratios are based on different populations than the summary file data used in the multivariate analysis. Approximately twelve MAs have large enough differences to warrant concern. However, these MAs were checked during the outlier diagnostics and not found to be problematic. As a result, it was decided to keep these MAs in the analysis in the interest of including all possible data.

The relationship between the IJCs and BOCs, across MAs, are investigated in a multivariate regression analysis context with the three BOCs as the dependent variables and the three IJCs as the primary independent variables of interest. Control variables (e.g., labor force participation) are determined based on theory and empirical research found in the relevant literature. The additional metropolitan-level data and variables come from a pre-existing data set based on SFs from Census 2000 (see Adelman et al. 2005; Jaret, Reid, and Adelman 2003; Reid et al. 2005). Three nested models are generated for each of the three BOCs (dependent variables), comprised of variables that are grouped into those involving labor market, disadvantage, and global city characteristics.

Dependent variables. The dependent variables are the low-BOC, mid-BOC, and high-BOC, continuous variables measured as proportions.

Independent variables. The main independent variables of interest are the low-IJC, mid-IJC, and high-IJC, continuous variables stated as proportions. Control variables are used for theoretical reasons, and for a more complete understanding of the relationship between the BOCs and the IJCs. These variables are used to generate three nested OLS regression models for each BOC. Model 1 predicts each BOC while including only the IJCs and labor force control variables on the right-hand side of the equation. Model 2 adds economic disadvantage variables and Model 3 adds variables that are indicative of a global city. Control variables are defined as follows:

1. Black labor force participation: the number of blacks aged sixteen or older that are categorized as in the labor force. From Census 2000 Summary File 3 (SF 3) Detailed Table P150B.

2. Asian labor force participation: the number of Asians aged sixteen or older that are categorized as in the labor force. From Census 2000 Summary File 3 (SF 3) Detailed Table P150D.
3. Hispanic labor force participation: the number of Hispanics aged sixteen or older that are categorized as in the labor force. From Census 2000 Summary File 3 (SF 3) Detailed Table P150H.
4. The percentage change in the foreign-born population from 1990 to 2000. Census 2000 Summary File 3 (SF 3) – Sample Data – Table DP-2: Profile of Selected Social Characteristics and Census 1990 Summary File 3 (SF 3) – Sample Data – Table DP-2: Social Characteristics: 1990.
5. Percent black in-migration (1995-2000): the percentage of the MA population (2000) that was in a different MA than in 1995. From Census 2000 Summary File 4 (SF 4) – Sample Data - PCT50. Residence in 1995 for the population 5 years and over – MSA/PMSA Level: Black or African American alone.
6. Percent black not high school graduate: the percentage of the MA's black population, aged 25 and over, which do not have a high school degree. Census 2000 Summary File 3 (SF 3) - Sample Data – Detailed Table P148B. Sex by Educational Attainment for the Population 25 Years and Over (Black or African American Alone).
7. Median Age: the median age of the MA population. DP-1. Profile of General Demographic Characteristics: 2000 Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data.

8. Disadvantage index: an index calculated by adding the MA's percentage poverty (Census 2000 Summary File 3 (SF 3) – Sample Data – Table P87: Poverty Status by Age in 1999 [Detailed Tables]), percentage unemployment (U.S. Bureau (1993a), Table 33), and percentage female head-of-household (Census 2000 Summary File 3 (SF 3) Table P9).
9. Cost of living (First Quarter 2003): composite of cost factors such as housing, taxes, and food, expressed as an index against a national average of 100 (Sperling and Sandler 2004:71).
10. Percent professional services: percentage of the civilian labor force (age 16 and over) that is employed in the professional services sector. Census 200 Summary File 3 (SF 3) – Sample Data – Table GCT-P13: Occupation, Industry, and Class of Worker of Employed Civilians 16 Years and Over [Geographical Comparison Tables].
11. Percent low-service industries: percentage of the civilian labor force (aged 16 and over) that is employed in the service sector.[7] Census 2000 Summary File 3 (SF 3) - Sample Data – Table DP-3: Profile of Selected Economic Characteristics [Demographic Profiles].
12. Percentage change in service industry (1990-2000): the percentage change in the civilian labor force (aged 16 and over) that is employed in the service sector (see number 11 above).
13. Percent change in white labor force (1990-2000): the percentage change of the

[7] This variable is obtained by adding the percentages of an MA's civilian labor force that are employed in two service industry categories ("arts, entertainment, recreation, accommodation, and food services" and "other services, except public administration") (see Reid et al. 2005)

civilian labor force, aged 16 and over. Census 2000 Summary File 3 (SF 3) – Sample Data - Table P150I [Detailed Tables] and Table 43, U.S. Census Bureau 1993a for MAs whose boundaries did not change between 1990 and 2000.[8]

Diagnostics

In the multivariate analysis, standard errors are corrected using Long and Ervin's HC3 correction (2000) for heteroscedasticity. In an aggregate metropolitan level of analysis, heteroscedasticity results from larger MAs exhibiting smaller standard deviations than those exhibited by smaller MAs. This violates the homoscedasticity assumption for OLS regression and results in potentially misspecified standard errors. The HC3 correction compensates for both known and unknown heteroscedasticity and adjusts the standard errors accordingly (see Reid et al. 2005; Johnston and DiNardo 1997; Mesner and Blau 1987). The HC3 correction is the preferred method, as Reid et al. (2005: 768) note:

> The advantage of HC3 over weighted least squares regression, a more often used correction for heteroscedasticity, is that for the latter the source of the heteroscedasticity must be known and an appropriate functional correction must be available. HC3 corrects heteroscedasticity from both known and unknown sources.

In addition to the HC3 correction, OLS diagnostics were performed to validate the assumptions, beyond homoscedasticity, for OLS regression analysis, including multicollinearity, linearity, and outliers (Gujarati 1995). To assess multicollinearity, bivariate correlations were checked against a standard that they be less than 0.7. The only variables that were near this threshold were between the labor force participation variables, but they were at acceptable levels. Particular attention was paid to the three IJC

[8] MAs that added or dropped counties between 1990 and 2000 have been adjusted in the existing data set such that the 1990 boundaries match those of 2000. This required the use of additional data sources: Table

classifications, because it was desirable to include these as concurrent independent variables for ease in presenting the results. Tolerance values and variance inflation factors (VIFs) were well within acceptable levels. The VIFs for the IJC variables were all below three (Gujarati 1995).

Also, considerable attention was given to assessing outliers, including investigation of standardized residuals, studentized residuals, leverage, studentized deleted residuals, Dffit, and Cook's Distance. Several MAs stood out on scatterplots of standardized and studentized residuals, including Duluth, Denver, Dallas, Oakland, and San Diego. A leverage plot indicated New York City as an outlier with the most leverage. However, Cook's Distance suggested that even New York City was not a problem (<.35) as no cases approached 1.0. Even though Duluth was the largest outlier in terms of residual, its lack of leverage was verified by removing the case and noting that it made virtually no difference. Duluth was then included in the analysis. Further, larger residuals were less of a concern because the HC3 correction was being used.

Normality was confirmed by plotting residuals on an expected versus observed cumulative probability graph and noting the conformity to a straight line. Linearity was found to be acceptable by observing the randomness of the partial regression plots for each variable. Homoscedasticity was assessed using White's Test and found to not be problematic. However, the HC3 correction was performed to assure no problem with unknown sources of heteroscedasticity.

30, U.S. Census Bureau 1993b, Tables 144 and 154, U.S. Census Bureau 1993c, and Tables 18, 20, and 30, U.S. Census bureau 1993d.

Hypotheses

Four primary hypotheses are tested as follows:

Hypothesis 1: MAs with larger low-IJCs will have larger mid-BOCs. In other words, a specific bump-up effect is expected to exist that increases the size of the mid-level black concentration (mid-BOC) when the low-level immigrant concentration (low-IJC) is increased. The case of low-wage immigrants creating mid-level black jobs is the situation that is expected to be pronounced in the current labor market due to the high number of immigrants in low-level jobs. Because administrative and clerical jobs are more likely to be generated by low-wage jobs (e.g., low-skill workers usually require more supervision and detailed scheduling), the low-IJC - mid-BJC relationship a key focus of this research. However, the relationship between all combinations of IJCs and BOCs will be tested.

Hypothesis 2: The size of a MA's low-IJC and the MA's low-BOC will not be significantly related. This hypothesis assesses the dominant literature that low-wage immigrant jobs and low-wage black jobs do not substitute for each other, but rather complement one another. A substitution effect will be evidenced by a low-BOC that decreases with an increase in the size of the low-IJC. If this relationship is not observed, it will indicate a complementary relationship between low-wage immigrant jobs and low-wage black jobs.

Hypothesis 3: MAs with higher levels of disadvantage will have smaller BOCs. This hypothesis assesses the effect of disadvantage factors, such as poverty and unemployment, on the size of black concentrations of jobs. Assuming that immigrant location patterns are influenced by instrumental economic factors, then IJCs will be lower in metropolitan areas with higher disadvantage. Further, areas with lower IJCs are

expected to have lower BOCs. It then follows that metros with higher disadvantage will have lower BOCs.

Hypothesis 4: MAs with higher global city characteristics will have larger BOCs. This hypothesis tests the role that global factors play as a predictor of black concentrations of jobs. Global cities generally attract immigrants to jobs in the low-wage service sector; therefore, a positive relationship is expected between global city factors and the BOCs.

Table 3.1. OCCUPATIONAL CATEGORIES

	Occupational Category	SEI
1.	Management Occupations	High
2.	Business and Financial Operations Occupations	High
3.	Computer and Mathematical Science Occupations	High
4.	Architecture and Engineering Occupations	High
5.	Life, Physical, and Social Science Occupations	High
6.	Community and Social Services Occupations	High
7.	Legal Occupations – High SEI	High
8.	Legal Occupations – Mid SEI	Mid
9.	Education, Training, and Library Occupations	High
10.	Arts, Design, Entertainment, Sports, and Media Occupations – High SEI	High
11.	Arts, Design, Entertainment, Sports, and Media Occupations – Mid SEI	Mid
12.	Healthcare Occupations – High SEI	High
13.	Healthcare Occupations – Mid SEI	Mid
14.	Healthcare Occupations – Low SEI	Low
15.	Protective Service Occupations – Mid SEI	Mid
16.	Protective Service Occupations – Low SEI	Low
17.	Food Preparation and Serving Related Occupations	Low
18.	Building and Grounds Cleaning and Maintenance Occupations	Low
19.	Personal Care and Service Occupations – Mid SEI	Mid
20.	Personal Care and Service Occupations – Low SEI	Low
21.	Sales and Related Occupations – High SEI	High
22.	Sales and Related Occupations – Mid SEI	Mid
23.	Office and Administrative Support Occupations	Mid
24.	Construction and Extraction Occupations – Mid SEI	Mid
25..	Construction and Extraction Occupations – Low SEI	Low
26.	Installation, Maintenance, and Repair Occupations	Mid
27.	Production Occupations – Low SEI	Low
28.	Production Occupations – Mid SEI	Mid
29.	Transportation and Material Moving Occupations – High SEI	High
30.	Transportation and Material Moving Occupation – Mid SEI	Mid
31.	Transportation and Material Moving – Low SEI	Low

Table 3.2. CALCULATION OF ODDS RATIOS *

Racial/Ethnic Group of Interest	**Occupation of Interest**	**All Other Occupations**
Immigrants	f_1	f_2
Blacks	f_3	f_4
All Others except group of Interest	f_5	f_6

Odds ratio for immigrant overrepresentation: $\frac{(f_1/f_2)}{(f_5/f_6)}$

Odds ratio for black overrepresentation: $\frac{(f_3/f_4)}{(f_5/f_6)}$

* This table is based on the description of odds ratios as calculated by Logan et al. (1994:700).

Table 3.3. METROPOLITAN AREA SAMPLE

Akron	Fresno	Orange Co.
Albany	Ft Lauderdale	Orlando
Albuquerque	Ft Wayne	Philadelphia
Allentown	Gary	Phoenix
Asheville	Grand Rapids	Pittsburgh
Atlanta	Greensboro	Portland
Atlantic City	Greenville	Providence
Austin	Harrisburg	Racine
Bakersfield	Hartford	Raleigh
Baltimore	Houston	Reno
Baton Rouge	Huntsville	Richmond
Beaumont	Indianapolis	Riverside
Bergen-Passaic	Jackson, MS	Rochester, MN
Biloxi	Jacksonville, FL	Rochester, NY
Binghamton	Jacksonville, NC	Sacramento
Birmingham	Jersey City	Salt Lake City
Bloomington	Kankakee	San Antonio
Bloomington-Normal	Kansas City	San Diego
Boise	Kenosha	San Francisco
Boston	Knoxville	San Jose
Bremerton	Lafayette	Savannah
Bridgeport	Lakeland	Scranton
Buffalo	Las Vegas	Seattle
Champaign-Urbana	Little Rock	Shreveport
Charleston, SC	Los Angeles	Sioux City
Charlotte	Louisville	South Bend
Chattanooga	Lubbock	Spokane
Chicago	Macon	Springfield, MA
Cincinnati	Madison	St Louis
Cleveland	Memphis	Stockton
Colorado Springs	Miami	Syracuse
Columbia	Milwaukee	Tacoma
Columbus	Minneapolis	Tallahassee
Corpus Christi	Mobile	Tampa
Dallas	Monmouth, NJ	Toledo
Davenport	Montgomery	Topeka
Dayton	Muncie	Trenton
Denver	Nashville	Tucson
Des Moines	Nassau	Tulsa
Detroit	New Haven	Vallejo
Duluth	New Orleans	Ventura
Dutchess County	Newark	Washington, DC
El Paso	Norfolk	West Palm Beach
Eugene	New York City	Wichita
Flint	Oakland	Wilmington, DE
Florence	Ocala	Wilmington, NC
Fort Walton	Oklahoma City	Worcester
Fort Worth	Omaha	Youngstown

CHAPTER 4: RESULTS AND DISCUSSION

The main results for this research consist of three OLS regression analyses, one each for the low-, mid-, and high BOC, followed by a detailed exploration of the metropolitan areas and specific occupational categories involved in the multivariate results. The outcomes of the regression analyses show relationships between black occupational concentrations and immigrant job concentrations, as well as between the BOCs and labor market, disadvantage, and global city variables. The significant relationships that are explored include associations between the mid-BOC and each of the three IJCs, between the low-BOC and the low and mid-IJCs, and between the low-BOC and three of the disadvantage variables. The results highlight competition among blacks and immigrants for some low-level jobs while other occupations appear to be complementary. However, overall, immigrant concentrations in low-skilled jobs tend to reduce the number of blacks who are employed in similar low-level occupations. Also, a bump-up effect is explored in which the mid-BOC is positively related to the low-IJC. Further, joint opportunities are shown to occur between the mid-BOC and the mid-IJC, in which blacks and immigrants gain entry into mid-level jobs via different paths. On the other hand, the high-BOC is found to be the smallest job concentration, indicating limited upward mobility for blacks.

Univariate and Descriptive Results

Table 4.1 shows that the largest occupational concentrations are in the low classification for both blacks and immigrants, 0.227 and 0.267 respectively. Or, stated differently, 22.7% of blacks in the sample MAs are in low-SEI occupations that are

overrepresented for blacks.[9] For immigrants, the percentage is higher at 26.7%. In both cases, the low concentrations are dramatically higher than for the mid- and high-level concentrations. However, the mid- and high-concentrations are quite different for blacks and immigrants. In the high classification, immigrants are in overrepresented occupations at over twice the rate of blacks: 0.058 compared to 0.027. Based on supplementary analysis, this effect is primarily the result of well-educated Asians in professional positions, with relatively few Hispanics in similar positions. The opposite relationship exists in the mid-classification where blacks are over twice as likely as immigrants to be in overrepresented mid-level occupations: 0.059 compared to 0.028, respectively.

Table 4.2 highlights the occupational differences between the primary minority racial and ethnic groups in the United States. The top five occupations for each group are shown for the jobs in which a group is most prevalent on one hand, and least prevalent on the other, across all MAs. The top and bottom occupational categories are determined in a supplementary analysis that disaggregates the immigrant category into Asians, Hispanics, and others. Results are shown for Asians and Hispanics separately, and then for all immigrants combined. The top occupational categories are ones in which the highest percentage of those in the 144 MA sample are of a specific race or ethnicity. For example, the total number of blacks in low-SEI Healthcare, for all MAs, is taken as a percentage of all workers in low-SEI Healthcare. The five highest and the five lowest job categories are then listed for each group. In other words, this table depicts the most and least likely occupational categories that Asians, Hispanics, all immigrants, and blacks are found. Asians are more likely to be employed in high SEI occupations and less likely to

[9] Indicates representation in an occupational category that is at least 1.5 times the expected rate based on the racial composition of the MA's population

work in mid SEI occupations. However, Asians are also less likely to be employed in high SEI occupations such as legal and social service jobs (the sixth most underrepresented category and therefore not depicted in the table). They appear to be employed in science related fields to the exclusion of non-scientific high-level occupations (e.g., legal). Interestingly, high SEI legal positions are underrepresented for all groups: black, Asian, and Hispanic, making it stand out as the "whitest" occupational category with the highest barriers to entry for minorities. This table also shows Hispanics as likely to be in low SEI occupations and unlikely to enter high SEI jobs. Similarly, blacks are most likely to hold low SEI jobs and least likely to attain high SEI occupations.

A distinct pattern emerges in Table 4.2 indicating that both blacks and immigrants are overwhelmingly positioned in lower SEI jobs. These results raise the question of what similarities and differences exist in the patterns among metropolitan areas and occupational categories? Tables 4.3 and 4.4 delineate the MAs with the highest and lowest BOCs and IJCs, respectively, highlighting a wide range of concentrations among the various MAs in the sample. These tables highlight a dichotomy in the patterns, some of which indicate a national character to black and immigrant job concentrations, and other patterns that point to specific regional or metropolitan characteristics. The national view is supported by the number of metropolitan areas with very different characteristics seem to have similarly sized job concentrations. For example, Ventura, CA, Corpus Christi, TX, Bloomington, IN, and Rochester, MN have high-BOCs in the same range and Florence, AL, Omaha, NE, and Racine, WI have mid-IJCs of similar magnitude.

On the other hand, there are other patterns that seem to have attributes that are unique to areas within the United States.

Focusing on the BOC, as outlined in Table 4.3, black overrepresentation in high-level occupations occurs often in metropolitan areas which have relatively small black populations (e.g., Boise). Conversely, there are thirty-two MAs that have no high-level occupations in which blacks are overrepresented. Many of these areas with zero BOCs also have low relative black populations, thus suggesting different characteristics between MAs with lower black populations that have high-BOCs and those with non-existent high-BOCs. Along these lines, there is strong southern regional pattern to the areas with high-BOCs of zero. In contrast, no southern MAs are among those with the largest concentrations of blacks in high-level occupations. This distinction is so consistent that even Atlanta, often considered a "black Mecca," has no high occupational categories in which blacks are overrepresented. In short, on average, blacks do not experience upward mobility to the higher job categories in the South.

The limitations of the South are also evident in comparing the largest and smallest mid-BOCs in Table 4.3. There are no southern MAs in the top twenty largest mid-level concentrations for blacks, but the South is well-represented in the list of the smallest mid-BOCs. Again, black upward mobility, even to modest lower middle-class positions, is dramatically less evident in the South. Not surprisingly, southern MAs do have some of the largest BOCs in the low-level occupational categories.

Table 4.3 also depicts that large mid-BOCs are the most common in larger metropolitan areas, particularly large western MAs such as Los Angeles, San Diego, Oakland, Denver, and San Francisco. These are areas with large immigrant populations,

but not specifically areas with the largest IJCs (see Table 4.4). Interestingly, different large western MAs, including Fresno, Stockton, Bakersfield, and Orange County are among the largest low-IJCs, suggesting a pattern where mid-BOCs are juxtaposed with low-IJCs. The largest high-IJCs are also dominated by western MAs and a few large eastern MAs.

The list of MAs with zero high-level concentrations is longer for immigrants than for blacks. Table 4.4 indicates that there are 50 (out of 144) MAs with no high-level job categories overrepresented by immigrants (compared to 32 for blacks) and 58 MAs with no mid-level IJCs (compared to 7 for blacks). This may reflect less opportunity for immigrants, but must also be tempered by the fact that there are more metropolitan areas with little or no immigrant presence than there are with minimal black populations. On the other hand, immigrant concentrations are found in geographically diverse areas. For example, from Table 4.4, the largest low-IJCs occur in MAs from all regions, although dominated by western areas. The smallest low-IJCs occur predominantly in mid-size Midwest and Northeast metropolitan areas. Table 4.4 provides some insight into the current state of immigrant locations, at least as reflected by labor markets. Clearly immigrant concentrations exist beyond the generally accepted gateway cities (i.e., Los Angeles, New York, and Miami). If the data in Table 4.4 were plotted on a map, it would show that immigrant occupational overrepresentations are emanating from the Southwest and moving to the North and East.

Tables 4.5 and 4.6 provide further insight into the issue, showing that there are certain occupational categories that are overwhelmingly overrepresented by blacks or by immigrants. These tables rank order the thirty-one job categories by mean odds ratio for

the 144 MAs. For example, low-SEI Healthcare, such as nurse's aides, are overrepresented with blacks in 142 of 144 MAs. Across all MAs, blacks are overrepresented in low-SEI Healthcare by an average odds ratio of 4.94. In Savannah, Monmouth, and Bergen-Passaic the odds ratio is 11.38, 10.85, and 9.77 respectively. In other words, the relative frequency of blacks in low-SEI Healthcare (versus those in all other occupations) in these MAs is approximately ten times as high as the relative frequency of non-blacks in this job category (versus those in all other occupations). The second highest mean odds ratio, for blacks, is mid-SEI Transportation and Material Handling, which includes jobs such as bus drivers, mass transit workers, and crane operators. With an average odds ratio of 3.20, this type of work is overrepresented by blacks in 124 of the 144 MAs. Similarly, low-SEI Protective Service occupations, such as mass transit police, security guards, and campus police, are overrepresented in 126 of the 144 MAs with a mean odds ratio of 2.21. The lowest mean odds ratio, for blacks, is in high-SEI Legal occupations. These occupations, such as lawyers and judges, have an average odds ratio of 0.31. In other words, across all MAs, the relative frequency that blacks are lawyers and judges (versus those in all other occupations) is about one-third of the relative frequency of non-blacks in this job category (versus those in all other occupations). Even in metropolitan areas with the largest odds ratios, specifically Oakland (0.69), Minneapolis (0.64), and Los Angeles (0.61), have fewer blacks in high-SEI Legal occupations than even odds would indicate we should expect.[10] Similarly, high-SEI Healthcare occupations and Management occupations have an average odds ratio of 0.42. Blacks are also underrepresented in these areas. Table 4.5 clearly portrays

[10] MAs with fewer than ten individuals in a given occupational category are included in Tables 4.5 and 4.6 in the column counting the number of MAs with odds ratios greater than one, but disregarded in the column

that blacks are much more likely to have access to certain occupations, those with the highest mean odds ratios, and limited in their access to certain other jobs, those with the lowest mean odds ratios.

Table 4.6 outlines the same information for immigrants as Table 4.5 does for blacks. Immigrants are overrepresented with the highest mean odds ratio of 2.84, in low-SEI Production Operations. Jobs in this category include manufacturing assemblers, production helpers, and low-skilled machine operators. Immigrants are overrepresented in these occupations in 137 of the 144 MAs. The highest odds ratios are found in Nassau, Orange County, and New Haven with values of 6.25, 5.74, and 5.42 respectively. The second highest immigrant mean odds ratio is in the Building and Grounds Cleaning and Maintenance occupational category, at 2.54. This category includes low-skilled service jobs such as groundskeepers, maids, and janitors. Immigrants are overrepresented in this job category in 126 of the 144 MAs.

The third highest immigrant mean odds ratio, in Table 4.6, is 2.396 for high-SEI Computer and Mathematical Science occupations, which points to a key difference between the type of occupations that are overrepresented by immigrants and those that are overrepresented by blacks. The only high-SEI occupational category to have a mean odds ratio greater than one, for blacks, is Community and Social Services. Even this one category is debatable as a high-SEI category; the jobs, which include counselors, social workers, and clergy, require education commensurate with many high-SEI occupations, but salaries are more in line with mid-SEI occupations. Therefore, the only high-SEI attainment by blacks is one with lower financial rewards than most other high-SEI occupations. By contrast, immigrants have several high-SEI occupational categories in

---

listing the MAs with the highest odds ratios.

which they are overrepresented, on average, across all MAs. In addition to Computer and Mathematical Science, these include Life, Physical, and Social Science, high-SEI Healthcare, and Architecture and Engineering. This suggests that the immigrant population is bifurcated by educational level with higher educated immigrants attaining high-SEI occupations that a much less accessible for blacks.

However, the lowest mean odds ratio for immigrants is in high-SEI Legal occupations (i.e., lawyers and judges), implying that immigrants do not pursue, or are excluded from, this occupational category (see Table 4.6). The mean odds ratio of 0.091 indicates that immigrants very rarely enter the legal profession. Slightly higher mean odds ratios are found in Boston (0.21), Washington, DC (0.15), and San Diego (0.15), but even these values are very low. The second lowest mean odds ratio (0.162) for immigrants is mid-SEI Protective Services, which includes jobs such as police, firefighters, and correctional officers. The third lowest mean odds ratio (0.247) for immigrant is mid-SEI Transportation and Material Moving, a job category that we have seen is one of the most overrepresented by blacks. This occupational category is an excellent example of jobs in which blacks and immigrants complement one another in the labor market as there is little competition among to two groups for these occupations.

Overall, these tables paint a picture where certain occupational categories seem to be over- or underrepresented across high numbers of MAs while distinctions between MAs are not immediately obvious. These descriptive data seem to indicate that social forces propelling racial/ethnic minorities into particular jobs are national while individual metropolitan characteristics seem to be less influential than the occupations themselves. The multivariate analysis that follows is designed to explore these relationships further.

Bivariate and Multivariate Results

Before addressing the multivariate results, the bivariate correlations are shown in Table 4.7. Bivariate correlations between the three BOC dependent variables and the three IJC independent variables indicate a weak, but significant, positive (.212) relationship between the size of the high-BOC and the mid-IJC. None of the three IJC variables are significantly correlated with the mid-BOC at the bivariate level. However, all three IJC variables are correlated with the low-BOC; there is a positive relationship with the high (.270) and mid (.224) IJC and a negative one with the low-IJC (-.268). These low-BOC associations are all significant.

These data demonstrate that several relationships of interest exist between black and immigrant job concentrations. These correlations suggest that a multivariate analysis may develop predictive and explanatory associations that will shed additional light on connections between minority occupational concentrations. It is the multivariate analysis that is of primary interest and is addressed next. Tables 4.8, 4.13, and 4.17 display three models for each dependent variable.

***Mid-BOC analysis*.** First, in Table 4.8, as hypothesized, there is a positive, moderately strong, and significant ($B = .134$, $\beta = .230$, $p = .027$) relationship between the low-IJC and the mid-BOC. Model 1 predicts that a one point increase in the size of the low-IJC will result in a 13.4% increase in the size of the mid-BOC when controlling for labor force variables. These data suggest that immigrants in low socioeconomic positions create higher socioeconomic jobs that are filled by blacks. Hypothesis 1 stated that MAs with larger low-IJCs will have larger mid-BOCs, which is shown to be the case in this analysis. This relationship is not statistically significant when disadvantage variables are

added, but is significant for Model 3 (p = .066), which includes disadvantage and global city variables.

Controlling for disadvantage characteristics diminishes the relationship between the mid-BOC and the low-IJC because of the variable that measures blacks without a high school education. Although this variable is not statistically significant, clearly it explains some of the variation in the mid-BOC that was attributed to the low-IJC in Model 1. Stated differently, by taking differences in the educational level of blacks out of the equation (i.e., controlling for), the significance (i.e., value of p) of the low-IJC is reduced (i.e., becomes statistically significant) compared to when black educational levels are not controlled for. This indicates that the relationship between the low-IJC and the mid-BOC is stronger in some MAs, and weaker in some MAs, depending on the percentage of blacks without a high school education. It suggests that the presence of a larger low-IJC does not correspond to a larger mid-BOC in areas where there are not sufficient numbers of blacks with adequate education to take advantage of the mid-level job opportunities. Additional research is required to better understand the effect of different educational levels on black middle-class job opportunities in areas with high low-level immigrant job concentrations. When global city variables are added in Model 3, the low-IJC is significant (p = .0661). Overall, then, these data support the presence of a “bump-up” effect.

Second, Table 4.8 shows a weak, positive, and significant relationship (B = .252, β = .139, p = .018) between the mid-IJC and mid-BOC. Model 1 predicts that a one point increase in the size of the mid-IJC will result in a 25.2% increase in the size of the mid-BOC when controlling for labor force variables. This relationship increases in strength

and significance as additional explanatory variables are added, suggesting that the relationship is based on variables other than disadvantage and global city characteristics. These results suggest the possibility that there is a synergistic effect between immigrants and blacks in mid-level occupational categories. The specific job categories involved are investigated later to provide further insight into this phenomenon of parallel mid-level minority opportunity.

Third, Table 4.8 also depicts a moderate, positive, and significant relationship (B = .252, β = .254, p = .025) between the high-IJC and the mid-BOC. Model 1 predicts that a one point increase in the size of the high-IJC will result in a 25.2% increase in the size of the mid-BOC when controlling for labor force variables. This relationship holds across the three models as additional explanatory variables are added. Whether this is a "pull-up" effect, where immigrants in high-level occupations create opportunities for blacks in mid-level jobs, or a case where conditions are favorable to both the high-IJC and the mid-BOC cannot be determined with certainty by this analysis. However, the relationship of the mid-BOC with higher SEI job overrepresentation by immigrants indicates that MA characteristics are favorable to both the mid-BOC and the high-IJC. Again, these characteristics do not appear among the disadvantage and global factor variables of Models 2 and 3. The specific job categories involved are investigated later to provide further insight into this phenomenon of parallel minority opportunity for blacks in mid-level occupations and immigrants in high-level occupations.

To further explore the significant relationship between the mid-BOC and the low, mid and high-IJC, MAs were ranked by the size of their combined job concentrations (e.g., the sum of the low-IJC and mid-BOC, a number that indicates the relative

magnitude of the combined job concentrations). For example, Dallas ranks the highest as having a large low-IJC and a large mid-BOC with a combined job concentration of .756, indicating that 75.6% of blacks and immigrant workers in the area are overrepresented in these two occupational categories (see Table 4.9). The MAs of primary interest (the top 20 combined job concentrations) in investigating the relationships between the IJC and the mid-BOC are listed in Table 4.9. These lists depict the MAs that most exemplify each of the three relationships with the IJC that Table 4.8 highlights as significant. The top MAs for each situation are then analyzed in terms of the occupational categories that comprise the respective job concentrations as depicted in Table 4.10, Table 4.11, and Table 4.12. In other words, Table 4.8 delineates which relationships are of interest; Table 4.9 lists which areas exhibit the relationships of interest, and Tables 4.10 through 4.12 provide additional information for analyzing the relationships of interest.

Tables 4.10 through 4.12 also present a "typical MA profile" for MAs having the combined attributes of interest. For Table 4.10, the top 20 MAs exhibiting both larger mid-BOCs and low-IJCs were considered in terms of the specific occupational categories that are overrepresented by either blacks or immigrants. These occupational categories were then tallied and are included in the "typical MA profile" if the category was overrepresented in more than half of the highest ranked MAs for that attribute combination. These profiles give a fairly concise picture of the job categories that most frequently contribute to the significant relationships between job concentrations in the mid-BOC multivariate analysis.

The mid-level occupations shown in Table 4.10, in which blacks are overrepresented, consist of Office and Administrative Support, which includes billing and

posting clerks, dispatchers, payroll clerks, and postal service mail carriers and Transportation and Material Moving, which includes bus drivers, subway workers, and ambulance drivers. Other occupational categories that comprise bump-up positions that offer black opportunity are Healthcare-mid SEI (see Los Angeles and Kankakee in Table 4.10), which includes registered nurses, paramedics, and dental assistants, Personal Care and Service Occupations (see Kankakee and San Diego in Table 4.10), which includes transportation attendants and child care workers, and Protective Services–Mid SEI (see Los Angeles and San Diego in Table 4.10), which includes police and firefighters.

The primary types of jobs envisioned by the literature as bump-up positions are services. As immigrants concentrate, a demand is created for services to support the additional population. This research supports this expectation and outlines the specific mid-level job categories that are involved in Table 4.10: Transportation and Material Moving, Healthcare, Protective Services, and Personal Care and Services.[11] These job categories are comprised of jobs, such as bus drivers, mass transit operators, nurses, and police, which provide the services necessary to the functioning of society. Thus, this research supports the literature that predicts a bump-up in service occupations which blacks are well-positioned to fill.

However, this research also depicts Office and Administrative occupations as a key job destination for blacks involved in a bump-up effect. This idea has been suggested

[11] Community and Social Services was classified as a high SEI occupational category for this study based on the decision to use the Duncan Socioeconomic Index as the classification criteria. As a result, community service jobs such as social workers and clergy, which are overrepresented by blacks (mean odds-ratio of 1.73), are not a part of the statistical analysis of the relationship between the mid-BOC and the low-IJC. However, these jobs typically pay salaries that are more in line with other jobs that are classified in the mid-level occupational category and are arguably a part of the "bump-up" effect for blacks. If Community and Social Services occupations were included in the mid-level classification, the significance of the mid-BOC, low-IJC relationship would increase substantially in the multivariate analysis. The net effect is that the bump-up effect is understated in this research.

in the literature as arising from the need for administrative functions required to fulfill immigration requirements such as documenting the legality of workers (see Light and Rosenstein 1995, Waldinger 1996). The suggestion here is much different in that immigrant workers are envisioned as creating a demand for administrative and clerical functions related to the incremental work performed by immigrant workers employed in low-level jobs. For example, immigrants working for a firm that provides chemical lawn services perform work that needs to be scheduled, provide services that need billed and use chemicals that need to be procured. These are jobs that result directly from the work (direct labor in financial terms) performed by those occupied in low-level positions. This research, then, extends the literature by identifying administrative functions as an additional source of bump-up positions, along with the previously suggested service functions.

Mid-level occupations in which blacks are overrepresented fall into two broad categories based on how entrance to the occupation is achieved: jobs requiring civil service skills (e.g., postal workers, bus drivers, billing clerks) and jobs requiring specific vocational training (e.g., dental assistants, laboratory technicians, police). Arguably, demand for civil service skills and vocational skills increases where concentrated economic activity occurs, which can be facilitated by low-cost labor such as that provided by immigrants working in jobs represented by the low-IJC. Nationally, blacks are overrepresented in mid-level jobs in the areas of Transportation and Material Moving, Protective Services, and Office and Administrative Support (see Table 4.5), suggesting civil service skills as a primary means of upward mobility. However, focusing on areas where both the mid-level black concentration and the low-level immigrant concentration

are the highest highlights the possible role of vocational training as an additional upward path.

Of the MAs that exceed the mean size of the mid-BOC, about 59% of these also have low-level immigrant job concentrations that exceed the mean size of the low-IJC.[12] There is a distinct positive relationship between mid-level black opportunity and low-level immigrant activity in the labor force as shown in Table 4.8, Models 1 and 3. Further research is required to better understand the exact mechanisms that make this the case and to better identify explanatory variables associated with the relationship. This current research further solidifies the premise that there is a bump-up effect, that it represents an area of mutual opportunity between blacks and immigrants, and that there are likely specific kinds of training that best position blacks to take advantage of the opportunity.

In the relationship between the mid-BOC and the mid-IJC, 41.5% of the MAs with mid-level black concentrations above the mean mid-BOC have mid-level immigrant job concentrations above the mean mid-IJC (see Footnote 11). In other words, this relationship occurs in fewer MAs than the mid-BOC, low-IJC relationship. However, multivariately it is a significant, albeit weak, relationship that holds across the three models (see Table 4.8). The values for the unstandardized coefficients range from .252 for Model 1 to .277 for Model 3, indicating that the model predicts that a unit increase in the size of the mid-IJC will result in an approximate 26% increase the size of the mid-BOC when controlling for labor force participation and change in recent foreign-born.

Table 4.11 was developed to further investigate the significant relationship between the mid-BOC and the mid-IJC, depicting the top MAs in terms of combined

[12] Based on a complete listing of the 144 MAs and the respective BOCs and IJCs. The MAs with the twenty highest job concentrations and the twenty lowest job concentrations is shown in Table 4.3.

mid-IJC and mid-BOC. The occupations in which blacks are most often overrepresented are Office and Administrative Support and Transportation and Material Moving, the same occupations that surfaced in the relationship between the low-IJC and the mid-BOC. The only overrepresented mid-IJC occupation to be consistently present in large mid-BOC, mid-IJC MAs is mid-level Production Operations, such as machinists, welders, and semiconductor processors. These data suggest that the first area that recent-foreign-born immigrants demonstrate upward mobility from low-level occupations is within the production arena. These jobs entail specific skills, but are skills that may be able to be learned on-the-job without high English proficiency. For all MAs in this sample, the mean odds-ratio for immigrants, in mid-SEI Production Operations, is 1.374 compared to 0.83 for blacks (see Tables 4.5 and 4.6). Based on supplementary analysis, both Asians and Hispanics are more likely to be overrepresented in Production Operations than blacks, but the odds-ratio for Hispanics is 45% higher than that for Asians.

The profile also indicates that, in MAs with concentrations of skilled immigrant production operators, many of the expected low-level immigrant occupations are present. These include Food Preparation and Serving, Low-SEI Production, Building and Grounds Cleaning and Maintenance, Low-SEI Construction and Extraction, and Low-SEI Healthcare. The presence of both low- and mid-level production occupations suggests a manufacturing base in the MAs exhibiting larger combinations of mid-IJC and mid-BOC concentrations.

The mid-level occupations, shown in Table 4.11, in which blacks are overrepresented, consist of Office and Administrative Support, which includes billing and posting clerks, dispatchers, payroll clerks, and postal service mail carriers and

Transportation and Material Moving, which includes bus drivers, subway workers, and ambulance drivers. Also, another occupational category that provides black opportunity is Protective Services, such as police, firefighters and correctional workers.

The profile, then, for MAs with both large mid-level IJCs and BOCs, is one of immigrants overrepresented in skilled production jobs with a corresponding black overrepresentation in administration and service occupations. It is very similar to the profile for the low-IJC, mid-BOC combination addressed above as a bump-up effect, the difference being the emergence of a mid-IJC centered on production occupations. These results can be interpreted as a parallel bump-up effect, with blacks gaining in administrative and service occupations and immigrants gaining in production occupations. However, it is more likely that given the declining manufacturing phenomenon in the United States, skilled production occupations are not paying substantially higher wages than unskilled jobs and that mid-SEI production occupations may no longer be differentiated, in earnings, from low-SEI production operations. In this scenario, skilled production jobs can be viewed as an extension of the low-level classification with the mid-level administrative and service jobs occupied by blacks actually paying more and the net effect being additional evidence of a bump-up. Additional research that collects income data is required to better elucidate this point.

In the relationship between the mid-BOC and the high-IJC, 31.7% of the MAs with mid-level black concentrations above the mean mid-BOC have mid-level immigrant job concentrations above the mean high-IJC (see footnote 11). Therefore, this relationship occurs less frequently in the sample MAs than the mid-BOC, low-IJC or mid-BOC, mid-IJC relationships. In the multivariate results, however, it is a significant,

moderate relationship that holds positively across the three OLS regression models (see Table 4.8). The highest unstandardized coefficient, at 0.252, is in Model 1, with Model 2 and 3 at 0.204 and 0.248, respectively. Model 1 predicts that a one point increase in the size of the high-IJC will result in a 25.2% increase in the size of the mid-BOC when controlling for a variety of metropolitan characteristics.

Table 4.12 helps to interpret the significant relationship between the mid-BOC and the high-IJC by expanding the top MAs in terms of the combined size of the high-IJC and mid-BOC. The "typical MA profile" for this situation consists of immigrant overrepresentation in the following occupational categories: Education, Training, and Library; Computer and Mathematical Science; Life, Physical, and Social Science; and Healthcare – High SEI occupations. Each of these overrepresented job categories are in the high SEI classification. These occupational concentrations are indicative of MAs with a strong university presence. The most frequent occurrence of mid-level black overrepresentation is in Transportation and Material Handling – Mid (e.g., bus drivers and subway operators) and Sales – Mid SEI (e.g., retail salespersons, cashiers, and telemarketers). University systems certainly add to the need for services, perhaps partially explaining the elevated number of blacks in mid-level occupations. Further, students produce a transient population that necessitates public services, but they are not always counted in the area where those services are consumed, perhaps skewing the data. For example, the highest ranked MAs in this situation are disproportionately in the Midwest and West, suggesting declining manufacturing, and a source of low and mid-skill workers, overrepresented by blacks, to fill the demand for mid-SEI positions. The presence of declining manufacturing in this scenario is supported by low-SEI production

occupations in the typical profile. Thus, the profile takes shape as MAs with traditional university centers combined with recent declining manufacturing or low-cost manufacturing (e.g., electronics assembly). These MAs exhibit larger mid-level black concentrations; however this is not likely the result of a bump-up effect, where low-level immigrant jobs create black opportunities, or a "pull-up" effect, where high-level immigrant jobs create black opportunities. More likely, these MAs are indicative of cities where blacks have lost manufacturing sector jobs, but aided by a university presence have transitioned to similar SEI occupations in the service sector. Longitudinal research that explores the temporal aspects of the mid-BOC is recommended to better understand mid-SEI black concentrations within the context of declining manufacturing.

Summarizing the mid-BOC analysis, black attainment of mid-level occupations is the most evident in areas which have high overrepresentations of immigrants in low, mid, and high-SEI jobs. Whether there is a pull-up effect in which the presence of immigrants in the high-IJC directly creates a demand for mid-SEI black workers is debatable. However, the relationship can be expected to hold true in the population that blacks experience more mid-range mobility in areas with higher concentrations of immigrants. The jobs that blacks successfully fill in each of the three scenarios discussed above are those that are obtained with civil service and vocational skills. These skills seem to be the keys to advancing from low-SEI jobs to mid-level occupations, or to maintaining occupations within mid-SEI job categories.

Low BOC analysis. Table 4.13 indicates that, contrary to hypothesis II, there is a negative, moderate, and significant relationship ($B = -.254$, $\beta = -.312$, $p = .005$) between the low-IJC and the low-BOC. Model 1 predicts that a one point increase in the size of

the low-IJC will result in a 25.4% decrease in the size of the low-BOC when controlling for labor force variables. This relationship holds across the three models as additional disadvantage and global city variables are added.

These data suggest that immigrants and blacks in low socioeconomic positions do, in fact, compete for available jobs. In economic terms, immigrants and blacks are substitutes, as opposed to complements, when considering only low-SEI occupations. Hypothesis 2 stated that low-IJCs and low-BOCs will not be significantly related, an assertion based on a substantial literature deducing that immigrants do not have a negative effect on native-born black employment outcomes. However, while the strength of the negative relation in the current results declines somewhat with the introduction of disadvantage and global city variables, it remains significant and substantial across the three models. This finding is a major contradiction to parts of the literature.

In contrast, Table 4.13 indicates a strong, significant, and positive relationship ($B = .631$, $\beta = .250$, $p = .003$) between the mid-IJC and the low-BOC. For example, Model 1 predicts that a one point increase in the size of the mid-IJC will result in a 63.1% increase in the size of the low-BOC. The effect is lower, but still strong in Models 2 and 3, where the unstandardized coefficients are .475 and .462 respectively. Clearly areas with larger mid-IJCs have larger low-BOCs and this result raises the question of whether immigrants are bypassing native-born blacks in terms of SEI. However, this significant relationship alone does not lead to this conclusion. Areas of high economic activity may lead to jobs for blacks in low-level jobs as well as mid-level jobs and immigrants in mid- and low-level jobs as well. The relationship between the mid-IJC and the low-BOC, in particular is explored further, below, in order to better assess these data.

The percent change in recent-foreign-born population is also significant in Model 1 and Model 3. For Model 1, a one standard deviation increase in recent foreign-born population is predicted to result in a 0.33 standard deviation increase in low-BOC. Thus, increasing populations of recent-foreign-born increase the size of the low black job concentration, but the positive effect is muted by competition for similar low-skill jobs, which results in a 0.312 standard deviation decrease in the low-BOC. In other words, there are opposing effects that highlight the difficulty of measuring the impact of immigrants on native-born black employment outcomes.

When disadvantage variables are added in Model 2 of Table 4.13, black educational levels, median age, and cost of living are significant. First, there is a strong, positive, and significant relationship between the low-BOC and the percentage of blacks who do not have a high school education. Higher levels of blacks with low educational levels results in larger low-level black job concentrations. The moderate relationship between the low-IJC and the low-BOC does not change as the result of adding disadvantage variables, including black educational level. This suggests that education plays a lesser role in the competition for low-skilled jobs. Educational levels, then, have been shown to be a factor in relationship between the low-IJC and the mid-BOC, but not the low-IJC and the low-BOC; a result that stresses the importance of at least a high school education in blacks being positioned for upward mobility into the mid-level occupations. In other words, the presence of immigrant job concentrations may result in higher numbers of mid-level opportunities for blacks, but these opportunities cannot be taken advantage of without sufficient education.

In Table 4.13, Model 2 also depicts moderate, negative, and significant relations between the low-BOC and median age and cost of living. MAs with higher median ages tend to have smaller low-level black occupational concentrations, indicating that areas with older populations have fewer blacks overrepresented in low-level jobs. This suggests that, as workers age, they move out of low-level occupations, either to occupational categories that are not overrepresented, to higher-level job categories, or by no longer participating in the labor market. Similarly, MAs with higher cost of living also have smaller low-BOCs. How the job concentrations are affected by disadvantage factors is an area for further study, however, these results show that indicators of MA disadvantage, higher black educational levels, higher cost of living, and higher median age, along with larger low-IJCs, are significant in predicting the magnitude of the low-BOC. Model 3 indicates that global city variables are not particularly useful in predicting or explaining the number of blacks who work in low-level occupations that have black overrepresentations.

The disadvantage index, at the center of hypothesis 3 is not supported. Hypothesis 3 stated that immigrants, and indirectly blacks, would be expected to avoid areas of disadvantage. This line of reasoning holds true with the negative relationship between the low-BOC and the cost of living variable, however, a similar relationship with the mid-BOC or high-BOC did not prove to be significant. Thus, hypothesis 3 is inconclusive and needs to be investigated further to better understand the relationship between metropolitan area disadvantage and occupational concentrations.

Because global cities typically have a higher cost of living, the above negative relationship between the low-BOC and Sperling and Sander's cost of living index raises

an interesting question about the role of blacks and immigrants in global cities, an area that could be the subject of further research. However, none of the four global city measures are significant in the low-BOC multivariate analysis. Therefore, hypothesis 4, which anticipated a positive relationship between global city variables and black occupational concentrations, based on an expected relationship between higher immigrant concentrations in global cities and complementary black concentrations, is not demonstrated. On the other hand, it is not explicitly rejected, suggesting that the hypothesis needs to be reoperationalized in future research.

To further explore the significant relationship between the low-BOC and the low and mid-IJC, MAs were ranked by the size of their combined job concentrations (e.g., the sum of the low-IJC and the low-BOC, a number that indicates the relative magnitude of the combined job concentrations). For example, Greensboro ranks the highest as having a large low-IJC and a large low-BOC with a combined job concentration of .878, indicating that 87.8% of blacks and immigrant workers in the city are in overrepresented in these two low-level occupational categories. The MAs of primary interest (the top 20 combined job concentrations) in investigating the relationships between the IJC and the low-BOC are listed in Table 4.14. These lists depict the MAs that most exemplify each of the two relationships with the IJC that Table 4.13 highlights as significant. The top MAs for each situation are then analyzed in terms of the occupational categories that comprise the respective job concentrations as depicted in Table 4.15 and Table 4.16. In other words, Table 4.13 depicts which relationships are of interest; Table 4.14 lists which areas exhibit the relationships of interest, and Tables 4.15 and 4.16 provide additional information for analyzing the relationships of interest.

Tables 4.15 and 4.16 also present a “typical MA profile” for MAs having the combined attributes of interest. For Table 4.15, the top 20 MAs exhibiting both larger low-BOCs and low-IJCs were considered in terms of the specific occupational categories that are overrepresented by either blacks or immigrants. These occupational categories were then tallied and are included in the “typical MA profile” if the category was overrepresented in more than half of the highest ranked MAs for that attribute combination. These profiles give a concise picture of the job categories that most frequently contribute to the significant relationships between job concentrations in the low-BOC multivariate analysis.

Table 4.15 shows a “typical MA profile” in which three of the five most overrepresented occupational categories are the same in each MA for both blacks and immigrants. Production Occupations – Low SEI, Building and Grounds Cleaning and Maintenance, and Transportation and Material Moving – Low SEI contain jobs that are potentially contested by blacks and immigrants. Interestingly, it varies from MA to MA as to whether the black or the immigrant concentration is higher (e.g., see Production Occupations for Greensboro (.243 immigrant versus .144 black), Greenville (.146 immigrant versus .209 black), Kankakee (.208 immigrant versus .117 black), Wilmington (.049 immigrant versus .095 black), and Racine (.137 immigrant versus .167 black). Other occupational categories seem to be based less on competition and more on other structural factors such as English language proficiency or recruiting networks. For example, on average, Construction and Extraction – Low SEI is dominated by immigrants and Healthcare – Low SEI is dominated by blacks. In any case, these results indicate considerable competition for low-skill jobs among blacks and immigrants,

although, as noted above, this effect is somewhat mitigated in areas where the foreign-born population is growing the fastest.

Table 4.16 outlines the "typical MA profile" for MAs that have the largest combined low-BOC and mid-IJC, as shown in Table 4.14. This profile is comprised of mid-SEI Production Occupations as the single mid-SEI job category in which immigrants are consistently overrepresented. In MAs that have the largest combined mid-IJC and low-BOC, production occupations seem to be a large enough job category to comprise large mid-level concentrations of immigrants. Therefore, a substantial manufacturing base is evident in these MAs. These are largely "sunbelt" cities and midwestern MAs with declining manufacturing where immigrants are attaining skilled production jobs that are traditionally considered to be mid-level in terms of SEI. In MAs with a low-BOC, mid-IJC scenario, immigrants appear to have captured skilled production jobs while blacks remain in unskilled production positions, suggesting an effect where immigrants "leapfrog" over blacks in the labor market. Thus, competition continues to be a major theme in the analysis of the low-BOC. Whether immigrants are able to achieve mid-SEI jobs due to hiring preferences over blacks, more effective networks, skill differences or other factors is not provided by this analysis. However, it is clear that production related jobs is the primary occupational category where immigrants are currently surpassing blacks, and thus indicates the area of focus for researching the leapfrog effect.

On the other hand, there is also black/immigrant occupational differentiation where competition is much lower, such as that evidenced by black overrepresentation in Healthcare – low SEI and immigrant overrepresentation in Construction and Extraction – low SEI. Thus, low-BOC situations have been shown where there are occupations in

which blacks and immigrants compete, with blacks being more overrepresented in some areas and immigrants in other areas, occupations in certain MAs where immigrants appear to be moving ahead of blacks, and others where blacks or immigrants seem to dominate with little competition. However, two competitive situations dominate: that where blacks and immigrants compete for low-level jobs, and that where blacks and immigrants compete with an apparent outcome in which immigrants have obtained higher SEI occupations.

In sum, the low-BOC analysis is marked by competition while the mid-BOC analysis is characterized by complements, particularly the bump-up effect. Although there is some overlap between the MAs that are in the top twenty MAs with a mid-BOC combination, as shown in Table 4.9, and the top twenty MAs with a low-BOC combination, as shown in Table 4.14, the majority of MAs are unique to one table or the other. This suggests the possibility of different MA characteristics, those that are complementary and those that are competitive. These differences are not explicitly captured in this analysis by disadvantage and global city variables, but research into other characteristics, or a refinement of these characteristics, may shed light on the underlying structure that acts to determine black and immigrant outcomes in the labor market.

High-BOC analysis. Table 4.17 presents the nested OLS regression analysis where the dependent variable is the high-level BOC. Although these models are not the focus of this research, they are included to provide insight into each of the possible combinations between black and immigrant concentrations. Of note is the fact that the high-BOC is the smallest occupational classification among the six classifications being investigated, and is approximately half the size of the high-IJC (see Table 4.1). None of

the IJCs have a significant relationship with the high-BOC and, as suggested by the adjusted R^2 of 0.045, Model 1 is of little predictive value. Model 1 does suggest that the factors that contribute to the highest levels of black upward mobility are different than the factors that drive immigrant concentrations. The attainment of high-BOC jobs does not seem to relate to immigrant job concentrations and the factors that produce immigrant concentrations.

Model 2 shows that percent black in-migration has a relatively strong, positive, and significant relationship with the high-BOC, indicating that blacks migrate to areas that provide opportunity. Further, based on Model 3, blacks in the highest status occupations are found in MAs with higher cost of living, likely because high-level jobs are more plentiful in high cost of living MAs. A third significant result is a somewhat surprising negative relationship with the percentage of the labor force employed in professional service occupations, a variable used as a global city indicator. It appears that black success occurs more in MAs that do not have this global city characteristic, yet are higher cost of living areas.

The MAs that have the largest high-BOCs are listed in Table 4.3. These MAs are generally not areas with large black populations. Table 4.3 also shows that there is not a lot of overlap between MAs that provide black opportunity at the mid-level and at the high-level. In fact, Atlanta, which ranks high in mid-BOC, has no occupations overrepresented by blacks in the high classification. There is no MA that can be pointed to as having both top mid-level black opportunity and top high-level black opportunity. This suggests that black upward mobility does not generally occur within the same area; the concentrations are more distributed and perhaps disconnected. Research more

specifically oriented to understanding black upward mobility, within an MA context, is required to better investigate this dynamic.

Table 4.1. DESCRIPTIVE STATISTICS FOR 144 U.S. METROPOLITAN AREAS, 2000

Dependent Variables	**Mean**	**Std. Dev.**
Low Black Occupation Concentration	0.227	0.105
Mid Black Occupation Concentration	0.059	0.075
High Black Occupation Concentration	0.027	0.028
Independent Variables		
Low Immigrant Job Concentration	0.267	0.129
Mid Immigrant Job Concentration	0.028	0.041
High Immigrant Job Concentration	0.058	0.076
% Change in Foreign Born, 1990-2000	127.4	102.5
Asian Labor Force	29767	69268
Black Labor Force	81549	137093
Hispanic Labor Force	81551	187797
% Black w/o High School Education (>25 years old)	24.520	6.492
Cost of Living, Sperling and Sander (1Q2003)	102.676	22.809
Disadvantage Index	29.717	6.233
% Black In-migrants	14.358	8.534
% Labor Force in Low Skilled Service Occupations	13.165	3.139
% Labor Force in Professional Service Occupations	13.393	5.356
% Change in Low-Skilled Service Occs. (1990-2000)	0.000	1.000
% Change in White Labor Force (1990-2000)	5.4984	15.347

Table 4.2. OCCUPATIONAL CATEGORIES BY RACE/ETHNICITY

Asian Occupational Category Representation

Top Five Occupational Categories	Classification	Bottom Five Occupational Categories	Classification
Computer and Mathematical Science Occupations	High	Construction and Extraction – Low SEI	Low
Life, Physical, and Social Science Occupations	High	Construction and Extraction – Mid SEI	Mid
Personal Care and Service Workers - Low SEI	Low	Transportation and Material Moving – Mid	Mid
Production Occupations - Low SEI	Low	Legal-High SEI	High
Architecture and Engineering Occupations	High	Protective Service – Mid SEI	Mid

Hispanic Occupational Category Representation

Top Five Occupational Categories	Classification	Bottom Five Occupational Categories	Classification
Building and Grounds Cleaning and Maintenance	Low	Business and Financial Operations Occs	High
Construction and Extraction – Low SEI	Low	Healthcare - High SEI	High
Production Operations – Low SEI	Low	Computer and Mathematical Science Occs	High
Food Preparation and Serving Related Occupations	Low	Protective Service - Mid SEI	Mid
Transportation and Material Moving - Low SEI	Low	Legal-High SEI	High

Asian/Hispanic Occupational Category Representation

Top Five Occupational Categories	Classification	Bottom Five Occupational Categories	Classification
Building and Grounds Cleaning and Maintenance	Low	Transportation & Material Moving – Mid SEI	Mid
Production Occupations – Low SEI	Low	Transportation & Material Moving – High SEI	High
Construction and Extraction – Low SEI	Low	Legal-Mid SEI	Mid
Food Preparation and Serving Related Occupations	Low	Protective Service - Mid SEI	Mid
Transportation and Material Moving - Low SEI	Low	Legal-High SEI	High

Black Occupational Category Representation

Top Five Occupational Categories	Classification	Bottom Five Occupational Categories	Classification
Healthcare - Low SEI	Low	Legal-High SEI	High
Transportation and Material Moving – Mid SEI	Mid	Architecture and Engineering Occupations	High
Protective Service - Low SEI	Low	Arts, etc. - High SEI	High
Community and Social Services Occupations	Low	Healthcare - High SEI	High
Building and Grounds Cleaning and Maintenance	Low	Management occupations	High

Table 4.3. METROPOLITAN AREAS WITH THE HIGHEST AND LOWEST BOCS

High BOC		Mid BOC		Low BOC	
Highest Concentrations:		**Highest Concentrations:**		**Highest Concentrations:**	
Boise	0.185	Duluth	0.416	Sioux City	0.499
Duluth	0.166	Los Angeles	0.329	Greenville SC	0.489
Sioux City	0.136	San Diego	0.301	Rochester MN	0.480
Rochester MN	0.120	Oakland	0.300	Shreveport	0.426
Corpus Christi	0.102	Bloomington IN	0.285	Mobile	0.403
Ventura	0.085	Denver	0.270	Worcester	0.399
Bloomington IN	0.072	San Francisco	0.265	Racine	0.397
Binghamton	0.061	Dallas	0.261	Little Rock	0.377
El Paso	0.058	Washington DC	0.259	Charlotte	0.374
Bremerton	0.056	Atlanta	0.225	Savannah	0.372
Springfield MA	0.055	Spokane	0.181	Scranton	0.371
Worcester	0.055	Binghamton	0.170	Lubbock	0.368
Fresno	0.050	Corpus Christi	0.153	Macon	0.367
Dutchess Co.	0.049	Albuquerque	0.152	Biloxi	0.365
New Haven	0.048	Sioux City	0.136	Champaign	0.361
Albany	0.045	Lafayette IN	0.136	Montgomery	0.356
Boston	0.042	Kankakee	0.129	New Orleans	0.351
New York	0.040	El Paso	0.126	Memphis	0.351
Bloomington-Nor IL	0.040	Champaign	0.122	Rochester NY	0.348
Albuquerque	0.039	Bloomington-Nor IL	0.116	Columbia SC	0.347
Lowest Concentrations:		**Lowest Concentrations:**		**Lowest Concentrations:**	
Allentown	0.000	Colorado Springs	0.000	El Paso	0.027
Asheville	0.000	Dayton	0.000	Orange County	0.035
Atlanta	0.000	Greenville SC	0.000	Las Vegas	0.040
Baton Rouge	0.000	Huntsville	0.000	Vallejo	0.046
Birmingham	0.000	Mobile	0.000	Sacramento	0.050
Charleston SC	0.000	Monmouth-Ocean	0.000	San Antonio	0.052
Chattanooga	0.000	Worcester	0.000	Stockton	0.065
Cincinnati	0.000	Asheville	0.004	Springfield MA	0.070
Colorado Spr	0.000	Birmingham	0.004	Los Angeles	0.081
Eugene	0.000	Harrisburg	0.004	Riverside-SB	0.082
Flint	0.000	Knoxville	0.004	Jersey City	0.084
Florence AL	0.000	Memphis	0.004	Bergen-Passaic	0.089
Fort Worth	0.000	Charleston SC	0.005	Bakersfield	0.090
Greensboro	0.000	Lakeland	0.005	Atlantic City	0.092
Greenville SC	0.000	Macon	0.005	Washington DC	0.099
Harrisburg	0.000	Nashville	0.005	Tucson	0.100
Jackson MS	0.000	Phoenix	0.005	Fresno	0.102
Knoxville	0.000	Richmond	0.005	San Diego	0.107
Lafayette IN	0.000	Salt Lake City	0.005	New York	0.112
13 others tied with	0.000	Chattanooga	0.006	San Jose	0.112

Table 4.4. METROPOLITAN AREAS WITH THE HIGHEST AND LOWEST IJCS

High IJC		Mid IJC		Low IJC	
Highest Concentrations:		**Highest Concentrations:**		**Highest Concentrations:**	
Wilmington, DE	0.384	Sioux City	0.321	Kankakee	0.575
Richmond	0.377	Florence AL	0.138	Greensboro	0.555
Bloomington-Normal	0.293	Omaha	0.138	Phoenix	0.511
Boston	0.291	Racine	0.118	Wilmington NC	0.506
Youngstown	0.250	Beaumont	0.109	Dallas	0.495
Macon	0.229	Atlantic City	0.109	Reno	0.488
Boise	0.219	Davenport	0.107	Fresno	0.488
Phoenix	0.217	Topeka	0.105	Fort Worth	0.480
Seattle	0.195	Boise	0.102	Stockton	0.479
Springfield, MA	0.193	Biloxi	0.097	Kenosha	0.476
Lakeland	0.180	South Bend	0.090	Las Vegas	0.469
Asheville	0.180	Oklahoma City	0.080	Bakersfield	0.466
Orange County	0.177	Kenosha	0.080	Orange County	0.461
Reno	0.173	Memphis	0.076	Ventura	0.455
Charlotte	0.150	Dallas	0.075	Austin	0.451
Norfolk	0.139	San Antonio	0.075	Wichita	0.447
Riverside	0.138	Corpus Christi	0.074	Tulsa	0.444
Muncie	0.128	Raleigh-Durham	0.073	Oklahoma City	0.439
Sacramento	0.125	Albuquerque	0.073	Racine	0.431
Gary	0.124	Kankakee	0.069	El Paso	0.426
Lowest Concentrations:		**Lowest Concentrations:**		**Lowest Concentrations:**	
Albuquerque	0.000	Akron	0.000	Albany	0.000
Asheville	0.000	Asheville	0.000	Knoxville	0.000
Atlanta	0.000	Bakersfield	0.000	Detroit	0.029
Atlantic City	0.000	Baltimore	0.000	Flint	0.043
Austin	0.000	Baton Rouge	0.000	Champaign	0.044
Bakersfield	0.000	Bergen-Passaic	0.000	Akron	0.055
Bergen-Passaic	0.000	Boston	0.000	Pittsburgh	0.063
Boise	0.000	Buffalo	0.000	Bloomington IN	0.071
Bremerton	0.000	Chattanooga	0.000	Baton Rouge	0.074
Bridgeport	0.000	Cincinnati	0.000	Bloomington-Nor IL	0.083
Charlotte	0.000	Cleveland	0.000	Toledo	0.086
Chicago	0.000	Colorado Springs	0.000	Buffalo	0.086
Colorado Spr	0.000	Dayton	0.000	Mobile	0.090
Dallas	0.000	Detroit	0.000	Fort Lauderdale	0.097
Denver	0.000	Duluth	0.000	Cincinnati	0.099
El Paso	0.000	Dutchess Co.	0.000	Florence AL	0.103
Fort Worth	0.000	El Paso	0.000	Cleveland	0.103
Fresno	0.000	Fort Lauderdale	0.000	Syracuse	0.105
Greensboro	0.000	Fort Wayne	0.000	Binghamton	0.108
31 others tied with	0.000	39 others tied with	0.000	Rochester NY	0.120

Table 4.5. MEAN BLACK ODDS RATIOS BY 31 OCCUPATIONAL CATEGORIES

Occupation Category	Mean Odds Ratio*	Metropolitan Areas with Highest Odds Ratios**	# MAs w/ OR>1
Healthcare - Low	4.94	Savannah (11.38), Monmouth (10.85), Bergen-Passaic (9.77)	142
Transportation and Material Moving - Mid	3.20	Savannah (25.60), Charlotte (10.45), Miami (8.89)	124
Protective Service - Low	2.21	South Bend (7.20), San Francisco (4.75), Chicago (4.10)	126
Building and Grounds Cleaning and Maintenance (Low)	1.90	Shreveport (4.11), Jackson (3.92), Baton Rouge (3.50)	131
Community and Social Service - High	1.73	Ventura (3.63), Wilmington, DE (3.39), Bergen-Passaic (2.88)	132
Production Operations - Low	1.58	Memphis (2.60), Raleigh (2.56), Charleston (2.49)	135
Transportation and Material Moving - Low	1.58	Jackson (3.47), Wilmington, NC (3.28), Tallahassee (2.99)	110
Personal Care and Service - Low	1.50	Ocala (3.34), Buffalo (2.67), Fresno (2.54)	128
Protective Services - Mid	1.29	Stockton (2.57), San Francisco (2.52), Youngstown (2.43)	110
Food Preparation and Serving (Low)	1.24	Lubbock (2.68), Jackson (2.55), Shreveport (2.33)	104
Personal Care and Service - Low	1.23	Lubbock (2.91), Bridgeport (2.34), Fresno (2.16)	104
Office and Administrative Support (Mid)	1.12	DC (1.63), Oakland (1.58), Dallas (1.57)	101
Sales - Mid	1.04	Binghamton (1.89), Champaign (1.89), Bloomington (1.72)	69
Healthcare - Mid	0.97	El Paso (2.51), NYC (1.77), Trenton (1.75)	60
Arts, etc. - Mid	0.85	San Diego (1.31), Pittsburgh (1.28), Detroit (1.02)	34
Transportation and Material Handling - High	0.83	Des Moines (1.55), San Jose (1.42), Wilmington, NC (1.34)	34
Production Operations - Mid	0.83	NYC (1.95), Oakland (1.61), Vallejo (1.49)	42
Education, Training and Library (High)	0.79	El Paso (1.33), Ocala (1.29), Jersey City (1.22)	18
Business and Financial Operations (High)	0.78	Bloomington-Normal (1.44), Harrisburg (1.35), Fresno (1.32)	21
Installation, Maintenance, and Repair Occupations (Mid)	0.68	Baton Rouge (1.45), Salt Lake City (1.35), Charleston (1.26)	20
Legal - Mid	0.67	San Jose (1.33), NYC (1.11), Ft Walton (1.09)	14
Construction and Extraction - Low	0.67	Orange Co. (2.05), Seattle (1.78), San Francisco (1.49)	30
Computer and Mathematical Science (High)	0.56	Ventura (1.60), Vallejo (1.06), Tacoma (1.05)	13
Construction and Extraction - Mid	0.53	San Jose (1.00), Ft Lauderdale (0.99), San Francisco (0.99)	5
Arts, etc. - High	0.50	Huntsville (1.03), Buffalo (0.99), Hartford (0.75)	11
Sales - High	0.48	Albuquerque (1.11), Colorado Springs (0.88), Jersey City (0.81)	5
Life, Physical , and Social Science (High)	0.47	Akron (1.15), Beaumont (0.89), Phoenix (0.84)	11
Architecture and Engineering (High)	0.45	Ventura (0.98), Providence (0.96), Orange Co. (0.94)	5
Management (High)	0.42	Orange Co. (1.01), Jersey City (0.97), San Antonio (0.68)	6
Healthcare - High	0.42	Orange Co. (0.87), San Antonio (0.84), Jersey City (0.80)	1
Legal - High	0.31	Oakland (0.69), Minneapolis (0.64), LA (0.61)	5

* Mean for 144 Metropolitan Areas ** Metropolitan Areas with at least ten black workers in the PUMS occupation category

Table 4.6. MEAN IMMIGRANT ODDS RATIOS BY 31 OCCUPATIONAL CATEGORIES

Occupational Category	Mean Odds Ratio*	Metropolitan Areas with Highest Odds Ratios**	# MAs w/ OR>1
Production Operations - Low	2.843	Nassau (6.25), Orange Co. (5.74), New Haven (5.42)	137
Building and Grounds Cleaning and Maintenance (Low)	2.540	Phoenix (5.94), Reno (5.36), DC (5.31)	126
Computer and Mathematical Science (High)	2.396	Austin (7.98), Dallas (7.29), Atlanta (7.19)	107
Construction and Extraction - Low	2.124	Pittsburgh (7.55), Chattanooga (7.10), Akron (6.16)	98
Life, Physical , and Social Science (High)	2.098	Pittsburgh (10.80), Buffalo (8.91), Cleveland (8.07)	84
Food Preparation and Serving (Low)	2.057	Tulsa (3.64), Reno (3.59), San Francisco (3.38)	133
Healthcare - High	1.837	Pittsburgh (6.21), Syracuse (4.77), Buffalo (4.37)	72
Production Operations - Mid	1.374	Sioux City (7.45), Omaha (6.55), Des Moines (3.80)	105
Personal Care and Service - Low	1.369	Ocala (6.34), Cincinnati (3.93), Colorado Springs (3.20)	82
Transportation and Material Moving - Low	1.273	Kenosha (2.91), Fresno (2.52), Milwaukee (2.45)	116
Architecture and Engineering (High)	1.033	Akron (3.17), Detroit (2.91), Dayton (2.80)	55
Construction and Extraction - Mid	0.842	Columbia (2.84), Raleigh (2.78), Memphis (2.22)	45
Healthcare - Low	0.792	San Francisco (3.46), Ventura (2.87), Vallejo (2.70)	41
Education, Training and Library (High)	0.756	Lafayette (3.36), Champaign (3.20), Akron (3.05)	27
Arts, etc. - Mid	0.749	Tampa (0.94), Philadelphia (0.84), Boston (0.81)	35
Personal Care and Service - Low	0.729	Atlantic City (1.74), Ft Walton (1.50), Biloxi (1.43)	27
Sales - Mid	0.726	Bridgeport (2.46), Monmouth (1.57), DC (1.51)	34
Installation, Maintenance, and Repair Occupations (Mid)	0.697	Miami (1.51), New Orleans (1.26), Albuquerque (1.22)	27
Business and Financial Operations (High)	0.637	Bloomington (2.93), Akron (2.02), Cincinnati (1.86)	18
Healthcare - Mid	0.538	Jacksonville (1.33), Bergen-Passaic (1.28), Norfolk (1.21)	12
Sales - High	0.515	Balt. (0.94), Ft Lauderdale (0.92), Bergen-Passaic (0.89)	16
Office and Administrative Support (Mid)	0.512	Spokane (1.01, San Francisco (0.99), Bremerton (0.95)	16
Arts, etc. - High	0.455	St Louis (1.42), Monmouth (0.93), Kansas City (0.84)	13
Community and Social Service - High	0.428	St Louis (1.37), Jacksonville, FL (1.27), Tacoma (0.82)	8
Transportation and Material Handling - High	0.421	El Paso (1.17), Bergen-Passaic (0.81), Miami (0.72)	17
Management (High)	0.406	Cincinnati (1.04), Louisville (0.73), Ft Lauderdale (0.66)	4
Protective Service - Low	0.375	Hartford (1.49), San Francisco (1.09), Seattle (1.05)	9
Legal - Mid	0.338	DC (0.45), Boston (0.42), NYC (1.040)	9
Transportation and Material Moving - Mid	0.247	Jersey City (1.12), Bergen-Passaic (1.06), Orlando (0.97)	7
Protective Services - Mid	0.162	Tampa (0.43), Ft Lauderdale (0.32), San Francisco (0.23)	2
Legal - High	0.091	Boston (0.21), DC (0.15), San Diego (0.15)	2

* Mean for 144 Metropolitan Areas ** Metropolitan Areas with at least ten immigrant workers in the occupation category

Table 4.7. BIVARIATE CORRELATIONS

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) bjchigh	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(2) bjcmid	.355**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(3) bjclow	-.103	-.289**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(4) ijchigh	-.017	. 016	.270**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(5) ijcmid	.212*	.097	.224	-.084*	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(6) ijclow	.033	.109	-.268**	-.663**	.230**	---	---	---	---	---	---	---	---	---	---	---	---	---
(7) lfasian	.021	.416**	-.369**	-.205*	-.052	.147	---	---	---	---	---	---	---	---	---	---	---	---
(8) lfblack	-.119	.186 *	-.162	-.156	-.081	-.025	.634**	---	---	---	---	---	---	---	---	---	---	---
(9) lfhisp	.026	.388**	-.379**	-.275**	.039	.255**	.851**	.570**	---	---	---	---	---	---	---	---	---	---
(10) cgrefb00	-.126	-.216**	.321**	-.153	.194*	.313**	-.243**	-.036	-.234**	---	---	---	---	---	---	---	---	---
(11) bloeduc0	-.141	-.242**	.500**	.101	.010	-.231**	.167*	.075	-.119	.096	---	---	---	---	---	---	---	---
(12) colsperl	.114	.270**	-.462**	-.269**	-.167*	.146	.607**	.217**	.371**	-.330**	-.260**	---	---	---	---	---	---	---
(13) disad00	-.119	.027	-.028	.043	-.003	-.014	.094	.198*	.276**	-.304**	.300**	-.220**	---	---	---	---	---	---
(14) medage	-.042	-.165*	.081	-.121	-.085	-.229**	-.119	-.079	-.207*	.071	.346**	.067	-.273**	---	---	---	---	---
(15) perrbi	.435**	.336**	-.127	.142	.017	.077	.167*	-.375**	-.137	-.155	-.497**	.022	-.250**	-.247**	---	---	---	---
(16) lowsrv00	-.053	.015	-.087	-.089	.084	.113	-.035	-.065	.029	.028	-.015	-.125	.137	.047	.119	---	---	---
(17) profser0	-.114	.213*	-.414**	-.316**	-.187*	.084	.527**	.438**	.380**	-.159	-.289**	.652**	-.207*	-.015	-.198*	-.096	---	---
(18) pwlfdiff	.121	-.138	.119	-.066	.140	.124	-.278*	-.187*	.267**	.401**	-.109	-.265**	-.315**	-.065	.188*	.204	-.090	---
(19) srvchang	-.021	.034	.208*	.280**	.115	-.330**	-.181*	-.101	-.188*	-.105	.037	-.283**	.142	.012	.086	.287**	-.282**	.093

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

Table 4.8. MID BOC MULTIVARIATE RESULTS

	Model 1 (Labor Force)	Model 2 (Disadvantage)	Model 3 (Global City)
IJC-High	.252*	.204*	.248*
	(.254)	(.205)	(.250)
	[.111]	[.098]	[.111]
IJC-Mid	.252*	.268**	.277**
	(.139)	(.148)	(.153)
	[.105]	[.093]	[.104]
IJC-Low	.134*	.092	.149†
	(.230)	(.157)	(.255)
	[.060]	[.071]	[.080]
Asians 16+ in the labor force	.000	.000	.000
	(.371)	(.334)	(.343)
	[.000]	[.000]	[.000]
Blacks 16+ in the labor force	.000	.000	.000
	(-.029)	(.127)	(.055)
	[.000]	[.000]	[.000]
Hispanics 16+ in the labor force	.000	.000	.000
	(.054)	(.070)	(.073)
	[.000]	[.000]	[.000]
% Change in size of recent foreign born population, 1990-2000	.000*	.000	.000
	(-.172)	(-.066)	(-.017)
	[.000]	[.000]	[.000]
% Black w/o high school (> 25 years old)		.000	.001
		(.005)	(.090)
		[.001]	[.001]
Median age		.004	.005
		(.125)	(.160)
		[.003]	[.003]
Cost of living, Sperling & Sandler (1Q2003)		.000	.000
		(.049)	(-.079)
		[.001]	[.001]
Disadvantage index		.001	.001
		(.073)	(.094)
		[.002]	[.001]
% Black in-migrants (1995-2000)		.004*	.005**
		(.448)	(.551)
		[.002]	[.002]
% of labor force in low-skill service occs.			-.002
			(-.070)
			[.001]
% of labor force in professional service occs.			.009†
			(.293)
			[.005]
% Change in low-skill service occs., 1990-2000			.009
			(.165)
			[.008]
% Change in white labor force (1990-2000)			-.001
			(-.098)
			[.000]
Intercept	.005	-.222	-.398†
	[.021]	[.176]	[.208]
Adjusted R^2	.210***	.326***	.358*

† p ≤ .1 * p ≤ .05 ** p ≤ .01 *** p ≤ .001 Note: standardized coefficients in parentheses; standard errors in brackets.

Table 4.9. RANKING OF METROPOLITAN AREAS BY COMBINED MID-BOC & IJC

MAs with large high-IJC & mid-BOC

Highest Combined Rank:

1	Bloomington IN	0.578*
2	Duluth	0.541
3	Champaign	0.506
4	Muncie	0.442
5	Bloomington-Nor IL	0.407
6	Lafayette IN	0.386
7	Oakland	0.358
8	Los Angeles	0.329
9	San Diego	0.301
10	Binghamton	0.284
11	Denver	0.270
12	Pittsburgh	0.266
13	San Francisco	0.265
14	Dallas	0.261
15	Rochester MN	0.260
16	Washington DC	0.259
17	Akron	0.235
18	Flint	0.227
19	Atlanta	0.225
20	Spokane	0.217

MAs with large mid-IJC & mid-BOC

Highest Combined Rank:

1	Sioux City	0.457
2	Duluth	0.416
3	Los Angeles	0.370
4	Dallas	0.336
5	San Diego	0.334
6	Bloomington IN	0.305
7	Denver	0.304
8	Oakland	0.300
9	Washington DC	0.291
10	San Francisco	0.287
11	Atlanta	0.252
12	Corpus Christi	0.227
13	Albuquerque	0.225
14	Kankakee	0.198
15	Binghamton	0.193
16	San Antonio	0.189
17	Spokane	0.185
18	Beaumont	0.183
19	Racine	0.170
20	Bloomington-Nor IL	0.168

MAs with large low-IJC and mid-BOC

Highest Combined Rank:

1	Dallas	0.756
2	Los Angeles	0.725
3	Kankakee	0.704
4	Denver	0.688
5	San Diego	0.656
6	Oakland	0.624
7	Duluth	0.616
8	San Francisco	0.581
9	Atlanta	0.569
10	Kenosha	0.564
11	Greensboro	0.561
12	Stockton	0.559
13	Reno	0.558
14	El Paso	0.552
15	Fresno	0.544
16	Albuquerque	0.536
17	San Antonio	0.527
18	Washington DC	0.517
19	Phoenix	0.516
20	Wilmington NC	0.513

* Combined concentration size for both classifications

Table 4.10. LOW IJC/MID BOC ANALYSIS

METROPOLITAN AREAS WITH HIGHEST RANK OF COMBINED LOW-IJC AND MID-BOC

IJC Overrepresentations		BOC Overrepresentations	
Occupational Category		**Occupational Category**	
	Typical MA Profile: *		
Construction and Extraction - Low SEI		Healthcare - Low SEI	
Production Occupations - Low SEI		Community and Social Services (high)	
Food Prep and Serving Related (low)		Office & Administrative Support (mid)	
Bldg, Grounds Cleaning & Maint (low)		Protective Service - Low SEI	
Trans and Material Moving - Low SEI		Trans and Material Moving - Mid SEI	
Production Occupations - Mid SEI		Trans and Material Moving - Low SEI	
	IJC		**BOC**
	Dallas:		
Construction and Extraction - Low SEI	0.152	Office & Administrative Support (mid)	0.253
Production Occupations - Low SEI	0.102	Trans and Material Moving - Low SEI	0.085
Food Prep and Serving Related (low)	0.090	Healthcare - Low SEI	0.030
Bldg, Grounds Cleaning & Maint (low)	0.085	Community and Social Services (high)	0.016
Trans and Material Moving - Low SEI	0.066	Protective Service - Low SEI	0.013
Production Occupations - Mid SEI	0.038	Trans and Material Moving - Mid SEI	0.008
Construction and Extraction - Mid SEI	0.037		
	Los Angeles:		
Production Occupations - Low SEI	0.128	Office & Administrative Support (mid)	0.254
Bldg, Grounds Cleaning & Maint (low)	0.071	Healthcare - Mid SEI	0.047
Trans and Material Moving - Low SEI	0.071	Protective Service - Low SEI	0.033
Food Prep and Serving Related (low)	0.064	Community and Social Services (high)	0.029
Construction and Extraction - Low SEI	0.050	Healthcare - Low SEI	0.024
Production Occupations - Mid SEI	0.041	Personal Care and Services - Low SEI	0.024
Healthcare - Low SEI	0.012	Protective Service - Mid SEI	0.014
	Kankakee:		
Production Occupations - Low SEI	0.208	Healthcare - Low SEI	0.117
Trans and Material Moving - Low SEI	0.139	Production Occupations - Low SEI	0.117
Food Prep and Serving Related (low)	0.109	Healthcare - Mid SEI	0.083
Bldg, Grounds Cleaning & Maint (low)	0.069	Bldg, Grounds Cleaning & Maint (low)	0.049
Installation, Maint, and Repair (mid)	0.059	Community and Social Services (high)	0.034
Construction and Extraction - Low SEI	0.050	Personal Care and Services - Mid SEI	0.028
Healthcare - High SEI	0.030	Trans and Material Moving - Mid SEI	0.012
Arts, etc. - Mid SEI	0.010	Arts, etc. - Mid SEI	0.006
Computer and Math Science (high)	0.010		
	Denver:		
Construction and Extraction - Low SEI	0.152	Office & Administrative Support (mid)	0.257
Food Prep and Serving Related (low)	0.108	Trans and Material Moving - Low SEI	0.081
Bldg, Grounds Cleaning & Maint (low)	0.084	Healthcare - Low SEI	0.031
Production Occupations - Low SEI	0.074	Community and Social Services (high)	0.020
Construction and Extraction - Mid SEI	0.034	Protective Service - Low SEI	0.015
		Trans and Material Moving - Mid SEI	0.013
	San Diego:		
Bldg, Grounds Cleaning & Maint (low)	0.111	Office & Administrative Support (mid)	0.236
Production Occupations - Low SEI	0.096	Trans and Material Moving - Low SEI	0.056
Food Prep and Serving Related (low)	0.087	Personal Care and Services - Mid SEI	0.031
Construction and Extraction - Low SEI	0.048	Healthcare - Low SEI	0.028
Production Occupations - Mid SEI	0.033	Community and Social Services (high)	0.026
Healthcare - Low SEI	0.013	Protective Service - Low SEI	0.023
		Protective Service - Mid SEI	0.021
		Trans and Material Moving - Mid SEI	0.013

* Based on overrepresentation of the job category in more than 50% of the highest ranked MAs.

Table 4.11. MID IJC/MID BOC ANALYSIS

METROPOLITAN AREAS WITH HIGHEST RANK OF COMBINED MID-IJC AND MID-BOC

IJC Overrepresentations Occupation category		BOC Overrepresentations	
	Typical MA Profile: *		
Production Occupations - Mid SEI		Healthcare - Low SEI	
Food Prep and Serving Related (low)		Office & Administrative Support (mid)	
Production Occupations - Low SEI		Trans and Material Moving - Mid SEI	
Bldg, Grounds Cleaning & Maint (low)		Community and Social Services (high)	
Construction and Extraction - Low SEI		Protective Service - Low SEI	
Healthcare - Low SEI			
	IJC		**BOC**
	Sioux City:		
Production Occupations - Mid SEI	0.321	Production Occupations - Low SEI	0.136
Production Occupations - Low SEI	0.179	Healthcare - Low SEI	0.136
Food Prep and Serving Related (low)	0.104	Trans and Material Moving - Low SEI	0.136
Personal Care and Service - Low SEI	0.038	Business & Financial Operations (high)	0.091
Computer and Math Science (high)	0.019	Bldg, Grounds Cleaning & Maint (low)	0.091
		Installation, Maint, and Repair (mid)	0.091
		Arts, etc. - High SEI	0.045
		Arts, etc. - Mid SEI	0.045
	Duluth:		
Food Prep and Serving Related (low)	0.125	Sales - Mid SEI	0.333
Production Occupations - Low SEI	0.050	Bldg, Grounds Cleaning & Maint (low)	0.167
Management occupations (high)	0.050	Business & Financial Operations (high)	0.083
Computer and Math Science (high)	0.025	Education, Training, and Library (high)	0.083
Life, Physical, & Social Science (high)	0.025	Production Occupations - Low SEI	0.083
Healthcare - High SEI	0.025	Production Occupations - Mid SEI	0.083
Personal Care and Service - Low SEI	0.025		
	Los Angeles:		
Production Occupations - Low SEI	0.128	Office & Administrative Support (mid)	0.254
Bldg, Grounds Cleaning & Maint (low)	0.071	Healthcare - Mid SEI	0.047
Trans and Material Moving - Low SEI	0.071	Protective Service - Low SEI	0.033
Food Prep and Serving Related (low)	0.064	Community and Social Services (high)	0.029
Construction and Extraction - Low SEI	0.050	Healthcare - Low SEI	0.024
Production Occupations - Mid SEI	0.041	Personal Care and Service - Low SEI	0.024
Healthcare - Low SEI	0.012	Protective Service - Mid SEI	0.014
		Trans and Material Moving - Mid SEI	0.014
	Dallas:		
Construction and Extraction - Low SEI	0.152	Office & Administrative Support (mid)	0.253
Production Occupations - Low SEI	0.102	Trans and Material Moving - Low SEI	0.085
Food Prep and Serving Related (low)	0.090	Healthcare - Low SEI	0.03
Bldg, Grounds Cleaning & Maint (low)	0.085	Community and Social Services (high)	0.016
Trans and Material Moving - Low SEI	0.066	Protective Service - Low SEI	0.013
Production Occupations - Mid SEI	0.038	Trans and Material Moving - Mid SEI	0.008
Construction and Extraction - Mid SEI	0.037		
	San Diego:		
Bldg, Grounds Cleaning & Maint (low)	0.111	Office & Administrative Support (mid)	0.236
Production Occupations - Low SEI	0.096	Trans and Material Moving - Low SEI	0.056
Food Prep and Serving Related (low)	0.087	Personal Care and Services - Mid SEI	0.031
Construction and Extraction - Low SEI	0.048	Healthcare - Low SEI	0.028
Production Occupations - Mid SEI	0.033	Community and Social Services (high)	0.026
Healthcare - Low SEI	0.013	Protective Service - Low SEI	0.023
		Protective Service - Mid SEI	0.021
		Trans and Material Moving - Mid SEI	0.013

** Based on overrepresentation of the job category in more than 50% of the highest ranked MAs.

Table 4.12. HIGH IJC/MID BOC ANALYSIS

METROPOLITAN AREAS WITH HIGHEST RANK OF COMBINED HIGH-IJC AND MID-BOC

IJC Overrepresentations		BOC Overrepresentations	
Occupation category *			
	Typical MA Profile: ***		
Educ, Training, and Library (high)		Production Occupations - Low SEI	
Computer and Math Science (high)		Sales - Mid SEI	
Life, Physical, & Social Science (high)		Trans and Material Moving - Mid SEI	
Healthcare - High SEI		Bldg, Grounds Cleaning & Maint (low)	
		Protective Service - Low SEI	
		Healthcare - Low SEI	
	IJC		**BOC**
	Bloomington:		
Educ, Training, and Library (high)	0.182	Office & Administrative Support (mid)	0.257
Food Prep and Serving Related (low)	0.071	Production Occupations - Low SEI	0.086
Life, Physical, & Social Science (high)	0.061	Computer and Math Science (high)	0.043
Architecture and Engineering (high)	0.03	Community and Social Services (high)	0.029
Community and Social Services (high)	0.02	Protective Service - Low SEI	0.029
Legal-Mid SEI	0.01	Arts, etc. - Mid SEI	0.014
Arts, etc. - Mid SEI	0.01	Trans and Material Moving - Mid SEI	0.014
	Duluth:		
Food Prep and Serving Related (low)	0.125	Sales - Mid SEI	0.333
Production Occupations - Low SEI	0.05	Bldg, Grounds Cleaning & Maint (low)	0.167
Management occupations (high)	0.05	Business & Financial Operations (high)	0.083
Computer and Math Science (high)	0.025	Education, Training, and Library (high)	0.083
Life, Physical, & Social Science (high)	0.025	Production Occupations - Low SEI	0.083
Healthcare - High SEI	0.025	Production Occupations - Mid SEI	0.083
Personal Care and Service - Low SEI	0.025		
	Champaign-Urbana:		
Educ, Training, and Library (high)	0.238	Sales – Mid SEI	0.122
Life, Physical, & Social Science (high)	0.084	Trans and Material Moving - Low SEI	0.099
Production Occupations - Low SEI	0.044	Food Prep and Serving Related (low)	0.094
Computer and Math Science (high)	0.044	Production Occupations - Low SEI	0.068
Healthcare - High SEI	0.018	Building, Grounds Cleaning & Maint	0.051
Legal-Mid SEI	0.007	Healthcare - Low SEI	0.04
		Community and Social Services (high)	0.034
		Protective Service - Low SEI	0.009
	Muncie:		
Educ, Training, and Library (high)	0.188	Production Occupations - Low SEI	0.209
Building, Grounds Cleaning & Maint	0.125	Construction and Extraction - Low SEI	0.05
Management occupations (high)	0.063	Personal Care and Service - Mid SEI	0.043
Business and Financial (high)	0.063	Healthcare - Low SEI	0.029
Computer and Math Science (high)	0.063	Arts, etc. - High SEI	0.022
Trans and Material Moving - Low SEI	0.063	Personal Care and Service - Low SEI	0.022
		Trans and Material Moving - Mid SEI	0.022
	Bloomington-Normal:		
Business and Financial (high)	0.146	Sales - Mid SEI	0.111
Building, Grounds Cleaning & Maint	0.083	Building, Grounds Cleaning & Maint	0.065
Educ, Training, and Library (high)	0.073	Community and Social Services (high)	0.025
Healthcare - Mid SEI	0.052	Personal Care and Service - Low SEI	0.025
Computer and Math Science (high)	0.031	Healthcare - Low SEI	0.02
Architecture and Engineering (high)	0.021	Protective Service - Low SEI	0.015
Trans and Material Moving - High SEI	0.01	Trans and Material Moving - High SEI	0.015
Healthcare - High SEI	0.01	Trans and Material Moving - Mid SEI	0.005

* Based on overrepresentation of the job category in more than 50% of the highest ranked MAs

Table 4.13. LOW BOC MULTIVARIATE RESULTS

	Model 1 (Labor Force)	Model 2 (Disadvantage)	Model 3 (Global City)
IJC-High	.150	-.051	-.081
	(.108)	(-.037)	(-.059)
	[.154]	[.133]	[.147]
IJC-Mid	.631**	.475*	.462*
	(.250)	(.188)	(.183)
	[.209]	[.190]	[.183]
IJC-Low	-.254**	-.228**	-.218*
	(-.312)	(-.279)	(-.268)
	[.089]	[.083]	[.086]
Asians 16+ in the labor force	.000†	.000	.000†
	(-.140)	(.307)	(.305)
	[.000]	[.000]	[.000]
Blacks 16+ in the labor force	.000	.000	.000
	(.023)	(-.115)	(-.114)
	[.000]	[.000]	[.000]
Hispanics 16+ in the labor force	.000	.000*	.000*
	(-.094)	(-.305)	(-.299)
	[.000]	[.000]	[.000]
% Change in size of recent foreign born population, 1990-2000	.000***	.000	.000**
	(.330)	(.226)	(.251)
	[.000]	[.000]	[.000]
% Black w/o high school (<25 years old)		.009***	.009***
		(.543)	(.539)
		[.002]	[.002]
Median age		-.010**	-.010**
		(-.249)	(-.246)
		[.003]	[.003]
Cost of living, Sperling & Sandler (1Q2003)		-.001*	-.001*
		(-.241)	(-.251)
		[.001]	[.001]
Disadvantage index		-.002	-.003
		(-.137)	(-.150)
		[.001]	[.002]
% Black in-migrants (1995-2000)		.001	.001
		(.054)	(.075)
		[.001]	[.014]
% of labor force in low-skill service occs.			-.002
			(-.072)
			[.005]
% of labor force in professional service occs.			-.001
			(-.016)
			[.004]
% change in low-skill service occs., 1990-2000			-.002
			(.046)
			[.005]
% Change in white labor force (1990-2000)			-.001
			(-.075)
			[.001]
Intercept	.234	.553	.570
	[.027]	[.152]	[.184]
Adjusted R^2	.326***	.520***	.517***

† $p \leq .1$ *$p \leq .05$ ** $p \leq .01$ *** $p \leq .001$ two-tailed test

Note: standardized coefficients in parentheses; standard errors in brackets.

Table 4.14. RANKING OF METROPOLITAN AREAS BY COMBINED LOW-BOC & LOW-IJC AND MID-IJC

MAs with large low IJC & low BJC

Highest Combined Rank:

1	Greensboro	0.878
2	Greenville SC	0.870
3	Kankakee	0.858
4	Wilmington NC	0.845
5	Racine	0.828
6	Sioux City	0.820
7	Charlotte	0.777
8	Kenosha	0.755
9	Omaha	0.739
10	Reno	0.712
11	Oklahoma City	0.702
12	Jacksonville NC	0.699
13	Rochester MN	0.697
14	Grand Rapids	0.685
15	Little Rock	0.680
16	Fort Worth	0.665
17	Raleigh-Durham	0.651
18	Wichita	0.649
19	Phoenix	0.648
20	Shreveport	0.645

MAs with large mid IJC & low BOC

Highest Combined Rank:

1	Sioux City	0.820
2	Racine	0.515
3	Rochester MN	0.498
4	Greenville SC	0.489
5	Omaha	0.477
6	Mobile	0.469
7	Biloxi	0.462
8	Florence AL	0.459
9	Little Rock	0.442
10	Beaumont	0.438
11	Topeka	0.430
12	Memphis	0.427
13	Shreveport	0.426
14	Charlotte	0.411
15	Savannah	0.403
16	Worcester	0.403
17	Macon	0.402
18	Lubbock	0.400
19	Columbia SC	0.399
20	Des Moines	0.382

* Combined concentration size for both classifications

Table 4.15. LOW IJC/LOW BJC ANALYSIS

METROPOLITAN AREAS WITH HIGHEST RANK OF COMBINED LOW-IJC AND LOW-BOC

IJC Overrepresentations		BOC Overrepresentations	
Occupation category		**Occupation category**	
		Typical MA Profile: *	
Production Occupations - Low SEI		Healthcare - Low SEI	
Construction and Extraction - Low SEI		Production Occupations - Low SEI	
Food Prep and Serving Related (low)		Building, Grounds Cleaning & Maint	
Building, Grounds Cleaning & Maint		Trans and Material Moving - Low SEI	
Trans and Material Moving - Low SEI		Trans and Material Moving - Mid SEI	
	IJC		**BOC**
		Greensboro:	
Production Occupations - Low SEI	0.243	Production Occupations - Low SEI	0.144
Construction and Extraction - Low SEI	0.104	Trans and Material Moving - Low SEI	0.094
Food Prep and Serving Related (low)	0.084	Building, Grounds Cleaning & Maint	0.050
Trans and Material Moving - Low SEI	0.083	Healthcare - Low SEI	0.035
Building, Grounds Cleaning & Maint	0.041	Trans and Material Moving - Mid SEI	0.006
		Greenville:	
Production Occupations - Low SEI	0.146	Production Occupations - Low SEI	0.209
Construction and Extraction - Low SEI	0.106	Trans and Material Moving - Low SEI	0.104
Food Prep and Serving Related (low)	0.081	Food Prep and Serving Related (low)	0.075
Building, Grounds Cleaning & Maint	0.048	Building, Grounds Cleaning & Maint	0.069
Computer and Math Science (high)	0.029	Healthcare - Low SEI	0.032
		Kankakee:	
Production Occupations - Low SEI	0.208	Production Occupations - Low SEI	0.117
Trans and Material Moving - Low SEI	0.139	Healthcare - Low SEI	0.117
Food Prep and Serving Related (low)	0.109	Healthcare - Mid SEI	0.083
Building, Grounds Cleaning & Maint	0.069	Building, Grounds Cleaning & Maint	0.049
Installation, Maint, and Repair (mid)	0.059	Community and Social Services (high)	0.034
Construction and Extraction - Low SEI	0.05	Personal Care and Service - Mid SEI	0.028
Healthcare - High SEI	0.03	Trans and Material Moving - Mid SEI	0.012
Arts, etc. - Mid SEI	0.01	Arts, etc. - Mid SEI	0.006
		Wilmington, NC:	
Construction and Extraction - Low SEI	0.244	Trans and Material Moving - Low SEI	0.108
Food Prep and Serving Related (low)	0.11	Production Occupations - Low SEI	0.095
Building, Grounds Cleaning & Maint	0.073	Building, Grounds Cleaning & Maint	0.083
Production Occupations - Low SEI	0.049	Healthcare - Low SEI	0.053
Construction and Extraction - Mid SEI	0.043	Trans and Material Moving - Mid SEI	0.007
Healthcare - Low SEI	0.03		
		Racine:	
Production Occupations - Low SEI	0.137	Production Occupations - Low SEI	0.167
Food Prep and Serving Related (low)	0.137	Healthcare - Low SEI	0.096
Trans and Material Moving - Low SEI	0.118	Trans and Material Moving - Low SEI	0.083
Production Occupations - Mid SEI	0.118	Building, Grounds Cleaning & Maint	0.045
Construction and Extraction - Low SEI	0.039	Architecture and Engineering (high)	0.032
Arts, etc. - High SEI	0.02	Personal Care and Service - Mid SEI	0.026
		Trans and Material Moving - Mid SEI	0.026
		Protective Service - Low SEI	0.006

* Based on overrepresentation of the job category in more than 50% of the highest ranked MAs

Table 4.16. MID IJC/LOW BJC ANALYSIS

METROPOLITAN AREAS WITH HIGHEST RAND OF COMBINED MID-IJC AND LOW-BOC

IJC Overrepresentations		BOC Overrepresentations	
Occupation category *	**IJC**	**Occupation category ***	**BOC**
	Typical MA Profile: ***		
Food Prep and Serving Related (low)		Healthcare - Low SEI	
Production Occupations - Low SEI		Production Occupations - Low SEI	
Construction and Extraction - Low SEI		Building, Grounds Cleaning & Maint	
Production Occupations - Mid SEI		Trans and Material Moving - Low SEI	
Computer and Math Science (high)			
Bldg, Grounds Cleaning & Maint (low)			
Trans and Material Moving - Low SEI			
	Sioux City		
Production Occupations - Mid SEI	0.321	Production Occupations - Low SEI	0.136
Production Occupations - Low SEI	0.179	Healthcare - Low SEI	0.136
Food Prep and Serving Related (low)	0.104	Trans and Material Moving - Low SEI	0.136
Personal Care and Service - Low SEI	0.038	Business & Financial Operations (high)	0.091
Computer and Math Science (high)	0.019	Bldg, Grounds Cleaning & Maint (low)	0.091
		Installation, Maint, and Repair (mid)	0.091
		Arts, etc. - High SEI	0.045
		Arts, etc. - Mid SEI	0.045
	Racine:		
Production Occupations - Low SEI	0.137	Production Occupations - Low SEI	0.167
Food Prep and Serving Related (low)	0.137	Healthcare - Low SEI	0.096
Trans and Material Moving - Low SEI	0.118	Trans and Material Moving - Low SEI	0.083
Production Occupations - Mid SEI	0.118	Building, Grounds Cleaning & Maint	0.045
Construction and Extraction - Low SEI	0.039	Architecture and Engineering (high)	0.032
Arts, etc. - High SEI	0.020	Personal Care and Service - Mid SEI	0.026
		Trans and Material Moving - Mid SEI	0.026
		Protective Service - Low SEI	0.006
	Rochester, MN:		
Food Prep and Serving Related (low)	0.075	Production Occupations - Low SEI	0.280
Production Occupations - Low SEI	0.066	Healthcare - High SEI	0.120
Computer and Math Science (high)	0.066	Building, Grounds Cleaning & Maint	0.080
Healthcare - High SEI	0.057	Trans and Material Moving - Low SEI	0.080
Life, Physical, & Social Science (high)	0.057	Healthcare - Low SEI	0.040
Building, Grounds Cleaning & Maint	0.038	Personal Care and Service - Mid SEI	0.040
Trans and Material Moving - Low SEI	0.038	Construction and Extraction - Mid SEI	0.040
Legal-Mid SEI	0.009		
Arts, etc. - Mid SEI	0.009		
	Greenville:		
Production Occupations - Low SEI	0.146	Production Occupations - Low SEI	0.209
Construction and Extraction - Low SEI	0.106	Trans and Material Moving - Low SEI	0.104
Food Prep and Serving Related (low)	0.081	Food Prep and Serving Related (low)	0.075
Building, Grounds Cleaning & Maint	0.048	Building, Grounds Cleaning & Maint	0.069
Computer and Math Science (high)	0.029	Healthcare - Low SEI	0.032
	Omaha:		
Production Occupations - Mid SEI	0.136	Production Occupations - Low SEI	0.083
Production Occupations - Low SEI	0.118	Trans and Material Moving - Low SEI	0.083
Food Prep and Serving Related (low)	0.089	Food Prep and Serving Related (low)	0.078
Construction and Extraction - Low SEI	0.075	Building, Grounds Cleaning & Maint	0.063
Trans and Material Moving - Low SEI	0.066	Community and Social Services (high)	0.027
Building, Grounds Cleaning & Maint	0.052	Healthcare - Low SEI	0.020
Trans and Material Moving - Mid SEI	0.002	Protective Service - Mid SEI	0.015
		Protective Service - Low SEI	0.012
		Arts, etc. - Mid SEI	0.009
		Trans and Material Moving - Mid SEI	0.003

** Based on overrepresentation of the job category in more than 50% of the highest ranked MAs

Table 4.17. HIGH BOC MULTIVARIATE RESULTS

	Model 1 (Labor Force)	Model 2 (Disadvantage)	Model 3 (Global City)
IJC-High	.001	-.018	-.026
	(.003)	(-.048)	(-.070)
	[.039]	[.048]	[.042]
IJC-Mid	.159	.167	.155
	(.235)	(.248)	(.231)
	[.144]	[.126]	[.134]
IJC-Low	.005	-.014	-.018
	(.021)	(-.063)	(-.082)
	[.023]	[.031]	[.035]
Asians 16+ in the labor force	.000	.000	.000
	(.134)	(-.008)	(-.034)
	[.000]	[.000]	[.000]
Blacks 16+ in the labor force	.000	.000	.000
	(-.162)	(..035)	(.088)
	[.000]	[.000]	[.000]
Hispanics 16+ in the labor force	.000	.000	.000
	(-.049)	(.046)	(.090)
	[.000]	[.000]	[.000]
% Change in size of recent foreign born population, 1990-2000	.000	.000	.000†
	(-.163)	(-.055)	(-.097)
	[.000]	[.000]	[.000]
% Black w/o high school (<25 yo)		.001	.000
		(.125)	(.054)
		[.001]	[.001]
Median Age		.001	.001
		(.075)	(.108)
		[.001]	[.001]
Cost of living, Sperling & Sandler (1Q2003)		.000	.000†
		(.134)	(.261)
		[.000]	[.000]
Disadvantage index		.000	.000
		(-.020)	(.017)
		[.001]	[.001]
% Black in-migrants (1995-2000)		.002*	.002*
		(.532)	(.475)
		[.001]	[.001]
% of labor force in low-skill service occs.			-.001
			(-.134)
			[.001]
% of labor force in professional service occs.			-.003*
			(-.224)
			[.001]
% change in low-skill service occs., 1990-2000			.000
			(-.016)
			[.002]
% Change in white labor force (1990-2000)			.000
			(.172)
			[.001]
Intercept	.028***	-.052	-.032
	[.006]	[.065]	[.075]
Adjusted R^2	.045*	.218**	.242*

† $p \leq .1$ *$p \leq .05$ ** $p \leq .01$ *** $p \leq .001$ two-tailed test

Note: standardized coefficients in parentheses; standard errors in brackets.

CHAPTER 5: CONCLUSION

This research has endeavored to clarify the relationship among immigrant and black outcomes in the labor market. It has done so by moving the immigrant/native-born black debate beyond the typical low-skill workers as substitutes or complements focus to a more comprehensive view of labor markets. By investigating the proportion of blacks and immigrants who are in occupations in which either blacks or immigrants are overrepresented, the concentrations in low, mid, or high classifications are assessed. The nine possible relationships between black and immigrant occupational classifications are analyzed in a multivariate context. Five of these relationships are significant, providing valuable results that add to the existing literature on the labor market outcomes of native-born blacks in the face of substantial immigration levels.

The significant relationships are summarized as follows. A negative relationship between low-level immigrant occupational concentrations and low-level black job concentrations is shown, which indicates that blacks and immigrants do compete for low-SEI jobs in some areas and that immigrant concentrations reduce the size of black concentrations where there is competition for low-skilled jobs. A positive relationship between mid-level immigrant concentrations and low-level black concentrations is depicted, which suggests that there may be an effect where immigrants leapfrog over blacks, particularly in areas with a manufacturing economic base. A positive relationship between low-level immigrant occupations and mid-level black jobs is delineated, which supports a bump-up effect in which immigrants working in low-level jobs generate mid-level jobs that well-positioned blacks can take advantage of. A positive relationship between mid-level immigrant and mid-level black concentrations is demonstrated, which suggest areas of parallel opportunity for blacks and immigrants. Finally, a positive

relationship is shown between high-level immigrant concentrations and mid-level black concentrations, also supporting a possible parallel upward mobility in some areas such as "rust-belt" university centers.

Overall, blacks have a higher likelihood of being overrepresented in mid-level occupations in areas that have higher numbers of immigrants in overrepresented low-, mid-, and high-level occupations. In other words, the presence of immigrants, whether in low, mid, or high SEI jobs, tends to increase the number of blacks in "middle-class" jobs; immigrants improve black's labor market outcomes in the middle occupational classification. This is partly due to economic factors, as discussed in Chapter 4, such as new immigrants creating additional demand for services. In metropolitan areas where there are higher immigrant overrepresentations, there are higher black overrepresentations in occupational categories that include jobs such as bus drivers, postal workers, nurses, and police. This finding solidifies emerging research (see Adelman et al. 2005 and Linton 2002) suggesting a bump-up effect based on the demand for services generated by immigrants and contradicts earlier research that finds black occupational status to be unrelated to the relative proportion of immigrants in a metropolitan area (e.g., see Frisbie and Neidert 1977).

This research also identifies a bump-up effect resulting from a need for increased administrative functions as new immigrants enter the labor market. Jobs, such as billing and posting clerks, dispatchers, and payroll clerks, within the office and administrative occupational category result from increased economic activity that occurs in areas with a source of low-cost labor, most often associated with immigrant workers. Blacks disproportionately fill these office and administrative jobs. Thus, there are two ways in which immigrant workers improve labor market outcomes for blacks; service and administrative related demand. In this research, then, I

extend the existing literature on the bump-up effect by detailing two different reasons for the bump-up effect, specifying an administrative factor and a service factor, as well as relating the bump-up effect to definitive occupational categories.

However, analyzing the bump-up effect also requires consideration of the social factors influencing labor markets. Investigating the mid-level jobs in which blacks are overrepresented depicts occupations in which entry is gained via civil service examinations or vocational/technical training (Boyd 1994). Civil service examinations test for verbal and written skills, the ability to work with people, and basic decision making; English proficiency is required. Native-born blacks are better positioned than immigrants to pass these tests and enter jobs in the public sector. Vocational/technical skills refer to training that is specific to a particular occupation. For example, a high school student can choose a technical track—as opposed to a college preparatory track—and leave high school prepared for jobs such as a mechanic or welder. Alternatively, they are also prepared for certificate or diploma programs, occupation specific training that requires less time than a standard four-year college degree, such as cosmetology, medical transcription, or dental assistant. These programs require English skills as well as occupation specific training. They are also more accessible to those who progress through the American school system. A generalization based on the type of jobs that native-born blacks and recent immigrants hold is that native-born blacks are much more likely to be in occupations that require civil service credentials or technical training.

Although the mid-level occupations that blacks are most likely attain represents a degree of upward mobility, they are not the best jobs available. These jobs might be considered to fall in the lower part of the middle-class, but do often provide health insurance and a higher wage than the lower SEI jobs. On the other hand, the relatively low representation of blacks in high-SEI

occupations is notable. The only high-SEI category in which blacks are typically overrepresented across a range of metropolitan areas is Community and Social Services, which is comprised of jobs that do not pay as well as other high-SEI occupations. On the other hand, blacks are grossly underrepresented in occupations that might be considered high status (e.g., high-SEI Legal, high-SEI Healthcare, Management, and Architecture and Engineering). Blacks appear to be structurally constrained from achieving positions in these high-status occupations. As a result, the focus in this analysis is more on mid-level jobs that seem to represent the currently achievable frontier for black upward mobility.

Entry into mid-level occupations, for native-born blacks, tends to occur in jobs that require either civil service or vocational/technical training. By contrast, immigrants who enter mid-level jobs do so predominantly in occupations that can be learned on the job (e.g., electronic production skills or masonry). The point of entry into mid-level occupations appears to be quite different for the two groups. The mid-level occupational classification, then, seems to be more complementary than competitive (i.e., there is a parallel opportunity for blacks and immigrants in the mid-level jobs). Also, based on blacks being in mid-level jobs at more than twice the rate of immigrants, “on-the-job training” appears to be a less effective path to mid-level occupations. In any case, this study lays the groundwork for further research into “middle-class” points of entry, regional or metropolitan differences in vocational/technical training or civil service success, or the effects of “on-the-job training” on specific labor market composition and wages. For example, are areas with high mid-immigrant concentrations experiencing declining wages as a result? Are there identifiable social factors which help to explain differences in the size of immigrant and black concentrations, particularly in the middle level? Is there a devaluing effect where immigrants learn mid-level jobs in which they are willing to work for lower wages?

Although this research finds a significant relationship between disadvantage variables and the low job concentrations, the study shows that disadvantage and global city characteristics (i.e., primarily economic criteria) are not key explanatory variables for mid-level job concentrations. Thus, there is opportunity for additional work in this area of research.

This research also presents compelling evidence of competition between blacks and immigrants for low-wage, low-skill jobs. This augments a substantial literature that addresses this issue, but contradicts the frequent position that there is little impact of immigration on native-born blacks. The multivariate analysis depicts the size of the low-level immigrant job concentration as second only to a lack of education in predicting the size of the low-level black occupational concentration. Metropolitan areas that have more low-level job categories in which immigrants are overrepresented have fewer categories in which blacks are overrepresented. I have identified the areas that are the most competitive and the specific job categories that are the most competitive. I extend the literature by investigating low-level occupations as a separate classification and by providing additional granularity of job categories than previous research. Results that indicate a negative relationship between low-level black concentrations and low-level immigrant concentrations provide evidence of unfavorable labor market outcomes for native-born blacks vying for low-skilled jobs. This should add to the long-standing debate and hopefully encourage additional work to illuminate the critical issue of increased black marginalization in the labor force as a result of higher levels of recent immigrants.

Certainly, an overarching theme of this analysis is the social organization that pervades U.S. labor markets (Semyonov et al. 2000). Many occupations are notable in the extent that they are overrepresented by one group or the other. For example, low SEI healthcare occupations, such as nursing and home-health aides, are consistently overrepresented by blacks. 142 out of

144 metropolitan areas have more blacks working in low-level healthcare jobs than would be expected based on their populations. Blacks are over six times more likely than immigrants to be employed in this occupational category. By contrast, immigrants are overrepresented within low-level construction jobs in 98 metropolitan areas and are over three times more likely than blacks to work in this occupational category. However, both blacks and immigrants are overrepresented in building and grounds cleaning and maintenance occupations and have a similar likelihood of working in this area. Some jobs are dominated by blacks, some by immigrants, and yet others seem to be competitive between the two groups. Thus, there are factors beyond political economic issues that influence the make-up of labor markets. These social factors, such as education, language, social networks, or local politics play important roles in understanding the relationships between black and immigrant occupational classifications (Elliott and Joyce 2004; Granovetter 1995; Hewitt 2004; Waldinger 1997).

In the case of education, there are situations in which mid-level jobs exist in areas with large immigrant occupational concentrations, but in some of these areas blacks cannot take advantage of these opportunities because of inadequate educational levels. A key point, in regard to the bump-up effect, is that a bump up exists only if black workers have the skills, typically either civil service or technical/vocations skills, to fill the available positions. In other words, lack of education or associated skills can be a structural limitation that constrains blacks in the labor market. This structural constraint is especially evident in the disparity between the size of high-SEI black concentrations and high-SEI immigrant concentrations. Immigrants are twice as likely as blacks to be overrepresented in high-level occupational classifications, suggesting limitations, primarily educational, that affect native-born blacks, but do not constrain recent foreign-born workers, though these are relatively small concentrations for both groups.

Language tends to act more as a structural constraint on immigrants. For example, they are most overrepresented in occupations such as Building and Grounds Cleaning and Maintenance or Construction and Extraction, which require minimal language skills. They are least overrepresented in Legal Occupations and Protective Services, which require significant use of the English language. Occupations where immigrants with lower educational levels are attaining upward mobility are mid-SEI Production Operations, jobs where advancement is possible without English being a critical skill. On the other hand, language, and associated skills engaging customers and providing public services, tends to favor native-born blacks, leading to overrepresentation in jobs that require civil service skills or healthcare occupations that demand an ability to communicate with patients. Thus, language acts as a structural constraint for both groups, acting in opposite ways, and leading to occupational categories that are highly over- or underrepresented by the two groups.

Social networks and hiring preferences also seem to establish structural constraints that limit blacks or immigrants access to certain occupations. For example, the overrepresentation of immigrants in low-SEI Construction and Extraction may be predicated upon hiring preferences in the construction industry and networks that provide immigrants with knowledge about job openings. By showing the relative size of black and immigrant job concentrations, both nationally and by metropolitan area, I provide a unique perspective for investigating the structural constraints which order labor markets in the United States and its metropolises. The pervasiveness of racial and ethnic dimensions in determining the composition of labor markets is confirmed in this study and should be recognized as an underlying factor in interpreting the results.

In summary, immigration seems to have different effects on native-born blacks in low-level and mid-level jobs. In low-level occupations, some types of jobs appear to be complements, such as low-SEI Healthcare which favors blacks over immigrants or low-SEI Construction and Extraction which favors immigrants over blacks. At the same time, in many jobs, such as low-SEI Production Occupations and Building, Grounds Cleaning, and Maintenance, immigrants are substitutes for native-born black workers (Waldinger and Lichter 2003). Situations in which immigrants are substitutes have a larger influence than those that are complementary in determining the presence of blacks in low-level jobs. In other words, a higher proportion of immigrants concentrated in low-level jobs results in an overall reduction of labor market outcomes for blacks in low-level jobs. On the other hand, concentrations of immigrants, whether in low, mid, or high occupational classifications, results in higher proportions of blacks in mid-level jobs. In this case, the presence of immigrants results in improved labor market outcomes for blacks. The net effect seems to be opportunities, a bump-up effect, for blacks that are positioned to take advantage of the situation with effective high school and technical school education while blacks without, or with inadequate, high school education will have even fewer opportunities due to immigration and may even be displaced by immigrant workers willing to accept lower wages. The bump-up effect occurs in two broad areas, service and administrative job functions, which result to varying degrees from low, mid, and high immigrant job concentrations. Poorer labor market outcomes for blacks are related primarily to low-level immigrant job concentrations. Thus, native born blacks experience the effects of post-1980 immigration in quite different ways, an insight that extends our understanding of black/immigrant labor market dynamics.

Twenty-first century policy implications are then also different for the two situations. On one hand, programs are required to help enable native-born blacks to enter mid-level occupations via educational initiatives that relate specifically to today's labor market. On the other hand, programs that address the reality of poorer outcomes for native-born blacks due to competition for low-level jobs must be developed. A lack of such initiatives will fail to capitalize on opportunities for black upward mobility while further marginalizing blacks in the labor market.

REFERENCES

Abowd, John M., and Richard B. Freeman, Eds. 1991. *Immigration, Trade, and the Labor Market*. Chicago: University of Chicago Press.

Adelman, Robert, Cameron Lippard, Charles Jaret, and Lesley Williams Reid. 2005. "Jobs, Poverty, and Income in American Metropolises: Do Immigrants Really Hurt the Economic Opportunities of Blacks?" *Sociological Focus* 38: 261-285.

Altonji, Joseph G., and David Card. 1991. "The Effects of Immigration on the Labor Market Outcomes of Less-skilled Natives." Pp. 201-234 in *Immigration, Trade, and the Labor Market*, edited by J. Abowd and R. Freeman. Chicago: University of Chicago Press.

Bean, Frank D., Jennifer Van Hook, and Mark A. Fossett. 1999. "Immigration, Spatial and Economic Change, and African American Employment." Pp. 31-63 in *Immigration and Opportunity: Race, Ethnicity, and Employment in the United States*, edited by F. Bean and S. Bell-Rose. New York: Russell Sage Foundation

Borjas, George J. 2003. "The Labor Demand Curve *Is* Downward Sloping: Reexamining the Impact of Immigration on the Labor Market." *The Quarterly Journal of Economics* 118: 1335-1374.

Borjas, George J. 1999. *Heaven's Door: Immigration Policy and the American Economy*. Princeton: Princeton University Press.

Borjas, George J. 1995. "The Economic Analysis of Immigration." Pp. 27-42 in *The New Economics of Human Behavior*, edited M. Tommasi and K. Ierulli. New York: Cambridge University Press.

Borjas, George J. 1998. "Do Blacks Gain or Lose from Immigration?" Pp. 51-74 in *Help or Hindrance? The Economic Implication of Immigration for African Americans*, edited by D. Hamermesh and F. Bean. New York: Russell Sage Foundation.

Borjas, George J. 1993 [1998]. "The Impact of Immigrants on Employment Opportunities of Natives." Pp. 217-230 in *The Immigration Reader: America in a Multidisciplinary Perspective* edited D. Jacobson. Oxford: Blackwell Publishers Ltd.

Borjas, George J., Richard B. Freeman, and Lawrence F. Katz. 1997. "How Much Do Immigration and Trade Affect Labor Market Outcomes?" *Brookings Paper on Economic Activity.*

Borjas, George J., Richard B. Freeman, and Lawrence F. Katz. 1996. “Searching for the Effect of Immigration on the Labor Market.” *The American Economic Review* 86: 246-251.

Boyd, Robert. L. 1994. “The Allocation of Black Workers into the Public Sector.” *Sociological Focus* 27: 35-51.

Butcher, Kristin F. 1998. “An Investigation of the Effect of Immigration on the Labor-Market Outcomes of African Americans.” Pp. 149-181 in *Help or Hindrance? The Economic Implication of Immigration for African Americans*, edited by D. Hamermesh and F. Bean. New York: Russell Sage Foundation

Camarota, Steven A. 1997. “The Effect of Immigrants on the Earnings of Low-Skilled Native Workers: Evidence from the June 1991 Current Population Survey.” *Social Science Quarterly* 78: 417-431

Card, David. 1990. “The Impact of the Mariel Boatlift on the Miami Labor Market.” *Industrial and Labor Relations Review* 43: 245-257.

Castells, Manuel, Ed. 1985a. *High Technology, Space, and Society*. Beverly Hills, CA: Sage.

Castells, Manuel. 1985b. “High Technology, Economic Restructuring, and the Urban-Regional Process in the United States.” Pp. 11-40 in *High Technology, Space, and Society*. Beverly Hills, CA: Sage.

Castles, Stephen, and Mark J. Miller. 2003. *The Age of Migration: International Population Movements in the Modern World*. 3d ed. New York: The Guilford Press.

Duncan, Otis Dudley. 1961. "A Socioeconomic Index for All Occupations." Pp. 109-138 in Albert J. Reiss et al., *Occupations and Social Status* edited by A. Reiss. New York: Free Press.

Elliot, James R., and Marilyn S. Joyce. 2004. “The Effects of Race and Family Structure on Women’s Spatial Relationship to the Labor Market.” *Sociological Inquiry* 74: 411-435.

Filer, Randal K. 1992. “The Effect of Immigrant Arrivals on Migratory Patterns of Native Workers.” Pp. 245-269 in *Immigration and the Work Force: Economic Consequences for the United States and Source Areas,* edited by G. Borjas and R. Freeman. Chicago: Chicago University Press.

Frey, William H. 1999. “New Black Migration Patterns in the United States: Are They Affected by Recent Immigration?” Pp. 311-344 in *Immigration and Opportunity: Race, Ethnicity, and Employment in the United States*, edited F. Bean and S. Bell-Rose. New York: Russell Sage Foundation.

Friedberg, Rachel M., and Jennifer Hunt. 1995. "The Impact of Immigrants on Host Country Wages, Employment and Growth." *Journal of Economic Perspectives* 9: 23-44.

Frisbie, W. Parker, and Lisa Neidert. 1977. "Inequality and the Relative Size of Minority Populations: A Comparative Analysis." *American Journal of Sociology* 82: 1007-1030.

Granovetter, Mark. 1995. *Getting A Job: A Study of Contacts and Careers*, 2d ed. Chicago: University of Chicago Press.

Grossman, Jean Baldwin. 1982. "The Substitutability of Natives and Immigrants in Production." *The Review of Economics and Statistics* 64: 596-603.

Gujarati, Damodar N. 1995. *Basic Econometrics*. 3d ed. New York: McGraw-Hill.

Hamermesh, Daniel S., and Frank D. Bean. 1998, Eds. *Help or Hindrance? The Economic Implication of Immigration for African Americans.* New York: Russell Sage Foundation.

Heer, David M. 1996. Immigration in America's Future: Social Science Findings and the Policy Debate. Boulder, CO: Westview Press.

Heisler, Barbara Schmitter. 1999. "The Future of Immigrant Incorporation: Which Models? Which Concepts?" Pp. 117-139 in *Migration and Social Cohesion*, edited by S. Vertovec. Northampton, MA: Edward Elgar.

Hewitt, Cynthia M. 2004. "African-American Concentration in Jobs: The Political Economy of Job Segregation and Contestation in Atlanta." *Urban Affairs Review* 39: 318-341.

Jacobson, David, Ed. 1998. *The Immigration Reader: America in a Multidisciplinary Perspective*. Oxford: Blackwell Publishers Ltd.

Jaret, Charles, Lesley W. Reid, and Robert M. Adelman. 2003. "Black-White Income Inequality and Metropolitan Socioeconomic Structure." *Journal of Urban Affairs* 25: 305-333.

Johannsson, Hannes, and Stephan Weiler. 2004. "Local Labor Market Adjustment to Immigration: The Roles of Participation and the Short Run." *Growth and Change* 35: 61-76.

Johnston, John, and John DiNardo. 1997. *Econometric Methods*. New York: McGraw-Hill.

Kaufman, Bruce E., and Julie L. Hotchkiss. 2003. *The Economics of Labor Markets*, 6h ed. Mason, OH: Southwestern.

Kennedy, Peter. 1998. *A Guide to Econometrics*. Cambridge: MIT Press.

LaLonde, Robert J., and Robert H. Topel. 1991. "Labor Market Adjustments to Increased Immigration." Pp. 167-201 in *Immigration, Trade, and the Labor Market*, edited by J. Abowd and R. Freeman. Chicago: University of Chicago Press.

Lewis Mumford Center. 2003. Lewis Mumford Center for Comparative Urban and Regional Research.

Lichtenstein, Nelson. 2002. *State of the Union: A Century of American Labor*. Princeton: Princeton University Press.

Light, Ivan, and Carolyn Rosenstein. 1995. "Expanding the Interaction Theory of Entrepreneurship." Pp. 166-212 in *The Economic Sociology of Immigration: Essays on Networks, Ethnicity, and Entrepreneurship*, edited by A. Portes. New York: Russell Sage Foundation.

Lim, Nelson. 2001. "On the Back of Blacks? Immigrants and the fortunes of African Americans." Pp. 186-227 in *Strangers at the Gates*, edited by R. Waldinger. Berkeley, CA: University of California Press.

Linton, April. 2002. "Immigration and the Structure of Demand: Do Immigrants Alter the Labor Market Composition of U.S. Cities?" *International Migration Review* 36: 58-80.

Logan, John R., Richard D. Alba, and Thomas L. McNulty. 1994. "Ethnic Economies in Metropolitan Regions: Miami and Beyond." *Social Forces* 72: 691-724.

Long, J. S., and L. H. Ervin, 2000. "Using Heteroscedasticity Consistent Standard Errors in the Linear regression Model." *The American Statistician* 54: 217-224.

Massey, Douglas S. 1995. "The New Immigration and Ethnicity in the United States." *Population and Development Review* 21: 631-652.

Messner, Steven, and Judith R. Blau. 1987. "Routine Leisure Activities and Rates of Crime: A Macro-Level Analysis." *Social Forces* 65: 1035-1052.

Moss, Phillip, and Chris Tilly. 2001. "Why Opportunity Isn't Knocking: Racial Inequality and the Demand for Labor." Pp. 444-495 in Urban Inequality: Evidence From Four Cities edited by A. O'Connor, C. Tilly, and L. Bobo. New York: Russell Sage Foundation.

Portes, Alejandro. 1995. "Economic Sociology and the Sociology of Immigration: A Conceptual Overview." Pp. 1-41 in *The Economic Sociology of Immigration: Essays on Networks, Ethnicity, and Entrepreneurship*, edited by A. Porters. New York: Russell Sage Foundation.

Portes, Alejandro, and Alex Stepick. 1993. *City on the Edge: The Transformation of Miami*. Berkeley: University of California Press.

Portes, Alejandro, and Walton, John. 1981. *Labor, Class and the International System*. New York: Academic Press.

Reid, Lesley Williams, Harald E. Weiss, Robert M. Adelman, and Charles Jaret. 2005. "The Immigration-Crime Relationship: Evidence Across US Metropolitan Areas." *Social Science Research* 34: 757-780.

Reid, Lesley Williams, and Beth A. Rubin. 2003. "Integrating Economic Dualism and Labor Market Segmentation: The Effects of Race, Gender, and Employment Status, 1972-2000." *Sociological Quarterly* 44: 405-32.

Rosenfeld, Michael J., and Marta Tienda. 1999. "Mexican Immigration, Occupational Niches, and Labor-Market Competition: Evidence from Los Angeles, Chicago, and Atlanta, 1970 to 1990." Pp. 311-344 in *Immigration and Opportunity: Race, Ethnicity, and Employment in the United States*, edited F. Bean and S. Bell-Rose. New York: Russell Sage Foundation.

Ruggles, Steven., Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. 2004. *Integrated Public Use Microdata Series: Version 3.0* [Machine-readable database]. Minneapolis: Minnesota Population Center [producer and distributor]. Retrieved from http://www.ipums.org.

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

Sassen, Saskia. 2000. *Cities in a World Economy* 2d ed. Thousand Oaks: Pine Forge Press.

Semyonov, Moshe, Yitchak Haberfeld, Yinon Cohen, and Noah Lewin-Epstein. 2000. "Racial Composition and Occupational Segregation and Inequality across American Cities." *Social Science Research* 29: 175-187.

Slater, Courtenay M., and George E. Hall, eds. 2002. *City and County Extra.* Lanham, MD: Bernan Press.

Sperling, Bert, and Peter Sander. 2004. *Cities Ranked and Rated*. Hoboken, NJ: Wiley Publishing.

Steinberg, Stephen. 2005. "Immigration, African Americans, and Race Discourse." *New Politics* 10: 1-14.

U.S. Census Bureau. 1993a. *1990 Census of Population: Social and Economic Characteristics, Metropolitan Areas*. Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau. 1993b. *1990 Census of Population and Housing: Population and Housing Characteristics for Census Tracts and Block Numbering Areas.* Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau. 1993a. *1990 Census of Population: Social and Economic Characteristics, States*. Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau. 1993b. *1990 Census of Population and Housing: Population and Housing Characteristics for Census Tracts and Block Numbering Areas Outside of Metropolitan Areas, States.* Washington, D.C.: U.S. Government Printing Office.

U.S. Census Bureau. 2002. *2000 Census of Population*. Retrieved from http://www.census.gov/

U.S. Census Bureau. 2003. 2000 *Census of Population: Social and Economic Characteristics, Metropolitan Areas*. Washington, D.C.: U.S. Government Printing Office.

Waldinger, Roger David. 1996. *Still the Promised City? African-Americans and New Immigrants in Postindustrial New York*. Cambridge: Harvard University Press.

Waldinger, Roger. 1997. "Black/Immigrant Competition Re-assessed: New Evidence From Los Angeles." *Sociological Perspectives* 40: 365-386.

Waldinger, Roger, and Michael I. Lichter. 2003. *How the Other Half Works: Immigration and the Social Organization of Labor*. Berkeley: University of California Press.

Winegarden, C. E., and Lay Boon Khor. 1991. Undocumented Immigration and Unemployment of U.S. Youth and Minority Workers: Econometric Evidence." *The Review of Economic Statistics* 73: 105-112.

APPENDIX – OCCUPATIONAL CATEGORIES

Occupational Category (Census 2000 identifiers)			SEI
I	Management occupations: (001-049 less 20, 21)		High
	1	Chief executive	68
	2	General and Operations Managers	68
	3	Legislators	66
	4	Advertising and Promotions Managers	72
	5	Marketing and Sales Managers	72
	6	Public Relations Managers	82
	10	Administration Services Managers	68
	11	Computer and Information Systems Managers	68
	12	Financial Managers	68
	13	Human Resources Managers	84
	14	Industrial Production Managers	68
	15	Purchasing Managers	77
	16	Transportation, Storage, and Distribution Managers	68
	22	Construction Managers	68
	23	Education Administrators	72
	30	Engineering Managers	68
	31	Food Service Managers	68
	32	Funeral Directors	59
	33	Gaming Managers	68
	34	Lodging Managers	68
	35	Medical and Health Services Managers	46
	36	Natural Sciences Managers	68
	40	Postmasters and Mail Superintendents	60
	41	Property, Real Estate, and Community Association Managers	32
	42	Social and Community Service Managers	68
	43	Managers, All Other	68
II	Business and Financial Operations Occupations: (50-99 less 51)		High
	50	Agents and Business Managers of Artists, Performers, and Athletes	68
	52	Wholesale and Retail Buyers, Except Farm Products	72
	53	Purchasing Agents, Except Wholesale, Retail, and Farm Products	77
	54	Claims Adjusters, Appraisers, Examiners, and Investigators	66
	56	Compliance Officers, Except Ag, Const, Hth, Safety, and Trans	63
	60	Cost Estimators	68
	62	Human Resources, Training, and Labor Relations Specialists	84
	70	Logisticians	65
	71	Management Analysts	86
	72	Meeting and Convention Planners	68
	73	Other Business Operations Specialists	66
	80	Accountants and Auditors	78
	81	Appraisers and Assessors of Real Estate	62
	82	Budget Analysts	68
	83	Credit Analysts	68
	84	Financial Analysts	68
	85	Personal Financial Advisors	73
	86	Insurance Underwriters	66
	90	Financial Examiners	63
	91	Loan Counselors and Officers	68
	93	Tax Examiners, Collectors, and Revenue Agents	78
	94	Tax Preparers	68
	95	Financial Specialists, All Other	68

Appendix (continuted)

III	Computer and Mathematical Science Occupations (100 to 129)		High
	100	Computer Scientists and Systems Analysts	65
	101	Computer Programmers	65
	102	Computer Software Engineers	65
	104	Computer Support Specialists	65
	106	Database Administrators	65
	110	Network and Computer Systems Administrators	65
	111	Network Systems and data Communications Analysts	65
	120	Actuaries	81
	121	Mathematicians	65
	122	Operations Research Analysts	65
	123	Statisticians	65
	124	Miscellaneous Mathematical Science Occupations	81
IV	Architecture and Engineering Occupations: (130-159)		High
	130	Architects, Except Naval	90
	131	Surveyors, Cartographers, and Photogrammetrists	48
	132	Aerospace Engineers	87
	133	Agricultural Engineers	87
	134	Biomedical Engineers	87
	135	Chemical Engineers	90
	136	Civil Engineers	84
	140	Computer Hardware Engineers	84
	141	Electrical and Electronics Engineers	84
	142	Environmental Engineers	87
	143	Industrial Engineers, Including Health and Safety	86
	144	Marine Engineers and Naval Architects	82
	145	Materials Engineers	82
	146	Mechanical Engineers	82
	150	Mining and Geological Engineers	87
	151	Nuclear Engineers	80
	152	Petroleum Engineers	85
	153	Engineers, All Other	87
	154	Drafters	67
	155	Engineering Technicians, Except Drafters	62
	156	Surveying and Mapping Technicians	48
V	Life, Physical, and Social Science Occupations: (160-199)		High
	160	Agricultural and Food Scientists	80
	161	Biological Scientists	80
	164	Conservation Scientists and Foresters	48
	165	Medical Scientists	80
	170	Astronomers and Physicists	80
	171	Atmospheric and Space Scientists	80
	172	Chemists and Materials Scientists	79
	174	Environmental Scientists and Geoscientists	80
	176	Physical Scientists, All Other	80
	180	Economists	81
	181	Market and Survey Researchers	81
	182	Psychologists	82
	183	Sociologists	81
	184	Urban and Regional Planners	65
	186	Miscellaneous Social Scientists and Related Workers	81
	190	Agricultural and Food Science Technicians	53
	191	Biological Technicians	53
	192	Chemical Technicians	53

Appendix (continued)

	193	Geological and Petroleum Technicians	62
	194	Nuclear Technicians	62
	196	Other Life, Physical, and Social Science Technicians	53
VI	Community and Social Services Occupations (200-209)		High
	200	Counselors	65
	201	Social Workers	64
	202	Miscellaneous Community and Social Service Specialists	64
	204	Clergy	52
	205	Directors, Religious Activities and Education	56
	206	Religious Workers, All Other	56
VII	Legal-High SEI (210, 211)		High
	210	Lawyers	93
	211	Judges, Magistrates, and Other Judicial Workers	93
VIII	Legal-Mid SEI (214, 215)		Mid
	214	Paralegals and Legal Assistants	44
	215	Miscellaneous Legal Support Workers	44
IX	Education, Training, and Library Occupations: (220-259)		High
	220	Postsecondary Teachers	84
	230	Preschool and Kindergarten Teachers	72
	231	Elementary and Middle School Teachers	72
	232	Secondary School Teachers	72
	233	Special Education Teachers	52
	234	Other Teachers and Instructors	52
	240	Archivists, Curators, and Museum Technicians	68
	243	Librarians	60
	244	Library Technicians	44
	254	Teacher Assistants	65
	255	Other Education, Training, and Library Workers	52
X	Arts, Design, Entertainment, Sports, and Media - High SEI (260-272, 280-283, 285)		High
	260	Artists and related workers	67
	263	Designers	73
	270	Actors	60
	271	Producers and Directors	68
	272	Athletes, Coaches, Umpires, and Related Workers	64
	280	Announcers	65
	281	News Analysts, reporters, and Correspondents	82
	282	Public relations Specialists	82
	283	Editors	82
	285	Writers and Authors	76
XI	Arts, etc. - Mid SEI (274-276, 284, 286-296)		Mid
	274	Dancers and Choreographers	45
	275	Musicians, Singers, and Related Workers	52
	284	Technical writers	31
	286	Miscellaneous Media and Communication Workers	31
	290	Broadcast and Sound Engineering Technicians and Radio Operators	53
	291	Photographers	50
	292	Television, Video, and Motion Picture Camera Operators and Editors	50
	296	Media and Communication Equipment Workers, all Other	
XII	Healthcare - High SEI (300, 301, 304-306, 312, 314-316, 321-326)		High
	300	Chiropractors	75
	301	Dentists	96
	304	Optometrists	79
	305	Pharmacists	82
	306	Physicians and surgeons	92

Appendix (continued)

	312	Podiatrists	58
	314	Audiologist	58
	315	Occupational Therapists	58
	316	Physical Therapists	58
	321	Recreation Therapists	58
	322	Respiratory Therapists	58
	323	Speech-Language Pathologists	58
	324	Therapists, All Others	58
	325	Veterinarians	78
	326	Health, Diagnosing and Treating Practitioners, All Other	75
XIII	Healthcare - Mid SEI (303, 311, 313, 320, 330-332, 340, 341, 350-354, 362-365)		Mid
	303	Dietitians and Nutritionists	39
	311	Physician Assistants	46
	313	Registered Nurses	46
	320	Radiation Therapists	48
	330	Clinical Laboratory Technologists and Technicians	48
	331	Dental Hygienists	48
	332	Diagnostic Related Technologists and technicians	48
	340	Emergency Medical Technicians and Paramedics	48
	341	Health Diagnosing and treating Practitioner Support Technicians	48
	350	Licensed Practical and Licensed Vocational Nurses	22
	351	Medical Records and Health Information Technicians	44
	352	Opticians, Dispensing	39
	353	Miscellaneous Health Technologists and technicians	48
	354	Other Healthcare Practitioners and Technical Occupations	48
	362	Physical Therapist Assistants and Aides	38
	363	Massage Therapists	26
	364	Dental Assistants	38
	365	Medical Assistants and Other Healthcare Support Occupations	38
XIV	Healthcare - Low SEI (360, 361)		Low
	360	Nursing, Psychiatric, and Home Health Aides	13
	361	Occupational Therapist Assistants and Aides	13
XV	Protective Service - Mid SEI (370-385)		Mid
	370	First-Line Supervisors/Managers of Correctional Officers	39
	371	First-Line Supervisors/Managers of Police and Detectives	39
	372	First-Line Supervisors/Managers of Fire Fighting and prevention Workers	37
	373	Supervisors, Protective Service Workers, All Other	18
	374	Fire Fighters	37
	375	Fire Inspectors	29
	380	Bailiffs, Correctional Officers, and Jailers	34
	382	Detectives and Criminal Investigators	39
	383	Fish and Game Wardens	39
	384	Parking Enforcement Workers	34
	385	Police and Sheriff's Patrol Officers	39
XVI	Protective Service - Low SEI (386-395)		Low
	386	Transit and Railroad Police	17
	390	Animal Control Workers	19
	391	Private Detectives and investigators	18
	392	Security Guards and Gaming Surveillance Officers	18
	394	Crossing Guards	8
	395	Lifeguards and Other Protective Service Workers	19
XVII	Food Preparation and Serving Related Occupations: (400-419)		Low
	400	Chefs and Head Cooks	15
	401	First-Line Supervisors/Managers of Food Preparation and Serving Workers	68

Appendix (continued)

	402	Cooks	15
	403	Food Preparation Workers	15
	404	Bartenders	19
	405	Combined Food Preparation and Serving Workers, Including Fast Food	11
	406	Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	17
	411	Waiters and Waitresses	16
	412	Food Servers, Nonrestaurant	11
	413	Dining Room and Cafeteria Attendants and Bartender Helpers	11
	414	Dishwashers	11
	415	Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	15
	416	Food Preparation and Serving Related Workers, All Other	11
XVII			
I	Building and Grounds Cleaning and Maintenance Occupations: (420-429)		Low
	420	First-Line Supervisors/Managers of Housekeeping and Janitorial Workers	9
	421	Supervisors/Mgrs of Landscaping, Lawn Service, and Groundskeeping Workers	41
	422	Janitors and Building Cleaners	9
	423	Maids and Housekeeping Cleaners	10
	424	Pest Control Workers	18
	425	Grounds Maintenance Workers	11
XIX	Personal Care & Serv Wkrs - Mid SEI (430, 441, 442, 446, 454-455, 460, 462, 464-465)		Mid
	430	First-Line Supervisors/Managers of Gaming Workers	68
	441	Motion Picture Projectionists	43
	442	Ushers, Lobby Attendants, and Ticket Takers	25
	446	Funeral Service Workers	26
	454	Tour and Travel guides	26
	455	Transportation Attendants	31
	460	Child Care Workers	26
	462	Recreation and Fitness Workers	52
	464	Residential Advisors	26
	465	Personal Care and Service Workers, All Other	26
XX	Personal Care and Service Workers - Low SEI (432, 434, 435, 440, 443, 450-453, 461)		Low
	432	First-Line Supervisors/Managers of Personal Service Workers	19
	434	Animal Trainers	6
	435	Nonfarm Animal Caretakers	18
	440	Gaming services Workers	19
	443	Miscellaneous Entertainment attendants and Related Workers	19
	450	Barbers	17
	451	Hairdressers, Hairstylists, and Cosmetologists	17
	452	Miscellaneous Personal Appearance Workers	17
	453	Baggage Porters, Bellhops, and Concierges	4
	461	Personal and Home Care Aides	13
XXI	Sales - High SEI (470-471, 480-483, 492-493)		High
	470	First-Line Supervisors/Managers of Retail Sales Workers	68
	471	First-Line Supervisors/Managers of Non-Retail Sales Workers	68
	480	Advertising Sales Agents	66
	481	Insurance Sales Agents	66
	482	Securities, Commodities, and Financial services Sales Agents	73
	483	Travel Agents	60
	492	Real Estate Brokers and Sales Agents	62
	493	Sales Engineers	87

Appendix (continued)

XXII	Sales - Mid SEI (472, 474-476, 484-485, 490, 494-496)		Mid
	472	Cashiers	44
	474	Counter and Rental Clerks	44
	475	Parts Salespersons	47
	476	Retail Salespersons	47
	484	Sales Representatives, Services, All Other	47
	485	Sales Representatives, Wholesale and Manufacturing	47
	490	Models, Demonstrators, and Product Promoters	35
	494	Telemarketers	47
	495	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	27
	496	Sales and Related Workers, All Other	47
XXII I	Office and Administrative Support Occupations: (500-599)		Mid
	500	First-Line Supervisors/Managers of Office and Administrative Support Workers	68
	501	Switchboard Operators, Including Answering Service	45
	502	Telephone Operators	45
	503	Communications Equipment Operators, All Other	45
	510	Bill and Account Collectors	39
	511	Billing and Posting Clerks and Machine Operators	44
	512	Bookkeeping, Accounting, and Auditing Clerks	51
	513	Gaming Cage Workers	44
	514	Payroll and Timekeeping Clerks	44
	515	Procurement Clerks	44
	516	Tellers	52
	520	Brokerage Clerks	44
	521	Correspondence Clerks	44
	522	Court, Municipal, and License Clerks	44
	523	Credit Authorizers, Checkers, and Clerks	44
	524	Customer Service Representatives	44
	525	Eligibility Interviewers, Government Programs	44
	526	File Clerks	44
	530	Hotel, Motel, and Resort Desk Clerks	44
	531	Interviewers, Except Eligibility and Loan	44
	532	Library Assistants, Clerical	44
	533	Loan Interviewers and Clerks	44
	534	New Accounts Clerks	44
	535	Order Clerks	44
	536	Human Resources Assistants, Except Payroll and Timekeeping	44
	540	Receptionists and Information Clerks	44
	541	Reservation and Transportation Ticket Agents and Travel Clerks	60
	542	Information and Record Clerks, All Other	44
	550	Cargo and Freight Agents	22
	551	Couriers and Messengers	28
	552	Dispatchers	40
	553	Meter Readers, Utilities	44
	554	Postal Service Clerks	44
	555	Postal Service Mail Carriers	53
	556	Postal Service Mail Sorters, Processors, and Processing Machine Operators	44
	560	Production, Planning, and Expediting Clerks	44
	561	Shipping, Receiving, and Traffic Clerks	22
	562	Stock Clerks and Order Fillers	44
	563	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	44
	570	Secretaries and Administrative Assistants	61
	580	Computer Operators	45

Appendix (continued)

	581	Data Entry Keyers	45
	582	Word Processors and Typists	61
	583	Desktop Publishers	61
	584	Insurance Claims and Policy Processing Clerks	44
	585	Mail Clerks and Mail Machine Operators, Except Postal Service	44
	586	Office Clerks, General	44
	590	Office Machine Operators, Except Computer	45
	591	Proofreaders and Copy Markers	44
	592	Statistical Assistants	44
	593	Office and Administrative Support Workers, All Other	44
XXIV	Construction and Extraction - Mid SEI (620-622,630-632,635-640,644-650,652-653,666-670)		Mid
	620	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	68
	621	Boilermakers	39
	622	Brickmasons, Blockmasons, and Stonemasons	27
	630	Paving, Surfacing, and Tamping Equipment Operators	24
	631	Pile-Driver Operators	24
	632	Operating Engineers and Other Construction Equipment Operators	24
	635	Electricians	44
	636	Glaziers	26
	640	Insulation Workers	32
	644	Pipelayers, Plumbers, Pipefitters, and Steamfitters	34
	646	Plasterers and Stucco Masons	25
	650	Reinforcing Iron and Rebar Workers	24
	652	Sheet Metal Workers	33
	653	Structural Iron and Steel Workers	34
	666	Construction and Building Inspectors	41
	670	Elevator Installers and Repairers	27
	672	Hazardous Materials Removal Workers	32
XXV	Construction and Extraction - Low SEI (623-626,633,642-643,651,660,671-694)		Low
	623	Carpenters	19
	624	Carpet, Floor, and Tile Installers and Finishers	12
	625	Cement Masons, Concrete Finishers, and Terrazzo Workers	19
	626	Construction Laborers	8
	633	Drywall Installers, Ceiling Tile Installers, and Tapers	18
	642	Painters, Construction and Maintenance	16
	643	Paperhangers	10
	651	Roofers	15
	660	Helpers, Construction Trades	8
	671	Fence Erectors	8
	673	Highway Maintenance Workers	8
	674	Rail-Track Laying and Maintenance Equipment Operators	8
	675	Septic Tank Servicers and Sewer Pipe Cleaners	8
	676	Miscellaneous Construction and Related Workers	8
	680	Derrick, Rotary Drill, and Service Unit Operators, Oil, Gas, and Mining	10
	682	Earth Drillers, Except Oil and Gas	10
	683	Explosives Workers, Ordinance Handling Experts, and Blasters	11
	684	Mining machine Operators	10
	691	Roof Bolters, Mining	10
	692	Roustabouts, Oil and Gas	10
	693	Helpers--Extraction Workers	8
	694	Other Extraction Workers	8
XVI	Installation, Maintenance, and Repair Occupations: (700-769)		Mid
	700	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	49
	701	Computer, Automated Teller, and Office Machine Repairers	36

Appendix (continued)

	702	Radio and Telecommunications Equipment Installers and Repairers	49
	703	Avionics Technicians	36
	704	Electric Motor, Power Tool, and Related Repairers	27
	705	Electrical and Electronics Installers and Repairers, Transportation Equipment	27
	710	Electrical and Electronics Repairers, Industrial and Utility	36
	711	Electronic Equipment Installers and Repairers, Motor Vehicles	27
	712	Electronic Home Entertainment Equipment Installers and Repairers	36
	713	Security and Fire Alarm Systems Installers	44
	714	Aircraft Mechanics and Service Technicians	48
	715	Automotive Body and Related Repairers	19
	716	Automotive Glass Installers and Repairers	19
	720	Automotive Service Technicians and Mechanics	19
	721	Bus and Truck Mechanics and Diesel Engine Specialists	19
	722	Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics	27
	724	Small Engine Mechanics	18
	726	Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, & Repairers	19
	730	Control and Valve Installers and Repairers	27
	731	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	27
	732	Home Appliance Repairers	27
	733	Industrial and Refractory Machinery Mechanics	27
	734	Maintenance and Repair Workers, General	27
	735	Maintenance Workers, Machinery	15
	736	Millwrights	31
	741	Electrical Power-Line Installers and Repairers	49
	742	Telecommunications Line Installers and Repairers	49
	743	Precision Instrument and Equipment Repairers	36
	751	Coin, Vending, and Amusement Machine Servicers and Repairers	32
	752	Commercial Divers	27
	754	Locksmiths and Safe Repairers	27
	755	Manufactured Building and Mobile Home Installers	27
	756	Riggers	27
	760	Signal and Track Switch Repairers	44
	761	Helpers--Installation, Maintenance, and Repair Workers	18
	762	Other Installation, Maintenance, and Repair Workers	27
XXVII	Production Occupations - Low SEI (771-775,783-785, 795-796, 801-802, 804,810,812, 820, 822, 830-834, 836, 840-842, 846, 851, 853-855,863-865, 871-874,880-881,885-886, 890, 892-896)		Low
	771	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	18
	772	Electrical, Electronics, and Electromechanical Assemblers	18
	773	Engine and Other Machine Assemblers	18
	774	Structural Metal Fabricators and Fitters	18
	775	Miscellaneous Assemblers and Fabricators	18
	783	Food & Tobacco Roasting, Baking, & Drying Machine Operators & Tenders	18
	784	Food Batchmakers	18
	785	Food Cooking Machine Operators and Tenders	8
	795	Cutting, Punching, & Press Machine Setters, Opers, & Tenders, Metal & Plastic	18
	796	Drilling & Boring Machine Tool Setters, Operators, & Tenders, Metal & Plastic	18
	801	Lathe & Turning Machine Tool Setters, Operators, & Tenders, Metal & Plastic	18
	802	Milling and Planning Machine Setters, Operators, Tenders, Metal and Plastic	18
	804	Metal Furnace and Kiln Operators and Tenders	17
	810	Molders & Molding Machine Setters, Operators, & Tenders, Metal & Plastic	18
	812	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	18
	820	Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	18
	822	Metalworkers and Plastic Workers, All Other	18
	830	Laundry and Dry-Cleaning Workers	15

Appendix (continued)

	831	Pressers, Textile, Garment, and Related Materials	15
	832	Sewing Machine Operators	18
	833	Shoe and Leather Workers and Repairers	12
	834	Shoe Machine Operators, and Tenders	18
	836	Textile Bleaching and dyeing Machine Operators and Tenders	18
	840	Textile Cutting Machine Setters, Operators, and Tenders	18
	841	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	6
	842	Textile Winding, Twisting, & Drawing Out Machine Setters, Operators, & Tenders	18
	846	Textile, Apparel, and Furnishings Workers, All Other	18
	851	Furniture Finishers	18
	853	Sawing Machine Setters, Operators, and Tenders, Wood	5
	854	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	18
	855	Woodworkers, All Other	18
	863	Miscellaneous Plant and System Operators	10
	864	Chemical Processing Machine Setters, Operators, and Tenders	18
	865	Crushing, Grinding, Polishing, Mixing, and Blending Workers	18
	871	Cutting Workers	18
	872	Extruding, Forming, Pressing, & Compacting Machine Setters, Opers, & Tenders	18
	873	Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	17
	874	Inspectors, Testers, sorters, Samplers, and Weighters	18
	880	Packaging and Filling machine Operators and Tenders	18
	881	Painting workers	18
	885	Cementing and Gluing Machine Operators and Tenders	18
	886	Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	18
	890	Cooling and Freezing Equipment Operators and Tenders	18
	892	Molders, Shapers, and Casters, Except Metal and Plastic	18
	893	Paper Goods machine-Setters, Operators, and Tenders	18
	894	Tire Builders	18
	895	Helpers--Production Workers	8
	896	Production Workers, All Other	18
XXVIII	Production Occupations - Mid SEI (770, 780-781, 790, 792-794, 800, 803, 806, 813-816, 821, 823-826, 835, 843-845, 850, 852, 860-862, 875-876, 883-886, 890-891)		Mid
	770	First-Line Supervisors/Managers of Production and Operating Workers	49
	780	Bakers	22
	781	Butchers and Other Meat, Poultry, and Fish Processing Workers	29
	790	Computer Control Programmers and Operators	53
	792	Extruding & Drawing Machine Setters, Operators, & Tenders, Metal & Plastic	23
	793	Forging Machine Setters, Operators, and Tenders, Metal and Plastic	23
	794	Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	22
	800	Grinding, Lapping, Polishing, & Buffing Machine, Opers, & Tndrs, Metal & Plastic	22
	803	Machinists	33
	806	Model Makers and Patternmakers, Metal and Plastic	44
	813	Tool and Die Makers	50
	814	Welding, Soldering, and Brazing Workers	24
	815	Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	22
	816	Lay-Out Workers, Metal and Plastic	34
	821	Tool Grinders, Filers, and Sharpeners	22
	823	Bookbinders and Bindery Workers	33
	824	Job Printers	49
	825	Prepress Technicians and Workers	52
	826	Printing Machine Operators	49
	835	Tailors, Dressmakers, and Sewers	23
	843	Extruding & Forming Machine Setters, Opers, & Tndrs, Synthetic & Glass Fibers	22
	844	Fabric and Apparel Patternmakers	22
	845	Upholsterers	22

Appendix (continued)

	850	Cabinetmakers and Bench Carpenters	23
	852	Model Makers and Patternmakers, Wood	22
	860	Power Plant Operators, Distributors, and dispatchers	50
	861	Stationary Engineers and Boiler Operators	47
	862	Water and Liquid Waste Treatment Plant and System Operators	47
	875	Jewelers and Precious Stone and Metal Workers	36
	876	Medical, Dental, and Ophthalmic Laboratory Technicians	48
	883	Photographic Process Workers and Processing Machine Operators	42
	884	Semiconductor Processors	42
	890	Cooling and Freezing Equipment Operators and Tenders	22
	891	Etchers and Engravers	47
XXIX	Transportation and Material Moving - High SEI (900-904,920-924,931-933)		High
	900	Supervisors, Transportation and Material Moving Workers	68
	903	Aircraft Pilots and Flight Engineers	79
	904	Air Traffic Controllers and Airfield Operation Specialists	69
	920	Locomotive Engineers and Operators	58
	923	Railroad Brake, Signal, and Switch Operators	42
	924	Railroad Conductors and Yardmasters	58
	931	Ship and Boat Captains and Operators	34
	933	Ship Engineers	88
XXX	Transportation and Material Moving - Low SEI (913-915,930,934-975)		Low
	913	Driver/Sales Workers and Truck Drivers	15
	914	Taxi Drivers and Chauffeurs	10
	915	Motor Vehicle Operators, All Other	10
	930	Sailors and Marine Oilers	16
	934	Bridge and Lock Tenders	19
	935	Parking Lot Attendants	19
	936	Service Station Attendants	19
	941	Transportation Inspectors	18
	942	Other Transportation Workers	8
	950	Conveyor Operators and Tenders	19
	951	Crane and Tower Operators	21
	952	Dredge, Excavating, and Loading Machine Operators	24
	956	Hoist and Winch Operators	21
	960	Industrial Truck and Tractor Operators	18
	961	Cleaners of Vehicles and Equipment	8
	962	Laborers and Freight, Stock, and Material Movers, Hand	8
	963	Machine Feeders, and Offbearers	8
	964	Packers and Packagers, Hand	18
	965	Pumping Station Operators	8
	972	Refuse and Recyclable Material Collectors	8
	974	Tank, Car, Truck, and Ship Loaders	8
	975	Material Moving Workers, All Other	8
XXXI	Transportation & Material Moving - Mid SEI (911-912, 923, 926, 931, 934, 950-952. 956)		Mid
	911	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	
	912	Bus Drivers	24
	923	Railroad Brake, Signal, and Switch Operators	42
	926	Subway, Streetcar, and Other Rail Transportation Workers	34
	931	Ship and Boat Captains and Operators	34
	934	Bridge and Lock Tenders	34
	950	Conveyor Operators and Tenders	24
	951	Crane and Tower Operators	21
	952	Dredge, Excavating, and Loading Machine Operators	24
	956	Hoist and Winch Operators	21