The Impact of The Great Recession on the Occupational Segregation of Black Men in the U.S.

Michelle Holder, Ph.D.
John Jay College of Criminal Justice, City University of New York
November 2015

Abstract

Existing research on occupational segregation measures the degree of under- and overrepresentation of a group in an occupation given that group's expected level of representation; the occupational crowding hypothesis posits that the expected level of representation is based on the share of the group with the educational attainment level possessed by the majority of the occupation's workers (Bergmann 1971). Black men are overrepresented in low-wage occupations, and underrepresented in high-wage occupations, even after controlling for education (Bergmann 1971; Gibson, Darity, and Myers 1998; Hamilton, Austin and Darity 2011). The occupational crowding hypothesis indicates that the crowding of black workers into low-wage occupations is due to: (1) employers' desire not to associate with blacks; (2) employers' perception that black workers are less productive; (3) employers' fear of reprisal from white customers or employees. Since occupational crowding research typically ignores the effect of business cycles on occupational sorting, this research examines whether the Great Recession exacerbated the occupational crowding of black men in the U.S

Introduction

Existing research on occupational segregation measures the degree of under- and overrepresentation of a group in an occupation given that group's expected level of representation; the expected level of representation is based on the share of the group with the educational attainment level possessed by the majority of workers in that occupation (Bergmann 1971). Black men are overrepresented in low-wage occupations and underrepresented in high-wage occupations, even after controlling for education (Bergmann 1971; Gibson, Darity, and Myers 1998; Hamilton, Austin and Darity 2011). The occupational crowding hypothesis posits that black workers are "crowded" into low-wage occupations by employers due to employers' desire not to associate with blacks, their perception that black workers are less productive, their fear of reprisal from white customers or employees, or their fear that having black employees will diminish their status among peers.[1] According to Darity and Mason (1998), most economists assume that:

> "…….some part of the racial or gender gap in earnings or occupations is due to average group differences in productivity-linked characteristics (human capital gap) and some part is due to average group differences in treatment (a discrimination gap)."[2]

Neoclassical economic theory typically explains discriminatory behavior from employers in the following two ways:[3] (1) employers have a "taste for discrimination,"[4] in which they gain economic utility for indulging in bigoted behavior, and thus are still rational economic actors, or; (2) employers use "statistical discrimination," where they utilize perceived group characteristics in employment decisions which they presume is an efficient way to proceed, thus again making the behavior economically rational.[5]

Occupational crowding research typically fails to account for the effect of business cycles on occupational sorting. Downturns in the business cycle create an environment where occupational segregation based on race can become more severe, as employers have more latitude to indulge in discriminatory hiring practices. In addition, the vast majority of the literature on occupational segregation focuses primarily on sorting based on gender. For example, Heidi Hartmann (1976), employing a Marxist-Feminist perspective, starts with a basic question; given the sex-blind (and race-blind for that matter) characteristic of capital, how did it come to be that the U.S. labor market became highly segregated along gender lines? Ultimately her answer is the cross-hatching of capitalism and patriarchy; Hartmann points out that patriarchy preceded capitalism, and that "by the time of the emergence of capitalism in the 15th through 18th centuries, the nuclear patriarchal peasant family had become the basic production unit in society"[6] with women subordinate to men. Brown, Moon, and Zoloth (1980) use a sample of men to estimate the probability of one's occupational choice given individual characteristics, and then apply the resultant parameters to a sample of women with results that show a very different occupational distribution than the women actually had.[7] The authors conclude labor market discrimination based on gender explains the results of their experiment. Beller (1982) tests supply-side (human capital) and demand-side (discrimination) explanations for occupational segregation based on sex, and finds stronger evidence for gender discrimination in the labor market as an explanatory factor, noting that Title VII of the Civil Rights Act of 1964 (that prohibits employment discrimination based on race, ethnicity, or gender)[8] increased the probability of a woman being employed in a male-dominated occupation.[9]

There are, however, a handful of scholars who have focused on race and occupational segregation, the majority of whom are delineated below. Of the researchers indicated below, only one, Wicks-Lim (2011), specifically looked at the effect of the business cycle on occupational crowding by race.

A Note on "Crowding Out"

The term "crowding out" in economics typically refers to the scenario where monetary policy in the form of government investment "crowds out" private investment. However, wherever this term is used in this chapter, as well as in chapters 2 and 3, it will instead refer to a scenario where black men are "crowded out" of high-wage occupations because they are either being "crowded into" low-wage occupations or pushed out of the labor market.

Bergmann's (1971) Model of Occupational Segregation by Race

Bergman (1971) examined the occupational distribution of black men in the U.S. using data from the 1960 decennial census. Utilizing a theory posited by Francis Y. Edgeworth in 1922, who was building on work done by Millicent Fawcett in 1892 on why women received lower pay compared to men, Bergmann hypothesized that black men were "crowded" into low-wage and less desirable occupations compared to their white male counterparts. Bergmann indicated the purpose of her study was to examine the costs associated with integrating the workforce, since one of the excuses used by employers for continuing discriminatory practices was that ending them would be associated with considerable costs. If costs to white employees associated with integrating the labor force could be shown to be minimal, then according to Bergmann this would be "valuable ammunition with which to allay fears and promote fairer arrangements."[10] She also noted that occupational segregation depresses wages of black men in high-wage occupations given the concept of "opportunity costs"—if a black man is unwilling to

accept lower wages than their white male counterparts in high-wage occupations then his only alternative is to accept even lower wages in more menial work. Bergmann posited that it was employer action that resulted in such crowding, though she did indicate that discriminatory unions may also play a role by limiting the racial/ethnic employee pool of a union shop from which an employer may hire.[11] Bergmann's model controlled for educational attainment as an explanatory variable for occupational crowding, but she restricted her analysis to occupations requiring less than a high school diploma. Thus, occupations requiring higher educational attainment levels were not examined.

Bergmann's (1971) Methodology to Determine Occupational Segregation

In an attempt to control for educational attainment differences, and recognizing the significant gap in educational attainment levels between blacks and whites at the time of her research, Bergmann only looked at occupations which required less than a high school diploma. The expected share of non-white men in the occupations examined was based on the percentage of non-white men without a high school diploma; if an occupation had a 10 percent greater share of black men than expected then black men were considered to be "crowded" into that occupation. Similarly, if an occupation had less than 10 percent of expected black men then black men were underrepresented in that occupation. Bergmann's model of the expected number of non-whites in an occupation can be represented by the following equation:

$$\sum_{i=1}^{n} E_{ij}\left(\frac{P_i^n}{P_i}\right)$$

where E equals the total number of people employed of the ith educational attainment level and the jth occupation, P_i is the total population at the ith educational attainment level, and P_i^n is the total number of non-whites in the population at the ith educational level.[12]

Bergmann's occupational crowding model found that of the 29 occupations she analyzed 8 were "crowded" with non-whites, and 18 had a "deficit" of non-whites.

Spriggs and Williams' (1996) "L" Index

Alternatively, Spriggs and Williams (1996) developed an occupational segregation index, the "L" index, which measured how gender or race affects the probability of being in an occupation. The L index was conceived as an alternative to another measure of occupational segregation, the Duncan Dissimilarity Index, or "D" index. Spriggs and Williams (1996) pointed out that there were a few methodological problems in using the D index to measure occupational segregation, which are: (1) the inability to simultaneously control for two or more independent variables that influence the degree of occupational segregation, necessitating the creation of separate indices for subsets of a population; (2) occupational category changes inhibit longitudinal analysis, and; (3) jobs dominated by men tend to have more detailed occupational classifications which would make analysis of occupational segregation by race of male-dominated jobs more accurate than that for occupations dominated by women.

The Duncan "D" Index

The Duncan "D" index of occupational segregation is given by the following formula:[13]

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

where B_i is the total number of blacks who are employed in occupation i, B is the total number of blacks who are working, and W_i and W are the analogous estimates for whites. When D equals 0 the occupations i through k are completely integrated with blacks and whites; when D equals 1 occupations i through k are completely segregated with each group dominating an occupation to the exclusion of the other.

L Index Formulation

Spriggs and Williams asserted that one's occupation is a better predictor than annual wages of economic status in the long run, but that economists have tended to ignore the role of occupational status in the race wage gap because of methodological problems with occupational segregation analytical tools.[14] Given the shortcomings of the D index, these researchers used a logit regression model which allowed for multivariate analysis. However, an important difference between Spriggs and Williams' analytical approach and that of the D index is the logit regression model calculates occupational segregation indices based on probabilities, while the D index is descriptive.

The L index is given by the following formula:

$$L = \frac{1}{2} \sum_{i=1}^{k} \left| \frac{\Delta P_i}{\Delta X_r} \right|_{P_i^*}$$

where P_i = probability of being in i occupation, X_r is the independent variable race used to estimate P and $r \in$ (race, sex), $P_i^* = T_i/T$ and T_i are total employees in occupation i and T are total workers. Employing the L index, Spriggs and Williams (1996) found that occupational segregation decreased for women and African Americans in the 1970s, and in the 1980s it decreased for African Americans but increased for

women. By using the L index Spriggs and Williams found that the impact of policy prescriptions to reduce occupational segregation was more easily identified, unlike with the D index whose model cannot simultaneously control for several independent explanatory variables.

Gibson, Darity, and Myers (1998) and Hamilton, Austin, and Darity (2011) on Occupational Segregation by Race

Other researchers have employed and refined Bergmann's (1971) methodology, preferring a descriptive analytical approach, and in doing so confirmed that black men are still crowded into low-wage occupations, and underrepresented in high-wage occupations, after controlling for education. Gibson, Darity, and Myers (1998) and Hamilton, Austin, and Darity (2011) computed occupational crowding indices for black workers. These researchers updated Bergmann's findings by examining not only occupations requiring only a high school diploma or less but also occupations requiring higher educational attainment levels. Black male crowding indices, or scores, were assigned to occupational categories by estimating the share of black males that would be expected in an occupation given the share of black men in the working-age population who possess the required educational credentials for that occupation.

Analyzing 1990 census data, Gibson, Darity and Myers (1998) restricted their analyses to counties in Michigan and Pennsylvania that experienced severe declines in manufacturing employment, and, unlike Bergmann, looked at occupational crowding of women as well. Examining 59 occupations, Gibson, Darity, and Myers found that in Allegheny County in Pittsburgh and in Wayne County in Detroit black men and women were excluded from high-wage occupations, with the exception of public sector managerial jobs. These researchers also found that in manufacturing and service sector jobs black

men were crowded into low-skill laborer and operator occupations, as opposed to craft occupations. In addition, they also found both black and white women were excluded from even low-skill operative work in manufacturing, but crowded into low-paying service occupations.

Hamilton, Austin, and Darity (2011) broadened their analysis to include all occupations, and examined the occupational distribution of black men at the national level. These researchers began by examining wage differentials based on race, and concluded that wage disparities could not be explained simply by differences in educational attainment levels; they found in the aggregate that among black and white male workers of the same educational attainment level there existed a gap in wages based on race.[15] Like Bergmann (1971), Hamilton, Austin, and Darity linked occupational segregation and racial wage disparities. And like Gibson, Darity and Myers (1998) Hamilton, Austin and Darity refined Bergmann's methodology by broadening the analysis to include an examination of occupational crowding scores not just for those occupations requiring a high school diploma or less, but occupations requiring an associate's degree or higher. Using American Community Survey (ACS) data for 2005-2007, Hamilton, Austin and Darity found segregation of black men existed in 87 percent of all occupations in the U.S., with black men underrepresented in 49 percent of all occupations, most notably construction work, but overrepresented in 38 percent of all occupations, most notably service jobs. In the construction occupation the researchers pointed out that although many of these jobs don't require advanced degrees they tend to be relatively well-paying. However, out of 67 sub-occupations in construction the researchers found that black men were underrepresented in 54 of them.[16]

Gibson, Darity, and Myers (1998) and Hamilton, Austin, and Darity (2011) Methodology on Occupational Segregation

The occupational crowding score is a ratio consisting of an occupation's percentage of employed black males in the numerator and the percentage of the working age population that consists of black men with the necessary educational credentials for that occupation in the denominator. A crowding score of less than 1 means that black men are underrepresented in that occupation, and a score greater than 1 means that black men are overrepresented, and thus "crowded," in that occupation.

The occupational crowding score may be represented by the following formula:

$$(BE_i/LF_i)/(BE*/CP*)$$

where BE_i is all black men employed in occupation i, LF_i is the total labor force in occupation i, $BE*$ is all black men who possess the required educational credentials for occupation i, and $CP*$ is the portion of the civilian population who possess the required educational credentials for occupation i.

Results from Analysis of Great Recession and Black Male Occupational Sorting

Data Sets

The U.S. Census Bureau's American Community Survey (ACS) for 2005, 2006, 2010, and 2011 are the main data sets. This analysis examines occupations at the 4-digit level of detail consistent with current U.S. Census Bureau coding of occupations which follows a similar coding scheme as the more well-known Standard Occupational Classification (SOC) system.[17] The Census Bureau coding system must be used since the ACS employs this system in its coding of occupational data. Note that any occupational coding system is distinct from the North American Industrial Classification System (NAICS) which is a coding system for industries, not occupations.[18]

Methodology

This research examines how the recession may have affected the occupational crowding of black men by employing the same methodology used by Gibson, Darity, and Myers (1998) and Hamilton, Austin, and Darity (2011). I analyzed all occupations, currently numbering over 500, for changes in occupational crowding scores for black men.

First, using 2005-2006 and 2010-2011 merged ACS samples, I assigned black male occupational crowding scores to occupational categories by deriving two ratios for each occupation, and dividing those ratios for each occupational crowding score. These years were chosen because they occur before and after the Great Recession, which began in December 2007 and ended in June 2009.[19] Since I wanted to isolate the impact of the recession I felt these years were the most appropriate to examine changes. In addition, using merged samples has the advantage of offering more units of observation.

In calculating black male occupational crowding scores the first ratio consists of the share of non-Hispanic black men in occupation i out of the total number who are in that occupation. For the second ratio, in order to determine the required credentials for an occupation I calculated, following the methodology employed by Gibson, Darity, and Myers (1998) and Hamilton, Austin, and Darity (2011), the 25th and 90th percentile of educational attainment for all sample respondents in i occupation . I then determined the share of black men who possess between the 25th and 90th percentile of educational attainment for i occupation out of the all workers who possess between the 25th and 90th percentile of educational attainment for that occupation. Determining the share of black men who possess the required educational credentials for occupation i allowed me to estimate the share of black males that would be expected in occupation i. I divided the first ratio by the second ratio to determine an occupational crowding score for non-Hispanic black men for each occupation.   The 2005-2006 and 2010-2011 black male occupational crowding scores were compared and changes analyzed.

Analysis of the data was restricted in the following manner:

1) Black men were restricted to non-Hispanics.

2) The age range was restricted to 25-64 year olds consistent with Hamilton, Austin and Darity's (2011) methodology.

3) For the portion of the occupational crowding score attributable to occupational data only persons in the labor force were included.

4) For the portion of the occupational crowding score attributable to educational attainment persons could have been either in or out of the labor force.

Results

In order to fully execute this analysis, I categorized each major occupational category as either high-wage, mid-wage, or low-wage. Table 1 distinguishes between high-wage, mid-wage, and low-wage major occupational categories. The overall median annual wage in the U.S. in May 2011 was $34,465. Occupations with median wages near or above $60,000 annually are categorized as high-wage occupations, and those near or below $27,400 are categorized as low-wage (See Appendix for 25th and 70th percentile calculations for annual wages in 2011 using American Community Survey data). Occupations which are neither high-wage nor low-wage are categorized as mid-wage.

Black Male Representation in High-Wage Occupations

Table 1 presents black male occupational crowding scores for major occupational categories for 2005-2006 and 2010-2011. Focusing for the moment on high-wage occupations, while the occupational crowding score for the category "business operations specialists" increased slightly from .63 in 2005-2006 to .66 in 2010-2011 it should be noted that the black male occupational crowding score is quite low, just over .60, for both time periods. In the categories of "financial specialists," (including accountants) "life, physical, and social scientists," and "healthcare practitioners" (including medical doctors) not only were the crowding scores significantly less than one in 2005-2006-- .74 for financial specialist occupations, .61 for life, physical, and social science occupations, .47 in legal occupations, and .54 for healthcare practitioners—but also each of these scores declined dramatically (with the exception of legal occupations, where the decline was modest) by 2010-2011, illustrating a pattern of "crowding out" of black men in high-wage occupations during the recession.

Table 1

Black Male Occupational Crowding Scores in the U.S. by Major Occupational Category, Wage Level and Representation Level, 2005-2006 and 2010-2011

	2005-2006 Black Male Occupational Crowding Score	2010-2011 Black Male Occupational Crowding Score	Point Change	Median Annual Wage, May 2011	Wage Level Category	Black Male Representation
All Occupations				$ 34,466		
Management	0.67	0.68	0.01	$ 92,872	High-Wage	Underrepresented
Legal Occupations	0.47	0.44	(0.04)	$ 75,462	High-Wage	Underrepresented
Computer and Mathematical	0.87	0.95	0.08	$ 75,088	High-Wage	Underrepresented
Architecture	0.72	0.57	(0.15)	$ 72,072	High-Wage	Underrepresented
Engineering	1.11	1.05	(0.06)	$ 72,072	High-Wage	Proportional
Business Operations Specialists	0.63	0.66	0.03	$ 61,714	High-Wage	Underrepresented
Financial Specialists	0.74	0.63	(0.10)	$ 61,714	High-Wage	Underrepresented
Healthcare Practitioners and Technical	0.54	0.49	(0.04)	$ 59,571	High-Wage	Underrepresented
Life, Physical, and Social Science	0.61	0.55	(0.06)	$ 59,322	High-Wage	Underrepresented
Education, Training, and Library	0.50	0.46	(0.04)	$ 46,051	Mid-Wage	Underrepresented
Arts, Design, Entertainment, Sports, Media	0.77	0.79	0.02	$ 43,638	Mid-Wage	Underrepresented
Installation, Maintenance and Repair	1.10	1.09	(0.01)	$ 40,602	Mid-Wage	Proportional
Community and Social Service	1.69	1.42	(0.27)	$ 39,874	Mid-Wage	Overrepresented
Construction and Extraction	0.92	0.80	(0.12)	$ 39,832	Mid-Wage	Underrepresented
Protective Service	2.49	2.30	(0.19)	$ 36,733	Mid-Wage	Overrepresented
Office and Administrative Support	0.59	0.59	0.00	$ 31,242	Mid-Wage	Underrepresented
Production	1.06	0.97	(0.09)	$ 30,659	Mid-Wage	Proportional
Transportation and Material Moving	2.17	2.02	(0.15)	$ 28,766	Low-Wage	Overrepresented
Healthcare Support	0.62	0.57	(0.05)	$ 25,126	Low-Wage	Underrepresented
Sales and Related	0.60	0.54	(0.05)	$ 24,835	Low-Wage	Underrepresented
Buildings and Grounds Cleaning and Maintena	1.48	1.47	(0.02)	$ 22,610	Low-Wage	Overrepresented
Personal Care and Service	0.51	0.53	0.02	$ 20,717	Low-Wage	Underrepresented
Farming, Fishing, and Forestry	0.76	0.58	(0.18)	$ 19,469	Low-Wage	Underrepresented
Food Preparation and Serving Related	0.82	0.81	(0.02)	$ 18,907	Low-Wage	Underrepresented

Data Sources: For occupational crowding scores author analysis of American Community Survey data for 2011, Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek, Integrated Public Use Microdata Series: Version 5 [Machine-readable database], Minneapolis, University of Minnesota, 2010; For wage data U.S. Department of Labor, Bureau of Labor Statistics.

The only major high-wage occupational category where black men were nearly proportionally represented in 2005-2006, and where the occupational crowding score did not decline in 2010-2011, is "computer and mathematical" occupations—see Table 1. In this category, the crowding score was .87 in 2005-2006, and actually increased to .95 in 2010-2011. The sub-occupational category "software developers" appears to play a major role here in terms of both proportional representation of, as well as an increase in representation of, black men in the computer and mathematical occupations.

Black Male Representation in Low-Wage Occupations

Juxtaposing what occurred in high-paying occupations in which black men are mostly underrepresented let's examine changes in occupational crowding in jobs which Hamilton, Austin and Darity (2011) found were low-wage with an overrepresentation of black men.[20] Building, grounds cleaning and maintenance occupations are low-wage— see Table 1 and Appendix A.4-- and have an overrepresentation of black men according to the overall occupational crowding score of 1.48 for 2005-2006 indicated in Table 1. By 2010-2011 the score was virtually unchanged at 1.47. Thus, it does not appear that black men were further crowded into the major occupational category of building and grounds cleaning and maintenance as a result of the recession. Once again, were black men only being crowded out, and not crowded in, during the recession?

A similar pattern was found in the low-wage major occupational category "transportation and material moving." Black men were significantly overrepresented in this occupation in 2005-2006 given an occupational crowding score of 2.17 (see Table 1). By 2010-2011, the crowding score did not increase, but declined to 2.02. Yet again, were black men only being crowded out, and not crowded in, during the recession?

Of the four major occupational categories in which black men were significantly overrepresented--community and social service, protective service, building and grounds cleaning and maintenance, and transportation and material moving (because wage data was not available for military-specific occupations this category will be omitted from wage analysis), with occupational crowding scores at or above 1.4 in 2005-2006 as well as 2010-2011, two were not, in an aggregate sense, low-wage occupations—these were community and social service and protective service (note that these occupations were not high-wage either). In Table 1 community and social service occupations had a crowding score of 1.69 for black men prior to the recession; these occupations include counselors and social workers. By 2010-2011 the score declined to 1.42—black men were crowded out of this mid-wage occupational category.

Looking at the wage detail in sub-occupations of the "community and social service" group none could be considered low-wage.[21] However, in the protective service occupation, where the crowding score for black men was 2.49 in 2005-2006, several low-wage sub-occupational categories such as security guards, crossing guards, and life guards, are grouped together with mid-wage occupations such as police officers and firefighters. The relevance of this is: (1) of the estimated 3 million workers in the protective services occupation approximately one-third are in the security guard sub-occupation; (2) black men are staggeringly overrepresented among the security guard occupation, with a crowding score of 3.78 in 2005-2006, and; (3) the security guard occupation is low-wage, with a median annual salary of $23,900 in 2011.

In the protective services occupational category not only did the overall black male occupational crowding score decline from 2.49 to 2.30 by 2010-2011, but in the sub-occupational category of security guards, which had the highest crowding score of all other sub-occupational categories in the overall occupational group, the crowding score also declined from 3.78 in 2005-2006 to 3.60 in 2010-2011. Here again, black men were clearly not further crowded into the low-wage security guard occupation as a result of the recession.

Notably, of the seven low-wage major occupational categories—healthcare support, food preparation and serving, buildings and grounds cleaning and maintenance, personal care and service, sales and related, farming, fishing and forestry, and transportation and material moving -- black men were overrepresented in only two of them. Given the occupational crowding model, however, the expectation would be that black men would be overrepresented in at least four of the seven low-wage major occupational categories. Let us therefore examine the workforce demographics of the five low-wage major occupational categories in which black men are underrepresented.

Black Male Underrepresentation in Low-Wage Occupations

In the major occupational category of healthcare support the median annual wage in 2011 was $25,126, as can be seen in Table 1. However, the black male occupational crowding score in that category was below .65 in both 2005-2006 and 2010-2011-- see Table 1. Similarly, in the personal care service major occupational category the black male occupational crowding score was .55 in 2005-2006 as well as 2010-2011. The explanation for why black men were sharply underrepresented in the healthcare support and personal care occupational categories, even though they are low-wage, likely lies in these

occupations' gender makeup— 88 percent of healthcare support workers, and 79 percent of personal care and service workers, are women, while 48 percent of the workforce in general are women.[22]
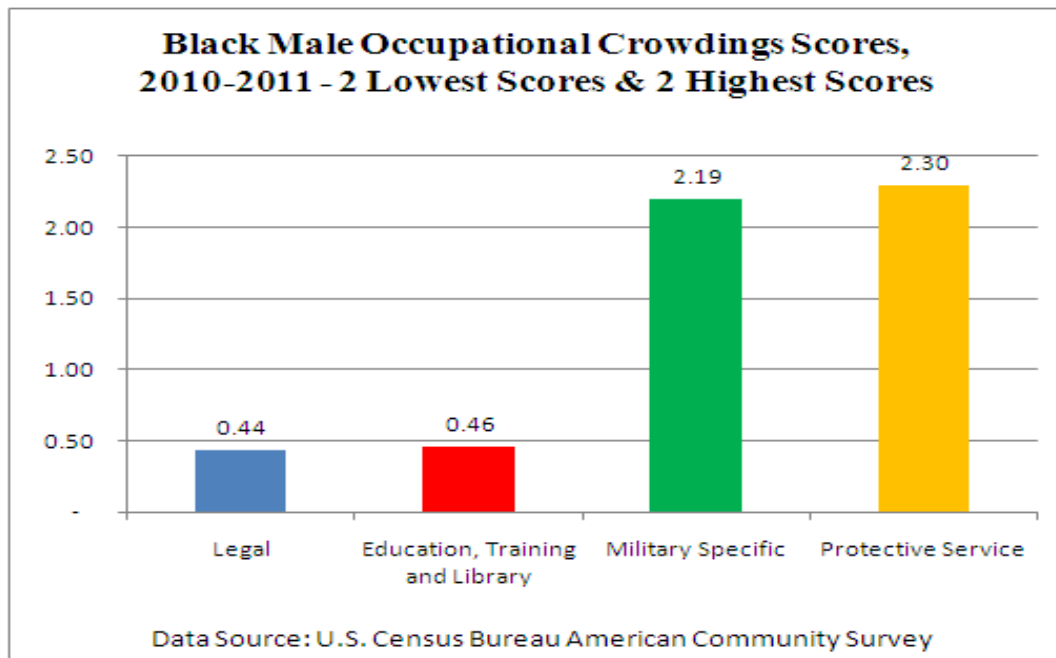
Seven percent of the overall workforce in the U.S. consists of non-citizens; 6.5 percent of the workforce are non-citizens who are not black.[23] However, in the low-wage major occupational categories of food preparation and serving as well as farming, fishing and forestry 13 percent and 32 percent, respectively, are non-citizens who aren't black.[24] In farming, fishing, and forestry 79 percent of workers are in the "miscellaneous agricultural workers" sub-occupational category, and 38 percent of workers in this sub-occupational category are non-citizens who are not black.[25] In sum, the share of workers in food preparation and serving who are non-black non-citizens is double the share of all workers who are non-black non-citizens; in farming, fishing and forestry this share is quintuple the U.S. share. The prevalence of non-black non-citizens in the major occupational categories of food preparation and serving as well as farming, fishing and forestry may help explain why the occupational crowding scores were low in 2005-2006 as well as 2010-2011, as can be seen in Table 1.

In the remaining low-wage major occupational category in which black men are underrepresented, sales and related occupations, neither a predominance of women nor non-citizens who are non-black could be used as potential explanations for why the black male occupational crowding score was below .65 in 2005-2006 as well as 2010-2011; women constituted 50 percent of the workforce in sales and related occupations, and non-citizens who were non-black constituted 5 percent.[26] So, what might explain the sharp underrepresentation of black men in sales occupations, which are predominantly low-wage?[27] Once again, the finding of Pager and Western's (2005) audit study may shed some light here— these researchers found that in the case of equally qualified white and black male job applicants black

male applicants for sales jobs were the only group "channeled down" into less visible jobs. The black male occupational crowding scores themselves belie this; in 2005-2006 the sub-occupation with the lowest black male crowding score (.28) in the sales category was "models, demonstrators, and product promoters," a highly visible position, and the sub-occupation with the highest black male crowding score (1.04) was "telemarketers," a non-visible position with respect to customers.

There wasn't a consistent pattern of changes to black male occupational crowding scores in the five low-wage major occupational groups in which black men were underrepresented. As can be seen in Table 1**, the** crowding score: (a) in healthcare support declined from 2005-2006 to 2010-2011; (b) held fairly steady in food preparation and serving; (c) ticked up in personal care and service, and; (d) declined in sales and related as well as farming, fishing and forestry.

Chart 1

Black Male Occupational Crowdings Scores, 2010-2011 – 2 Lowest Scores & 2 Highest Scores

Data Source: U.S. Census Bureau American Community Survey

Black Male Representation in Mid-Wage Occupations

As can be seen in Table 1, of the eight mid-wage occupational groups five experienced declines in the black male occupational crowding scores from 2005-2006 to 2010-2011, even (as noted earlier) in the two mid-wage occupational groups in which black men were overrepresented (community and social service and protective service). The crowding scores remained virtually unchanged from 2005-2006 to 2010-2011 for two mid-wage occupational groups (office and administrative support and installation, maintenance, and repair) while the crowding score modestly increased for only one of the eight mid-wage occupational groups—art, design, entertainment, media, and sports. In this group the score increased from .77 in 2005-2006 to .79 in 2010-2011. The overall pattern of changes in black male crowding scores for mid-wage occupations suggest that black men were not only crowded out of high-wage occupations during the recession, but mid-wage occupations as well.

Conclusion

It appears that the Great Recession did exacerbate occupational crowding-out of black men not just in high-wage occupations, but mid-wage occupations as well. However, the data show that black men were not further crowded into low-wage occupations; so there wasn't a shift of black men out of high- and mid-wage occupations into low-wage occupations. Writ large black men appeared to have been further marginalized in the U.S. labor market as a result of the recession, since they were crowded out of high- and mid-wage occupations but there was no offset crowding in of black men in low-wage occupations. This assessment is further supported by: (a) changes in major labor force indicators for black men, compared to other men and all working-age women, from 2006 to 2010, as well as; (b) a comparison

with what happened to white men with respect to occupational sorting during the last economic downturn.

As can be seen in Tables 2 and 3, the largest absolute increase in the unemployment rate before and after the recession occurred among black men, and black men were second only to Hispanic/Latino men in the decline in the employment-population ratio (which measures the percent of the working-age population that have a job) over this time period, with the caveat that Hispanic/Latino men had the highest employment-population ratio of all major male and female demographic groups before the start of the recession, while black men had the lowest employment-population ratio. In addition, Table 4 shows that while Hispanic/Latino men had the largest percentage increase in the category "not in the labor force," which is comprised of persons who are neither working nor looking for work, the percentage of black men who were not in the labor force *prior* to the recession was double that of Hispanic men, and the percentage point increase in the NILF category from 2005-2006 to 2010-2011 was highest for black men—2.3 percentage points—compared to the other major demographic groups examined in the table.

Finally, a compelling picture emerges when the occupational sorting of white men during the recession is compared and contrasted with that of black men. In Table 5 occupational crowding scores for white non-Hispanic men are delineated, and, as can be seen in this table, white men did not experience declines in occupational representation at the level of severity that black men did. Out of the 24 major occupational groups examined, declines in white male representation from 2005-2006 to 2010-2011 occurred in only seven categories, and the changes were overwhelmingly modest. In stark contrast, as can be seen in Table 1, predominantly significant declines occurred in black male representation in 17 out of 24 major occupational categories over the course of the Great Recession.

20

Table 2

Select U.S. Labor Force Statistics by Race, Ethnicity and Sex, 2006

			2006	
Demographic Group	Unemployment Rate	Labor Force Participation Rate	Employment-Population Ratio	Percent of Population Not in Labor Force
White Men	4.0%	74.3%	71.3%	25.7%
Black Men	**9.5%**	67.0%	60.6%	33.0%
Asian Men	3.0%	75.0%	72.8%	25.0%
Hispanic/Latino Men	4.9%	80.7%	76.8%	19.3%
Women, All Races & Ethnicities	4.6%	59.4%	56.6%	40.6%

NOTE: All data are for the civilian non-institutional population 16 years of age and older.
Data Source: U.S. Department of Labor, Bureau of Labor Statistics

Table 3

Select U.S. Labor Force Statistics by Race, Ethnicity and Sex, 2010

			2010	
Demographic Group	Unemployment Rate	Labor Force Participation Rate	Employment-Population Ratio	Percent of Population Not in Labor Force
White Men	9.6%	72.0%	65.1%	28.0%
Black Men	18.4%	65.0%	53.1%	35.0%
Asian Men	7.9%	73.2%	67.5%	26.8%
Hispanic/Latino Men	12.7%	77.8%	68.0%	22.2%
Women, All Races & Ethnicities	8.6%	58.6%	53.6%	41.4%

NOTE: All data are for the civilian non-institutional population 16 years of age and older.
Data Source: U.S. Department of Labor, Bureau of Labor Statistics

Table 4

Change in "Not in the Labor Force" (NILF) Category in the U.S. for 25-64 Year Olds, by Select Gender, Race, & Ethnic Groups, 2005-2006 and 2010-2011

	2005-2006	2010-2011	Level or Percentage Point Change	Percent Change
White non-Hispanic Men	52,523,561	52,993,349	469,788	0.9%
Not in Labor Force	6,847,271	7,856,945	1,009,674	14.7%
Percent NILF	13.0%	14.8%	1.8%	
Black non-Hispanic	7,991,144	8,581,233	590,089	7.4%
Not in Labor Force	1,709,069	2,029,537	320,468	18.8%
Percent NILF	21.4%	23.7%	2.3%	
Hispanic Men	10,462,378	11,934,895	1,472,517	14.1%
Not in Labor Force	1,061,083	1,371,831	310,748	29.3%
Percent NILF	10.1%	11.5%	1.4%	
Women, All Races/Ethnicities	73,382,674	75,752,938	2,370,264	3.2%
Not in Labor Force	20,528,773	21,425,597	896,824	4.4%
Percent NILF	28.0%	28.3%	0.3%	
Black non-Hispanic Women	9,802,746	10,400,424	597,678	6.1%
Not in Labor Force	2,588,140	2,942,901	354,761	13.7%
Percent NILF	26.4%	28.3%	1.9%	

Data Source: U.S. Census Bureau Current Population Survey.

Table 5

White Male Occupational Crowding Scores in the U.S. by Major Occupational Category, Wage Level and Representation Level, 2005-2006 and 2010-2011

	2005-2006 White Male Occupational Crowding Score	2010-2011 White Male Occupational Crowding Score	Point Change	Median Annual Wage, May 2011	Wage Level Category	White Male Representation
All Occupations				$ 34,466		
Management	1.47	1.45	(0.01)	$ 92,872	High-Wage	Overrepresented
Legal Occupations	1.25	1.24	(0.01)	$ 75,462	High-Wage	Overrepresented
Computer and Mathematical	1.43	1.47	0.03	$ 75,088	High-Wage	Overrepresented
Architecture	1.67	1.67	0.00	$ 72,072	High-Wage	Overrepresented
Engineering	1.89	1.93	0.04	$ 72,072	High-Wage	Overrepresented
Business Operations Specialists	1.01	1.02	0.02	$ 61,714	High-Wage	Proportional
Financial Specialists	0.99	1.00	0.01	$ 61,714	High-Wage	Proportional
Healthcare Practitioners and Technical	0.51	0.50	(0.01)	$ 59,571	High-Wage	Underrepresented
Life, Physical, and Social Science	1.14	1.13	(0.00)	$ 59,322	High-Wage	Overrepresented
Education, Training, and Library	0.54	0.56	0.01	$ 46,051	Mid-Wage	Underrepresented
Arts, Design, Entertainment, Sports, Media	1.15	1.20	0.05	$ 43,638	Mid-Wage	Overrepresented
Installation, Maintenance and Repair	1.94	2.11	0.17	$ 40,602	Mid-Wage	Overrepresented
Community and Social Service	0.76	0.75	(0.02)	$ 39,874	Mid-Wage	Underrepresented
Construction and Extraction	1.78	1.94	0.16	$ 39,832	Mid-Wage	Overrepresented
Protective Service	1.48	1.59	0.11	$ 36,733	Mid-Wage	Overrepresented
Office and Administrative Support	0.40	0.44	0.05	$ 31,242	Mid-Wage	Underrepresented
Production	1.30	1.43	0.13	$ 30,659	Mid-Wage	Overrepresented
Transportation and Material Moving	1.48	1.54	0.06	$ 28,766	Low-Wage	Overrepresented
Healthcare Support	0.15	0.17	0.01	$ 25,126	Low-Wage	Underrepresented
Sales and Related	1.13	1.19	0.06	$ 24,835	Low-Wage	Overrepresented
Buildings and Grounds Cleaning and Maintena	0.98	0.94	(0.04)	$ 22,610	Low-Wage	Proportional
Personal Care and Service	0.31	0.34	0.03	$ 20,717	Low-Wage	Underrepresented
Farming, Fishing, and Forestry	1.22	1.18	(0.05)	$ 19,469	Low-Wage	Overrepresented
Food Preparation and Serving Related	0.50	0.53	0.03	$ 18,907	Low-Wage	Underrepresented

Data Sources: For occupational crowding scores author analysis of American Community Survey data for 2005, 2006,2010 & 2011, Steven Ruggles J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek, Integrated Public Use Microdata Series: Version [Machine-readable database], Minneapolis, University of Minnesota, 2010; For wage data U.S. Department of Labor, Bureau of Labor Statistics.

NOTES

[1] Barbara R. Bergmann, "The Effect on White Incomes of Discrimination in Employment," <u>Journal of Political Economy</u> Vol. 79 No. 2 (Mar. – Apr. 1971): 294.

[2] William A. Darity, Jr. and Patrick Mason, "Evidence on Discrimination in Employment: Codes of Color, Codes of Gender," <u>Journal of Economic Perspectives</u> Vol. 12 No. 2 (Spring 1998): 67.

[3] Darrick Hamilton and William Darity Jr. Forthcoming, "Crowded Out? The Racial Composition of American Occupations," in James Jackson, Cleopatra Caldwell, and Sherrill Sellers' edited volume <u>Research Methodology in Black Communities</u>, Oxford University Press, 2.

[4] Gary S. Becker, <u>The Economics of Discrimination</u> (Chicago: University of Chicago Press, Second Edition, 1971).

[5] Dennis J. Aigner and Glen G. Cain, "Statistical Theories of Discrimination in Labor Markets," <u>Industrial and Labor Relations Review</u> Vol. 30 No. 2 (Jan. 1977): 175-176.

[6] Heidi Hartmann, "Capitalism, Patriarchy, and Job Segregation by Sex," <u>Signs</u> Vol. 1 No. 3 (Spring 1976): 147.

[7] Randall S. Brown, Marilyn Moon, and Barbara S. Zoloth,," Occupational Attainment and Segregation by Sex," <u>Industrial and Labor Relations Review</u> Vol. 33 No. 4 (Jul. 1980): 506-517.

[8] U.S. Equal Employment Opportunity Commission – Title VII of the Civil Rights Act of 1964. http://www.eeoc.gov/laws/statutes/titlevii.cfm.

[9] Andrea Beller, "Occupational Segregation by Sex: Determinants and Changes," <u>The Journal of Human Resources.</u> Vol. 17 No. 3 (Summer 1982): 371-392.

[10] Bergmann, <u>The Effect on White Incomes</u> 295.

[11] Bergmann, <u>The Effect on White Incomes</u> 297.

[12] Bergmann, <u>The Effect on White Incomes</u> 297 footnote #3.

[13] William E. Spriggs and Rhonda Williams, "A Logit Decomposition Analysis of Occupational Segregation Results for the 1970s and 1980s," <u>The Review of Economics and Statistics</u> Vol. 78, No. 2 (May 1996): 349.

[14] Spriggs and Williams 348.

[15] Darrick Hamilton, Algernon Austin and William Darity Jr."Whiter Jobs, Higher Wages: Occupational Segregation and the Lower Wages of Black Men," Economic Policy Institute Briefing Paper #268, Washington, D.C., February 28, 2011, 2.

[16] Hamilton, Austin, and Darity 5.

[17] U.S. Department of Commerce Census Bureau Industry and Occupation Code Lists and Crosswalks. http://www.census.gov/people/io/methodology/

[18] U.S. Department of Commerce Census Bureau Industry and Occupation Code Lists and Crosswalks. http://www.census.gov/people/io/methodology/

[19] National Bureau of Economic Research , "U.S. Business Cycle Expansions and Contractions," http://www.nber.org/cycles.html.

[20] Hamilton, Austin, and Darity, 5.

[21] U.S. Department of Labor, Bureau of Labor Statistics, "Wage Estimates by Occupation in the U.S., May 2011, " http://www.bls.gov/oes/current/oes_nat.htm#21-0000.

[22] Author analysis of American Community Survey data for 2011, Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]. Minneapolis, University of Minnesota, 2010.

[23] Author analysis of American Community Survey data for 2011.

[24] Author analysis of American Community Survey data for 2011.

[25] Author analysis of American Community Survey data for 2011.

[26] Author analysis of American Community Survey data for 2011.

[27] Devah Pager and Bruce Western. "Race at Work: Realities of Race and Criminal Record in the NYC Job Market." Published report presented at NYC Commission on Human Rights Conference "Race at Work: Realities of Race and Criminal Record in the NYC Job Market," Schomburg Center for Research in Black Culture, December 9, 2005, 8-11.

Appendix

Data Set is American Community Survey for 2011

NOTE: $4429.99 is assigned as the minimum value because $2.13 is the minimum wage for the category of "Tipped Workers" and $2.13 per hour is equivalent to $4430 full-time annually.

-- Binom. Interp. --

Variable	Obs	Percentile	Centile	[95% Conf. Interval]	
workerwage7	882028				
		5	13000	13000	13000
		20	24500	24200	24700
		25	27400	27100	27600
		30	30000	30000	30000
		33	32000	32000	32000
		50	42000	42000	42000
		66	55000	55000	55000
		70	60000	60000	60000
		75	65000	65000	66000
		90	100000	100000	100000
		95	135000	133000	

Data Source: Author analysis of American Community Survey data for 2011, Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]. Minneapolis, University of Minnesota, 2010

Bibliography

Aigner, Dennis J. and Glen G. Cain."Statistical Theories of Discrimination in Labor Markets." <u>Industrial and Labor Relations Review</u> Vol. 30 No. 2 (Jan. 1977): 175-187.

Arrow, Kenneth J. "What Has Economics to Say about Racial Discrimination?" <u>The Journal of Economic Perspectives</u> Vol.12 No. 2 (Spring 1998): 91-100.

Becker, Gary S. <u>The Economics of Discrimination</u>. Chicago: University of Chicago Press, Second Edition, 1971.

Beller, Andrea. "Occupational Segregation by Sex: Determinants and Changes." <u>The Journal of Human Resources.</u> Vol. 17 No. 3 (Summer 1982): 371-392.

Bergmann, Barbara R. "Occupational Segregation, Wages and Profits when Employers Discriminate by Race or Sex." <u>Eastern Economic Journal</u> Vol. 1 No. 2 (Apr. 1974): 103-110.

Bergmann, Barbara R. "The Effect on White Incomes of Discrimination in Employment." <u>Journal of Political Economy</u> Vol. 79 No. 2 (Mar. – Apr. 1971): 294-313.

Brown, Randall S., Marilyn Moon, and Barbara S. Zoloth." Occupational Attainment and Segregation by Sex." <u>Industrial and Labor Relations Review</u>. Vol. 33 No. 4 (Jul. 1980): 506-517.

Caston, Richard J. "Dimensions of Occupational Inequality and Duncan's Socioeconomic Index." <u>Sociological Forum</u> Vol. 4 No. 3 (Sept. 1989): 329-348.

Darity, William A. Jr. "The Human Capital Approach to Black-White Earnings Inequality: Some Unsettled Questions." <u>The Journal of Human Resources</u> XVII (1982): 72-91.

Darity, William A., Jr. and Patrick Mason. "Evidence on Discrimination in Employment: Codes of Color, Codes of Gender." <u>Journal of Economic Perspectives</u> Vol. 12 No. 2 (Spring 1998): 63-90.

 Ghilarducci, Teresa, Michelle Holder, Jeff Madrick, Nikolaus Papanikolaou and Jonathan Schlefer "Infrastructure for America's Economy: Evaluating the Evidence" in Schwartz Center for Economic Policy Analysis publication The Promise of Public Investment, New York, 2008: 21-31.

Gibson, Karen, William A. Darity Jr. and Samuel Myers Jr."Revisiting Occupational Crowding in the United States: A Preliminary Study." <u>Feminist Economics</u> 4(3) 1998: 73-95.

Hamilton, Darrick, Algernon Austin and William Darity Jr."Whiter Jobs, Higher Wages: Occupational Segregation and the Lower Wages of Black Men." Economic Policy Institute Briefing Paper #268, Washington, D.C., February 28, 2011.

Hamilton, Darrick and William Darity Jr. Forthcoming. "Crowded Out? The Racial Composition of American Occupations." in James Jackson, Cleopatra Caldwell, and Sherrill Sellers' edited volume Research Methodology in Black Communities, Oxford University Press.

Hartmann, Heidi. "Capitalism, Patriarchy, and Job Segregation by Sex." Signs. Vol. 1 No. 3 (Spring 1976): 137-169.

Mason, Patrick L. "Race, Competition, and Differential Wages." Cambridge Journal of Economics 19 4 (August 1995): 545-567.

Mason, Patrick L. "Understanding Recent Empirical Evidence on Race and Labor Market Outcomes in the USA." Review of Social Economy Vol. 58 No. 3 (Sept. 2000): 319-338.

National Bureau of Economic Research. "U.S. Business Cycle Expansions and Contractions." http://www.nber.org/cycles.html.

Pager, Devah and Bruce Western. "Race at Work: Realities of Race and Criminal Record in the NYC Job Market." Published report presented at NYC Commission on Human Rights Conference "Race at Work: Realities of Race and Criminal Record in the NYC Job Market" Schomburg Center for Research in Black Culture, December 9, 2005, 1-12.

Rawlston, Valerie and William E. Spriggs. "A Logit Decomposition Analysis of Occupational Segregation: An Update for the 1990s." The Review of Black Political Economy 29:4 (Spring 2002): 91-96.

Spriggs, William E. and Rhonda Williams. "A Logit Decomposition Analysis of Occupational Segregation Results for the 1970s and 1980s." The Review of Economics and Statistics Vol. 78, No. 2 (May 1996): 348-355.

"The Recovery Act" http://www.recovery.gov .

U.S. Department of Commerce Census Bureau Current Population Survey Annual Social and Economic Supplement 2004, Racial Statistics Branch, Population Division.

U.S. Department of Commerce Census Bureau Industry and Occupation Code Lists and Crosswalks. http://www.census.gov/people/io/methodology/

U.S. Department of Labor, Bureau of Labor Statistics. "The Employment Situation – May 2012." 2. http://www.bls.gov/bls/newsrels.htm#OEUS.

U.S. Department of Labor, Bureau of Labor Statistics. "Wage Estimates by Occupation in the U.S., May 2011." http://www.bls.gov/oes/current/oes_nat.htm#21-0000.

Wicks-Lim, Jeannette. "A Stimulus for Affirmative Action? The Impact of the American Recovery and Reinvestment Act on Women and Minority Workers in Construction." Proceedings from the Weisskopf Conference, September 2011.