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Jhacova Williams, Taylor Franklin, and Andre Brown

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Jhacova Williams
American University

Taylor Franklin
American University

Andre Brown
American University

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Michigan Retirement and Disability Research Center, University of Michigan, P.O. Box 1248. Ann Arbor, MI 48104, mrdrc.isr.umich.edu, (734) 615-0422

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Only Spot a Few Blacks the Higher I Go: Occupational Segregation and the COVID-19 Pandemic

Abstract

This project examines whether there exists a link between occupational segregation by race and labor market outcomes during the COVID-19 pandemic. We estimate the extent to which workers employed in occupations with higher concentrations of Black workers were more likely to indicate a change in employer, a change in hours employed, or a change in earnings during the pandemic. The results show that Black workers employed in occupations with higher concentrations of Black workers are more likely to indicate a reduction in hours and earnings compared to White workers employed in occupations with similar concentrations of Black workers during the pandemic. These results do not exist between Hispanic and White workers when comparing individuals employed in occupations with similar concentrations of Hispanic workers. Considering that short-term unemployment, long-term unemployment, or a reduction in earnings can affect future Social Security payments, racial differences in labor market outcomes are directly related to SSA programs and may have lasting impacts on individuals during older ages.

Citation

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Introduction

"The most important feature of an economy in which discrimination is practiced is the simple fact that some jobs are open to [Black individuals] and some are not…[t]he jobs open…tend to be predominately low in status…" (Bergmann 1971)

More than 50 years ago, economist Barbara Bergmann examined the economic consequences of discrimination in the labor market. She hypothesized that behaviors such as the dislike of associating with Black workers or beliefs that Black workers were less reliable and less productive from employers or employees would result in Black workers being clustered into lower-paying occupations. Her findings were upheld and extended in the early 2000s by Hamilton and Darity (2012), who found that many occupations remained racially segregated even after accounting for educational levels.[1] Considering that research findings have shown that occupational segregation by race has persisted in the U.S. labor market for decades, examining the extent to which this structural barrier has contributed to current trends in the labor market is important for understanding differences in individuals' wealth and poverty during older ages.

In this project, we examine the extent to which contemporary outcomes in the labor market are related to a persistent structural barrier — occupational segregation by race. Specifically, we examine outcomes during the COVID-19 pandemic, one of the worst employment hardships in recent times that caused tens of millions of Americans to lose their jobs. Using longitudinal data on individuals' occupations prior to the

[1] Hamilton and Darity updated results from Gibson et al. (1998) and restricted their sample to Black and white male workers.

pandemic, accompanied by a COVID-19 supplement fielded in 2021, we test whether occupational segregation during the pandemic relate to changes in labor market outcomes for Black (Hispanic) and white workers.

To examine this relationship, we combine individual-level data from the National Longitudinal Survey of Youth 1997 Cohort's (NLSY97) most recent biennial survey, Round 19, with the NLSY97's COVID-19 supplement in 2021. Both surveys contain respondents' youth identification codes that are used to merge both data sets. This merge combines a respondent's work information in 2019, such as their main occupation, industry, race, gender, age, education, region of residence, and income, with their pandemic work-related information in 2021, such as whether there was a change in earnings, hours worked, or employer during the COVID-19 outbreak.

Next, we construct a measure of occupational segregation based on a respondent's 2019 work information in two ways. First, using a respondent's main occupation category, we define Black occupational segregation as the percentage of Black workers relative to all workers in each main occupational category. Second, we group each respondent's occupation into nine broad occupations and construct a similar occupational segregation measure based on the broader occupational group.[2] To test whether occupational segregation for Hispanic workers is also related to labor market changes during the pandemic, we construct two similar measures of occupational

[2] The nine broad occupational groups use an individual's industry code to classify their broad occupation as: (1) Executives and Management, (2) Scientists and Professionals, (3) Education, (4) Entertainment and Media, (5) Technicians and Support, (6) Services, (7) Trades, (8) Armed Forces and Military, and (9) Special CPS/ACS Codes.

segregation for Hispanic workers that calculates the percentage of Hispanic workers to all workers in the main and broad occupational categories respectively.

After constructing our occupational segregation measure, we estimate a linear probability model to investigate whether workers employed in occupations with higher levels of occupational segregation were more likely to indicate a change in their labor market outcomes due to the COVID-19 outbreak. After accounting for several individual characteristics, the results show that Black workers employed in occupations with a higher concentration of Black workers are more likely to indicate a reduction in hours and earnings compared to white workers employed in occupations with a similar concentration of Black workers. This result does not exist between Hispanic and white workers. Motivated by the possibility that additional individual characteristics may explain this result, we examine three potential confounders: union membership, health condition, and criminal history. The results remain unchanged after the inclusion of these potential confounders.

There are two main contributions to this paper. First, it adds to findings from the health literature that show that Black individuals were disproportionately affected by the COVID-19 pandemic (Reyes 2020) and extends these findings to the labor market by showing that Black workers were disproportionately affected in the labor market during the pandemic. Second, the paper increases our understanding of the extent to which occupational segregation, a structural barrier that has existed for decades, contributed to the economic hardship that many American workers experienced during the COVID-19 pandemic.

Previous research

The segregation of Black people into occupations in the United States is based on a history of discrimination against Black workers, originating during slavery. While the practice of slavery ended more than 150 years ago, the culture of occupational segregation has remained and been documented by several researchers. For example, Dewey (1952) was one of the first economic papers to analyze Black employment trends in the South. In his work, Dewey found that a large degree of occupational segregation still existed in the South following slavery due to two “virtual laws” that limited the substitution, or interchangeability, of Black and white labor. The first virtual law restricted Black workers from overseeing white workers or holding jobs that required them to give orders to white workers. The second virtual law restricted Black workers from holding jobs requiring them to work side-by-side with white workers. In cases where Black and white workers worked in the same spaces, Black workers were assigned separate responsibilities that often included less desirable tasks.

Becker (1957) explored a market discrimination coefficient in which Black workers could face discrimination from employers, employees, and customers. His analytical framework suggested that discrimination is synonymous with money since employers, employees, and customers who have a taste for discrimination are willing to forego money to associate with certain groups over others. Simply put, if there exist two separate societies divided by race and individuals have a certain measurable preference against employing, working alongside, or buying goods and services from Black workers, then there is a certain price these individuals would be willing to pay to not interact with Black workers.

Bergmann (1971) applied Edgeworth's crowding hypothesis to race-based occupational segregation and showed that the concentration of Black labor in a few occupations resulted in an excess labor supply in those occupations and lowered the wages of Black workers.

Both Becker (1957) and Bergmann (1971) show how discrimination indirectly benefits white workers since lessened competition in higher-skill occupations creates a false labor scarcity and corresponding higher wages. Both authors point out that reducing or eliminating occupational segregation or discrimination in the labor force would have little cost to most white workers and large gains for Black workers, which would improve economic efficiency in the labor market overall.

An alternative theory on the persistence of racial disparities in the economy is based on stratification economics (Darity et al. 2017). This theory posits that personal satisfaction is determined by how one compares themselves to others, and the groupings of individuals have a vested interest in the relative positioning of their group in society. In this frame, individuals in a dominant group are interested in maintaining their comparative position. These relative positions in society come with stereotypes that can impact individual productivity. If firms then react to the comparatively lower marginal productivity brought about by adverse stereotype effects on the nondominant group, we could see the persistence of Black workers being segregated in low-paying and undesirable occupations (Darity et al. 2017).

Conceptual framework

A worker's Social Security benefit can be described as a product of the time and intensity of their earnings contributions. Intensity can be characterized by how much a

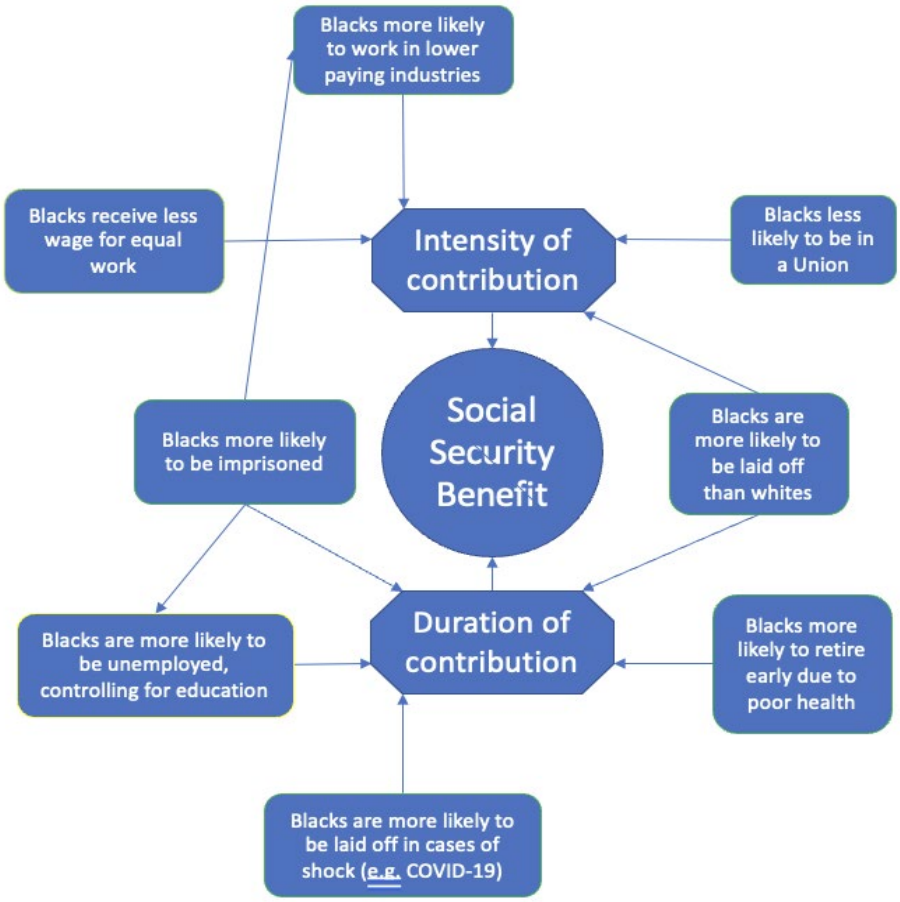
worker can earn and contribute to their Social Security benefit each year, whereas time is represented by a worker's ability to sustain intensity. Social Security benefits use an individual's peak 35 years of earnings to calculate their benefit, and if they cannot achieve 35 years of earnings, their benefit value will be negatively affected. Considering that research has shown that nearly half of Black individuals rely on Social Security for 90% or more of their retirement income (Hendley and Bilimoria 1999), understanding the extent to which occupational segregation could lead to differences in time and intensity may help explain differences in Social Security benefits across races.

Many social factors could hinder Black workers from attaining full earnings or for their work history to accrue a peak set of 35 years, one of which is occupational segregation. For example, research has shown that Black workers, and generally workers of color, are overrepresented in low-paying occupations (Zhavoronkova et al. 2022). Additionally, Black workers are, and have historically been, nearly twice as likely to be unemployed as white workers at each level of education (Moore 2022 Wilson and Darity 2022). These racial disparities in low-paying occupations and unemployment were compounded as workplaces shut down during the COVID-19 pandemic. While some workers could easily transition their work to home, many were employed in occupations that could not switch to home employment. For instance, food preparation and service occupations have few tasks that can be done from home (Adams-Prassl et al. 2022). In contrast, computer and mathematical occupations have a large share of occupations that can be done from home (Adams-Prassl et al. 2022). Additionally, as the economy began to rebound from the pandemic, Black workers had more difficulty finding work and were the first to be laid off in times of economic downturn (Williams

2020). Taking into account the historical racial disparities that have persisted in the labor market between Black and white workers, accompanied by Black workers being overrepresented in occupations that were negatively affected by the pandemic (i.e., service industry and licensed practical and vocational nurses [Reyes 2020]), we create the flow chart seen in Figure 1 to highlight some of the ways that racial disparities in the labor market that may be due to (or a result of) occupational segregation could affect Black workers time and intensity variables and lead to racial differences in Social Security benefits.

The arrows in Figure 1 point to a factor that directly hinders or contributes to a worker's ability to accrue time and/or intensity. For example, Black workers are more likely to work in lower-paying occupations, receive lower wages for equal work, are less likely to be in a union, and are more likely to be imprisoned. Any of these factors may result in differences in their intensity of contribution or differences in accrued time compared to white workers. Additionally, Black workers are more likely to be unemployed even after controlling for education levels, are more likely to retire early due to poor health, and are more likely to be laid off in cases of shock. These factors could also explain differences in time contribution between Black and white workers. While this flow chart does not highlight all the factors that could contribute to racial differences in Social Security benefits, it demonstrates some of the social and economic complexity that contributes to the calculation of Social Security benefits.

Figure 1: Factors that could contribute to racial differences in Social Security benefits



Data

The data used in this project was obtained from two substudies from the NLSY97: the NLSY97 (Round 19) and the NLSY97 COVID-19 supplement. The NLSY97 (Round 19) data contain demographic information from respondents such as an individual's identifying code, four-digit occupation code, race, ethnicity, income, education, age, and sex.[3] The NLSY97 COVID-19 supplement includes an individual's

[3] We convert income, which is a categorical variable in NLSY97, to a variable that represents a respondent's income quintile.

identifying code and responses to questions related to their health status and the impact of the COVID-19 pandemic on their employment in the last 12 months. Specifically, the NLSY97 COVID-19 asks respondents whether they (their):

- Stopped working for employer?
- Started working for new employer?
- Hours decreased?
- Hours increased?
- Earnings decreased?
- Earnings increased?

Using an individual's identifying code, we matched individuals' responses to the COVID-19-related questions in 2021 to their demographic information (i.e., race, ethnicity, occupation, income, education, age, and sex) in 2019.

Table 1 presents the descriptive statistics for our sample. Table 1 shows that a higher percentage of Black workers indicated that they stopped working, started working for a new employer, had their hours reduced, and had their earnings decreased during the pandemic compared to Hispanic and white workers. In comparison, a higher percentage of white workers indicated that their hours increased and their earnings increased compared to Black and Hispanic workers. Additionally, a higher percentage of Black workers are employed in racially segregated occupations than Hispanic and white workers. Tables 2 and 3 show occupations comprised only of Black and Hispanic workers.

Given that there are several main occupations in NLSY97, we group each respondent's occupation into nine broad occupations and construct a similar

occupational segregation measure based on the broader occupational group. Figure 1 shows the racial composition across the nine broad occupational categories. White workers comprise over 50% of the Executives and Management, Scientists and Professionals, Education, Entertainment and Media, Trades, and Special Current Population Survey/American Community Survey occupational categories. However, this percentage falls to around 40% in the Technicians and Services occupational categories, and the percentage of Black workers increases to more than 30% in these categories.

Table 1: Descriptive statistics

	Black	Hispanic	White
% Stopped working	31	24	21
% New employer	21	13	14
% Hours reduced	32	28	25
% Hours increased	28	24	30
% Earnings decreased	31	29	28
% Earnings increased	33	28	34
% Occupational Segregation	34	27	21
% Female	61	51	48
% High school	29	35	24
% Some college	21	32	20
% College or more	40	33	55
% Bottom quintile	22	19	14
% 2nd quintile	24	19	15
% 3rd quintile	25	24	21
% 4th quintile	18	22	25
% Top quintile	10	17	26
% Health condition	48	49	47
% Criminal history	29	31	28
% Union membership	19	21	14
Age	38	38	38

Source: These data come from the NLSY97 2019 files (Round 19) and the NLSY97's COVID-19 supplement. Health condition is an indicator variable that equals one if a respondent indicated that a family member has an underlying health condition for cancer, heart disease,

diabetes, or asthma. Criminal history is an indicator variable equal to 1 if a respondent indicated they have ever been arrested, incarcerated, or are currently incarcerated.

Table 2: Occupations comprised only of Black workers

Main Occupation	Percent Black
Postmasters and Mail Superintendents	100
Media and Communication Equipment Workers, All Other	100
Weighers, Measurers, Checkers, and Samplers, Recordkeeping	100
Other Transportation Workers	100
Statistical Assistants	100
Transit and Railroad Police	100
Crossing Guards	100
Ushers, Lobby Attendants, and Ticket Takers	100
Forging Machine Setters, Operators, and Tenders, Metal and Plastic	100
Food Batchmakers	100
Riggers	100
Hazardous Materials Removal Workers	100
Job Printers	100
Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	100
Glaziers	100
Cutting Workers	100
Explosives Workers, Ordnance Handling Experts, and Blasters	100
Metal Furnace and Kiln Operators and Tenders	100
Molders and Molding Machine Setters, Operators, and Tenders, Metal and Plastic	100
Shoe and Leather Workers and Repairers	100
Tailors, Dressmakers, and Sewers	100
Lay-Out Workers, Metal and Plastic	100
Molders, Shapers, and Casters, Except Metal and Plastic	100
Paper Goods Machine Setters, Operators, and Tenders	100

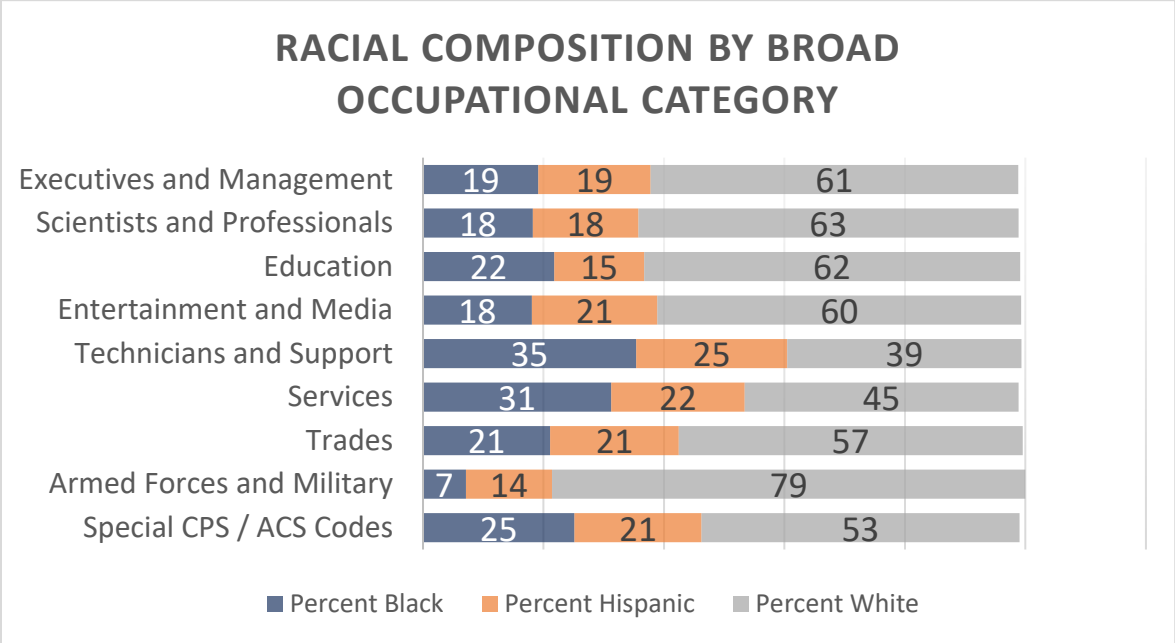
Source: These data come from the NLSY97 2019 files (Round 19).

Table 3: Occupations comprised of only Hispanic workers

Main Occupation	Percent Hispanic
Recreational Therapists	100
Archivists, Curators, and Museum Technicians	100
Occupational Therapist Assistants and Aides	100
Subway, Streetcar, and Other Rail Transportation Workers	100
Postal Service Mail Sorters, Processors, and Processing Machine Operators	100
Baggage Porters, Bellhops, and Concierges	100
Cabinetmakers and Bench Carpenters	100
Electronic Home Entertainment Equipment Installers and Repairers	100
Fabric and Apparel Patternmakers	100
Reinforcing Iron and Rebar Workers	100
Tire Builders	100

Source: These data come from the NLSY97 2019 files (Round 19).

Figure 1: Racial composition of broad occupational category



Source: These data come from the NLSY97 2019 files (Round 19).

Empirical estimation

We create a baseline measure of occupational segregation by calculating the share of individuals in each occupation by race. Given that our focus is to identify occupations with higher concentrations of Black workers, we focused on calculating the share of Black workers in each occupation. We also created an occupational segregation measure to identify occupations with higher concentrations of Hispanic workers. For each racial/ethnic group occupational measure, our total number of workers will include the racial/ethnic group plus the number of white workers.[4] Considering that the NLYSY97 contains a small number of individuals in each occupation, we grouped occupations into nine broader occupational categories to create a second measure of occupational segregation based on an individual's broader occupation.[5]

To examine how our measure of occupational segregation by race relates to changes in labor market outcomes during the pandemic, we estimated the following:

$$y_i = \alpha + \beta X_i + \gamma r_i + \delta r_i f_{o(i),r(i)} + \varepsilon_{i,} \qquad (1)$$

where y_i represents indicators for whether an individual stopped working for an employer, started working for a new employer, hours decreased, hours increased, earnings decreased, or earnings increased; X_i is a vector of demographic

[4] NLSY97 race and ethnic variables identify Black, Hispanic, and non-Black/non-Hispanic individuals. As such, the number of white workers will include white workers plus individuals who identify as other (i.e., Asian, Native American workers).

[5] The nine broad occupational groups use an individual's industry code to classify their broad occupation as: (1) Executives and Management, (2) Scientists and Professionals, (3) Education, (4) Entertainment and Media, (5) Technicians and Support, (6) Services, (7) Trades, (8) Armed Forces and Military, and (9) Special CPS/ACS Codes.

characteristics that may be related to employment outcomes such as age, sex, income, and education; r_i is an indicator variable that equals one if individual i is a Black (Hispanic) individual and 0 if individual i is a white individual; $f_{o(i),r(i)}$ is the occupational segregation measure (i.e., the share of individuals in each occupation by race) which is a function of occupation and race; and ε represents the error term. The occupational segregation measure takes two forms based on an individual's main occupation and broader occupational category.[6]

Results

Table 4 shows the results from estimating equation (1) using a linear probability model and compares labor market outcomes during the pandemic of Black and white workers. Columns (1) to (6) show workers' outcomes for indicating they stopped working for their employer, started working for a new employer, had their hours reduced, had their hours increased, had their earnings decreased, or had their earnings increased, respectively. Given that our main coefficient of interest is δ in equation (1), we will focus on the estimates from the third variable in Table 4. While the estimates are close to zero for many of the labor market outcome indicators measured during the pandemic, the results show that Black workers who are employed in occupations with a higher concentration of Black workers are more likely to indicate that their hours were reduced and their earnings decreased due to the pandemic when compared to white workers who were employed in occupations with a similar concentration of Black workers.

[6] We construct occupational segregation measures for Black workers and Hispanic workers and compare their outcomes to white workers.

Specifically, a one percentage point increase in Black workers in an occupation is associated with a 0.4% increase in the probability that Black workers indicated that their hours were reduced compared to white workers in similarly segregated occupations.[7] Similarly, a one percentage point increase in Black workers in an occupation is associated with a 0.2% increase in the probability that Black workers indicated that their earnings decreased compared to white workers in similarly segregated occupations.[8,9] Considering that a reduction in hours and earnings could negatively affect an individual's time and intensity variables that are used to calculate their Social Security benefit, Table 4 provides evidence that occupational segregation contributed to differences in labor market outcomes during the pandemic which could potentially lead to differences in Social Security benefits in the long-run.

[7] These results remain statistically significant when we estimate equation (1) using a probit or a logit model.

[8] Table A.1 in the Appendix shows that this relationship remains when we use our broader occupational segregation measure, yet the results become statistically insignificant when comparing Black and white workers and the earnings decreased indicator. However, the results remain statistically significant when comparing Black and white workers and the hours reduced indicator.

[9] These results remain marginally statistically significant when we estimate equation (1) using a probit or a logit model.

Table 4: Relationship between occupational segregation and labor market outcomes during the pandemic for Black and white workers

	(1) Stopped Work	(2) New Employer	(3) Hours Reduced	(4) Hours Increased	(5) Earnings Decreased	(6) Earnings Increased
Black	0.059	0.066	-0.085*	0.005	-0.056	-0.016
	(0.041)	(0.035)	(0.042)	(0.045)	(0.044)	(0.046)
Occupational Segregation (Black)	-0.000	0.001	-0.001	0.002*	-0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Black # Occupational Segregation (Black)	0.000	-0.001	0.004**	-0.001	0.002^{+}	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Demographic Controls	x	x	x	x	x	x
Regional FE	x	x	x	x	x	x
Constant	0.162	0.402*	0.424	0.181	0.422	-0.030
	(0.226)	(0.196)	(0.233)	(0.250)	(0.245)	(0.259)
Observations	2,593	2,596	2,582	2,578	2,580	2,575

Notes: Standard errors in parentheses. $^{+}$ p < 0.15 * p < 0.05 ** p < 0.01 *** p < 0.001. Occupational segregation (Black) is the percentage of Black workers relative to all workers in each main occupation. Demographic controls include age, gender, income quintile, and education level. Regions include Northeast, North Central, South, and West.

Table 5 shows the results from estimating equation (1) and compares labor market outcomes of Hispanic and white workers during the pandemic. The results show that there does not exist a relationship between occupational segregation (of Hispanic workers) and labor market outcomes during the pandemic of Hispanic workers and white workers.[10]

[10] Table A.1 in the Appendix shows the relationship between Hispanic and white workers when we use our broader occupational segregation measure.

Table 5: Relationship between occupational segregation and labor market outcomes during the pandemic for Hispanic and white workers

	(1) Stopped Work	(2) New Employer	(3) Hours Reduced	(4) Hours Increased	(5) Earnings Decreased	(6) Earnings Increased
Hispanic	0.017	-0.015	-0.023	-0.067	-0.028	-0.046
	(0.040)	(0.034)	(0.042)	(0.046)	(0.045)	(0.048)
Occupational Segregation (Hispanic)	0.001	-0.000	0.000	-0.002	0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hispanic # Occupational Segregation (Hispanic)	-0.001	-0.000	0.001	0.000	0.001	-0.001
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Demographic Controls	x	x	x	x	x	x
Regional FE	x	x	x	x	x	x
Constant	0.265	0.354	0.519*	0.178	0.650**	0.181
	(0.222)	(0.187)	(0.234)	(0.249)	(0.248)	(0.259)
Observations	2,529	2,532	2,523	2,517	2,514	2,514

Note: Standard errors in parentheses. $^{+}$ $p < 0.15$ * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$. Occupational segregation (Hispanic) is the percentage of Hispanic workers relative to all workers in each main occupation. Demographic controls include age, gender, income quintile, and education level. Regions include Northeast, North Central, South, and West.

Motivated by the possibility that the relationship between occupational segregation and the reduction in hours/reduced earnings indicators may be the result of differences in additional individual characteristics between Black and white workers, we examine three potential confounders. For example, research has shown that Black Americans disproportionately suffered the brunt of the pandemic's health impact and underlying health conditions could place individuals at a higher risk of contracting the COVID-19 virus. In addition, individuals with criminal histories were negatively affected by the pandemic, given that they were more likely to experience employment

disruptions during the pandemic (Schwam et al. 2023). Whereas individuals employed in union jobs had more positive outcomes during the pandemic since these individuals had fewer job losses during the pandemic compared to individuals in jobs without a union (McNicholas et al. 2021). As such, we include indicators for whether an individual has a family history of health preconditions related to COVID-19, such as a family history of cancer, heart disease, diabetes, or asthma, whether an individual has a criminal history, and whether the individual is employed in an occupation covered by a union contract.

Table 6 shows the results when we include these potential confounders and examine the relationship between occupational segregation and reduced hours between Black and white workers. Of the potential confounders examined, only the indicator for having a criminal record is related to reduced hours. Specifically, having a criminal history is positively associated with a reduction in hours. However, the estimate on the main coefficient of interest remains stable and significant with the inclusion of all the potential confounders, suggesting a relationship exists between occupational segregation and a reduction in hours worked for Black and white workers.[11]

[11] Table 6 and 7 are estimated for Black and white workers using the main occupational segregation measure and the broader occupational segregation measure for the remaining labor market outcome indicators (i.e., stopped working, new employer, hours increased, earnings increased). These estimates remain close to zero and are available upon request. The same is true for the estimates that compare Hispanic and white workers.

*Table 6: **Relationship between occupational segregation and hours reduced indicator for Black and white workers (Including potential confounders)***

Dependent Variable - Hours Reduced	(1)	(2)	(3)	(4)	(5)
Black	0.085*	0.085*	0.082*	0.085*	-0.081
	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
Occupational Segregation (Blacks)	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Black # Occupational Segregation (Blacks)	0.004**	0.004**	0.003**	0.004**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Health Condition		-0.007			-0.008
		(0.017)			(0.017)
Criminal History			0.095***		0.094***
			(0.020)		(0.020)
Union Membership				-0.043	-0.040
				(0.024)	(0.024)
Demographic Controls	x	x	x	x	x
Regional FE	x	x	x	x	x
Constant	0.424	0.424	0.367	0.419	0.364
	(0.233)	(0.233)	(0.233)	(0.233)	(0.233)
Observations	2,582	2,582	2,582	2,582	2,582

Similarly, Table 7 shows that having a criminal history is positively associated with decreased earnings during the pandemic. Yet, union membership is negatively associated with decreased earnings suggesting that workers who were employed in occupations with a union fared better in terms of labor market earnings during the pandemic. However, the main coefficient of interest remains stable and significant with the inclusion of our confounders.

Table 7: Relationship between occupational segregation and earnings decreased indicator for Black and white workers (Including potential confounders)

Dependent Variable - Earnings Decreased	(1)	(2)	(3)	(4)	(5)
Black	-0.056	-0.057	-0.052	-0.055	-0.052
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)
Occupational Segregation (Blacks)	-0.001	-0.001	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Black # Occupational Segregation (Blacks)	0.002+	0.002+	0.002+	0.002+	0.002+
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Health Condition		0.014			0.013
		(0.018)			(0.018)
Criminal History			0.083***		0.082***
			(0.021)		(0.021)
Union Membership				-0.056*	-0.053*
				(0.025)	(0.025)
Demographic Controls	x	x	x	x	x
Regional FE	x	x	x	x	x
Constant	0.422	0.421	0.369	0.416	0.363
	(0.245)	(0.245)	(0.245)	(0.245)	(0.245)
Observations	2,580	2,580	2,580	2,580	2,580

Note: Standard errors in parentheses. * p < 0.05 ** p < 0.01 *** p < 0.001. Occupational segregation (Black) is the percentage of Black workers relative to all workers in each main occupation. Demographic controls include age, gender, income quintile, and education level. Regions include Northeast, North Central, South, and West.

Conclusion

Social Security is an essential revenue source for older individuals in the United States. The Social Security calculation is neutral in its allotment and is unbiased in that it does not specifically take demographics into benefit calculations. The two primary variables used to calculate an individual benefit value are time and intensity. In simple terms, the more money an individual earns over 35 years, the larger the benefit value will be during retirement. Yet, the ability to contribute a full 35-year period of high earnings may differ for several reasons related to race. Since occupational segregation has deep roots in American history, the Black workforce may undoubtedly have income effects amplified by the pandemic. Given that an individual's earnings history is used to calculate their Social Security benefits, a reduction in earnings or hours during the COVID-19 pandemic may eventually contribute to differences in Social Security benefits during old age.

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Appendix A

Table A.1: Relationship between broad occupational segregation and labor market outcomes during the pandemic

	(1) Stopped Working	(2) New Employer	(3) Hours Reduced	(4) Hours Increased	(5) Earnings Decreased	(6) Earnings Increased
Black	0.136	0.033	-0.127	0.076	-0.040	-0.101
	(0.071)	(0.062)	(0.074)	(0.079)	(0.077)	(0.081)
New Broader Occupational Segregation (Black)	0.003*	0.001	0.001	0.003	0.002	-0.002
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Black # New Broader Occupational Segregation (Black)	-0.003	0.001	0.005*	-0.003	0.002	0.004
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
Demographic Controls	x	x	x	x	x	x
Regional FE	x	x	x	x	x	x
Constant	0.071	0.396*	0.364	0.172	0.360	0.022
	(0.228)	(0.198)	(0.236)	(0.253)	(0.248)	(0.261)
Observations	2,593	2,596	2,582	2,578	2,580	2,575
Hispanic	0.152	0.154	-0.081	0.185	0.041	0.024
	(0.125)	(0.106)	(0.132)	(0.141)	(0.140)	(0.146)
New Broader Occupational Segregation (Hispanic)	0.008*	0.004	0.008*	0.007	0.009*	0.002
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Hispanic # New Broader Occupational Segregation (Hispanic)	-0.008	-0.008	0.004	-0.012	-0.002	-0.005
	(0.006)	(0.005)	(0.006)	(0.007)	(0.007)	(0.007)
Demographic Controls	x	x	x	x	x	x
Regional FE	x	x	x	x	x	x
Constant	0.089	0.269	0.343	-0.005	0.466	0.124
	(0.234)	(0.197)	(0.246)	(0.263)	(0.260)	(0.273)
Observations	2,529	2,532	2,523	2,517	2,514	2,514