Public vs. Private Pay: Evidence on the Black–White Wage Gap in the United States, 2007–2021

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Abstract

Racial wage disparities remain a persistent feature in the U.S labor market. This paper examines how the Black–White wage gap among men differs between the public and private sectors, and how these differences have evolved over time. Using data from the American Community Survey (ACS) between 2007 and 2021, I compare wage gaps for prime-age working men working full-time and full-year. The analysis first documents descriptive patterns in the wage gap across sectors and over time. I then estimate regression models with sectoral interaction terms and perform Oaxaca–Blinder decompositions to separate differences in observed characteristics from differences in returns to those characteristics. The results provide evidence on whether institutional wage-setting environments in the public sector are associated with smaller racial wage disparities relative to the private sector.

1 Introduction

Despite major changes in civil rights legislation and educational attainment, racial wage disparities remain a persistent feature of the U.S. labor market. A large literature documents that Black workers continue to earn less on average than White workers, even after accounting for observable characteristics such as education and experience. Understanding the institutional contexts in which these disparities arise is important for identifying potential mechanisms that shape wage inequality.

One important institutional distinction in the labor market is between public and private sector employment. Public-sector compensation is often characterized by standardized pay schedules, formal promotion structures, and greater wage transparency. In contrast, wages in the private sector are typically more market-driven and may involve greater discretion in pay-setting. These institutional differences may influence the magnitude of racial wage gaps.

This paper examines whether the Black–White wage gap differs between the public and private sectors and how these differences evolve over time. By comparing wage gaps across sectors and over multiple years, the analysis provides evidence on whether structured wage-setting environments are associated with smaller racial wage disparities.

1.1 Research Question

How does the Black–White wage gap for prime-age men differ between the public and private sectors, and how have these differences evolved over time?

1.2 Hypotheses

H1 (Sectoral Differences). The Black–White wage gap is smaller in the public sector than in the private sector.
H2 (Cyclicality). The Black–White wage gap in the private sector is more sensitive to macroeconomic fluctuations than the wage gap in the public sector.
H3 (Composition Effects). Differences in observable characteristics, particularly education, explain a larger share of the Black–White wage gap in the private sector than in the public sector.

2 Literature Review

2.1 Persistent Racial Wage Gaps and the Growing Unexplained Portion

A substantial literature documents the persistence of the Black–White wage gap in the United States. Despite improvements in educational attainment and occupational access, earnings differences between Black and White workers remain significant. Daly, Hobijn, and Pedtke (2017) show that the relative wages of Black men declined between 1979 and 2016 and that a growing share of the wage gap cannot be explained by observable characteristics such as education, occupation, or region. Their decomposition analysis demonstrates that while some of the gap is explained by differences in industry and occupation, the unexplained portion has increased over time.

These findings suggest that differences in education or occupational distribution alone cannot fully account for racial wage disparities. Institutional factors, historical pay norms, and discrimination may also play an important role but are more difficult to directly measure.

2.2 Decomposing Changes Over Time

Another important contribution is provided by (Kim, 2010), who emphasizes that understanding changes in the wage gap over time requires more than

simply comparing decompositions across years. Kim shows that shifts in the wage gap may reflect multiple forces simultaneously, including changes in worker characteristics, changes in returns to those characteristics, and broader transformations in the wage structure.

As a result, movements in the wage gap over time may reflect overlapping trends rather than a single underlying mechanism. This insight is particularly useful when studying periods that include major macroeconomic disruptions such as the Great Recession or the COVID-19 pandemic.

2.3 Public vs. Private Sectors

Wage-setting mechanisms differ substantially between the public and private sectors. Public-sector compensation is often structured around standardized pay schedules, collective bargaining agreements, and greater transparency. These features may compress wage dispersion and limit discretionary pay-setting.

In contrast, private-sector wages are typically more market-driven and may reflect firm-level performance, negotiation, and decentralized compensation structures. These differences may allow for greater variation in returns to worker characteristics and may also lead wages to respond more strongly to macroeconomic conditions.

Carrington, McCue, and Pierce (1996) highlight the importance of sectoral dynamics in shaping patterns of Black–White wage convergence and divergence over time, noting that the private sector played a significant role in the slowdown of convergence after the mid-1970s. Consistent with this view, more recent evidence suggests that racial wage penalties tend to be smaller in the public sector.

2.4 What This Paper Contributes

The existing literature documents persistent racial wage gaps and institutional differences in wage-setting between public and private sectors. However, these dimensions are often studied separately.

This paper contributes to the literature by examining how racial wage gaps differ between public and private sectors and how these gaps evolve over time. Using data from 2007 to 2021, I compare Black–White wage gaps within each sector across years. This sector-by-time approach allows direct evaluation of whether institutional wage-setting environments are associated with different magnitudes of racial wage disparities and whether these differences change during periods of macroeconomic disruption.

3 Data

3.1 Source

This study uses data from the American Community Survey (ACS), obtained through IPUMS. The sample spans years 2007–2021, allowing analysis before, during, and after the Great Recession as well as the COVID-19 period. The ACS provides large annual samples and detailed demographic, education, and employment characteristics, making it well suited for studying wage disparities.

3.2 Sample Construction

The analysis focuses on men between ages 30 and 55 to reduce concerns related to labor market entry and retirement decisions. The sample includes only individuals who are employed, work full-time (at least 40 hours per week), and work full-year (50–52 weeks). These restrictions ensure that the analysis captures a relatively stable labor market attachment and comparable employment intensity across individuals.

The sample is further restricted to wage and salary workers. Self-employed individuals and unpaid family workers are excluded in order to compare workers in the public and private sectors. Observations with non-positive wage income are removed. To limit the influence of extreme outliers, hourly wages are trimmed at the 1st and 99th percentiles of the wage distribution.

The analysis compares non-Hispanic Black and White men. Race is coded as a binary indicator equal to one for Black workers and zero for White workers.

3.3 Key Variables

Hourly wages are constructed by dividing annual wage and salary income by 52 multiplied by usual weekly hours worked. The dependent variable is the log of hourly wages, which allows estimated coefficients to be interpreted as approximate percentage differences.

Public-sector employment is defined using IPUMS class-of-worker codes. Workers employed by federal, state, or local governments are classified as public-sector employees, while workers employed by private firms are classified as private sector employees. A binary indicator identifies public-sector employment.

Educational attainment is converted from categorical education codes into years of schooling using a standard mapping so that education can enter regression models as a continuous control variable.

4 Methodology

4.1 Descriptive Analysis

The empirical analysis begins with descriptive comparisons of wages by race, sector, and year. For each year between 2007 and 2021, mean log wages are computed separately for Black and White workers in both the public and private sectors. This provides a transparent view of how the racial wage gap differs across institutional settings and how it evolves over time.

4.2 Regression Framework

To formally test whether the racial wage gap differs by sector, the following regression model is estimated:

$$\log(wage_{it}) = \beta_1 Black_i + \beta_2 Public_i + \beta_3 (Black_i \times Public_i) + X_i\gamma + \delta_t + \varepsilon_{it}$$

Here, $Black_i$ is an indicator for Black workers and $Public_i$ indicates public-sector employment. The interaction term captures how the racial wage gap differs in the public sector relative to the private sector. The vector X_i includes controls for age, age squared, and years of education, while δ_t represents year fixed effects.

In this specification, β_1 captures the Black–White wage gap in the private sector, while β_3 measures the difference in the wage gap between the public and private sectors.

4.3 Oaxaca–Blinder Decomposition

To further separate differences in worker characteristics from differences in returns to those characteristics, Oaxaca–Blinder decompositions are performed at the mean. These decompositions divide the wage gap into an "explained" component, which reflects differences in observable characteristics such as education and age, and an "unexplained" component, which captures differences in returns to those characteristics.

The decomposition analysis provides additional insight into whether sectoral differences in the wage gap arise primarily from differences in worker characteristics or from differences in wage-setting mechanisms.

5 Results

5.1 Descriptive Patterns

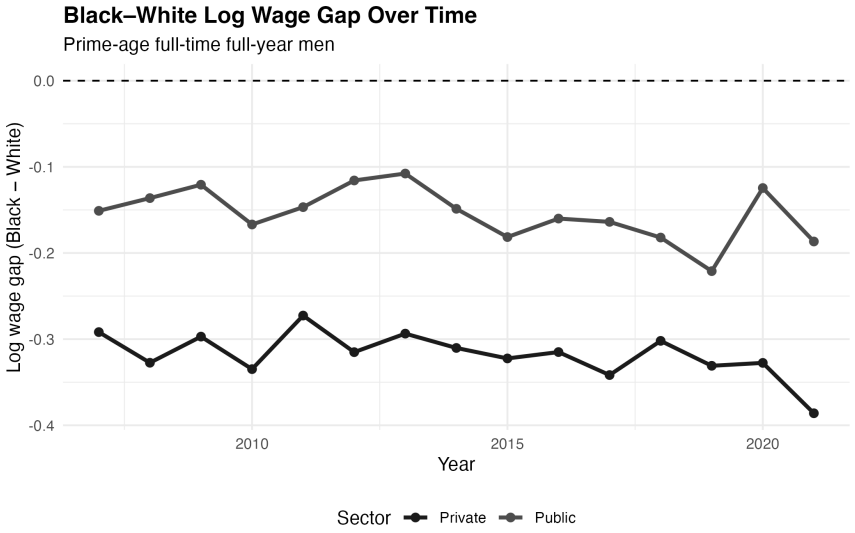

Figure 1: Black–White mean log wage gap over time by sector. The gap is calculated as Black minus White mean log wages within each sector and year.

Figure 1 plots the Black–White mean log wage gap by sector for each year from 2007 to 2021. The wage gap is defined as the difference in mean log hourly wages between Black and White workers (Black − White) within each sector and year.

Two patterns are immediately apparent. First, the racial wage gap is consistently larger in magnitude in the private sector than in the public sector. Across nearly all years, the private-sector gap ranges between approximately −0.30 and −0.38, while the public-sector gap ranges between roughly −0.10 and −0.22. This indicates that the private-sector wage gap is roughly one and a half to two times larger than the public-sector gap. This pattern is consistent with Hypothesis 1, which predicts that institutional wage-setting mechanisms in the public sector are associated with smaller racial wage disparities.

Second, both sectors exhibit modest fluctuations in the wage gap over time, including movements around the Great Recession and the COVID-19 period. However, the relative ordering of the sectors remains stable, with the private-sector gap consistently larger than the public-sector gap throughout the sample period. A formal test comparing the variance of the yearly wage gaps across sectors does not provide evidence that the private-sector gap

is more volatile than the public-sector gap (F-test $p = 0.587$). This result does not support the hypothesis that the private-sector wage gap is more sensitive to macroeconomic fluctuations.

5.2 Regression Results

Dependent Variable:	log_hourly_wage	
Model:	(1)	(2)
Variables		
black	-0.3173***	-0.2635***
	(0.0056)	(0.0049)
public	0.0457***	-0.0580***
	(0.0038)	(0.0034)
black × public	0.1649***	0.1679***
	(0.0117)	(0.0103)
age		0.0748***
		(0.0021)
age square		-0.0007***
		(2.42×10^{-5})
educ_years		0.1001***
		(0.0004)
Fixed-effects		
multyear	Yes	Yes
Fit statistics		
Observations	187,950	187,950
R^2	0.03804	0.25938
Within R^2	0.01904	0.24475

IID standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

The regression examines whether the Black–White wage gap differs between the public and private sectors significantly using an OLS model on log hourly wages.

Model (1) shows a baseline specification, including the indicators for Black workers, public sector employment, and their interaction term. Model (2) expands on the first by adding controls for age, age squared, years of education, region, and occupation. These additional controls account for observable differences in worker characteristics which are known to affect wages. This allows a more accurate comparison of wages between Black and white workers, holding other factors constant.

Both models include year fixed effects, which control for time-specific factors like inflation, business cycles, or other macro-economic changes over a the entire time period.

Since the output variable is log of hour wages, we can interpret the

coefficients as an approximate percentage difference.

In model 2, the coefficient on Black is about -0.2635, which implies that Black workers earn about 26% less than comparable White workers in the private sector.

The interaction term between Black and pulic sector is positive and significant, indicating that the racial gap is smaller in teh public sector. Specifically, the gap is about 16.8 percentage points smaller in the public sector relative to the private sector. Using these numbers, we can calculate the racial wage gap in the public sector:

$$-0.2635 + 0.1679 \approx -0.0956$$

which is about 9.6%. This is substantially smaller than the 26% gap in the private sector.

To conclude, these results indicate while a substantial racial wage gap exists, it is significant reduced in the public sector. This goes along with the idea that public employment is more standardized and transparent, thus limiting wage disparities relative to the private sector.

5.3 Oaxaca Decomposition Results

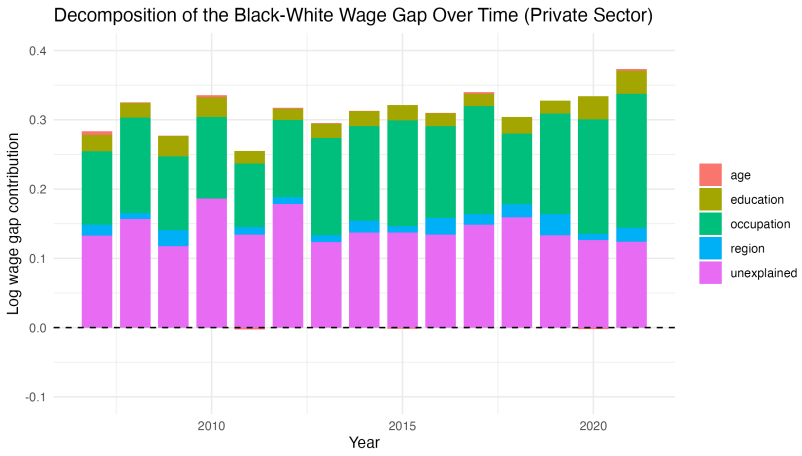

Figure 2: Decomposition of the Black–White Wage Gap Over Time (Private Sector)

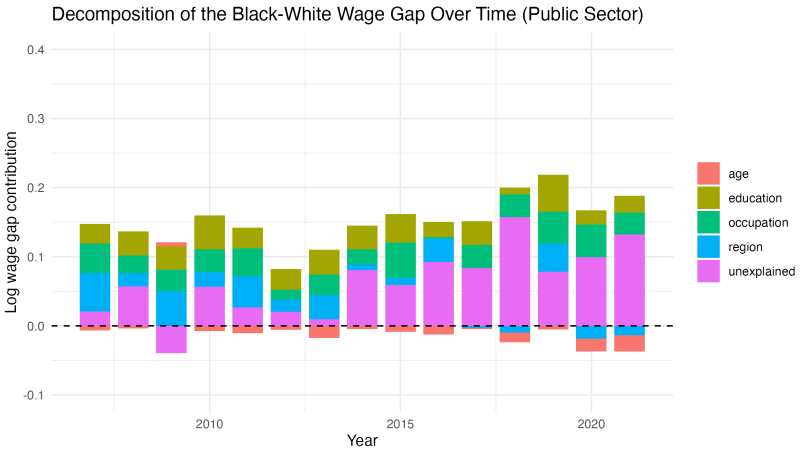

Figure 3: Decomposition of the Black–White Wage Gap Over Time (Public Sector)

To further examine the sources of the Black–White wage gap, an Oaxaca Daly style decomposition was performed, separating the gap into explained components (due to observable characteristics) and an unexplained components, and plotted over time.

In the private sector, the overall wage gap remains relatively large and stable over time. Decomposing the gap shows that differences in education and occupation explain a substantial portion, with occupation consistently having the largest share. This suggests that Black and White workers are distributed differently across higher and lower paying occupations. Regional differences have a modest contribution, and age appears to be minimal.

The explained component remains a considerable size throughout the period, indicating that a large portion of the wage gap still exists. This could be due to other differences in characteristics outside of the dataset, or potential labor market discrimination.

In contrast, the public sector exhibits a smaller overall wage gap. The explained portion is more evenly distributed across its components, with no single factor dominating. Notably, age often contributes negatively, implying that Black workers in the public sector are on average, older than White workers. Since age is typically associated with higher wages, this would predict a smaller wage gap, hence its negative sign. Education and occupation still contribute positively, but to a lesser extend than the private sector.

The unexplained component is smaller and less persistent than in the private sector. In the early years from 2007-2013, the it remained relatively small and in some cases close to zero, indicating that most of the wage gap can be attributed to observable characteristics. However in later years, this component grows and becomes more prominent, indicating a growing share

of the wage gap is driven by factors not captured in the model. This could be new returns to observable characteristics, or the influence of unobserved factors, including potential discrimination.

The Oxaca decomposition does not directly show how the Black–White wage gap itself evolves over time. The notable growth in the unexplained component raises the question of whether the underlying racial wage gap is changing. To examine this more directly, I estimate a model with race-by-year interactions to allows the wage gap to vary across years.

5.4 Time-Varying Wage Gap

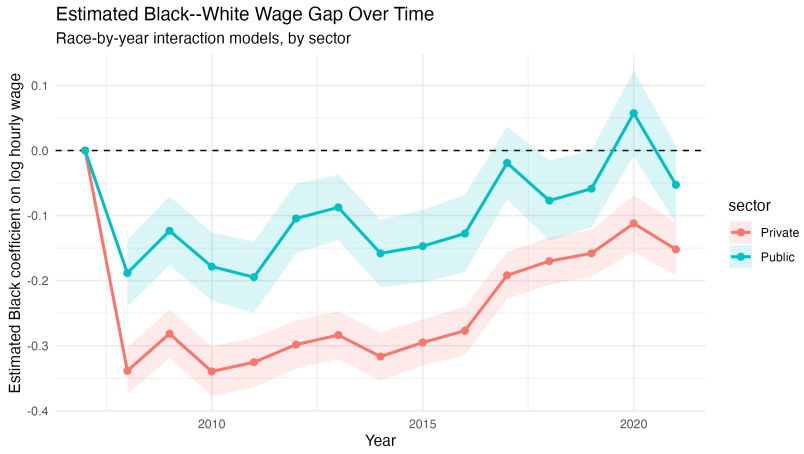

Figure 4: Estimated Black–White wage gap over time from race-by-year interaction models

The race-by-year interaction model estimates the gap separately for each year while holding observable characteristics constant. In the private sector, the estimated gap remains large but declines steadily over time, from approximately -0.34 in the late 2000s to around -0.15 by 2021. In contrast, the public sector exhibits a substantially smaller gap throughout the period, which trends toward zero and briefly becomes positive in later years.

These results complement the decomposition findings. Although the unexplained portion grows over time, the overall gap is simultaneously shrinking, suggesting that a larger share of the remaining difference is driven by variation in returns to characteristics or other unobserved factors.

6 Discussion

The results support the hypothesis that racial wage disparities are smaller in the public sector than the private. Across all findings, the Black–White

wage gap is substantially larger in private employment, while the public sector has a more compressed wage distribution.

This result is consistent with descriptive evidence showing that the private-sector wage gap is not only larger in magnitude but also does not exhibit significantly greater volatility over time relative to the public sector. A formal test comparing the variance of the yearly wage gaps across sectors does not provide evidence that the private-sector gap is more sensitive to macroeconomic fluctuations. This suggests that while both sectors respond to broader economic conditions, the larger gap observed in the private sector is persistent rather than driven by increased cyclical sensitivity.

One plausible explanation for sectoral difference is institutional wage setting int he public sector. Public-sector jobs are more likely to rely on standardize pay scales, formal job classifications, and union-negotiated wages. These features reduce managerial discretion in deciding compensation, reducing the magnitude of equal pay across otherwise similar workers. In contrast, private-sector wages are more decentralized and may depend heavily on negotiation, performance, and firm-specific factors, which can allow for more disparities.

The time dimension also suggests potential cyclical effects. The narrowing of the wage gap over time, especially in the public sector, may reflect general labor market changes, including changes in demand for skilled labor or changes in hiring and compensation practices. However, the persistence of a gap still into this decade suggests that convergence is incomplete.

At the same time, these results should be interpreted with caution. The models include controls for observable characteristics such as age, education, region and occupation, but there are several non-census factors that we cannot account for in the statistical analysis. These include things like job experience quality, firm characteristics. If these variables are correlated with both race and wage, this is an example of omitted variable bias; The racial wage gaps may partially reflect differences in these factors rather than equal treatment.

In addition, the analysis is descriptive and does not identify causal effects. While the results are consistent with the idea that job sector has an affect on wage disparities, establishing a causal effect would require a quasi-experiment, which is challenging, especially at a big scale.

Overall, the findings suggest that institutional structure plays an important role in shaping wage inequality, with more centralized and standardized pay systems associated with smaller racial wage gaps.

7 Conclusion

This paper examines racial differences in wages across the public and private sectors. The results show that the Black–White wage gap is consis-

tently larger in the private sector, while the public sector exhibits a more compressed wage distribution. The decomposition results show that observable characteristics explain a substantial portion of the gap, though an unexplained component remains and becomes more prominent over time.

Overall, the findings in this paper highlight the role of institutional wage-setting in racial wage disparities. Further work could investigate the sources of these unexplained components using more comprehensive data sources, or a quasi–experiment design.

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