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AN ANATOMY OF RACIAL AND ETHNIC TRENDS IN MALE EARNINGS IN THE U.S.

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Progress in narrowing black–white earnings differences has been far from continuous, with some of the apparent progress resulting from labor force withdrawal among lower-skilled African Americans. This paper documents racial and ethnic differences in male earnings from 1950 through 2010 using data from the decennial census and American Community Surveys. Emphasis is given to annual rather than weekly or hourly earnings. We take a quantile approach, providing evidence on medians and other percentiles of the distribution. Treatment of imputed earnings greatly affects measured outcomes. Hispanic men have exhibited earnings growth similar to white men over several decades. Black men have been left behind economically due in large part to increased joblessness, a process exacerbated by weak labor market conditions. By 2010, joblessness had risen to over 40 percent and the median black–white earnings gap was the largest in at least 60 years.

JEL Codes: J15, J31

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1. INTRODUCTION

Racial and ethnic differences in earnings and employment have been of interest to researchers, policymakers, and laypersons for some time. Black–white earnings gaps in the U.S. have received particular attention, with researchers documenting a considerable narrowing of the racial gap after 1940 (Smith and Welch, 1989; Margo, 1995; Chandra, 2000; Black *et al*., 2009). Black–white relative earnings, however, have not increased without interruption. Bound and Freeman (1992) suggest that relative earnings for young black men decreased from the mid-1970s through the 1980s. Subsequent work has focused on deterioration in relative black–white earnings concentrated among those with little education (Neal, 2006).[1]

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[1]The terms "black" and "white" refer to non-Hispanic blacks and non-Hispanic whites. We define "Hispanic" as Hispanics of any race. Altonji and Blank (1999) review the literature on race and gender in the labor market.

Researchers have noted the increasing frequency of labor market dropout by black men, especially those with low skills. Much of the observed convergence in black–white relative earnings results from the selective withdrawal of low-skilled blacks from the labor market (Butler and Heckman, 1977; Brown, 1984; Chandra, 2003; Juhn, 2003; Antecol and Bedard, 2004).[2] Labor market dropouts would have had relatively low earnings were they employed, so their withdrawal causes observed black earnings to be overstated and the black–white earnings gap to be understated. Because black non-employment has increased, researchers who do not account for selection over time will overstate the extent to which black–white earnings have converged.

This paper builds on prior research by documenting racial and ethnic differences in male earnings over time. Though we do not explicitly analyze the underlying causes of these differences, providing descriptive evidence on the magnitudes, time trends, and proximate correlates of earnings differentials is informative. We give special attention to the years from 2000 to 2010, a time period that includes the Great Recession and over which racial differences in earnings have received limited attention. Our primary focus is on racial differences, although we examine similar evidence for Hispanics, who are often ignored in studies that focus on race. We differ from most previous studies in our focus on annual rather than weekly or hourly earnings and in taking a quantile approach, focusing on differences throughout the distribution.[3]

In what follows, we find that black male joblessness not only continued its long-run increase, but increased sharply during the first decade of the twenty-first century. In 2010, the median log earnings gap between white and black men was the largest such gap since at least 1950. The increased joblessness and divergence in earnings is not only due to the recession and slow recovery. Well before the recession began in December 2007, the racial earnings gap had been growing. The first decade of the new millennium was a particularly difficult one for black men at the low end of the earnings distribution, many of whom are poorly educated. The experience of Hispanic men stands in sharp contrast to the recent experience of black men. Between 2000 and 2010, Hispanic non-employment was relatively stable, as was the Hispanic–white earnings gap.

We proceed as follows. The next section discusses the data sources used and the important issue of imputed earners. A third section documents overall trends in male earnings between 1950 and 2010, while a fourth section uses quantile

[2]Western and Pettit (2005), Raphael (2006), and Pettit (2012) argue that much of the increase in black male joblessness after 1980 can be attributed to increased incarceration in jails and prisons. Holzer *et al*. (2005) argue that the declining employment of less-educated young black men is largely attributable to prior incarceration and increased enforcement of child support payments. Borjas *et al*. (2010) show that increased immigration has played a role in both the decreased employment and increased incarceration of black men. Black employment problems are also exacerbated by "spatial mismatch" between inner city blacks and suburban jobs (Ihlanfeldt and Sjoquist, 1998). Other researchers emphasize the role of racial discrimination (Lang and Lehmann, 2011; Ritter and Taylor, 2011).

[3]Hoynes *et al*. (2012) examine who is hurt during recessions based on cross-state differences in the business cycle during the early 1980s and the 2007 recession. Although their focus and methods are very different from ours, their broad conclusions align with those reported here. They conclude that black, Hispanic, male, young, and less educated workers are most harmed in recessions. As do we, however, they find employment changes during the Great Recession to be similar for Hispanic and white men, while employment losses among black men are much larger.

regression to estimate black–white and Hispanic–white log earnings gaps, controlling for individual age, education, and location. A fifth section addresses concerns regarding heaped earnings data.

2. Data

Microdata from the 1950–2000 decennial censuses and the 2006–10 American Community Surveys (ACS) are used, all available from the Integrated Public Use Microdata Series (IPUMS) produced by Ruggles *et al*. (2010). Each is a representative 1 percent sample of the U.S. male population inclusive of non-earners, including persons institutionalized. The 2000–05 ACS did not include institutionalized persons and are not analyzed. We treat non-earners as having zero earnings rather than imputing potential earnings, thus measuring differences in realized earnings, conditional on measured attributes. Quantile regression is generally less sensitive than OLS to the treatment of non-earners. The institutionalized population consists primarily of men in correctional institutions, especially after 1980, but also includes persons in institutions for the mentally ill, those with severe physical disabilities, and those otherwise homeless (the elderly are not in our sample). Chandra (2003), Western and Pettit (2005), and Pettit (2012) have shown the importance of including the institutionalized population to account for selection effects in studies on racial differences in employment and earnings.

We restrict the sample to white, black, or Hispanic native-born men, aged 18–61, and not enrolled in school at the time of the survey. We exclude those currently in school because most are out of the labor force or work few hours in order to increase their human capital and increase future earnings. Their current low (or zero) earnings are a poor measure of potential or future earnings. Non-student adult male non-earners are typically decreasing their future earnings potential. Excluding students typically causes a slight decrease in racial and ethnic gaps.

Our principal earnings measure is based on annual earnings and includes wage and salary, business, and farm incomes. For the decennial censuses the reference period for earnings is the previous calendar year, e.g. earnings in the 2000 Census are for the 1999 calendar year. The ACS is conducted throughout the year and the reference period for earnings is the 12 months prior to the survey. All dollar amounts are converted to 2010 values using the Consumer Price Index (CPI) produced by the Bureau of Labor Statistics (BLS).

Omitted from our principal analysis are individuals who did not report earnings but for whom the Census Bureau imputed earnings using a hot deck procedure. Although item non-response is low for most survey questions, measures of earnings and income are exceptions. Inclusion of imputed values can seriously bias estimates of earnings, typically causing attenuation of earnings differentials. The attenuation (so-called "match bias") is severe with respect to earnings attributes that are not match attributes or are matched imperfectly in the hot deck procedure (Bollinger and Hirsch, 2006). The quality of matches is particularly poor for African-Americans and other minority groups. While inclusion of imputed values, typical in most studies, can introduce substantial bias in estimated earnings

differentials, their inclusion does nothing to correct for non-ignorable response bias because non-respondents are assigned earnings from those who do respond (Bollinger and Hirsch, 2013). Omitting imputed earners changes the composition of the sample with respect to measurable variables (e.g., age, education, and location), but this can be readily accounted for by reweighting the respondent sample based on the inverse probability of response (Wooldridge, 2002, pp. 587–88; Bollinger and Hirsch, 2006), an approach we follow in our analysis. In what follows, we find that black–white earnings gaps are substantially understated when imputed values are included, a result previously found by Neal (2006).[4]

Also important is the treatment of foreign-born men, whose employment and earnings differ from the native born. They are excluded from our principal analysis. Their inclusion noticeably affects the level and trend in Hispanic–white and, to a lesser extent, black–white earnings gaps.

Most prior studies examine racial differences in weekly or hourly earnings, but we follow Black *et al*. (2010) and focus primarily on annual earnings. Annual earnings reflect not only the price of labor services but also the number of weeks and hours worked during the year. It is informative to compare racial/ethnic differences in median annual earnings, weekly earnings, and hourly earnings, and mean annual hours worked, which we do using the 2000 Census. Weekly earnings are computed by dividing annual earnings by the number of weeks worked the previous year; hourly earnings are computed by dividing weekly earnings by the usual number of hours worked per week the previous year; and annual hours are the product of usual hours worked per week and the number of weeks worked the previous year. Persons with zero annual earnings are defined to have zero weekly and hourly earnings. Baum-Snow and Neal (2009) suggest that many persons appear to respond to the usual hours worked per week question in the Census survey as if they are reporting their usual hours worked per day, and the frequency of this error differs by race and gender. If so, this will bias observed racial (and possibly ethnic) gaps in hourly earnings and annual hours worked, all the more reason to focus on annual earnings.

Table 1 reports median earnings for black, Hispanic, and white men, along with the log and percentage differences in medians between whites and blacks and whites and Hispanics. Median annual earnings for black and Hispanic men reported in 2000 were $22,251 and $27,486, respectively, in 2010 dollars, 48.5 and 36.4 percent below the $43,192 seen for whites. These large gaps reflect both differences in hourly earnings and annual hours worked. Comparing annual earnings paints not only a more complete but also a bleaker picture of economic disparities between white and black men.

[4]Neal (2006) does not reweight his samples to account for changes in composition due to non-response. That said, we find results to be insensitive to reweighting. Earnings non-response rates for the 2006–10 ACS are about 15–18 percent for whites, 26–28 percent for blacks, and 24–26 percent for Hispanics. Non-response rates from the 1980, 1990, and 2000 decennial Censuses are a good bit higher. Non-response was far lower in 1950 (about 10 percent for whites and Hispanics and 14 percent for blacks) than in 1980 through 2010. The 1960 decennial Census from IPUMS does not include imputation flags, while reported rates for 1970 appear unrealistically low, thus affecting comparisons including those years.

TABLE 1

Median Annual, Weekly, and Hourly Earnings, and Mean Annual Hours, 2000

	Annual Earnings	Weekly Earnings	Hourly Earnings	Mean Annual Hours
Black	22,251	697	16.36	1,380
Hispanic	27,486	705	16.54	1,658
White	43,192	956	21.59	1,967
Log differences				
Black–white	–0.663	–0.316	–0.277	–0.354
Hispanic–white	–0.452	–0.305	–0.266	–0.171
% differences				
Black–white	–48.5%	–27.1%	–24.2%	–29.8%
Hispanic–white	–36.4%	–26.3%	–23.4%	–15.7%

Notes: All earnings measures are medians in 2010 dollars. Mean rather than median hours are shown since large shares of each group designate 2,080 (40 × 52) as their annual hours. The proportions with hours below 2,080 are 55, 47, and 32 percent for black, Hispanic, and white men (this includes non-earners).

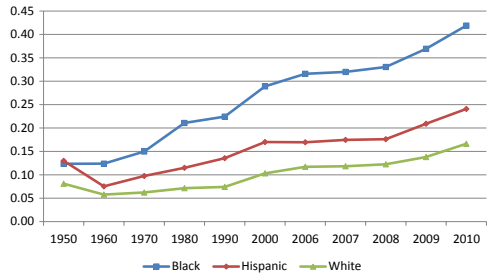

Figure 1. Share of Non-Earners by Race/Ethnicity, 1950–2010

3. Earnings Trends, 1950–2010

3.1. *Shares of Non-Earners*

We next examine trends in annual earnings from 1950–2010 among black, Hispanic, and white men. Figure 1 shows the trends in the share of men without positive annual earnings over this period. All values shown in figures in this paper are available in the Appendix tables posted on the authors' websites. Since 1970 there has been a sharp increase in the share of black men with no annual earnings. That share rose from 15 percent in 1970 to 29 percent in 2000 and to nearly 42 percent by 2010. The high current non-earnings rates are due in part to the economic recession that began in December 2007, but black male joblessness saw meaningful increases during the 1970s and the 1990s, and every decade since the 1960s has shown an increase. Long-term trends among white and Hispanic males also display increases in the proportion of non-earners, but at far lower levels. Joblessness among Hispanic males increased from roughly 10 to 17 percent between 1970 and 2000, was roughly constant between 2000 and 2008, and by 2010 had risen to 24 percent. The white male share increased continuously after 1970 and was 17 percent in 2010, moderately below the Hispanic rate and well below that among African Americans.

On average, blacks and Hispanics have less education and are younger than whites. These differences may account for some differences in non-earnings. Figure 2 looks at the trends and differences in the shares of non-earners between 2000 and 2010 by examining the non-earner rates for black, Hispanic, and white males by age and education group. We consider eight age groups ranging from 18–24 to 55–61. Age has a non-monotonic U-shape effect: the share of non-earners is lowest for those in the middle of the age distribution and highest for the youngest and oldest groups. Such a pattern is consistent with human capital theory and evidence (Rupert and Zanella, 2012) wherein declines in earnings during later years are driven more by decreases in hours worked than by wage decreases.

We investigate four education groups: less than a high school diploma, high school diploma but no college, some college but less than a four year degree, and four year college degree or higher. As is clearly evident in Figure 2, the share of

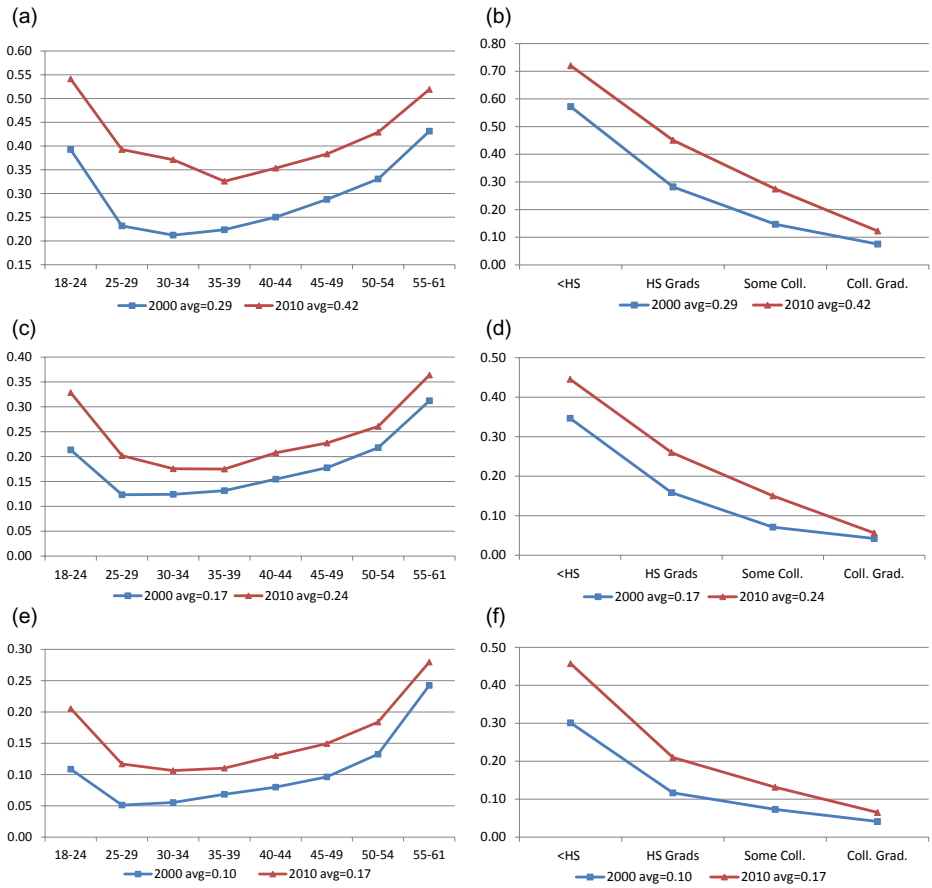

Figure 2. (a) Share of Black Non-Earners by Age, 2000 & 2010; (b) Share of Black Non-Earners by Education, 2000 & 2010; (c) Share of Hispanic Non-Earners by Age, 2000 & 2010; (d) Share of Hispanic Non-Earners by Education, 2000 & 2010; (e) Share of White Non-Earners by Age, 2000 & 2010; (f) Share of White Non-Earners by Education, 2000 & 2010

non-earners decreases sharply with the level of education for all race/ethnic groups. Differences between blacks and whites in non-earnings shares are not simply due to blacks being younger and less educated. Even within age and education groups, black males have far higher non-earner rates than whites and Hispanics. Among those without a high school diploma, for example, the share of black non-earners in 2000 was 0.57, compared to 0.35 among Hispanics and 0.30 among whites. In 2010 the situation was far worse with non-earner shares of 0.72, 0.45, and 0.46 for black, Hispanic, and white high school dropouts, respectively. College graduates have not done so poorly in the first decade of the twenty-first century. The non-earner share increased between 2000 and 2010 for black and for white college graduates, from 0.08 to 0.12 and from 0.04 to 0.06, respectively, but the levels remained far lower than for those with less education.

In work not shown (available on request), we explore whether or not measured covariates can account for the large differences by race and ethnicity in non-earnings. Using a linear probability model for non-earnings among individuals by year, we first regress non-earnings on race and ethnicity, which reproduces the information shown in Figure 1 for 2000. We then add age, then education, and then location. The results reinforce prior conclusions. For black men, age and location explain close to none of the large black–white difference in non-earnings, while education accounts for a meaningful but modest share (about 20 percent). Among Hispanic men, age does not explain differences, but education accounts for about half and location about 15 percent of the total Hispanic–white non-earnings difference in 2000. Remaining ethnic differences in non-earnings are modest in size, about 2 to $2^1/_2$ percentage points.

We also narrowed our primary sample to those who had worked within the past five years, a group for whom industry and occupation are recorded for those with a current job and those who have worked previously. As expected, this restricted sample displays rates of current non-earnings far lower (roughly half) than for our full sample. Controlling for industry and occupation, however, does little or nothing to explain racial or ethnic differences in non-earnings beyond those accounted for by age, education, and location.

3.2. *Real Annual Earnings across the Distribution: 1950–2010*

Figure 3 displays real annual earnings in 2010 dollars between 1950 and 2010 for men at the 25th, 50th (median), 75th, and 90th percentiles. Percentiles are for a full sample of men that includes those who are institutionalized, plus other non-earners. Earnings at the 25th percentile for black men increased between 1950 and 1970, but this measure is uninformative after 1970 because it is dominated by zero earners. Earnings at the 25th percentiles among Hispanics and whites increased sharply between 1950 and 1960, grew modestly during the 1960s, and then steadily declined over several decades. Earnings for these groups stabilized in 2006–08 before dropping steeply in 2009 and 2010.

Real annual earnings at the median increased substantially during the 1950s and the 1960s for all three racial/ethnic groups, but then were roughly flat in the 1970s, 1980s, and 1990s. Between 2000 and 2006 median earnings for black males fell by 30 percent, from $22,251 to $16,482, and by 2010 had fallen to $7,259, below

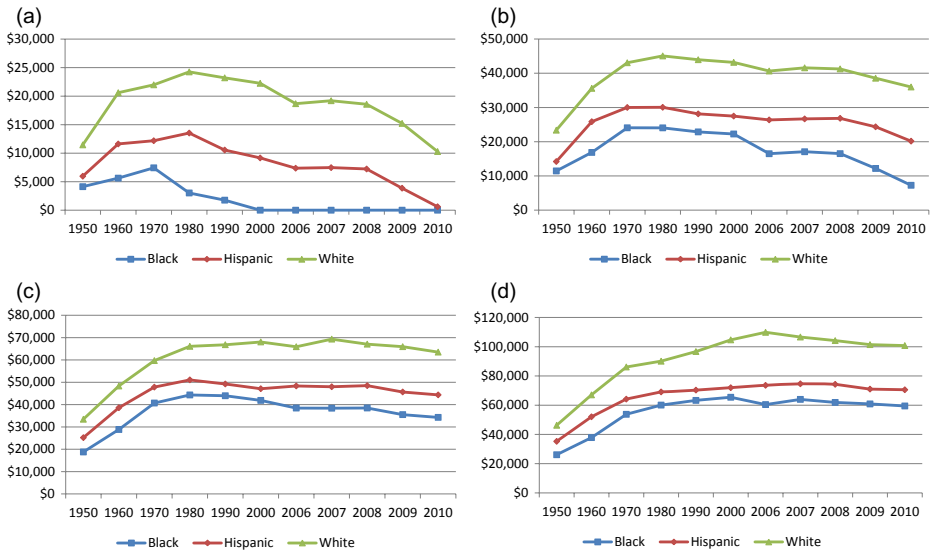

Figure 3. (a) Annual Earnings at 25th Percentile, 1950–2010; (b) Annual Earnings at 50th Percentile, 1950–2010; (c) Annual Earnings at 75th Percentile, 1950–2010; (d) Annual Earnings at 90th Percentile, 1950–2010

its value in 1950. Median earnings for Hispanic males changed little between 2000 and 2008, from $27,486 to $26,828, but by 2010 had decreased to $20,163. White male median earnings decreased from $43,192 in 2000 to $35,990 in 2010. We later use median regressions to examine log differences and trends in white–black and white–Hispanic median earnings.

Earnings at the 75th percentiles increased sharply between 1950 and 1970 for blacks, whites, and Hispanics, followed by modest growth in the 1970s. Since 1980, however, earnings for the three groups have displayed remarkably little change, apart from small declines in the Great Recession. Earnings at the 90th percentile increased continuously for black, Hispanic, and white men between 1950 and 2000. For all three groups, however, earnings at the 90th percentile were lower in 2010 than in 2000.

In short, the first decade of the twenty-first century has seen decreased annual earnings for black, white, and Hispanic men throughout the earnings distribution, modest decreases at the top of the distribution, and substantial declines toward the middle and lower portions of the distribution.

4. Quantile Regression Results

This section uses quantile regression to estimate racial/ethnic differences in log earnings between whites, blacks, and Hispanics, both with and without controls for individual age, education, and location.[5] We first examine differences

[5]Quantile regressions have been used in a wide variety of applications; examples and further details are provided in Buchinsky (1998) and Koenker (2005). We redefine all non-positive earnings, including stated losses among self-employed workers, to one dollar so that log earnings are equal to zero for non-earners. Self-employed workers with losses comprise a trivial fraction of recorded non-earners.

at the median and then look at differences throughout the distribution. While most studies of racial differences in earnings use least squares to examine differences in means, a few have examined median differences (Neal and Johnson, 1996; Johnson *et al*., 2000; Chandra, 2003). Median analysis is less influenced by outliers, and lessens the need to impute non-workers' potential earnings when these are likely to fall below the median (Johnson *et al*., 2000).

4.1. *Median Regression Results*

We present median regression estimates of black–white (Figure 4a) and Hispanic–white (Figure 4b) log annual earnings differences for men ages 18–61 with alternative controls. Presented are coefficients on dummy variables for blacks (Figure 4a) and Hispanics (Figure 4b), initially with just a constant and white men being the omitted reference group. White, black, and Hispanic men differ in age, education, and geographic location, all of which have been shown to influence wage rates and racial/ethnic earnings differences (DuMond *et al*., 1999; Black *et al*., 2009). Hence, we add in turn controls for age (a set of 43 dummies for single years of age), completed education (a set of 10 dummies), and location (a full set of dummies for each individual metro area or state non-metro area, as done in Black *et al*., 2009).[6]

The "No Controls" results in Figure 4a show that the median log earnings gap for black relative to white men deteriorated between 1950 and 2010, despite progress in the 1960s. Black men suffered a major setback in the first decade of the twenty-first century. The black–white log earnings gap increased from –0.66 (–48 percent) to –0.90 (–59 percent) between 2000 and 2006 and jumped to –1.60 (–80 percent) in 2010. The native-born Hispanic–white log earnings gap (Figure 4b) without controls was stable at around –0.45 (–36 percent) since about 1990, prior to widening in 2009–10.[7]

Including controls for age reduces earnings gaps for blacks and Hispanics relative to whites. Adding controls for education further reduces estimated gaps, particularly for Hispanics, confirming that a sizable portion of observed racial and ethnic earnings gaps are due to age and education differences. For example, the black coefficients for 2000 and 2010 fall (in absolute value) to –0.47 (–37 percent) and –0.90 (–59 percent), reductions of 0.19 and 0.70 log points relative to estimates with no controls. Controlling for age and education has particularly large effects for Hispanics. Hispanic–white gaps for 2000 and 2010 fall to –0.12 (–11 percent) and to –0.10 (–10 percent), respectively, reductions of 0.33 and 0.48 log points relative to the gaps absent controls.

Including the location controls has no effect on the 1950 black coefficient (in Figure 4a), while 1960 results are compromised by the inability to identify

[6]The number of identifiable metro areas differs across years and no metro areas were separately identified in the 1960 Census. For 1960 we include dummies for state and state interacted with metropolitan status.

[7]Standard errors are not reported. Sample sizes for all groups and years are sufficiently large that all coefficients in Figures 4a and 4b are significant at the 1% level. Log point estimates are converted to percentages using the standard measure $(\exp^{\beta} - 1)100$, where β is the log point gap. Log point differences are invariant to the base, while percentages are higher (lower) than log point gaps when using the smaller (larger) reference base.

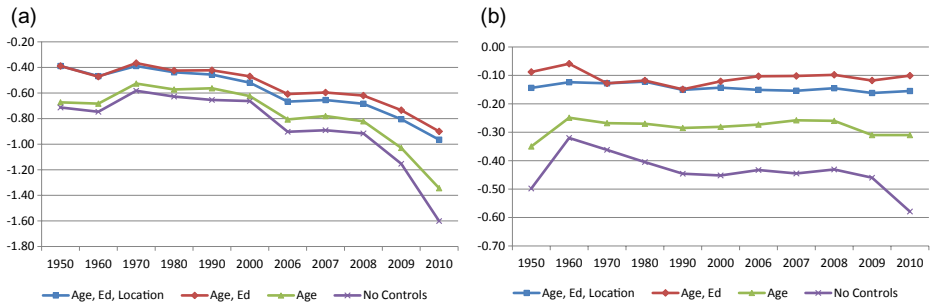

Figure 4. (a) Black-White Median Regression Log Annual Earnings Differentials with Alternative Controls, 1950–2010; (b) Hispanic-White Median Regression Log Annual Earnings Differentials with Alternative Controls, 1950–2010

individual metropolitan statistical areas (MSAs). Beginning in 1970, adding the location controls increases the black coefficient, reflecting the decreasing concentration of blacks in the South and increasing concentration in metro areas (DuMond *et al.*, 1999; Black *et al.*, 2009). For Hispanic men, controlling for location substantially widens estimated log earnings gaps relative to whites because of the relative concentration of Hispanics in high earnings locations. The Hispanic gap (Figure 4b) changed little between 2000 and 2010, from –0.14 (–13 percent) to –0.155 (–14 percent). While black men lost considerable ground in the 2000s, Hispanic men largely held their own in earnings relative to non-Hispanic white men.

4.2. *Median Regression with Alternative Earnings Measures and Population Samples*

We next re-estimate the median regressions for 2000 and 2006–10 using three alternative dependent variables: log weekly earnings, log hourly earnings, and log annual hours worked. Besides being important economic measures in their own right, these results allow us to qualitatively assess each one's contribution to trends in the log annual earnings gap.[8] The baseline results from median regressions with full controls, previously seen in Figure 4, are presented in panel A of Table 2 for 2000–10. Panels B, C, and D provide results for the three additional measures, weekly and hourly earnings, as well as annual hours. The far right column of Table 2 reports the change in each measure between 2000 and 2010.

Panels A–D of Table 2 suggest that for all outcome measures, controlling for age, education, and location, black men lost considerable economic ground

[8]Median annual earnings do not generally equal median hourly earnings times median annual hours. Thus, one cannot strictly decompose changes in median log annual earnings into the changes in median log hourly earnings and median log annual hours, as would be possible using variable means. The ACS variable measuring weeks worked the previous year for 2008, 2009, and 2010 is reported only in intervals from 1–13, 14–26, 27–39, 40–47, 48–49, and 50–52, rather than on a continuous basis as in 1950–2007. In order to estimate weekly earnings, hourly earnings, and annual hours for 2008–10, we use the 2007 ACS to calculate mean weeks worked for each interval by race, age, and education level. Mean weeks worked from 2007 are then assigned to persons in the equivalent demographic and weeks worked cells for 2008–10.

TABLE 2

Median Regression Results, Alternative Specifications and Samples, 2000–2010

	2000	2006	2007	2008	2009	2010	Δ 2000–2010
A. Annual earnings: primary sample							
Black	–0.519	–0.667	–0.655	–0.684	–0.805	–0.965	–0.446
Hispanic	–0.143	–0.151	–0.154	–0.145	–0.162	–0.155	–0.012
B. Weekly earnings: primary sample							
Black	–0.441	–0.544	–0.552	–0.592	–0.681	–0.775	–0.334
Hispanic	–0.125	–0.137	–0.145	–0.143	–0.149	–0.151	–0.026
C. Hourly earnings: primary sample							
Black	–0.373	–0.465	–0.468	–0.507	–0.558	–0.611	–0.238
Hispanic	–0.102	–0.114	–0.126	–0.117	–0.123	–0.125	–0.023
D. Annual hours: primary sample							
Black	–0.085	–0.134	–0.134	–0.116	–0.224	–0.436	–0.351
Hispanic	–0.012	0.000	0.000	0.000	0.000	–0.004	0.008
E. Annual earnings: worker-only sample							
Black	–0.293	–0.343	–0.344	–0.337	–0.332	–0.317	–0.024
Hispanic	–0.117	–0.145	–0.135	–0.138	–0.135	–0.131	–0.014
F. Annual earnings: non-institutionalized sample							
Black	–0.482	–0.547	–0.539	–0.564	–0.639	–0.727	–0.245
Hispanic	–0.138	–0.139	–0.138	–0.129	–0.144	–0.133	0.005
G. Annual earnings: primary sample plus foreign born							
Black	–0.532	–0.650	–0.629	–0.656	–0.775	–0.971	–0.439
Hispanic	–0.186	–0.176	–0.177	–0.165	–0.160	–0.115	0.071
H. Annual earnings: primary sample plus imputed earners							
Black	–0.518	–0.575	–0.565	–0.607	–0.668	–0.757	–0.239
Hispanic	–0.181	–0.167	–0.164	–0.161	–0.159	–0.149	0.032

Notes: Shown are log point earnings differentials. The primary sample includes all non-student, native-born white, black, and Hispanic men, aged 18–61, who report earnings (i.e., imputed earners excluded where possible; see text). All regressions include detailed dummies for age, education, and location.

relative to white men between 2000 and 2010. The increase in the white–black median gap between 2000 and 2010 is largest for annual earnings, being 0.45 log points, from –0.52 (–40 percent) to –0.97 (–60 percent). The widening of the racial gap in weekly earnings is lower, but still large, at 0.33, from –0.44 (–36 percent) to –0.775 (–54 percent). Median log gaps in hourly earnings and annual hours (panels C and D) also increased substantially in these years. We view annual earnings differences as the best measure of disparities in labor market outcomes by race. Its deterioration since 2000 was clearly a result of substantial declines in both black hourly earnings and hours worked.

We also consider how results vary using different population samples. In panel E of Table 2 we examine the effects on relative median annual earnings when restricting the sample to "workers-only"—those men with positive earnings in the previous year. In panel F we restrict the sample to the non-institutionalized population in the Census and ACS (panel E).[9] Next we estimate median log earnings

[9]In work not shown, we compare results from the March Current Population Survey (CPS) and the ACS non-institutional samples (the CPS does not include the institutional population). The CPS data largely mimic the ACS results, but with more year-to-year variation due to relatively small CPS sample sizes of blacks and Hispanics.

gaps for samples that include foreign born men (panel G). And in panel H, we examine how results change when men with imputed earnings are included.

Over time there has been selective withdrawal from the workforce of low-skilled black men, many or most of whom would have realized low earnings had they worked. Such selection helps account for results for the strikingly different racial gaps seen for the workers-only sample (panel E) than for our more comprehensive primary sample (panel A). The annual racial earnings gaps among workers are far lower each year as compared to the primary samples; moreover the change in the racial gap between 2000 and 2010, from –0.29 (–25 percent) to –0.32 (–27 percent), is not substantive. In short, ignoring selection by looking only at those who worked masks the strong deterioration in relative earnings among the larger population of black men during the 2000s.

Panel F of Table 2 shows results from a sample restricted to the non-institutionalized population. Between 2000 and 2010 the racial gap in median annual earnings changed from –0.48 to –0.73 log points (from –38 to –52 percent), an increase in the racial earnings gap roughly half as large as seen in the primary sample.

For native-born Hispanic men, the results in panels A–F show that they maintained labor earnings relative to whites between 2000 and 2010. Hispanic men were harmed by the Great Recession, but not disproportionately so. Had foreign-born males been included in the sample, we would have concluded that there had been a 0.07 log point *increase* in Hispanic–white earnings during the decade, with a narrowing of the gap from –0.19 (–17 percent) to –0.115 (–11 percent). This seemingly anomalous result occurs because the foreign-born Hispanic population saw little change in its non-earnings rate (perhaps because of migration flows), while the non-earnings share for native-born Hispanics increased from 0.17 to 0.24 (see Figure 1). In short, earnings growth among native Hispanic men mirrored that seen for native white males.

4.3. *Sensitivity to Imputed Earners*

Panel H of Table 2 examines how inclusion of imputed earners affects the median regression results. Doing so has only a modest effect on the results for the 2000 Census, where the very large sample size appears to provide high quality matches. In sharp contrast, inclusion of imputed values in the much smaller ACS produces far poorer donor quality matches for African Americans, resulting in considerable attenuation in the black coefficient.[10] In 2010, inclusion of imputed earners causes attenuation in the black coefficient, from –0.965 (–62 percent) to –0.76 (–53 percent), indicating considerable match bias in imputed earnings for black men.

The importance of imputed earner bias can also be seen by examining the share of non-earners using alternative treatments of imputed earners. Panel A of Table 3 reports the non-earner share for 2000–10 for our primary sample, which excludes imputed earners and reweights respondents to account for the probability of earnings non-response. Panel B reports the share of non-earners for our primary

[10]The Census 2000 long-form survey was distributed to one sixth of the U.S. population, but the 2010 ACS surveyed less than 2 percent of the U.S. population. The Census and ACS public use samples (as used in our study) include only a subset of the full samples, each including 1 percent samples of the population.

TABLE 3
NON-EARNINGS SHARES AND THE TREATMENT OF IMPUTED EARNERS

	2000	2006	2007	2008	2009	2010
A. Share with no earnings: excluding imputed earners and reweighting						
Black	0.289	0.316	0.320	0.330	0.369	0.419
Hispanic	0.170	0.170	0.175	0.176	0.209	0.241
White	0.103	0.117	0.118	0.123	0.138	0.166
B. Share with no earnings: excluding imputed earners no reweighting						
Black	0.274	0.309	0.312	0.320	0.362	0.413
Hispanic	0.161	0.166	0.171	0.171	0.205	0.236
White	0.099	0.116	0.117	0.120	0.136	0.164
C. Share with no earnings: including imputed earners						
Black	0.249	0.251	0.253	0.267	0.301	0.341
Hispanic	0.161	0.142	0.145	0.146	0.174	0.198
White	0.092	0.103	0.104	0.109	0.123	0.144
D. Share with no earnings: imputed earners only						
Black	0.206	0.089	0.092	0.129	0.123	0.138
Hispanic	0.162	0.052	0.053	0.061	0.062	0.069
White	0.066	0.032	0.035	0.051	0.049	0.053

Note: The respondent sample in Panel A is weighted by the inverse probability of response.

sample with no reweighting. Panel C reports the share for a full sample including both respondents and imputed earners. Panel D reports the share for a sample including only imputed earners. Panel A and B results are similar, confirming that reweighting based on the probability of non-response is a second-order issue.

Comparing panels A and D (or B and D), it is readily evident that both the Census and ACS assign too few non-earning donors to non-respondents. This is a particularly serious issue in the ACS. For example, using the 2000 Census, the 0.21 share of black non-earners in the imputed sample (panel D) is "only" 0.07 share points lower than in the unweighted sample of black respondents (panel B). Using the full sample (panel C) there is only a "modest" downward bias of 0.04 in the estimated share of non-earners, 0.25 with the full sample (panel B) versus 0.29 in our reweighted respondent sample (panel A). Using the ACS, however, downward bias in the black non-earnings share is substantial. For each of the years 2006 through 2009, bias is 0.06 to 0.07. In 2010, the downward bias is 0.08 points, a black non-earnings share of 0.34 in the full sample versus the 0.42 reported for the reweighted respondent sample. The substantial bias in the 2010 median regression black coefficient when imputed earners are included is due primarily to the low rate at which non-respondents are assigned non-earning donors. Only 14 percent of black non-respondents are allocated zero earnings. Imputation bias also exists for whites and Hispanics. For white, black, and Hispanic men in the ACS, the non-earner rates for imputed earners are about one-third the rates for respondents (Table 3, panel D versus A or B).

In short, including non-respondents with imputed earnings substantially understates the share of non-earners and the median log earnings gap between black and white men. In addition to biasing estimated levels of the racial earnings gap, use of samples including imputed earners biases estimates of gap changes, understating the deterioration in black relative earnings between 2000 and 2010.

TABLE 4
Log Annual Earnings Gaps at Various Percentiles: Full Controls, 2000–2010

	White–Black Gap			White–Hispanic Gap		
Percentile	2000	2010	Δ 2000–2010	2000	2010	Δ 2000–2010
30	–1.221	–4.489	–3.268	–0.188	–0.284	–0.096
40	–0.689	–1.520	–0.831	–0.163	–0.188	–0.025
50	–0.519	–0.965	–0.446	–0.143	–0.155	–0.012
60	–0.436	–0.680	–0.244	–0.131	–0.147	–0.016
70	–0.387	–0.550	–0.163	–0.131	–0.139	–0.008
80	–0.356	–0.470	–0.114	–0.135	–0.152	–0.017
90	–0.344	–0.424	–0.080	–0.151	–0.166	–0.015

Note: All regressions include detailed dummies for age, education, and location.

These results highlight the importance of either excluding imputed earners or empirically addressing imputation issues in analyses of levels and changes in relative earnings.

4.4. *Quantile Regression Results throughout the Distribution*

Racial and ethnic differences in *median* log annual earnings are important, but may not accurately reflect earnings gaps at other points in the earnings distribution. Thus, we use quantile regression to examine racial and ethnic differences in log annual earnings. Table 4 reports quantile regression log earnings gaps for blacks and Hispanics relative to whites with full controls for age, education, and location at the 30th through 90th deciles for 2000 and 2010. Results for the 10th and 20th percentiles are not reported because the high non-earner rates at the lowest percentiles render such estimates uninformative.

In both 2000 and 2010, white–black earnings gaps decline as we move toward the upper ends of the earnings distributions. For the year 2000, for example, the earnings gap is –0.69 (–50 percent) at the 40th percentile, –0.44 (–35 percent) at the 60th percentile, and –0.36 (–30 percent) at the 80th percentile. This pattern becomes more evident over time, the increase in the white–black earnings gap between 2000 and 2010 being largest at the lower deciles and smallest at the higher deciles. For example, between 2000 and 2010 the earnings gap at the 50th percentile expanded (in absolute value) by 0.45 log points, from –0.52 (–40 percent) to –0.965 (–62 percent), but gap widening declined as one moves up the earnings distribution, with increases of 0.24, 0.11, and 0.08 log points at the 60th, 80th, and 90th percentiles. Black men saw their annual earnings decline relative to whites at all parts of the distribution, but the effects are most pronounced in the lower tail. Such a pattern underscores the importance of examining racial earnings differences throughout the distribution.

Hispanic–white log annual earnings gaps are substantially smaller than are racial gaps at every point in the distribution in both 2000 and 2010. Conditional on age, education, and location, Hispanics fare better than African Americans throughout the earnings distribution. In contrast to racial differences, Hispanic–white relative male earnings vary little throughout the top two-thirds of the earnings distribution. At the 40th percentile and above, Hispanic–white earnings gaps

are in the mid-teens and increased little (1 or 2 percentage points) between 2000 and 2010. As seen previously for median earnings, changes during the past decade among native Hispanic men largely mimicked changes among white men throughout the distribution. Across the distribution, the performance of Hispanic men was notably better than that seen for black men.

5. Rounding, Heaping, and Smoothing

A common attribute of household surveys is that for continuous variables such as annual earnings, respondents report numbers that are rounded and concentrated (heaped) at focal values. Reported earnings typically have a last digit of zero, with greater heaping of values ending in two zeroes than in one, three than two, etc., plus a heaping of reported earnings half way between focal values (i.e., values ending in 50, 500, or 5,000). For most analyses, rounding is not a problem, particularly if the data are "coarsened at random," largely analogous to data missing at random (Heitjan and Rubin, 1990, 1991). Within a regression framework, it matters whether the randomly coarsened variable is on the left-hand side or right-hand side (Hausman, 2001). If coarsened earnings are used to measure a right-hand side variable, its coefficient is attenuated due to measurement error. This should not be serious as long as the degree of rounding is small relative to the true variation in earnings. If the coarsened variable is on the left-hand side, as in our analysis, then such measurement (reporting) error should not bias coefficients, but it will lower goodness of fit and increase standard errors.

It is less clear how coarsened earnings affect estimates using quantile analysis. Given the extent of heaping in the earnings data, we were concerned that median regression coefficient estimates (or those at other quantiles) might exhibit "jumps" due to movements from one large heap of earnings to another. To examine this issue, we smoothed the earnings data heaped at rounded values. For all earnings whose value ended in two or more zeroes, we calculated a pseudo random value generated using a standard normal distribution. We then added to each reported earnings value an amount equal to the random value times 20 percent of the rounded value (e.g., 200 if rounded to the nearest $1000 or 2000 if rounded to the nearest $10,000). This procedure distributes heaped earnings without affecting the mean.

Despite our concerns, estimates (available on request) are insensitive to heaping of earnings at values ending with zeroes. Descriptive data showing black, Hispanic, and white earnings at various percentiles displayed minimal effects from smoothing. Coefficient estimates from median regression (and other quantiles) were highly similar to those reported here. Because estimates are so similar, we report only results using the reported earnings values.

6. Conclusion

This paper presents an anatomy of earnings differentials and trends for white, black, and Hispanic men in the U.S., with a particular focus on differentials between 2000 and 2010. Using data from the decennial census and American

Community Survey, we find that native Hispanic men largely held their own relative to whites during the 2000s throughout most of the earnings distribution.

For black men, however, the first decade of the new millennium was a difficult one along several dimensions, the most important being increasingly high rates of joblessness, particularly among less-educated blacks. The share of prime-age black men with no earned income over a year rose from 29 percent in 2000 to 42 percent in 2010. Median annual earnings for black men declined both in real dollars and relative to whites and Hispanics. The median annual earnings percentage differential between whites and blacks in 2010 was larger than at any time since at least 1950. Black men are losing ground economically, a discouraging pattern seen prior to and exacerbated by the Great Recession.[11]

The analysis also has focused on important measurement issues, in particular the sensitivity of estimates with respect to the treatment of non-earners and imputed earnings. Concern that quantile estimates might be sensitive to heaped earnings (i.e., reporting at rounded numbers) in household datasets turned out to be unfounded. Trends in Hispanic earnings were found to be sensitive to the inclusion of the foreign-born population.

While the focus of our analysis is descriptive, there is certainly considerable interest in identifying the underlying causes of the patterns observed. For example, how much of the increased white–black differentials are due to discrimination in employment and pay, to changed endowments, and to changed returns? Our analysis offers some insights. First, controlling for age and education (Figure 4a) accounts for roughly 45 percent of the widening black–white median earnings gap since 2000. Blacks are relatively younger and less educated than whites, but the racial gaps in age and schooling changed little between 2000 and 2010. The mean gap in white-to-black age in our sample increased from 2.2 years to 2.5 years, while the mean schooling gap was largely constant, decreasing slightly from 1.22 to 1.20 years. Thus, much of the divergence in median earnings over the decade was due to changes in the "returns" to individual attributes (in employment as well as hourly earnings) and not to changes in the distribution of those attributes. A more precise approach for measuring the impact from changes in attributes versus changes in returns (i.e., changes in X's versus changes in betas) would be use of decomposition methods for quantile regression recently developed by Firpo *et al.* (2009). Such a decomposition analysis is beyond the scope of this study.

More fundamentally, our analysis shows that the widening black–white annual earnings gap is largely attributable to decreased employment among black men, both from a large institutionalized population and from declining employment among the non-institutionalized population. We divide annual earnings into hourly earnings and annual hours worked and find that more than half of the

[11]A referee asked what are the sources of income among non-earners. We briefly examined this question for black men in 2000 and 2010. In 2010, 19 percent of non-earner black men were institutionalized. Among those not institutionalized, 42 percent reported zero total personal income and 89 percent had personal income less than $20,000. Mean personal income was $8367, with 46 percent of this coming from Social Security/disability income, welfare, and Supplemental Security Income. Mean household income was $34,154. In 2000, the institutionalized share was only half as large. Among those not institutionalized, the income sources and levels (in constant dollars) were similar to those in 2010.

divergence in annual earnings in the previous decade was due to divergence in annual hours worked. This sharp decline in hours worked for black men is due mainly to an increased share of those with no paid work during a year. Had we ignored such selection and examined only the sample of men with non-zero earnings, we would have found very modest white–black earnings divergence during the 2000s.

The sharp deterioration in employment outcomes for black men leads naturally to questions about appropriate policy responses. Analysis of policy goes well beyond the scope of this largely descriptive note, but three general points are warranted.

First, it is clear that a healthy and robust macro-economy is a necessary (but not sufficient) condition for increasing labor force participation, earnings, and the relative well-being of African Americans households. Even substantial improvements in economic growth will not quickly undo the damage seen since 2008.

Second, criminal activity and the U.S. correctional system play a substantial role in the economic plight of black men (Western and Pettit, 2005; Raphael, 2006; Pettit, 2012). Young black men too often enter the correctional system at a young age and never obtain long-term attachment to the labor force.

Third, substantial narrowing of racial earnings gaps will require greater accumulation of cognitive and non-cognitive human capital among black youth, which will later narrow racial gaps in market outcomes among adults. A body of evidence suggests that programs targeting young children can meaningfully narrow racial gaps in cognitive skills, while progress on non-cognitive skill gaps may be achievable among older age groups (Heckman, 2011).

We have shown that racial gaps in earnings are larger than widely recognized and that the relative well-being of black men has badly deteriorated during the Great Recession. The proximate explanation for much of the gap is the high rate of joblessness among less-educated black males. There are few easy remedies to substantially reduce racial disparities. That said, policies, programs, and behaviors that produce progress along these dimensions—a healthy labor market, crime/incarceration, and human capital accumulation—deserve careful consideration.

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