# COLLEGE IS NOT ENOUGH:

# HIGHER EDUCATION DOES NOT ELIMINATE RACIAL AND ETHNIC WEALTH GAPS

William R. Emmons and Lowell R. Ricketts
Center for Household Financial Stability
Federal Reserve Bank of St. Louis

**Abstract**

Differences in college and post-graduate degree attainment alone explain less than half of black-white and Hispanic-white wealth gaps in a standard wealth regression. Differences in family structure and measures of luck such as income windfalls and inheritances explain even less. Measures of financial decision-making, such as the share of housing in total assets and debt ratios, are much more important. Controlling for differences in all of these observable factors simultaneously and adjusting for life-cycle effects, we can explain about 70 percent of the black-white wealth gap and virtually all of the Hispanic-white and Asian-white gaps, consistent with earlier research. However, this model imposes equal wealth returns to education levels across racial and ethnic groups by assumption. Relaxing the equal-returns-to-education assumption, we find significantly different wealth outcomes across racial and ethnic groups within the same education level. This, in turn, weakens the conclusion that racial and ethnic wealth gaps are largely explainable with observable factors. More importantly, the standard approach assumes all families face the same choice and opportunity sets. We investigate an alternative theoretical framework that attributes racial or ethnic group mean differences in education, family structure, financial decisions and luck not to individual choice or effort in the face of equal opportunities but to systemic or structural factors in the past and present, instead. In this model, the share of wealth gaps that can be explained by observables falls below one fifth for blacks and Latinos and to about three quarters for Asians. In other words, a structural-determinants framework suggests the vast majority of black-white and Hispanic-white wealth gaps may lie beyond the scope of individual actions or marginal policy changes directed at educational attainment, family structure, financial decision-making or even wealth redistribution. Instead, the gaps appear to be deeply rooted in unobservable factors that may include discrimination or other long-lasting disadvantage.

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### College is Not Enough: Higher Education Does Not Eliminate Racial and Ethnic Wealth Gaps

Wealth gaps between the median African-American (black) and median non-Hispanic white (white) families and between the median Hispanic (Latino) and median white families are large, having changed little during the last quarter century.[1] Typical black and Latino wealth is about one tenth of white wealth while the typical Asian family now owns about two thirds as much as the typical white family (all measured at the medians of the respective distributions).[2] Racial and ethnic wealth gaps are much larger than the corresponding income gaps. The conclusions are similar if we adjust for family size or consider means rather than medians or look at various percentiles of the respective wealth distributions.

Proposals aimed at reducing racial and ethnic wealth gaps include better financial training, different behavioral incentives, stronger institutional support and outright cash transfers. Yet there is little empirical evidence that any of these measures produce meaningful or lasting results for wealth outcomes within a single generation, let alone across generations. The ultimate causes of large and persistent racial and ethnic wealth gaps remain largely unknown.

More ambitious—albeit more daunting—strategies focus on broad-based improvements in academic or job skills and increased higher-education attainment rates. Bridging the "skills gap" or "education gap" presumably would pay off both in the job market, where most income is earned, and in financial decision-making, where savings turn into wealth. The hopeful subtext of these strategies is, "If only we could raise the skill levels and educational attainment of blacks and Latinos to white or Asian levels, racial and ethnic income and wealth gaps would be greatly reduced if not eliminated." A corollary is, "Nothing else will be as effective."

Yet the power of education to address racial and ethnic wealth gaps is unproven. A variety of evidence suggests education-focused strategies have had limited effectiveness in addressing racial and ethnic wealth gaps—at least so far. Several types of evidence point to the limits of education.

First, Asians as a group have significantly higher high school, college and post-graduate/professional degree attainment rates than whites but summary measures of their wealth are

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[1] Emmons and Noeth (2015a).
[2] The data we use classify families that are not white, black or Latino as "other." This group is about 80 percent Asian so we use the term Asian in what follows even though it also includes Native Americans, Native Hawaiians and Pacific Islanders and other groups.

lower.[3] To be sure, younger cohorts of Asians have widened their education advantage vis-à-vis whites rapidly. The financial payoff may appear in the future—indeed, median family income among Asians already is higher than the median white income while the wealth gap is declining. Nonetheless, the Asian experience cautions that a direct link between a high level of college- and post-graduate-degree attainment and high wealth is not automatic.

Second, despite a half century of huge public investments in education—including admittedly uneven progress toward desegregation and parity in primary and secondary educational quality—, racial and ethnic high-school graduation-rate gaps have declined but remain substantial. Black-white and Latino-white college graduation-rate gaps remain large and, unfortunately, appear to be increasing (albeit slowly) among younger cohorts.[4] Thus, any plan to achieve black-white and Hispanic-white graduation-rate parity first must overcome the stagnant (high school) or slightly increasing (college) graduation gaps that exist now.

Third, wealth gaps have widened substantially among college graduates of different races and ethnicities during the last two decades.[5] In particular, the median black college-graduate family in 2013 had 56 percent less wealth than the median black college-graduate family in 1992, and the median Latino college-graduate family had 27 percent less wealth in 2013 than its 1992 counterpart (both adjusted for inflation). Meanwhile, the median white college-graduate family in 2013 had 86 percent *more* wealth than the median white college-graduate family in 1992, while the corresponding increase was 90 percent among Asians.  The result is that the median white college-graduate family in 2013 had wealth 11 times as large as the median black college-graduate family and 7 times as large as the median Latino college-graduate family, up from less than three times for both groups in 1992. Thus, even reaching college-graduation-rate parity with whites would not necessarily translate into wealth parity for blacks and Latinos.

The fourth body of evidence that higher education does not level the playing field for wealth accumulation is the subject of this paper. We present two sets of regression results that quantify the contributions of many observable factors to family wealth. While educational attainment is strongly statistically related to wealth levels for all racial and ethnic groups—that is, more education is correlated

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[3] Emmons and Noeth (2015a).
[4] Emmons and Noeth (2015b). Education Department data show that, as of 2014, four-year college-graduation gaps between black and Latino men and women vis-à-vis their white counterparts were larger among people in their early 30s than among people in their early 60s.
[5] Emmons and Noeth (2015d).

with higher wealth—its contribution to explaining the overall racial wealth gap is relatively small. That is, race and ethnicity are highly predictive of family wealth even when comparing families with the same education level—for example, post-graduate whites and post-graduate Latinos. Therefore, raising black and Latino education levels could reduce but won't necessarily eliminate the overall wealth gaps.

An important contribution of our paper is to explore two distinct theoretical frameworks for understanding racial and ethnic wealth gaps. First, we assume that education, family structure, financial decisions and various indicators of luck—like good health or receiving an inheritance—are uncorrelated with race or ethnicity. In other words, every family is free to choose its education level, its marital status, financial-support obligations to extended family, the mix of assets and liabilities it holds and its odds of being healthy or receiving an income windfall or bequest. We call this a "post-racial" model of wealth determination; we use PR as shorthand to refer to models with this framing, which is standard in the literature.[6] If differences across families in these observable characteristics were to explain completely all differences in wealth, there would be no residual explanatory power attached to the family's race or ethnicity. Conversely, if indicators of race or ethnicity continue to provide predictive power, we would conclude that unobservable factors—such as ongoing discrimination or the legacies of historical or current disadvantage—are at work or that we have not identified all important observable factors.

Our alternative framework explicitly recognizes the possibility that deep-seated or structural factors related to race or ethnicity may systematically matter for wealth outcomes; we refer to models with this framing as SR models (structural racial or ethnic factors).[7] The key assumption is that families are not all equally free to choose their education, their family structure, their financial lives or their luck. Instead, this model assumes there are profound race- or ethnicity-related forces that determine or greatly influence these outcomes. We put this assumption into action by expressing all of the observable variables we study—education, family structure, financial choices and luck—in deviation form. For example, we define educational attainment as a family head's years of education minus the average years of schooling among all families of the same race or ethnicity and at the same stage of life. This means that only the idiosyncratic amount of a variable—the "extra" years of schooling compared to one's age- and race-defined peer group—matters in the model for explaining wealth. An important implication is that an SR model attributes more importance to race or ethnicity than in a "post-racial"

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[6] See Thompson and Suarez (2015). The term post-racial is ours.
[7] See Hamilton et al (2015).

framing. In effect, the indicator variable for race or ethnicity in the SR regression "soaks up" more of the variation in wealth than in the PR model because group mean differences in observable variables are absorbed in the race or ethnicity indicator by design. While the PR model implies that an entire racial or ethnic group could make "bad choices" about education, family structure, financial decisions or luck, the SR model rules this out by construction. Instead, families in each group make choices around a group mean—some better and some worse for accumulating wealth but all importantly determined by the group mean or norm.

To summarize our key results, observable factors explain about 70 percent of the black-white wealth gap and virtually all of the Hispanic-white and Asian-white gaps when we use a standard "post-racial" framework in which families are free to choose everything that affects their wealth. The most important observable factors that explain the gaps are measures of financial decision-making, such as the share of durable goods, housing or financial and business assets in total assets as well as debt ratios. The age of the family head and the year in which we observe the family also are important. Differences in educational attainment are relatively less important while differences in family structure and luck— such as health status and receipt of an inheritance—contribute even less.

The standard model imposes equal wealth returns to education levels across racial and ethnic groups by assumption.[8] Relaxing the equal-returns-to-education assumption, we find significantly different wealth returns to education across racial and ethnic groups. This, in turn, partially reverses the previous conclusion that racial and ethnic wealth gaps are largely explainable with observable factors. The unexplained Latino-white wealth gap jumps to about 30 percent when we allow wealth returns to education to vary by race or ethnicity; it is only 6 percent when we impose the equal-returns assumption. For blacks, the unexplainable portion of the wealth gap increases from 30 percent (assuming equal returns to education) to 43 percent (allowing unequal returns). Allowing wealth returns to education to vary by race or ethnicity also improves the overall explanatory power of the model slightly and noticeably steepens our estimate of the average wealth-return-to-education gradient—that is, the pattern of rising wealth associated with higher levels of education across the entire sample, on average.

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[8] The term "wealth return to education" means simply the increment to predicted family wealth associated with the next higher education level—high-school diploma, college or post-graduate degree or additional year of education in some specifications—holding all other factors constant.

Even more questionable than the assumption of equal wealth returns to education, the standard approach assumes all families face the same opportunity and choice sets. Using the alternative SR (structural racial or ethnic factors) framework in which opportunities and realistic alternatives differ by race or ethnicity, we estimate the share of wealth gaps explainable by observable factors to be less than one fifth for blacks and Latinos and about three fourths for Asians.[9] Adjusting for age remains important while the importance of financial choices—measured as deviations from the peer-group average—is much reduced. The wealth impacts of higher-than-peer-group education, being married or receiving an inheritance (and many other factors) have virtually no independent explanatory power.

To be sure, the standard approach and our systemic/structural framework may represent lower and upper bounds, respectively, for the role of unobservable factors such as discrimination or other disadvantage in explaining racial and ethnic wealth gaps. Consequently, we suggest a reasonable range for the potential role of unobservable factors in creating wealth disparities is about 43 to 81 percent for black families, 30 to 83 percent for Latino families and 3 to 25 percent for Asian families. Said differently, the portion of racial and ethnic wealth gaps we might expect individual initiative or marginal policy changes to permanently affect range between 19 and 57 percent for blacks, 17 and 70 percent for Latinos and 75 to 97 percent for Asians.[10] The remainder awaits more fundamental change in the nature of our society and the individuals who inhabit it. These large ranges hint at the extent of our ignorance about the ultimate causes of and potential remedies for racial and ethnic wealth gaps.

The paper proceeds as follows. The first section documents large and persistent wealth and income gaps between different racial and ethnic groups. The second section focuses on trends in racial and ethnic wealth gaps among families with four-year college degrees. The third section presents results from what we call a standard "post-racial" model of family wealth determination. The fourth section describes an alternative wealth model that assumes choices are not the same for members of every racial or ethnic group due to structural (or other unobservable) factors related to race or ethnicity. The final section concludes.

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[9] These results are from a specification in which wealth returns to education are allowed to differ by race or ethnicity. Imposing equal wealth returns degrades the overall performance of the model slightly, reduces the estimated wealth return to education on average and decreases the unexplained portion of the racial and ethnic wealth gaps, albeit marginally.

[10] The specific policy initiatives covered by our research are those directed at educational attainment, family structure, financial decision-making and wealth redistribution.

## I.    Racial and Ethnic Wealth and Income Gaps[11]

Large persistent differences in wealth and income exist between major racial and ethnic groups in the United States. With few exceptions, the financial patterns evident in 2013 echo those apparent throughout the period since 1989—at least among whites, Hispanics and blacks. Asian families have changed the most during the past 25 years, moving away from Hispanic and black families' wealth levels toward those of whites.

A simple measure of a household's financial strength is its net worth, or wealth. Figure 1 shows the median inflation-adjusted net worth of each of four racial and ethnic groups at a triennial frequency between 1989 and 2013. The median wealth of white families in 1989 was just over $130,000, while the medians for Asians, Hispanics and blacks were about $64,000, $9,000 and $8,000, respectively (all expressed in terms of 2013 purchasing power). The median wealth of each group generally increased until the mid-2000s, after which the medians for all groups declined sharply. In 2013, the median wealth estimates of the four groups were $134,000, $91,000, $14,000 and $11,000, respectively.

Figure 2 shows that the median wealth of Asian families increased more than the median wealth of white families by a significant amount in recent years, rising from 49 percent of the white median in 1989 to 68 percent in 2013. Meanwhile, the median wealth of Hispanic and black families changed little on balance during the quarter-century relative to white families' median wealth. Median Hispanic wealth increased from 7 to 10 percent of median white wealth between 1989 and 2013, while median black wealth increased from 6 to 8 percent of median white wealth.

All else equal, higher income may be associated with greater wealth for both direct and indirect reasons. The direct effect is that a higher income may allow a family to save more money because some expenses rise less than proportionately with income, such as food consumed at home, utilities or commuting costs. Thus, there may be more "slack" in the budget of a family with higher income. The indirect effect is that the same underlying reasons for why someone earns a high income—such as quantitative skills or patience—also may contribute to the quality of financial decision-making, affecting financial health and wealth accumulation.

Figure 3 shows that the median family incomes among Hispanic and black families have remained about 40 percent lower than the median white family income since the early 1990s. This fact alone might lead us to expect lower wealth accumulation among Hispanic and black families. It is

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[11] See Emmons and Noeth (2015a) for an extensive discussion of race, ethnicity and wealth upon which this section is based.

possible that white families have a greater ability to save simply because they typically have higher incomes and, therefore, more discretionary income, on average.

The median family income among Asians, on the other hand, generally grew faster than the median white income since 1989. The Asian median family income has exceeded the white median income for most of the past two decades. The former will probably continue to grow faster than the latter, given the growing educational achievements of Asians (discussed further in Section II).

Comparing Figures 2 and 3, two important questions arise—first, why are median Hispanic and black wealth levels about 90 percent lower than the median white wealth level, while median incomes are only 40 percent lower? Second, why is the median Asian wealth level significantly below the wealth of the median white family, despite earning more income for most of the past 20 years?

The answer to the first question may be related to financial behaviors—the indirect links between income and wealth—and/or to factors linked to historical discrimination and disadvantage. We investigate two alternative models of wealth accumulation below. In the first, financial behaviors, such as the share of housing in a family's total assets or the ratio of its debt to its assets, play a large role in explaining differences in wealth across racial and ethnic groups. Results from the second model of wealth accumulation are more consistent with an outsized role for unobservable race- and ethnicity-related factors, which could include a history of discrimination or other disadvantage.

The second question—why median Asian wealth remains 30 percent below the median white wealth level despite more education and higher median incomes for most of the past 20 years—may cease to be an anomaly in the near future. Education, income and wealth levels are rising rapidly among younger Asian families. If current trends continue, the median wealth level among Asian families could surpass the median white family's wealth in the near future.

## II.      Racial and Ethnic Wealth Gaps Among College-Educated Families[12]

There is a clear rank ordering among races and ethnicities in the U.S. in educational-attainment rates at every level of education. Throughout much of the 20th and continuing in the 21st century, successive birth cohorts have produced a stable ranking of attainment rates; from highest to lowest, they are Asian, white, black and Hispanic. For example, Figure 4 shows that, among the young adults who were born in the years 1980-84 (who were between the ages of 30 and 34 in 2014), 64 percent of Asians had obtained at least a four-year college degree by 2014, 43 percent of whites had a four-year college degree, while only 24 percent of blacks and 16 percent of Hispanics had such a degree. Figure 5

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[12] See Emmons and Noeth (2015b) for an extensive discussion of education and wealth.

shows that 30 percent of Asians born in 1980-84 had a post-graduate degree, while 16 percent of whites, 8 percent of blacks and 5 percent of Latinos had such a degree.

The figures also make clear that the black-white and Latino-white college-graduation and post-graduate degree gaps are generally increasing among successive younger cohorts. Education Department data show that, as of 2014, the four-year college-graduation gap between black men and white men had widened to -20.4 percent for the cohort born 1984-88 (ages 30-34 in 2014), versus -16.5 percent for the cohort born 1954-58 (ages 60-64 in 2014); to -20.7 vs. -10.5 percent for black women; to -24.0 vs. -17.0 percent for Hispanic men; and to -25.2 vs. -17.6 percent for Hispanic women. In stark contrast, Asian college and post-graduate degree attainment is rising more rapidly than that of whites, blacks or Latinos.

A particularly disturbing trend is the widening wealth gaps between black and Hispanic college-educated families on the one hand and college-educated white and Asian families on the other.[13] Job-market difficulties specific to Hispanic and black college graduates probably played a role. Financial choices appear even more important in explaining large wealth declines among Hispanic and black college-educated families during the Great Recession and its aftermath.

*Higher education typically boosts income and wealth.* The first row of Table 1 shows differences in 2013 median income between families with four-year college degrees and families without. The median income among all families headed by someone with a degree was 2.4 times the median income among families headed by someone without such a degree. The ratio was somewhat larger among whites and Asians than among blacks and Hispanics, but all were within the range of two to three times.

Table 2 shows that higher education is even more strongly associated with wealth accumulation. The typical college-educated family had between three and 10 times more wealth than its racial or ethnic counterpart without a degree. The white and Asian wealth ratios shown in the table are noticeably larger than those of blacks and Hispanics. One reason why the income and wealth ratios are highest among white and Asian college graduates is that they are more likely than black or Hispanic college graduates to have graduate or professional degrees (recall Figure 5). Advanced degrees typically provide significantly higher earnings and are strongly associated with greater wealth accumulation.

*Higher education protects wealth, but only among white and Asian families.* Another financial benefit of having more education may be its "protective" effect on wealth. Better-educated families often withstand major economic and financial shocks better than those with less education. For

[13] See Emmons and Noeth (2015d).

example, the median wealth of all families headed by a four-year college graduate declined by 24 percent between 2007 and 2013. The decline among families without a college degree, however, was 48 percent. (Both figures are adjusted for inflation.)

The reasons why having a college degree might appear to protect wealth during turbulent times are complex. They probably include both stronger attachment to and performance in the job market during recessions as well as purely financial factors, including balance-sheet choices and financial behaviors. Education is a strong predictor of the quality of financial decision-making.

Figure 6 compares the changes in median wealth between 2007 and 2013 among families headed by four-year college graduates versus those with less education. White and Asian college-headed families generally fared much better than their less-educated counterparts. The typical Hispanic and black college-headed family, on the other hand, lost much more wealth than its less-educated counterpart. Median wealth declined by about 72 percent among Hispanic college-grad families versus a decline of only 41 percent among Hispanic families without a college degree. Among blacks, the declines were 60 percent versus 37 percent.

Figure 7 suggests that relative changes in family income may have contributed to the better wealth experience of college-educated Asian families and the worse experience of college-educated black families. However, changes in median incomes among whites and Hispanics run counter to their respective wealth changes. Therefore, the link between changes in income and changes in wealth is imperfect at best, at least during the most recent economic cycle.

Financial choices probably played a bigger role than income fluctuations in determining wealth outcomes in recent years. Figure 8 shows that the median debt-to-income (DTI) ratios among college-educated Hispanic and black families in 2007—on the eve of the Great Recession—were far higher than those among any other group.

In particular, the typical DTI ratio of a college-educated Hispanic family was 100 percentage points higher than the typical DTI ratio of a non-college-educated Hispanic family, while the gap was 140 percentage points among blacks. Compounding this potentially severe squeeze on cash flow were balance sheets heavily concentrated in residential real estate, which subsequently plunged in value. Declines in the average value of owner-occupied homes among college-educated Hispanic and black families between 2007 and 2013 were 45 percent and 51 percent, respectively. The average value of owner-occupied homes declined 25 percent among college-educated white families and increased 6 percent among college-educated Asian families.

***Income trends are important in the longer term.*** College graduates typically accumulate much more wealth over long periods than do those without a college degree. The median wealth among all college graduates increased by 52 percent between 1992 and 2013, while the median wealth among all non-college grads declined by 26 percent. As Figure 9 shows, higher education was strongly associated with greater wealth accumulation among whites and Asians, while a college degree was associated with a much worse wealth trend by a typical Hispanic or black family.

Figure 10 suggests that adverse long-term income trends among Hispanic and black college grads may be an important factor. The median income of college-grad white families grew by 13 percentage points more than their non-college counterparts. The median income of college-grad Asian families grew 31 percent, while the median income of their non-college counterparts fell 9 percent over the same period. Conversely, median Hispanic and black college-grad incomes fell 10 percent and 12 percent, respectively, while the median incomes of their non-college counterparts rose 16 percent and 17 percent, respectively.

In sum, college degrees alone do not provide short-term wealth protection, nor do they guarantee long-term wealth accumulation for all racial and ethnic groups. Given sharply divergent trends in median wealth among college-educated families across racial and ethnic lines, the median white college-graduate family in 2013 owned wealth 11 times as large as the median black college-graduate family and 7 times as large as the median Latino college-graduate family, up from less than three times for both groups in 1992.

### III.    A "Post-Racial" Model of Wealth

The paper closest to the first model in our two-part approach is Thompson and Suarez (2015). This section follows their assumption that the choice set facing every family in the Federal Reserve Board's Survey of Consumer Finances (SCF) is the same regardless of race or ethnicity. That is, observable economic and financial decisions and outcomes are valid independent variables that may explain different wealth outcomes. The key modeling assumption is that, while educational outcomes, family structure, financial decisions, and the outcomes of what we will call luck—including good health, temporary income windfalls and shortfalls and the receipt of a bequest—may turn out to be correlated with the race or ethnicity of respondent families, this need not have been the case. All families exercise free choice—or in the case of luck, have equal *a priori* odds of being lucky—and differing wealth

outcomes therefore largely reflect different choices, effort levels or random chance. We term this a "post-racial" model of wealth (PR for short).[14]

Our alternative model (see next section) dispenses with the assumption of identical choice sets and odds of being lucky among all families; we call these models SR to denote the relevance of structural racial or ethnic factors. This approach is inspired by Hamilton et al (2015), who observe that "life outcomes can diverge radically, in particular for those subject to systemic historically rooted discrimination, which is not related to the amount of personal effort exerted" (p. 3).

We suggest the results from the PR and SR models we estimate can be interpreted as lower and upper bounds, respectively, on the role of race or ethnicity *per se* in determining wealth outcomes. To anticipate our results, in the PR model, race or ethnicity count for almost nothing; while in the SR model they are virtually everything for black and Latino families and a non-trivial factor for Asian families.

*Previous literature.*   The models of this (PR) and the next section (SR) follow a strategy to identify racial disparities pursued by Neal and Johnson (1996), Fryer (2011) and Thompson and Suarez (2015), among others. All of these authors considered a sequence of ordinary least-squares regressions in which dummy variables for race or ethnicity are included as explanatory variables along with independent variables plausibly linked to the outcome of interest in varying combinations. Neal and Johnson studied wage determination; Fryer updated the Neal and Johnson wage results and extended the model to explore differences in unemployment, incarceration, physical health and educational outcomes; while Thompson and Suarez adapted the approach to examine family wealth.

Results on the role of racial discrimination or other race/ethnicity-related factors from these studies were mixed. In some cases, controlling for observable factors greatly reduced or eliminated the apparent importance of race or ethnicity in predicting various outcomes; in others, an important role for race or ethnicity remained. Neal and Johnson used measures of individuals' cognitive skills and levels of education to explain racial or ethnic differences in wages; they concluded that measures of individual skills largely explained racial and ethnic differences in wages received:

> While our results do provide some evidence of current labor market discrimination, our
> primary finding is that large skill gaps between blacks and white are an important
> determinant of the black-white wage differences (p. 892).

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[14] An inevitable implication of the assumption of free choice is that, if a racial or ethnic group commonly displays a behavior that is negatively associated with wealth, such as a high debt-to-assets ratio, it must be the result of many families making "bad choices."

Among other outcomes, Fryer investigated racial and ethnic differences in children's scholastic achievement scores at various ages by supplementing race or ethnicity dummy variables with controls for testing conditions; precise differences in age at time of testing; gender; region of the country; parents' socioeconomic status; variables to proxy a child's home environment such as family structure, mother's age and number of siblings; parents' teaching ability; prenatal conditions such as birth weight, premature birth, and multiple births; as well as a host of variables to control for differences in school and teacher quality.[15] Using several different datasets, Fryer concluded that, from age two onward, observable factors could not explain all of the racial and ethnic test-score gaps.

Thompson and Suarez employed more than 50 independent variables from the SCF in addition to race and ethnicity dummy variables to model family wealth. They concluded that:

> [N]early all of the Hispanic/white wealth gap... can be accounted for by differences in observable traits, with basic demographic characteristics and educational attainment making up most of the gap. Also, most of the white/black wealth gap can be accounted for by differences in observable characteristics, particularly basic demographic traits and homeownership. Using the full set of observable characteristics discussed in this paper, including home ownership and usual income, we can account for 80 percent of the observed wealth differences between white and black families (p. 33).

*Methodology.* The dependent variable in all of our regressions is the size- and inflation-adjusted net worth of a family after application of the inverse hyperbolic-sine function (IHS).[16] The IHS transformation is similar to the natural logarithm but has the advantage of preserving observations with non-positive values of wealth. About eight percent of SCF families had zero or negative net wealth so the IHS transformation provides insight into the financial situations of the very poorest families that would be lost using the natural log. To interpret the dummy variables for race or ethnicity that are the primary focus of our study, we apply the Halvorsen-Palmquist transformation; this renders the co-efficient estimates as percentages.[17] To adjust for family size, we divide net worth by the square root of the number of immediate-family members; the result is adjusted for inflation using the CPI-U-RS price index. SCF sample years

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[15] Fryer (2011), p. 868.
[16] See Pence (2006).
[17] See Halvorsen and Palmquist (1980).

are 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010 and 2013. We use more than 40,000

observations of family units observed in one (and only one) of the nine survey waves.

*Results from a PR model of wealth.* Although our empirical specification differs

somewhat from that in Thompson and Suarez, overall results from this section's PR model are

similar to those reported in their Table 8 (pp. 48-52). As in Thompson and Suarez, one version of

our model explains virtually all the Hispanic-white wealth gap using observable variables and

accounts for about 70 percent of the black-white gap. Thompson and Suarez do not study the

Asian-white gap but we do; our model explains that gap completely. Our PR model thus leads to

the conclusion reached by Thompson and Suarez—namely, racial and ethnic wealth gaps are

due almost entirely to differences in basic demographics (for example, differing age

compositions of the groups) and quantifiable differences in behavioral choices including

education, family structure and financial decisions as well as some luck. A feature not explored

by Thompson and Suarez is the assumption about the wealth returns to education across racial

and ethnic groups. This turns out to be important, as discussed below.

Table 4, Column 1 shows the vast "raw" racial and ethnic wealth gaps evident in the SCF.

Compared to whites, a black family is predicted to have 92.6 percent lower wealth. A Latino

family is predicted to have 91.5 percent lower wealth and an Asian family is expected to have

51.1 percent lower wealth.[18] All of these estimates are highly statistically significant, with t-

statistics ranging from 11.0 for Asian families to 62.3 for black families.

These estimates do not take into account any information about the families except

their race or ethnicity (and family size, which is reflected in the transformed dependent variable

in all of our regressions). Our empirical strategy is to monitor the race and ethnicity co-efficients

and the regression's overall R-squared statistic (a measure of variation explained by the

regression) as we add blocks of variables; see Table 3 for the variables used in our study. The

simple model in column (1) explains about 12.4 percent of the observed variation in wealth, as

indicated by the R-squared statistic.

*Basic controls.* Column 2 adds three potentially important pieces of information to

account for variation beyond the control of individual families—a cubic function of age of the

family head to capture wealth-relevant life-cycle effects; year dummies reflecting SCF survey

dates and therefore the ups and downs of average wealth over time; and a set of dummy

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[18] These figures differ from Figures 1 and 2 because they reflect all families in all SCF years considered together. Figures 1 and 2 show medians from each group's distribution in each survey year separately.

variables to allow for birth-year cohort effects.[19] Controlling for age, survey year and birth year, the remaining wealth gaps associated with race or ethnicity decline to -87.7, -80.7 and -30.1 percent for black, Latino and Asian families, respectively. The amount of wealth variation explained increases to 32.1 percent. If age, survey year and birth year explained the raw racial and ethnic wealth gaps entirely, co-efficient estimates on the race and ethnicity dummy variables would be close to zero and the R-squared statistic might be much larger. Because this is not the case, we proceed with additional factors that may help explain the wealth gaps.

*Education.* Columns 3 through 6 add four blocks of variables in turn which include variables we associate with educational attainment, family structure, financial behavior and luck, respectively. Adding the highest level of education of the family head to the specification in 2, column 3 shows that the remaining unexplained wealth gaps decline to -77.5 and -54.5 for black and Latino families while the gap increases to -40.3 percent for Asian families. The relatively large reduction in the Hispanic co-efficient (from -80.7 to -54.5) suggests that the lower average level of education among Latinos is an important factor explaining their typically lower wealth; among black families, the reduction is much smaller (from -87.7 to -77.5), reflecting the somewhat smaller education gap between blacks and whites than between Latinos and whites.

For Asians, the education effect works in reverse. Asians typically are better educated than whites, so to hold education levels constant in a comparison with whites, the regression effectively penalizes Asians. In other words, if Asians had the same (lower) level of education as whites, the unexplained wealth gap would be 40.3 percent, not 30.1 percent.

Not surprisingly, the model estimates very strong positive connections between each successive level of educational attainment and wealth. Overall, the model explains 45.0 percent of the wealth variation we observe. Note, however, that the inclusion of education of the family head reduces the unexplained racial and ethnic wealth gaps shown in column 2 by only 12 and 32 percent for black and Latino families after controlling for age, survey year and birth year. Among Asians, the inclusion of education actually increases the unexplained wealth gap by 34 percent. In each case, the amount of the racial wealth gap explained by differing levels of education is far less than half and even goes in the "wrong" direction for Asians.

*Family structure.* Column 4 adds four variables to the model described in column 2 that we interpret as elements of family structure—whether the family head is married or living

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[19] Emmons and Noeth (2015c) document important wealth effects of birth year.

2016<br>Preliminary. Do not quote.

together with another adult or not; how many children are in the household; whether the family provides financial support to extended family; and if so, what fraction of the giving family's income that support represents.

As expected, the model predicts wealth to be much higher for married (or co-habiting) couples than for single adults (even after adjusting for family size). Families that provide assistance to extended-family members also are wealthier, suggesting that this variable helps identify financially stronger families whose gifts do not materially reduce their wealth. Although some families may provide so much support to extended family that it compromises their own financial situation, this effect is not evident in the overall sample. Perhaps surprisingly, neither the number of children in the household or the amount of financial support provided as a share of family income is a significant predictor of wealth.

The contribution of family-structure variables to explaining racial and ethnic wealth gaps is very small. Estimates of unexplained gaps fall only by seven and one percent for black and Latino families (from -87.7 to -81.7 and from -80.7 to -80.1 percent, respectively) compared to the model in column 2; for Asians, the unexplained gap rises eight percent (from -30.1 to -32.4 percent). Just as Asians had more education than whites, Asians have "stronger" family structures than whites as estimated by the model.

*Financial behaviors.* Column 5 examines the wealth effects of financial choices as measured by assets and liabilities on families' balance sheets and an index of their "financial health."[20] In sharp contrast to the relatively small influence of educational attainment, family structure and luck (described below) on racial wealth gaps, differences in financial behaviors are very important. Including an extensive set of variables characterizing the family's assets and liabilities as well as a summary measure of the family's day-to-day financial management (see Table 5) drops the unexplained portion of racial and ethnic gaps by 62, 84 and 137 percent for black, Latino and Asian families, respectively. In other words, a majority of black and Latino wealth gaps appear to be driven by differences in balance sheets compared to whites; for Asians, balance sheets are even stronger than those of white families. The model's R-squared jumps to 0.796 with financial variables included, suggesting that about 80 percent of the wealth variation in the SCF can be explained with this relatively simple model.

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[20] See Emmons and Noeth (2014) for a description of our Financial Health Score, which was modified slightly for inclusion here.

Examination of the balance-sheet variables in Table 5 suggests that wealth is strongly predicted by diversified asset holdings and low—but not no—debt. With the possible exception of financial and business assets, owning each asset category is a positive for wealth while "loading up" on any one category is a negative predictor. Owing any mortgage debt is a positive predictor while owing non-mortgage debt is a negative. Larger amounts of either kind of debt owed are negative predictors.

The surprising negative co-efficient on the financial and business assets (FBA) dummy variable deserves comment. We ran additional regressions with the basic control variables and the FBA variables alone or in combination with other balance-sheet categories. Ownership of financial and business assets strongly predicts wealth when considered alone and wealth is positively related to the share of total assets invested in this form, too. When entered into a regression with durable-goods ownership or homeownership, the sign of the FBA ownership variable flips while the FBA share variable retains its positive sign. Because ownership of these asset classes is high—especially of durable goods and financial and business assets—and overlaps to a great extent, we conclude that the negative sign on FBA ownership is an anomaly created by the peculiarities of highly correlated regressors.

The contribution of our Financial Health Score (FHS) to any of the measures considered here is marginal but the score itself is highly significant in the regression. As with different asset categories, the FHS is highly correlated with many of the balance-sheet variables.

*Luck.* Finally, we examine the effect of luck, which we attempt to capture with three variables—temporary income windfalls or shortfalls; the receipt of a bequest at any time in the past; and self-assessed health. Our reasoning is that an unusual surge or decline in a family's income in a given year could be reflected contemporaneously in their wealth but would not necessarily indicate a durable relationship that would continue; so we wish to exclude its effect from our model of wealth determination. Likewise, receiving an inheritance could affect wealth but is not a systematic, on-going contributor to a family's wealth. Finally, we expect poor health to exert a drag on wealth through decreased income from work and increased costs incurred for treatment. Although health certainly is not completely out of our control, we wish to recognize the role of luck in making some people healthier than others.

Column 6 shows that luck as we have measured it makes some difference to racial and ethnic wealth gaps and to the overall explanatory power of our model but is, by no means, the entire story. It turns out that temporary income windfalls and shortfalls as well as health status are very strongly

related to wealth; inheritances are not.[21] Controlling for luck reduces the unexplained wealth gaps by 8 percent for black families, by 13 percent for Hispanic families and by 60 percent for Asian families. The R-squared statistic is 0.444, comparable to the explanatory power of the model that included education but significantly less than the power of the regression including financial variables.

*Full model assuming equal wealth returns to education.* Of the five sets of explanatory variables introduced to explain racial and ethnic wealth gaps, the most important is the financial measures that characterize balance sheets and day-to-day financial management. Just as the variables within each category may be correlated with each other, variables in one category may correlate with those in another—for example, health is correlated with education and homeownership is correlated with marital status. Thus, interpreting individual variables (or groups of variables) in a causal sense is problematic. None of the variables we consider is perfectly correlated with each other, however, so it makes sense to use all of them as we pursue our ultimate objective, an understanding of racial and ethnic wealth gaps.

Column 7 shows the results of the full PR model that includes all of the variables discussed so far; as discussed below, this model assumes that the wealth returns to education are the same across all racial and ethnic groups. First, note that the full model's overall explanatory power is only slightly larger (R-squared of 0.818) than the simpler model in column 5 (0.796). In other words, once we include the financial variables, the incremental explanatory power contributed by education, family structure and luck is very small. Likewise, the amount of racial and ethnic gaps explained by the full model that was not already explained in the model of column 5 is relatively small—the black-white gap falls from -33.5 to -29.5 percent; for Latinos, from -13.3 to -5.9 percent; and for Asians, the effects are reversed—an Asian family's wealth was predicted to be 11.1 percent greater than that of a white family when only financial variables were held constant, falling to an advantage of 1.9 percent when all of the variables are considered. This result corresponds closely to Thompson and Suarez (2015): Hispanic-white and Asian-white (which they did not consider) wealth gaps are essentially fully explained by observable variables and about 70 percent of the black-white wealth gap is explained in a model that fits the data quite well.

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[21] The dummy variable indicating receipt of an inheritance of any size was insignificantly different from zero. We also investigated the inflation-adjusted size of a bequest received at any time in the past relative to the receiving family's current income. This variable displayed a very large range of values and entered the model with a negative sign, suggesting that the size of an inheritance was negatively related to current wealth. Because we found it implausible that a larger inheritance would make a family poorer and because the range of reported values was so large we dropped this variable.

***Full model allowing different wealth returns to education by race or ethnicity.*** An important

assumption of the models studied so far is that the link between education and wealth is the same for

all families in all racial and ethnic wealth groups. That is, moving from being a high-school graduate to a

college graduate should result in the same increment to wealth, holding all other factors constant. Is

that assumption valid?

Results reported in column 8 suggest the answer is no. Adding a set of interaction dummy

variables that allow the wealth returns to different levels of education to differ by race or ethnicity

improves the overall fit of the model slightly. It also reverses some of the apparent explanatory power

the earlier models provided for racial and ethnic wealth gaps. In particular, the unexplained portion of

the black-white wealth gap rises from -29.5 to -43.3 percent; the Latino-white gap rises from -5.9 to -

29.5 percent; and the Asian white advantage rises from 1.9 to 2.6 percent. The interaction variables

themselves (not shown) indicate that the equal-wealth-returns-to-education assumption overstates the

wealth impacts of successively higher levels of education for black and Latino families by significant

amounts. At the same time, forcing the model to equate wealth returns to education across racial and

ethnic groups caused the overall estimated returns to education to be smaller than when the

assumption is relaxed—that is, the wealth gradient in education is flatter with the equal-returns

assumption imposed.

Figure 11 summarizes the relationship between education, race and wealth estimated by the

model in column 8. For every $100 of wealth owned by a college-educated white family (the benchmark

family used throughout all of our specifications), we expect an Asian college-educated family to have

$103, a Latino college-educated family to have $70 and a black college-graduate family to have only $57.

These differences cannot be due to differences in educational attainment because we are comparing

families at the same level of education; nor to differences in age, family structure, financial decision-

making or luck because the model controls for all of those factors. The ultimate source of the predicted

wealth differences must be related to some unobservable aspect of race or ethnicity or to observable

factors that we have not included in the model.

Compared to the steep upward progression of expected wealth at successively higher levels of

education for white and Asian families, Figure 11 shows wealth trajectories that are much flatter for

Latino and black families. Moving from the lowest education level to the highest, the predicted wealth

of white families increases from $52 to $135; for Asians, from $58 to $132; but for Latinos, only from

$60 to $88 and, for blacks, from $46 to $56. Indeed, the predicted gains associated with college and a

post-graduate degree are quite modest for Latinos and blacks. These estimates suggest the wealth

returns of higher education are substantially higher for whites and Asians than they are for Latinos and blacks.

Another potentially poor assumption in the standard framework is that all individuals and families have equal access to opportunities for education, successful family life, strong balance sheets and the potential to be lucky. An alternative assumption is that the choice sets of different groups differ. The next section explores a series of wealth models that make this alternative assumption.

### IV.        A Wealth Model Incorporating Structural Factors Related to Race or Ethnicity

We recognize potentially important differences in access to opportunity and the range of viable choices facing members of different racial and ethnic groups by transforming most of the independent variables into deviation form. That is, the adjusted value of a variable is its observed value minus the peer-group mean, where the peer group is defined as families of the same race or ethnicity in the same life-cycle stage—young, middle-aged or old—observed in the same survey year. See Part B of Table 3 for variable definitions.

The result of using variables in deviation form is that only idiosyncratic variation in education, family structure, financial decisions or luck contribute to the model's explanation of racial and ethnic wealth gaps. Systematic differences across groups therefore are absorbed into the race or ethnicity indicator variables by construction. Because there are, in fact, sizable differences in group means for a number of the independent variables we use, the importance assigned to unexplained forces linked to race and ethnicity in the SR framework necessarily will be greater than in the PR framing.[22] The question is, how much greater?

*Education.* The SR framework begins with the basic model described in Column 2 of Table 4 and proceeds by adding, in turn, each set of explanatory variables expressed in deviation form one at a time. Our approach remains the same—monitor changes in the co-efficients on race and ethnicity and compare R-squared statistics as the variable list changes. For ease of reference, the first two columns of Table 4 are repeated in Table 6.

Column 3 of Table 6 shows the effect on the unexplained racial and ethnic wealth gaps of adding education in deviation form to the model of column 2.  Note first that we define education here as the number of years of completed schooling rather than distinct diploma- or

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[22] For example, Pfeffer and Killewald (2015) document sizable differences in the multi-generational transmission of wealth between black and white families.

degree-attainment levels. We allow non-linear effects of idiosyncratic educational attainment on wealth by adding squared and cubed terms in education. We chose this approach rather than reducing educational attainment essentially to a four-point scale (as above) so education could enter more flexibly. Otherwise, discrete steps on the scale—such as from no high-school diploma to college and from high school to post-graduate degree—would be considered equal (two steps). This seems implausible.

The effect of controlling for deviations in educational attainment from peer-group means on racial and ethnic wealth gaps are very small—ranging from essentially zero for Latinos to about three percent for blacks. Comparing co-efficients from column 3 of Table 6 to those in Table 4, column 3, it is clear that education's ability to "explain" racial and ethnic wealth gaps in the PR model was based almost entirely on differences in group means. In other words, systematic differences in racial and ethnic educational attainment explained systematic differences in wealth; idiosyncratic differences—what an individual achieves relative to peer group—are of little consequence. But this is seems circular—unexplained racial differences in education are used to explain racial differences in wealth. What explains the racial differences in education? The PR model assigns responsibility for lower educational attainment to individuals; the SR model suggests there are deeper structural or systemic causes.

The R-squared statistic for the model described in column 3 of Table 6 is 0.450—identical to its counterpart in Table 4. This is not surprising because the distribution of educational outcomes is the same in both models (apart from the shift from attainment levels to years of schooling); simply the means of racial and ethnic distributions have been shifted. In effect, the PR model assigns the wealth effects of both the peer-group mean level of education and the idiosyncratic level of education to the education variables; the SR model assigns the peer-group mean effects to the racial or ethnic indicator variable and attributes only the idiosyncratic level to the education variable.

A direct comparison of the education co-efficients themselves in the PR and SR specifications is impossible because we changed the way we measure educational attainment. In both specifications, however, education is strongly related to wealth. All three terms in the cubic function of education we employ in the SR model are highly statistically significant, vindicating our choice of a flexible functional form.

***Family structure.*** Column 4 of Table 6 adds four variables in deviation form to the model described in column 2. These family-structure variables now are the difference between the

indicator variable for being married (one if yes, zero otherwise) minus the peer-group mean of this variable; the difference between the number of children in the household minus the peer-group mean number of children; the difference between an indicator variable for providing support to extended family minus the peer-group mean of this variable; and, finally, if so, the difference of the support's share of the family's income from the peer-group mean of this variable.

The two strongly predictive variables from this set in the PR model—marital status and providing support to extended family—remain very strongly related to wealth in the SR model when expressed in deviation form. The number of children in the household in excess of the peer-group mean becomes a negative predictor in the SR model, while the number of children alone in the PR model was not statistically significant (albeit with the same negative sign). The share of income represented by family support is insignificant in both specifications.

The contribution of family-structure variables to explaining racial and ethnic wealth gaps is very small. Estimates of the unexplained gaps fall by two percent or less for black and Latino families compared to the model in column 2. For Asians, the unexplained gap falls by less than 10 percent. These effects are of the same order of magnitude as those found for family-structure variables in the PR model.

*Financial behaviors.* Column 5 of Table 6 examines the wealth effects of financial choices in deviation form. As in the PR model with untransformed financial variables, the SR model suggests financial variables are the most important in explaining wealth gaps that otherwise would be attributed to the racial and ethnic indicator variables. Nevertheless, removal of peer-group mean differences from the financial variables greatly reduces their effect on the unexplained portion of racial and ethnic wealth gaps. In the PR model, inclusion of the financial variables reduced the co-efficients by 62, 84 and 137 percent, respectively, for blacks, Latinos and Asian. Using de-meaned versions of these variables in the SR model, the reductions are 11, 9 and 9 percent, respectively. As noted above, the R-squared of the models described in column 5 of both Table 4 and Table 6 both are close to 0.800 because the total variation explained by the models is essentially the same.

Although the co-efficient estimates for the financial variables differ across the two specifications, the overall patterns of signs and statistical significance are very similar. As before, wealth is strongly predicted by diversified asset holdings and low debt.

*Luck.* In the final set of potential explanatory variables for racial and ethnic wealth gaps we consider luck. In deviation form, these variables are the temporary income windfall or shortfall of a family minus the peer-group mean; the difference between an indicator variable for the receipt of a bequest at any time in the past (one if received a bequest) and the peer-group mean; and the difference between self-assessed health and the peer-group mean.

Column 6 shows that "idiosyncratic luck"—your good or bad fortune relative to the average of your peer group—affects racial and ethnic wealth gaps very little. The reductions in race or ethnicity co-efficients are 3, 4 and 18 percent for black, Latino and Asian families, respectively. In this specification, all three variables are highly significant in predicting wealth. The size of an inheritance relative to the average size of your peer groups' inheritances is important in the SR framing while it was not in the PR model. The R-squared statistic of 0.441 is almost identical to that in the corresponding model in the PR

*Full model assuming equal wealth returns to education.* As expected, the reduction in the race or ethnicity indicator co-efficients in the full SR model is much smaller than in the PR model. Column 7 of Table 6 shows that the indicator falls only from -87.7 to -77.0 percent for blacks, from -80.7 to -72.8 percent for Latinos and from -30.1 to -25.6 percent for Asians. This represents declines of 12, 10 and 15 percent, respectively. In the PR model, the analogous declines were 66, 93 and 106 percent. The model's overall explanatory power is 0.802, a slight decline from the PR model's 0.818. This model imposes equal wealth returns to education by construction. As discussed above, this may overstate the influence of education and understate the unexplained portion of racial and ethnic wealth gaps.

*Full model allowing different wealth returns to education by race or ethnicity.* Column 8 adds a set of interaction dummy variables that allow the wealth returns to different levels of education to differ by race or ethnicity. These variables are identical in the PR and SR models.

The interaction variables improve the overall fit of the full SR model slightly. They also reverse some of the apparent explanatory power the earlier models provided for racial and ethnic wealth gaps, as in the PR model. The unexplained portion of the black-white wealth gap rises from -77.0 to -81.2 percent; the Latino-white gap rises from -72.8 to -82.5 percent; and the Asian white gap falls slightly from -25.6 to -25.1 percent. As before, the interaction variables themselves (not shown) indicate that the equal-wealth-returns-to-education assumption overstates the wealth impacts of successively higher levels of education for black and Latino families by significant amounts. At the same time, forcing the model to equate wealth returns to education across racial and ethnic groups caused the overall estimated returns to education to be smaller than when the assumption is relaxed—that is, the wealth gradient in education is flatter with the equal-returns assumption imposed.

V.      **Conclusions**

Black-white and Hispanic-white wealth gaps are large and persistent. This is due, in part, to large educational-attainment gaps in a world where job-market returns to higher education appear to be increasing. More education is related to better financial decision-making, too. This may compound the wealth-accumulation advantages enjoyed by better-educated people who earn higher incomes.

Yet large racial and ethnic wealth gaps exist even among college graduates and among families headed by someone with a graduate or professional degree. In fact, racial and ethnic wealth gaps have become much larger among college graduates of different races and ethnicities in recent decades. Are there other factors that may drive these patterns?

We used comprehensive demographic and financial information from more than 40,000 families surveyed by the Federal Reserve Board during the last quarter century to study the determinants of wealth. A standard model that assumes all families are free to choose their education level, their family structure, their balance sheet and their odds of being lucky can explain virtually all of the observed wealth gaps between Latinos and Asians and whites. About 70 percent of the black-white wealth gap is explained by observable factors. In other words, if Latinos, Asians and blacks had the same education, family structure, balance sheets and odds of being lucky, racial and ethnic wealth gaps would disappear (or diminish greatly in the case of blacks).

Two alternative assumptions qualify this conclusion, however. First, if we allow racial and ethnic groups to receive different returns to successively higher levels of education, unexplained wealth gaps— that is, the importance of race or ethnicity—rise noticeably. Failing to allow for heterogeneity in wealth returns to education masks relatively higher returns to less-educated black and Latino families relative to white and Asian peers and relatively lower returns to more-educated black and Latino families. The wealth returns to higher education appear to be much higher for white and Asian families than for Latino and black families.

Even more important, the assumption that all families have equal access to opportunity and equal freedom to shape their lives in all important respects (i.e., the standard model) leads to the conclusion that black and Latino families make "bad choices" in large numbers—at least as it relates to wealth accumulation. If, instead, we assume that individual choice is exercised relative to the peer-group means or norms we observe, the conclusions reached in a "post-racial" model are dramatically

reversed. For black and Latino families, we conclude that more than 80 percent of the wealth gaps we observe are related to differences in group means—that is, they may be structural rather than behavioral—, with less than 20 percent of wealth variation plausibly determined by individual choices. For Asians, the structural component of the raw wealth gap is about one quarter.

We conclude that our alternative estimates of the unexplained portions of racial and ethnic wealth gaps represent reasonable lower and upper bounds on the role of unobservable facts such as discrimination or other long-lasting or structural disadvantages. These ranges are large—about 43 to 81 percent for black families, 30 to 83 percent for Latino families and 3 to 25 percent for Asian families. In other words, the portion of racial and ethnic wealth gaps we might expect individual initiative or marginal policy changes to permanently affect range between 19 and 57 percent for blacks, 17 and 70 percent for Latinos and 75 to 97 percent for Asians. The remainder awaits more fundamental change in the nature of our society and the individuals who inhabit it. These large ranges hint at the extent of our ignorance about the ultimate causes of and potential remedies for racial and ethnic wealth gaps.

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**Tables 1 and 2**

TABLE 1

## Median Family Income in 2013

|  | Four-Year College Graduates | Non-College Graduates | Median College Income as a Multiple of Median Non-College Income |
|---|---|---|---|
| All Families | $87,250 | $36,523 | 2.4 |
| White | $94,351 | $41,474 | 2.3 |
| Asian | $92,931 | $32,668 | 2.8 |
| Hispanic | $68,379 | $30,436 | 2.2 |
| Black | $52,147 | $26,581 | 2.0 |

TABLE 2

## Median Family Net Worth in 2013

|  | Four-Year College Graduates | Non-College Graduates | Median College Net Worth as a Multiple of Median Non-College Net Worth |
|---|---|---|---|
| All Families | $273,586 | $43,625 | 6.3 |
| White | $359,928 | $80,692 | 4.5 |
| Asian | $250,637 | $25,632 | 9.8 |
| Hispanic | $49,606 | $12,160 | 4.1 |
| Black | $32,780 | $9,006 | 3.6 |

SOURCE FOR BOTH TABLES: Survey of Consumer Finances

**Table 3 Variable definitions**

| A. Post-Racial (PR) Models | | |
|---|---|---|
| **Categories and variables** | **Type of variable** | **Notes** |
| **Family wealth** | | |
| Net worth, calculated as total assets minus total liabilities, divided by the square root of the number of family members | Transformed using the Inverse Hyperbolic Sine function | Scaling parameter, theta, set to 0.0001 |
| | | |
| **Race or ethnicity of the family head** | | |
| Non-Hispanic African-American or black | 0 or 1 | Exactly one race or ethnicity for each family |
| Hispanic of any race | 0 or 1 | Self-reported in survey |
| Non-Hispanic white | Omitted from the regressions | If more than one indicated, use the first one mentioned |
| Other | 0 or 1 | |
| | | |
| **Life cycle** | | |
| Age of family head at time of survey | Years | |
| Age squared | Squared years | |
| Age cubed | Cubed years | |
| | | |
| **Survey year** | | |
| 1992, 1995,…, 2013 | 1 if survey responses in this year; 0 otherwise | |
| 1989 | Omitted from the regressions | |
| | | |
| **Birth cohort** | | |
| Consecutive five-year cohorts, beginning 1898-1902 (denoted "1900"), ending 1988-92 (denoted "1990") | 1 if family head was born in one of these cohort years; 0 otherwise | |
| 1938-42 | Omitted from the regressions | |
| | | |
| **Highest level of education of the family head** | | |
| Less than high school | 0 or 1 | Exactly one education level for each family |
| High-school diploma or G.E.D. | 0 or 1 | |
| 2- or 4-year college degree | Omitted from the | |

| | regressions | |
|---|---|---|
| Professional or graduate degree | 0 or 1 | |
| | | |
| **Family structure** | | |
| Married | 0 or 1 | 1 if married or cohabiting |
| Number of children | 0, 1, 2,… | |
| Provides support to extended family | 0 or 1 | |
| Support provided last year to extended family as percent of family income | Continuous on $[0, \infty)$ | |
| | | |
| **Financial behavior** | | |
| Owner of durable goods | 0 or 1 | Cut-off value of 1/52 of family income |
| Share of total assets represented by the value of durable goods owned | Percent, between 0 and 100 | |
| Owner of residential real estate | 0 or 1 | Cut-off value of 1/52 of family income |
| Share of total assets represented by the value of residential real estate owned | Percent, between 0 and 100 | |
| Owner of financial and business assets | 0 or 1 | Cut-off value of 1/52 of family income |
| Share of total assets represented by the value of financial and business assets owned | Percent, between 0 and 100 | |
| Owes some kind of non-mortgage debt | 0 or 1 | Cut-off value of 1/52 of family income |
| Share of total assets represented by the value of non-mortgage debt owed | Percent, 0 or greater | |
| Owes some kind of mortgage (home-secured) debt | 0 or 1 | Cut-off value of 1/52 of family income |
| Share of total assets represented by the value of mortgage debt owed | Percent, 0 or greater | |
| Financial-Health Score | 1, 2, 3, 4 or 5 | Composite score resulting from five SCF items; see Emmons and Noeth (2014) for details. |
| | | |
| **Luck** | | |
| Temporary family income, calculated as actual income minus median family income among families in the same survey year of the same race or ethnicity in the same life-cycle stage. | Continuous on $(-\infty, \infty)$ | Transformed by the Inverse Hyperbolic Sine function, theta equals 0.0001 |
| Received a bequest | 0 or 1 | Cut-off value of 1/52 of family income |
| Health status | 0 or 1 | Self-reported health of family head, coded 0 if |

| | | poor or satisfactory, 1 if good or excellent |
|---|---|---|

**B. Models With Structural Factors Related to Race or Ethnicity (SR)**

| Categories and variables | Type of variable | Notes |
|---|---|---|
| **Family wealth** | | |
| Same as above. | | |
| | | |
| **Race or ethnicity of the family head** | | |
| Same as above. | | |
| | | |
| **Life cycle** | | |
| Same as above. | | |
| | | |
| **Survey year** | | |
| Same as above. | | |
| | | |
| **Birth cohort** | | |
| Same as above. | | |
| | | |
| **Highest level of education of the family head** | | |
| Adjusted years of education | Continuous on [-30, 30]. | Actual years minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young (under 40), middle-aged (40-61) or old (62 or older). |
| Adjusted years of education squared | Continuous on [0, 900] | |
| Adjusted years of education cubed | Continuous on [-27,000, 27,000] | |
| | | |
| **Family structure** | | |
| Adjusted marital status | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if married or cohabiting; 0 minus mean of peer group otherwise. |
| Adjusted number of children | Continuous on [-10, | Number of children |

| | | |
|---|---|---|
| | 10] | minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old. |
| Adjusted indicator for provision of support to extended family | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if providing support; 0 minus mean of peer group otherwise. |
| Adjusted support provided last year to extended family as percent of family income | | |
| | | |
| **Financial behavior** | | |
| Adjusted owner of durable goods | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if married or cohabiting; 0 minus mean of peer group otherwise. |
| Adjusted share of total assets represented by the value of durable goods owned | Continuous on [-100, 100]. | Actual share minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young (under 40), middle-aged (40-61) or old (62 or older). |
| Adjusted owner of residential real estate | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if married or cohabiting; 0 minus mean of peer group otherwise. |
| Adjusted share of total assets represented by the value of residential real estate owned | Continuous on [-100, 100]. | Actual share minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young (under 40), |

| | | |
|---|---|---|
| | | middle-aged (40-61) or old (62 or older). |
| Adjusted owner of financial and business assets | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if married or cohabiting; 0 minus mean of peer group otherwise. |
| Adjusted share of total assets represented by the value of financial and business assets owned | Continuous on [-100, 100]. | Actual share minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young (under 40), middle-aged (40-61) or old (62 or older). |
| Adjusted owing of some kind of non-mortgage debt | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if married or cohabiting; 0 minus mean of peer group otherwise. |
| Adjusted share of total assets represented by the value of non-mortgage debt owed | Continuous on [-100, 100]. | Actual share minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young (under 40), middle-aged (40-61) or old (62 or older). |
| Adjusted owing of some kind of mortgage (home-secured) debt | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if married or cohabiting; 0 minus mean of peer group otherwise. |
| Adjusted share of total assets represented by the value of mortgage debt owed | Continuous on [-100, 100]. | Actual share minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young (under 40), middle-aged (40-61) or old (62 or older). |

| Adjusted Financial-Health Score | Continuous on [-5, 5]. | Actual score minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young (under 40), middle-aged (40-61) or old (62 or older). |
|---|---|---|
| | | |
| **Luck** | | |
| Adjusted temporary family income, calculated as actual income minus median family income among families in the same survey year of the same race or ethnicity in the same life-cycle stage. | Continuous on $(-\infty, \infty)$ | Transformed by the Inverse Hyperbolic Sine function, theta equals 0.0001 |
| Adjusted receipt of a bequest | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if married or cohabiting; 0 minus mean of peer group otherwise. |
| Adjusted health status | Continuous on [-1, 1] | 1 minus mean of peer group, defined as same race or ethnicity and same life-cycle stage, young, middle-aged or old, if married or cohabiting; 0 minus mean of peer group otherwise. |

**Table 4 Results from PR Models of Wealth**

Dependent variable: Inverse hyperbolic sine of family wealth

Family wealth is divided by the square root of the number of family members

The framework is "Post-racial," in which the behavioral and environmental variables are entered as observed. The assumption is that these variables are not meaningfully correlated with the race variables.

| Column | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Specification | 88 | 97 | 98 | 99 | 100 | 102 | 115 | 116 |
| Black | -92.6 | -87.7 | -77.5 | -81.7 | -33.5 | -80.3 | -29.5 | -43.3 |
| | (-62.3) | (-56.4) | (-43.9) | (-47.3) | (-18.7) | (-47.8) | (-16.9) | (-12.1) |
| Hispanic | -91.5 | -80.7 | -54.5 | -80.1 | -13.3 | -70.0 | -5.9 | -29.5 |
| | (-49.5) | (-36.9) | (-18.8) | (-38.3) | (-5.6) | (-29.5) | (-2.5) | (-5.5) |
| Other (Asian) | -51.1 | -30.1 | -40.3 | -32.4 | 11.1 | -12.0 | 1.9 | 2.6 |
| | (-11.0) | (-6.2) | (-10.0) | (-7.2) | (3.3) | (-2.4) | (0.6) | (0.5) |
| Age, birth cohort, year | | * | * | * | * | * | * | * |
| Educational attainment | | | * | | | | * | * |
| Family structure | | | | * | | | * | * |
| Balance sheet & financial health | | | | | * | | * | * |
| Luck | | | | | | * | * | * |
| Race x Education interaction | | | | | | | | * |
| R-squared | | | | 0.398 | 0.796 | 0.444 | 0.818 | 0.819 |
| | 0.124 | 0.321 | 0.450 | | | | | |

T-statistics are in parentheses.

An asterisk indicates the block of variables was included in the regression and some or all of the variables were statistically significant.

Data are from the Survey of Consumer Finances, comprising nine triennial waves between 1989 and 2013. Total observations are 41,306, on average, over the five implicates used in each regression.

**Table 5 Details on financial variables in the regression reported in Table 4, column 5**

| Variable name | Type of variable | Sign of estimated co-efficient: Relationship with family wealth | T-statistic |
|---|---|---|---|
| Own durable goods (DG) | Dummy in set {0,1} | Positive | 29.4 |
| Share of DG in total assets | Continuous on [0,1] | Negative | -21.3 |
| Own residential real estate (RRE) (used as primary residence) | Dummy in set {0,1} | Positive | 111.6 |
| Share of RRE in total assets | Continuous on [0,1] | Negative | -32.2 |
| Own safe and liquid assets (SLA) | Dummy in set {0,1} | Positive | 22.6 |
| Share of SLA in total assets | Continuous on [0,1] | Negative | -9.0 |
| Own financial or business assets (FBA) | Dummy in set {0,1} | Negative | -11.8 |
| Share of FBA in total assets | Continuous on [0,1] | Positive | 52.0 |
| Owe non-mortgage debt (NMD) | Dummy in set {0,1} | Negative | -37.0 |
| Ratio of NMD to total assets | Continuous on [0,∞] | Negative | -1.4 |
| Owe mortgage (home-secured) debt (MD) | Dummy in set {0,1} | Positive | 10.7 |
| Ratio of MD to total assets | Continuous on [0,∞] | Negative | -45.8 |
| Financial Health Score | Integer in set {0, 1, 2, 3, 4, 5} | Positive | 13.0 |

**Table 6 Results from SR Models of Wealth**

Dependent variable: Inverse hyperbolic sine of family wealth

Family wealth is divided by the square root of the number of family members

The SR framework reflects structural factors related to race or ethnicity. In particular, independent variables representing education, family structure, financial decisions and luck are entered as deviations from group means. The group means are calculated for 12 groups—four races or ethnicities times three age groups. The key assumption is that these variables are meaningfully correlated with the race variables. The race dummies absorb the average wealth effects associated with group means.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| **Specification** | **204** | **213** | **214** | **215** | **216** | **218** | **231** | **232** |
| Black | -92.6 | -87.7 | -84.8 | -86.3 | -78.3 | -84.9 | -77.0 | -81.2 |
| | (-62.3) | (-56.4) | (-56.2) | (-56.8) | (-69.6) | (-56.4) | (-70.8) | (-34.4) |
| Hispanic | -91.5 | -80.7 | -81.3 | -79.0 | -73.1 | -77.7 | -72.8 | -82.5 |
| | (-49.5) | (-36.9) | (-40.6) | (-27.2) | (-51.2) | (-36.8) | (-52.0) | (-25.5) |
| Other (Asian) | -51.1 | -30.1 | -29.4 | -27.2 | -27.3 | -24.6 | -25.6 | -25.1 |
| | (-11.0) | (-6.2) | (-6.6) | (-5.9) | (-9.6) | (-5.4) | (-9.4) | (-5.0) |
| Age, birth cohort, year | | * | * | * | * | * | * | * |
| Educational attainment | | | * | | | | * | * |
| Family structure | | | | * | | | * | * |
| Balance sheet & financial health | | | | | * | | * | * |
| Luck | | | | | | * | * | * |
| Race x Education interaction | | | | | | | | * |
| R-squared | | | | 0.396 | 0.779 | 0.441 | 0.802 | 0.803 |
| | 0.124 | 0.321 | 0.450 | | | | | |

T-statistics are in parentheses.

An asterisk indicates the block of variables was included in the regression and some or all of the variables were statistically significant.

Data are from the Survey of Consumer Finances, comprising nine triennial waves between 1989 and 2013. Total observations are 41,306, on average, over the five implicates used in each regression.

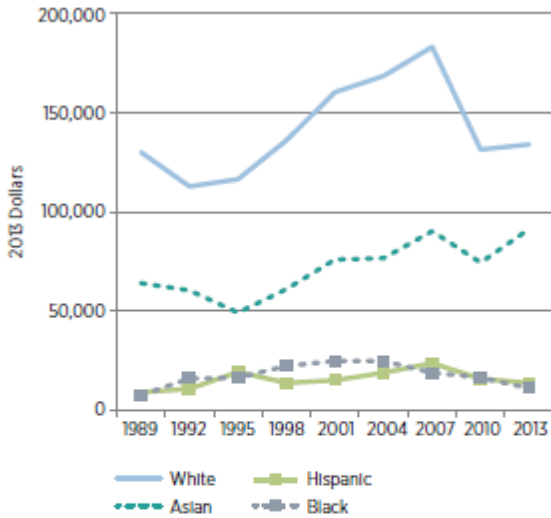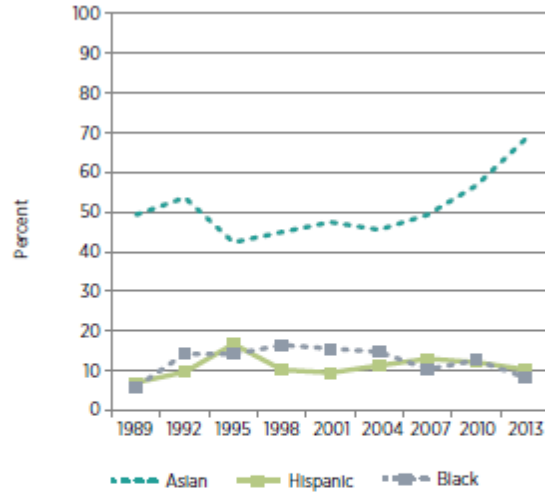**Figures 1 and 2**



Figure 1. Median Family Net Worth

Figure 2. Median Family Net Worth Relative to Median White Family Net Worth

All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS (Consumer Price Index for Urban Consumers, Research Series).

Due to apparent sampling error, data for Asian families in 2004 and 2007 were adjusted by the authors to match the growth rates of median wealth in the overall population.

Median family net worth is the value of total assets minus total debts for the family that ranks exactly in the middle of a ranking by net worth. See Sidebar 2 for more information.

The source for all tables and figures is the Federal Reserve's Survey of Consumer Finances.

**Figure 3**

Figure 3. Median Family Income Relative
to Median White Family Income
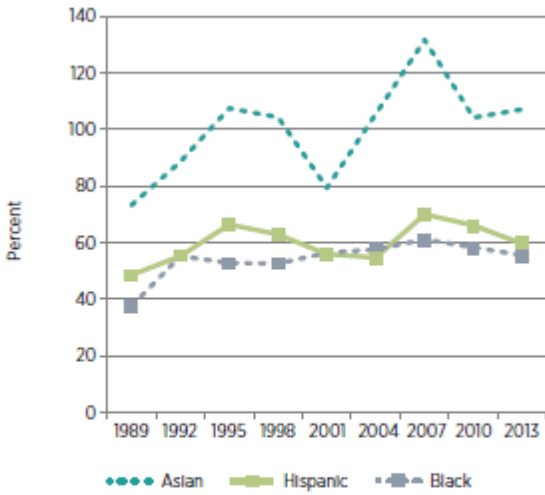


Median family income is the value of cash income, before taxes,
for the full calendar year preceding the survey for the family
that ranks exactly in the middle of a ranking by income. See
Sidebar 2 for more information.

**Figures 4 and 5**

Figure 12. Share of Birth Cohort with At Least a Four-Year College Degree in 2014, Both Sexes



Figure 13. Share of Birth Cohort with A Graduate or Professional Degree in 2014, Both Sexes
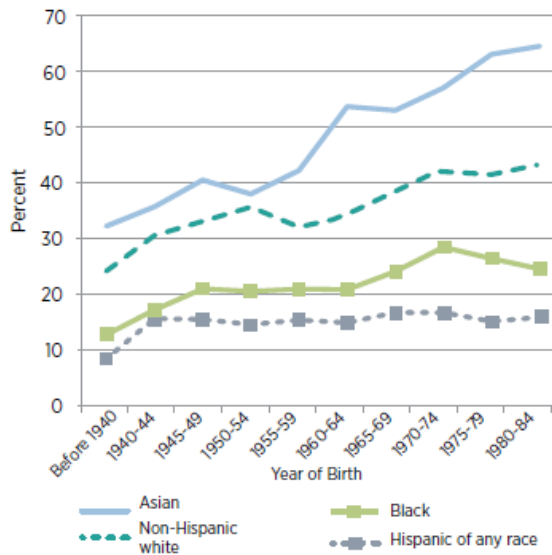


The chart shows the share of adults of both sexes with at least a four-year college degree as of 2014.

For example, among people born between 1980 and 1984, the share with at least a four-year college degree was 64 percent among Asians, 43 percent among non-Hispanic whites, 24 percent among blacks and 16 percent among Hispanics.

SOURCE: Census Bureau, Educational Attainment in the United States, 2014.
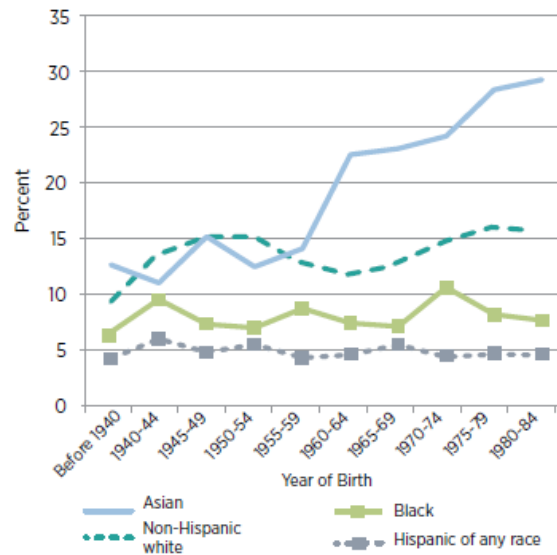
The chart shows the share of adults of both sexes with a graduate or professional degree as of 2014.

For example, among people born between 1980 and 1984, the share with a graduate or professional degree was 30 percent among Asians, 16 percent among non-Hispanic whites, 8 percent among blacks and 5 percent among Hispanics.

SOURCE: Census Bureau, Educational Attainment in the United States, 2014.
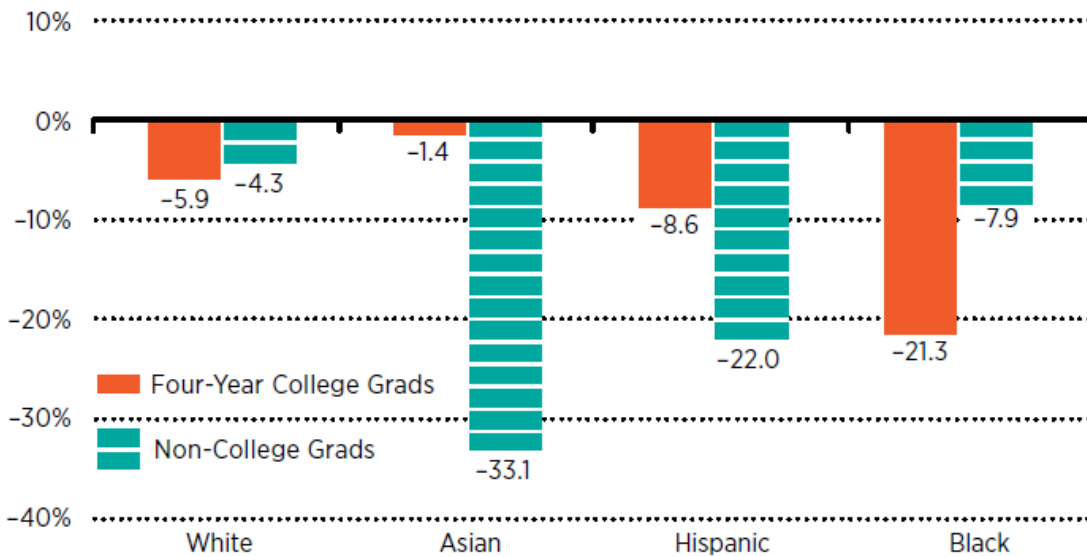
**Figures 6 and 7**

FIGURE 1

## Change in Median Real Net Worth between 2007 and 2013
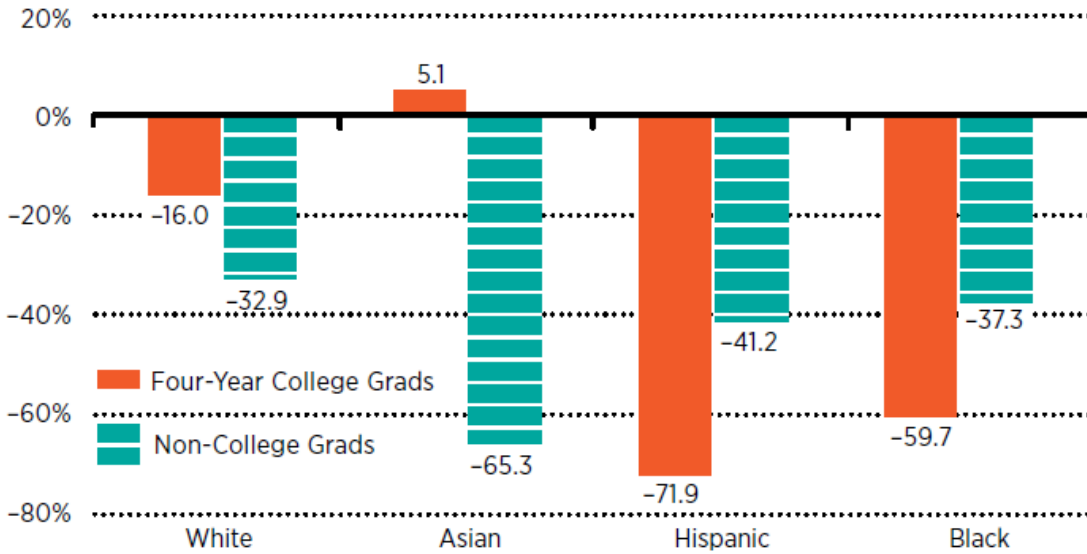


SOURCE: Survey of Consumer Finances.

FIGURE 2
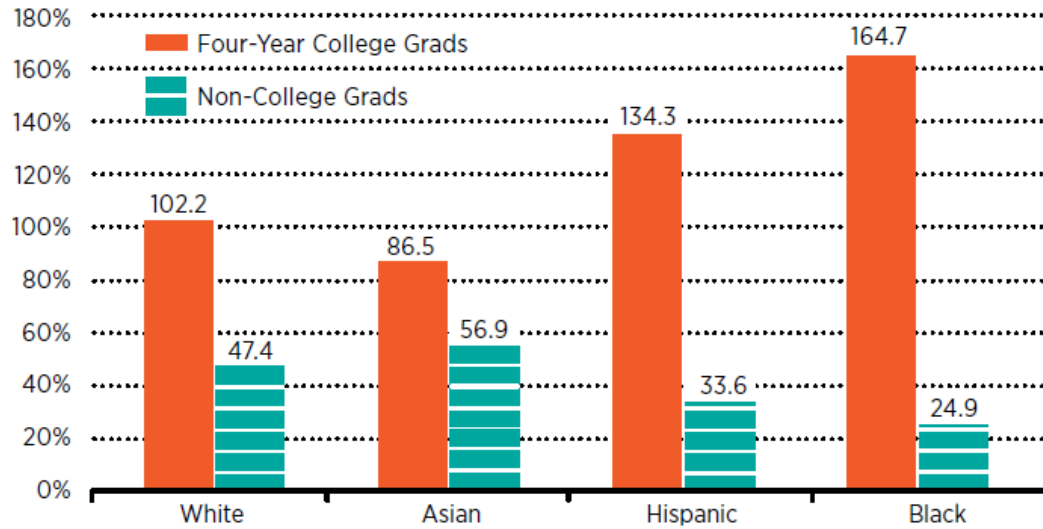
## Change in Median Real Income between 2007 and 2013



SOURCE: Survey of Consumer Finances.
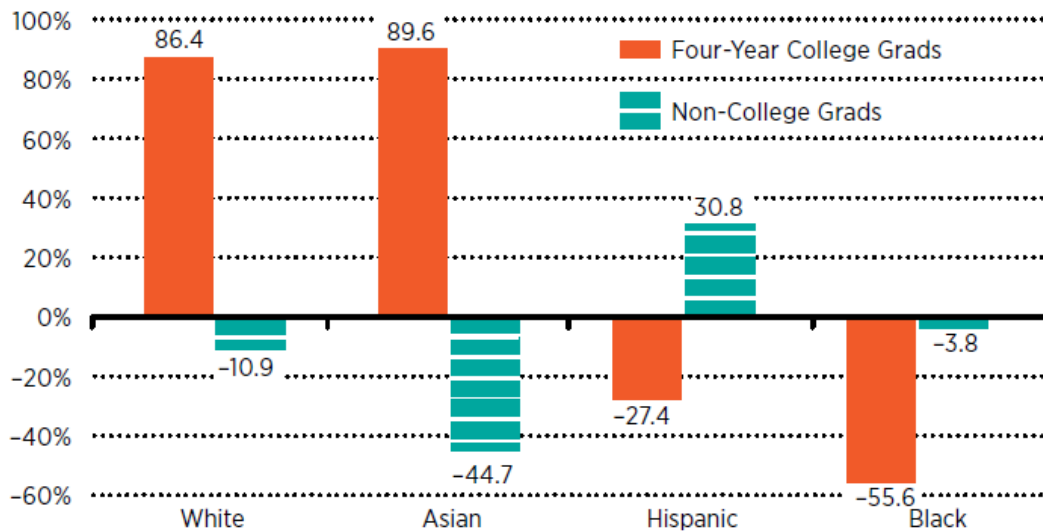
**Figures 8 and 9**

FIGURE 3

# Median Debt-to-Income Ratio in 2007



SOURCE: Survey of Consumer Finances.

FIGURE 4
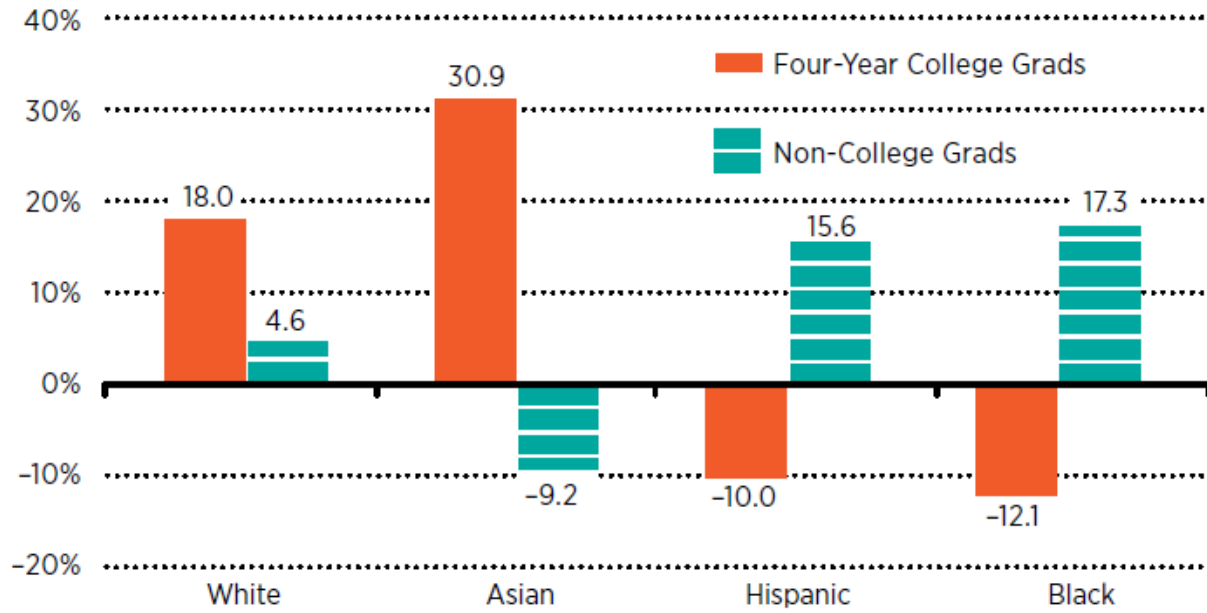
# Change in Median Real Net Worth between 1992 and 2013



SOURCE: Survey of Consumer Finances.

**Figure 10**

FIGURE 5

# Change in Median Real Net Income between 1992 and 2013



SOURCE: Survey of Consumer Finances.

**Figure 11**        **Predicted Wealth**

Based on the PR model of wealth shown in Column 8 of Table 4.

The figure shows the model's predicted wealth for each education level and race or ethnicity. The model allows the wealth returns to education level to differ by race and ethnicity. The wealth predictions are computed by combining the co-efficients on race or ethnicity, education and the interaction terms for race/ethnicity and education level.