# The Racial Wealth Gap, Financial Aid, and College Access

Phillip B. Levine
Wellesley College and NBER

Dubravka Ritter
Federal Reserve Bank of Philadelphia

January 2022

## ABSTRACT

We examine how the racial wealth gap interacts with financial aid in the American higher education system to generate a disparate impact on college access for Black students and Hispanic students. Retirement savings and home equity are excluded from the federal formula used to determine financial need. Omitting these assets from that formula mechanically increases the amount of financial aid available to families that hold them; white families are more likely to do so, and in larger amounts. This provides an implicit subsidy worth upwards of thousands of dollars per year to middle-to-higher income white students relative to Black students and Hispanic students with the same family income. We use the Survey of Consumer Finances, the National Postsecondary Student Aid Study, and the Panel Study of Income Dynamics to document this issue and to explore its relationship with observed differences in college attendance, types of institutions attended, degrees attained, and education debt. We show that this affordability gap is linked to differences in educational advancement and loan levels, particularly between white and Black students. It may explain 10 to 15 percent of observed differences in college outcomes between those students.

The views expressed here are those of the authors and do not necessarily reflect the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System. Nothing in the text should be construed as an endorsement of any organization or its products or services. No statements here should be treated as legal advice.

Can certain features of the federal financial aid formula result in a disparate impact on college affordability by race and ethnicity? The purpose of that system is to at least somewhat level the playing field, lessening the constraint of lower family resources on the ability to afford a college education.[1] To determine eligibility for financial aid, all applicants enter a tremendous amount of personal and financial information into the Free Application for Federal Student Aid (FAFSA). Those responses are processed through a formula that generates an "Expected Family Contribution" (EFC). The EFC is used to determine financial need, which forms the basis of the amount of financial aid students receive. Race and ethnicity are not incorporated into the formula that calculates the EFC; that information is not even requested on the FAFSA. The formula is neutral in that regard.

Yet it is now well-known that seemingly neutral processes can generate disparate impacts. Algorithms that are designed to make decisions without directly using personal characteristics as an input can still generate differences by race and ethnicity if the underlying factors on which they are built act as proxies for them. For instance, assigning officers to geographic locations today based on past arrest rates across locations is not race-neutral if those historical arrest rates differed due to racially disparate policing practices (cf. Richardson, Schultz, and Crawford, 2019).

The United States tax code presents another example of this phenomenon (Brown, 2021). Like the financial aid system, taxpayers submit extensive information on income received which is processed through a formula that is seemingly neutral to race and ethnicity; tax forms do not ask for that information. Yet several features of the tax code generate racial and ethnic disparities

[1] Levine (2022) assesses college affordability for students at different levels of income and wealth and at different types of academic institutions. We will address differences between the "federal methodology" and "institutional methodology" below.

based on differences in what income gets taxed. For instance, income contributed to retirement accounts is not taxed and homeowners can deduct mortgage interest paid from their income if they itemize their deductions.[2] Black families and Hispanic families are less likely to receive those tax breaks because retirement savings and home ownership are less common for them (Bhutta, et al., 2020).[3]

The federal financial aid system possesses similar features that generate a disparate impact on Black and Hispanic students.[4] That system also provides advantages to those with retirement savings and home equity. The amount of those assets held does not increase the EFC. Yet those families who have retirement accounts and own homes have greater financial resources available to help pay for their child's college education. Omitting those assets from consideration makes college more affordable for the families who hold them. Consequently, the racial and ethnic gap in the amount of those assets held makes college more affordable for white students than for Black students and Hispanic students.

The role that wealth plays in college enrollment and subsequent economic outcomes for children has been previously documented, focusing primarily on variation in home equity (cf. Lovenheim, 2011; Lovenheim and Reynolds, 2013; Charles, Hurst, and Notowidigdo, 2018; Johnson, 2020; Bullman, 2021; and Hotz, et al., forthcoming). These studies are discussed in more detail below. For the most part, though, they ignore the fact that some forms of wealth are largely overlooked ("uncounted") by the federal financial aid system and none have explored the

[2] The 2017 Tax Cuts and Jobs Act reduced the likelihood that families itemize their deductions by increasing the standard deduction, among other changes, reducing the value of the mortgage interest deduction (Eastman, 2019).
[3] Bankruptcy laws in the United States provide similar advantages for white families since they exempt some level of home equity (Auclert, Dobbie, and Goldsmith-Pinkham, 2019), a benefit which is larger for white families because of their greater propensity to own homes.
[4] Bleemer and Mehta (2021) provide another example of ways in which seemingly race-neutral higher education policies can have disparate impacts on Black, Hispanic, and Native American students. In their analysis, they find that GPA cutoffs to major in popular disciplines at public universities contribute to racial/ethnic gaps in college major, restricting access to higher-paying fields for these students.

impact of racial disparities in wealth.[5] The contribution of this paper is to extend past analyses on the role of family resources by incorporating how the federal financial aid system treats different sources of parental wealth along with the racial and ethnic disparities in their presence and level.

The differential treatment of assets in the financial aid system will have negative societal effects if it alters educational and economic outcomes. Chetty, et al. (2020) document the improvements in social mobility associated with a college education. To the extent that the federal financial aid system limits those opportunities, particularly disadvantaging Black students and Hispanic students, it will contribute to greater income inequality and stunt the narrowing of the wealth gap. More generally, a system that reduces human capital accumulation of a subset of the population hinders broader levels of economic activity.

To examine this issue, we initially use data from the 2019 Survey of Consumer Finances (SCF) to conduct a simulation exercise.[6] We demonstrate how the racial wealth gap interacts with institutional features of the federal financial aid system to generate differences in college affordability by race and ethnicity, conditional on family income. After that, we present a descriptive analysis using data from the 2016 National Postsecondary Student Aid Study (NPSAS) highlighting how these differences in affordability across groups are consistent with patterns in college enrollment by race/ethnicity and income and how parents and students pay for college once enrolled. Finally, we conduct an econometric analysis using data from the Panel

[5] Similar issues exist regarding transfers of wealth from extended family members, like grandparents. Lefebvre (2018) focuses on that issue.

[6] In all analyses, we focus on Black students and Hispanic students compared with white students, omitting a separate analysis of other racial and ethnic groups, including students of Asian American and Pacific Islander background. We do so partly because of insufficient sample sizes in the data we use and partly because wealth disparities are particularly prevalent and relevant for our analysis for Black students and Hispanic students. We also note that white, Black, and Hispanic students are mutually exclusive categories (i.e. white students and Black students are not also included in the category of Hispanic students).

Study of Income Dynamics (PSID) that examines the role that the racial wealth gap and the treatment of uncounted assets play in determining children's educational opportunity and outcomes.

The results of our analyses suggest that the treatment of wealth by the federal financial aid system generates disparities in college affordability by race and ethnicity mainly among students in middle-to-high income bands. For most lower-income families, wealth holdings are so low that the differential treatment of some forms of wealth is largely moot. But white students in this middle-to-high income group with an equal calculated EFC as Black students and Hispanic students have substantially greater uncounted assets. Those assets make college more affordable for them. For families with incomes between $75,000 to $125,000, who are typically eligible for financial aid, the value of the implicit subsidy associated with uncounted assets is around $3,000 greater for white students than for Black students. For those with incomes between $125,000 and $25,000, who often are eligible for financial aid at private institutions, the gap in this implicit subsidy by race is around $12,000.

These implicit subsidies are correlated with differences in educational outcomes by race. For instance, white students in these income groups are more likely to enroll at highly selective, 4-year institutions, that charge higher prices. Even among higher EFC students attending institutions that cost roughly the same amount, white parents provide about the same level of support to pay for college as Black parents, but Black parents borrow more extensively to provide the support.

We also estimate multivariate models that provide evidence consistent with a causal relationship between uncounted assets and college affordability. We examine several types of educational outcomes in the PSID, including enrollment, type of institution attended, completion,

and student borrowing. We relate those outcomes to the extent of parents' uncounted assets prior to college attendance, controlling for income and counted assets along with other indicators of socio-economic status, race/ethnicity, and, in some specifications, academic performance. We find that greater levels of uncounted assets appear to directly contribute to differences in the examined educational outcomes, explaining 10 to 15 percent of the achievement differences observed between white students and Black students.

We acknowledge that it is difficult to unequivocally conclude that these relationships are causal based on any single data source or analysis in this paper. The weight of the evidence, taken together, is consistent with an interpretation that the treatment of uncounted assets in the federal financial aid system leads to disparities in college access and outcomes, particularly for Black students.

## I. Institutional Details Regarding the Financial Aid System

How much financial aid should a student receive? A need-based financial aid award is generally capped at a level defined as financial need, which represents an institution's cost of attendance (COA) less the amount the family is estimated to be able to pay. The COA is a broad measure of college costs, including tuition, living expenses that may include room and board, and other miscellaneous expenses, like books and travel. Each institution of higher education that participates in the federal financial aid program is required to report the total amount.

The harder part of the process is determining how much a family can afford to pay, a concept that is inherently nebulous. Despite the obvious difficulties in defining and measuring it, the financial aid system includes such a calculation based on the information that students

provide in the Free Application for Federal Student Aid (FAFSA).[7] The result of those calculations is called the "expected family contribution," or EFC.[8]

The EFC label is a misnomer because it forms the basis for determining what a student will pay to attend college, but it is not the exact amount that a student will pay.[9] First, it focuses on out-of-pocket expenditures, ignoring required "contributions" from expected loans and student employment. The combination of all forms of expected payments is labeled the net price. Second, most schools expect students eligible for financial aid to pay out-of-pocket more than the "EFC" (i.e. more than they can "afford"). These schools do not "meet full need."

Figure 1 dramatically simplifies the key characteristics of the financial aid system, relating EFC to net price at different types of institutions (Levine, 2022). The dotted line represents net prices charged at institutions that meet full need. After accounting for expected loans and student employment, the net price rises dollar for dollar with EFC until the COA is reached. At institutions that do not meet full need, net price is higher at each level of EFC, incorporating some level of "unmet need." The slope of that line may be less than one, but it is shown here with that slope as well for simplicity. Merit-based awards are also included for these institutions. Those awards often substitute for need-based awards, at least partially, for students with financial need and largely benefit students from higher-income families. The key lesson from this figure is that the calculation of EFC is the single-most important component of

[7] Roughly 400 largely private colleges and universities also require students to complete a more detailed financial aid form, the CSS Profile. That form also asks about home equity; many institutions that require students to complete the CSS Profile do count at least some of that home equity in determining their financial aid awards. The vast majority of college students, though, attend institutions that rely exclusively on FAFSA. We will restrict our analysis to the details of that system.

[8] The federal government avoids labeling the EFC as a measure of ability to pay (https://studentaid.gov/complete-aid-process/how-calculated, accessed 11/28/2021), but that is how it is used.

[9] It is being renamed the Student Aid Index (SAI) beginning in 2023 because of this labeling problem.

determining how much a student will pay for college, particularly for those who cannot afford to pay the sticker price, which is most families.

EFC is determined by the information students provide on the FAFSA form they submit. That form is notoriously complicated. Questions 88 through 90 focus on wealth, asking about the "current balance of cash, savings, and checking accounts" (question 88), the value of "parents investments, including real estate" (question 89), and the value of "current businesses and/or investment farms" (question 90). Question 89 specifically indicates "**Don't include** the home in which your parents live (emphasis included)." It also directs applicants to a note, which indicates that "**investments do not include** … retirement plans (401[k] plans, pension funds, annuities, non-education IRAs, Keogh plans, etc.)" (emphasis included).

The argument in favor of ignoring home equity and retirement savings is that families should not be expected to liquidate their homes or lose their retirement savings to pay for a child's college education.[10] From an economic perspective, however, those with greater resources have a greater ability to pay than those with lesser. Edlin (1993) argues in favor of an approach based on permanent income, but a blend of current income and assets may be the closest feasible approach of capturing that concept.[11]

## II. The Racial Wealth Gap and College Affordability: A Mechanical Relationship

The racial wealth gap interacts with these institutional features of the federal financial aid system to generate racial disparities in the amount that students can afford to pay for college *between students with the same EFC*. The presence of this wealth gap has been documented

[10] Mullaney (2019) expresses concerns along these lines.

[11] The treatment of illiquid assets presents additional hurdles, both in terms of the logistics of accessing them and in terms of measurement. For instance, the ability to incorporate Social Security wealth and the expected value of defined benefit pension plans would improve our current ability to measure wealth, but those data are not readily available in a source that would contain any of the other information necessary for this analysis. Thompson and Volz (2021) show that both of these forms of wealth are held more broadly across racial and ethnic groups.

previously (Bhutta, et al., 2020). We conduct a similar exercise, but we focus on families with high school aged children (13-17), and we distinguish asset categories into those that are counted by the federal financial aid formula ("counted assets," like cash, financial investments, business and farm assets) and those that are not ("uncounted assets," including home equity and retirement savings). We use data from the 2019 Survey of Consumer of Finances for this purpose.

Figure 2 displays the composition of family net worth in counted and uncounted assets by race/ethnicity and by level of family income.[12] The income bands include those below $75,000 (roughly median family income), those with incomes between $75,000 and $125,000 (largely eligible for financial aid at public residential 4-year universities with typical levels of assets) and between $125,000 and $250,000 (largely eligible for financial aid at private universities with typical asset levels).

Not surprisingly, median net worth is higher for families in the higher income bands. Within each income band, white families have greater net worth, confirming the existence of a racial wealth gap. That gap grows in absolute magnitude as income grows. Those with below median income levels have few assets regardless of race or ethnicity (although even at those low asset levels, a small racial wealth gap is apparent).

The other obvious pattern displayed in Figure 2 is that most assets among families in income bands likely to be eligible for financial aid are not counted by the federal financial aid system. Overall, roughly three-quarters of median family assets are not counted by the federal financial aid system.

[12] Note that reported counted and uncounted assets represent medians. "Net worth" in this figure is defined as the sum of median counted and uncounted assets and does not exactly equal median net worth.

Omitting these assets from the EFC calculation provides students from white families with a significant financial advantage in college affordability. We measure the extent of that advantage by simulating "current EFC" (the EFC value the current federal financial aid formula generates) and "full EFC" (the EFC value that would result if all assets were treated the same way as counted assets are now).[13] The simulations rely on a proprietary algorithm developed by MyinTuition Corp.[14] The difference between full EFC and current EFC – the reduction in EFC due to uncounted assets – is an indication of an *implicit subsidy* that the federal financial aid system awards to families that hold uncounted assets.

Figure 3 displays the results of this exercise. As one might expect based on the low level of assets held by families with below median incomes, the distinction between counted and uncounted assets generates a modest racial and ethnic gap in this implicit subsidy. Among those with incomes between $125,000 and $250,000, though, the implicit subsidy is large, particularly for students from white families.[15] For them, their EFC would be calculated to be over $15,000 higher if all their assets were counted. Students from Black families would benefit as well, but the implicit subsidy for them is less than $4,000. Overall, these calculations suggest that white students in this income group receive an implicit subsidy from the federal financial aid system that is $12,000 greater than for Black students, making college considerably more affordable for

[13] Instead of treating uncounted assets comparably to counted assets, we could treat only liquid uncounted assets comparably to counted assets. This may make sense since, for instance, there are generally limits to how much equity can be extracted from one's home in the form of a home equity loan (say, 90%). There are also penalties for early withdrawals of retirement funding. We could make the necessary assumptions to implement this approach, but it would not change our main finding. A disparate impact on Black students and Hispanic students would still exist, albeit of a somewhat smaller magnitude.

[14] MyinTuition is an online tool that dozens of colleges and universities use to provide ballpark financial aid estimates based on a small number of financial inputs and the number of siblings enrolled in college. Levine is the founder and CEO of MyinTuition Corp. Minor differences across schools exist in the computation of EFC, but the approach used here would be relevant for typical institutions. For present purposes, the algorithm used simulates the federal methodology (FM) based on FAFSA. To simplify the subsequent analysis and discussion, I restrict all calculations to cases where the family has only one child in college at a time.

[15] For simplicity of exposition here and throughout this analysis, any reference to white or Black families implies that they are not of Hispanic origin.

them. A similar calculation for students from families with $75,000 to $125,000 in family income indicates a difference in implicit subsidies of about $3,000 between white and Black students. Students from Hispanic families fall between these two groups.

## III. Descriptive Analysis of College Choice and Payment Methods

We extend our analysis by providing descriptive evidence regarding the relationship between affordability, race/ethnicity, and college outcomes. Specifically, we compare differences in affordability by race and ethnicity to differences in the types of colleges students attend and how they pay for them.

We use data from the 2016 National Postsecondary Student Aid Survey (NPSAS) for this analysis. These data are high quality, merging administrative data from the U.S. Department of Education and data from the higher educational institutions that students attend, among other sources. The sample size is large; we restrict our analysis to the 33,000 dependent students enrolled at a single higher educational institution in these data. The disadvantage of these data is that they only include students enrolled in college, preventing us from using them to examine the decision to enroll.

REMAINDER OF SECTION HAS NOT YET BEEN APPROVED FOR RELEASE BY THE U.S. DEPARTMENT OF EDUCATION

## IV. Behavioral Analysis of College Enrollment, Graduation, and Debt

We initially documented that a mechanical relationship exists between uncounted assets and college affordability. We showed that it produces a disparate impact on Black students and, to a lesser degree, Hispanic students. That relationship is consistent with patterns in the types and

cost of institutions in which students enroll, and particularly differences in those outcomes between Black and white students. In this section, we use PSID data, extending our analysis to examine whether the extent of uncounted assets is related to differences in educational outcomes after holding constant potentially confounding factors. If so, underlying differences in family uncounted assets by race and ethnicity would be related to racial differences in student educational outcomes.

*A. Methodological Approach*

The basic econometric model we seek to estimate takes the form:

$$y_i = \beta_0 + \beta_1 black_i + \beta_2 hisp_i + \beta_2 efc_i + \beta_3 efc_i^2 + \boldsymbol{\beta_4}(\boldsymbol{efc\ reduction_i}) + \boldsymbol{\beta_5}(\boldsymbol{efc\ reduction_i^2}) + \beta_6 X_i + \varepsilon_i \quad (1)$$

In this specification, y reflects the alternative educational outcomes we consider for student i; we focus on college enrollment, graduation, and debt holdings. We hold constant race and ethnicity along with non-linear controls for a student's EFC. That variable represents a combination of income and counted assets; it is estimated from publicly available PSID data comparably to the approach we described earlier using the SCF (we provide more details on the data we use below). In this model, EFC holds constant direct measures of ability to pay, as calculated by the federal financial formula, which only incorporates counted assets. Since there are likely other unobserved family and neighborhood characteristics that are linked to college outcomes and to family income and counted measures of wealth (like the quality of K-12 schooling; see Baum and McPherson, 2022), EFC is at least partially controlling for those factors as well. We also include additional measures of a family's socioeconomic status (the mother's age at the child's birth, whether she was a married at that time, and her level of education) that may also help hold those unobserved characteristics constant.

The key right hand side variables in this model, though, is the EFC reduction, included as a quadratic. This variable also is measured analogously to that described earlier using SCF data. It represents the reduction in a student's EFC that results from the fact that home equity and retirement savings are omitted from the formal EFC calculation in FAFSA. It is the difference between the EFC that would result if all assets were counted and the EFC that results from the current formula omitting those two wealth forms. It acts as an implicit subsidy towards the financing of higher education for families who hold those uncounted assets. A positive relationship between the EFC reduction and educational attainment would indicate a benefit associated with the greater affordability resulting from protecting these forms of assets.

Note that the relationship between financial resources and college pricing is non-linear, as shown in Figure 1. At some point, as resources get large enough, they no longer affect the amount of financial aid available; the student is no longer eligible. This explains why both EFC and EFC reduction enter this specification non-linearly.

We also estimate alternative specifications that add controls for students' high school records, measured by test scores and grades, as represented in Equation 2.

$$y_i = \beta_0 + \beta_1 black_i + \beta_2 hisp_i + \beta_2 efc_i + \beta_3 efc_i^2 + \boldsymbol{\beta_4(efc\ reduction_i)} + \boldsymbol{\beta_5\left(efc\ reduction_i^2\right)} + \beta_6 X_i + \beta_7 Test\ Scores/Grades_i + \varepsilon_i \quad (2)$$

The presence of greater financial resources may improve students' high school record, making them more attractive to colleges and universities. Controlling for the high school record reduces the potential influence of that confounding factor. Alternatively, though, students who anticipate college will be less affordable may "invest less" in their academic performance. Concerns regarding racial and ethnic gaps in test scores (cf. Smith and Reeves, 2020) are another

limitation in including them in our analysis. In our main specifications provided below, we report results based on Equation 1 (excluding test scores and grades), but we also test the sensitivity of these estimates, reporting results from Equation 2 (including test scores and grades) in appendix tables.

Regardless of specification, there remains the potential that our key explanatory variable, the EFC reduction, is endogenous. Holding certain forms of assets, like home equity and retirement savings, represents a portfolio decision. Those choosing to hold assets in those forms may have greater preferences towards providing their children with a college education. It is possible that that our included explanatory variables do not capture those preferences, which would likely introduce an upward bias in the relationship between the EFC reduction and educational outcomes.

One approach to address this problem is to implement an instrumental variables (or related reduced form) strategy. Past research has done so in analyses addressing the impact of wealth on college outcomes.[16] Lovenheim (2011) was the first study to estimate models of college attendance as a function of wealth, instrumented by recent home price changes. Lovenheim and Reynolds (2013) examine the type of colleges students attend as a function of recent home price changes, which represents a reduced form variant of Lovenheim (2011). Cooper and Luengo-Prado (2015) estimate a similar reduced form specification to examine young adult earnings, comparing the behavior of renters and homeowners as a specification check. Johnson (2020) also estimates an instrumental variables model on college graduation

[16] Haider and McGarry (2018) report the results of OLS models relating college outcomes to financial wealth using the same component of the PSID data we use (the TAS survey, described below) along with the Health and Retirement Survey. They similarly find a strong relationship between wealth and college outcomes.

similar to Lovenheim (2011), but also distinguishing renters from homeowners. Each of these papers found that greater housing wealth improved college outcomes.[17]

Our application is somewhat different, and more complicated. Our focus is not on wealth, per se, but the composition of that wealth. In essence, an instrumental variables strategy would require a source of exogenous variation both in counted assets and uncounted assets separately. Beyond capturing total wealth, it would require identification of portfolio choice. Moreover, we have a theoretical expectation, based on the structure of the financial aid system as depicted in Figure 1, that any such impact of wealth should be non-linear. Past research provides one possible instrument, recent changes in home prices as a predictor of home equity in the years leading up to college entry, but that instrument is insufficient to overcome the identification problem we face.[18]

Instead, we estimate OLS models of the forms reported in Equations 1 and 2. Our methods do enable us to provide some support (or otherwise) regarding causation. First, as we discussed earlier, any effect of uncounted assets must enter the model non-linearly. Second, we conduct a placebo test, estimating the same model for high school graduation, an outcome where the structure of the financial aid system and the existence of uncounted assets should play less of a role. Neither of these alternative approaches can strongly distinguish a causal effect from a spurious one, but they do move us at least somewhat in that direction. It is the combination of

[17] Three other papers address other aspects of the relationship between wealth and college attendance. Hotz, et al. (forthcoming) shows that that the relationship between home equity and college attendance is moderated by transfers of that wealth between parents and their children. Charles, Hurst, and Notowidigdo (2018) find that students who live in areas experiencing large changes in housing prices ("booms" or "busts") found that college attendance fell because of the opportunity cost of employment options. Bullman (2021) finds that children in households that recently received moderate lottery payouts are only somewhat more likely to attend college. Large lottery winners, however, are considerably more likely to attend.

[18] We have attempted to estimate an instrumental variables model using recent home price changes as an instrument just for the EFC reduction in a linear specification of Equations 1 and 2, but the instrument was weak with resulting estimates that were extremely imprecise. The standard errors were multiples of those obtained from OLS.

these results along with our earlier analyses that provides the ability to draw a conclusion based on the preponderance of the evidence.

*B. Description of the Data*

To implement our analysis, we use data from the Panel Study of Income Dynamics (PSID). Data collection for the PSID began in 1968, initially surveying around 5,000 families and 18,000 individuals. Those original members, all of their offspring, and any new members of their households continue to be interviewed biennially, with the last available data from the 2019 survey.

For our purposes, these data possess two components critical for our analysis, detailed data on college outcomes for one cohort of children and income and asset data necessary to construct the relevant EFC measures in Equations 1 and 2. Beginning in 1997, the PSID began the Child Development Supplement (CDS), which included detailed information on the lives of children aged 12 and under. As those children aged, they transitioned into the subsequent Transition to Adulthood Survey (TAS), which began in 2005 and has been conducted biennially since then. The TAS provides extensive additional information not elsewhere included on the survey. Its focus is on the CDS cohort as they aged from 18 to 28.

These data are relevant for our analysis because of the extensive detail obtained from TAS cohort members regarding their educational outcomes, including the IPEDS institution identifier for those students who enrolled in college.[19] We use these data to create indicators of whether TAS respondents enrolled in college by age 19, the type of institution in which they enrolled if they did attend college (private 4 year, public 4 year, or other – mainly community

[19] The institution identifier is only available for users with a restricted use agreement. The TAS also includes data on student test scores (ACT and/or SAT) and high school grades, which are necessary to estimate Equation 2. The data appendix provides more detail regarding the construction of these and other measures obtained from the PSID.

colleges), and whether they received a bachelor's degree. Our full sample includes 2,464 individuals.[20]

Along with these measures of educational attainment, the TAS data also enable us to examine the extent to which students took on debt to finance a college education. Information on parent and student educational debt were also collected in the TAS. Andreski, et al. (2015) report a comparison of these student loan data with other data reported in NPSAS. The two sources of data differ somewhat in the borrowing being measured (all student borrowing versus borrowing among currently enrolled students). The authors conclude that "the estimates in the two sources are, in general, fairly similar, although some differences do exist." We use these PSID data on student debt as an outcome measure in our analysis.

One outcome that would have been desirable to add to this analysis is the amount of Parent Plus Loans that families took out to pay these students' higher education bills. We saw important patterns in that measure in the NPSAS data. Unfortunately, these data are not separately broken out in the TAS supplement.[21]

The detailed data on income and wealth available in the PSID provide us with the ability to construct our key explanatory variables, EFC and EFC reduction. These data have been shown

[20] In all analyses, we include sample weights that account for the longitudinal structure of the PSID data and the differential attrition that takes place over time ("individual longitudinal weights"). We use the value of this weight in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24 – note two ages are required because of the biannual nature of the survey). A small number of TAS respondents did not complete the survey in the relevant years. We omit those individuals from our analysis.

[21] Starting in 2011, the wealth supplement fielded to all PSID households included a new question asking respondents whether "you or anyone in your family living there currently have any other debts such as student loans, medical or legal bills, or loans from relatives?" The next question asks for the amount of student loan debt, if any. That variable should capture Parent Plus Loans, but they would not be specific to the individual student in the TAS survey. It also started being asked well after the TAS started to be administered. Our preliminary analysis of these data suggest that they are not appropriate for our analysis. For one thing, they show Parent Plus loan debt considerably greater for white families than for Black families - even among those with positive values – which is not consistent with other data sources.

to compare favorably to data available from the SCF (Pfeffer, et al., 2015).[22] As we described in that analysis, breaking up wealth into the parts that are counted by the financial aid system and the parts that are not (distinguished by the treatment of retirement savings and home equity) is critical for generating measures of EFC and the EFC reduction for each survey respondent. The PSID contains that level of detail.[23] We use the family-based structure of the PSID to obtain the wealth components we need for TAS respondents based on their parents' wealth in the years leading up to potential college entry.[24]

Beyond these data items specific to our key explanatory and outcome measures, the overall structure of the PSID provides other advantages. We are able to use the longitudinal, family-based structure of these data to provide additional measures of each family's socioeconomic status (SES) beyond their current EFC. In all econometric models, we also control for mother's educational attainment along with her marital status at birth and her age when the student was born.[25]

Table 1 presents a series of descriptive statistics from our PSID-TAS extract. The top panel of the table provides details of families' financial characteristics for all respondents and by race/ethnicity. We present both the median and 75$^{th}$ percentile values of family income, net worth, and counted and uncounted assets separately. Income and wealth differences by

[22] Net worth data from the SCF is somewhat higher than that in the PSID, although most of the gap results from SCF respondents in the very top of the wealth distribution. Differences in wealth throughout the remainder of the distribution are modest.
[23] We note that the PSID estimates of the EFC reduction are a lower bound because respondents are asked about retirement funds in individual retirement accounts, not balances in employer defined contribution pension plans (Cooper, Dynan, and Rhodenhiser, 2019). According to the Investment Company Institute (2020), IRA balances total $11 trillion compared to $8.7 trillion in defined contribution pension plans.
[24] Typically, parent wealth is measured when the child is age 17 or 18, but in those instances where the family is not included in the survey when the child is that age, we use parent wealth at ages 15 or 16 if those data are available.
[25] We focus on mother's characteristics because children are more likely to be living with their mothers throughout their childhood, increasing mothers' influence on children's outcomes. We also measure marital status at birth rather than contemporaneously because of the possible endogeneity of current marital status and family finances.

race/ethnicity are well documented. Table 1 also supports earlier findings that most assets are uncounted at these positions in the wealth distribution; white families have considerably more of uncounted assets. The formula for calculating the EFC would therefore affect college affordability more for these families.

The remainder of the table documents differences in the educational outcomes we examine in this analysis. Statistics are segmented by whether the population included is all students, those enrolled in college, or those who graduated from college, with relevant outcomes considered in each category. The patterns observed here are largely consistent with those observed elsewhere (cf. de Brey, 2019). In particular, differences in educational patterns between white and Black students are large. The gaps between white and Hispanic students are still evident in places, but these gaps are shrinking. The question we address in this analysis is whether any of those disparities in college outcomes, and particularly those between white and Black students, can be attributable to differences in college affordability driven by omitting some forms of assets from financial aid calculations.

*C. Econometric Results*

The results of our regression analysis characterized by Equation 1 are reported in Tables 2 and 3. Analogous results of models that also include test scores and grades, as described by Equation 2, are reported in Appendix Tables A3 and A4. As highlighted earlier, our focus is on the impact of the EFC reduction that prospective college students face if they have greater assets in the form of home equity and retirement savings. Our tables focus on those coefficients. We also report the coefficients on race/ethnicity indicator variables, since differences across groups are also a focus of this analysis. We initially report in these tables the results of regressions with just those indicator variables included to estimate unadjusted differences across groups. We also

control for students' estimated EFC, to hold constant differences how much they are estimated to be able to pay for college, as calculated by FAFSA, and additional measures of socioeconomic status to capture (at least partially) differential pathways and barriers towards higher education.[26]

We initially focus on the likelihood of graduating from high school and then the decision to enroll in college in Table 2. The top panel of the table demonstrates the same raw gaps in educational attainment as reported in Table 1. The bottom panel of the table reports the results of our multivariate analysis. The results indicate that even after controlling non-linearly for estimated EFC and other indicators of socioeconomic status, the presence of greater uncounted assets, quantified by our EFC reduction, is positively related to college enrollment (Column 2). We interpret the magnitude of these effects below.

Moreover, note that the exact same specification for high school graduation yields different results. We find no statistically significant relationship between the EFC reduction and the likelihood of graduation. Neither of these findings is definitive in "proving" our proposed mechanism is causal, but they are consistent with a causal interpretation.

The remainder of the table indicates that these increases in enrollment would be more common at public and private 4-year institutions. Enrollment at other institutions (mainly community colleges) would fall.

[26] We also have estimated alternative specifications that control for student grades and test scores (ACT/SAT), which are available in these data. As discussed previously, the advantage of including these variables is that they can capture differences in student performance, but they also may capture differences in anticipated college affordability. Students more comfortable in their ability to afford college may be more likely to take the SAT (perhaps paying for courses to increase their scores), for instance. Adding these variables somewhat reduces the estimated differences in outcomes by race/ethnicity. The estimated impact of EFC reduction, however, is somewhat smaller, but qualitatively similar to what we describe here. The results of models also controlling for test scores and grades are reported in Appendix Table A3 and A4 and suggest that the disparate impact in terms of our outcome variables is not due to differences in student achievement (after controlling for family characteristics and EFC).

Table 3 provides results from the same analysis focusing on ultimate degree completion (2-year or 4-year) and student loan debt at ages 21 or 22.[27] We conduct this analysis separately for all survey participants and for those who started college for degree completion and for those who graduated from a 4-year college for student loan debt. The results are consistent with a beneficial impact of uncounted assets on subsequent education outcomes. Uncounted assets are positively related to graduation from a 4-year institution and negatively related to receiving a 2-year degree and to owing student loan debt.

Including test scores and grades in the model has no impact on the direction of any of these effects. The magnitude of the estimated relationship is typically somewhat smaller, but the qualitative implications are similar. As a whole, the conclusions drawn from this analysis are robust to their inclusion.

To interpret the magnitude of the impact of the EFC reduction on gaps in educational attainment, we conduct a simulation exercise. We use our underlying individual data and the regression coefficients reported in Tables 3 and 4 to simulate the impact of the uncounted assets each individual holds on each outcome. Then we aggregate those simulated impacts, taking their mean by race and ethnicity. The difference in these simulated outcomes between groups informs our primary question of the impact of uncounted assets on educational disparities by race/ethnicity. If, say, Black families had the same uncounted assets as White families did, how would their educational outcomes change relative to White families?

The results of this analysis are reported in Table 4 for our main specification and Appendix Table A.5 for our alternative specification that also includes grades and test scores.

[27] Our goal is to measure student loan debt around the time a student may have graduated from a 4-year institution but had not yet started repaying the loan or taken out additional debt to pay for graduate school. With a biennial survey, we chose ages 21 and 22.

The results are clear that the racial and ethnic gap in uncounted assets generates substantive differences in educational outcomes by race. If Black and white students had the same uncounted assets, the gap in college enrollment would close by 2.8 percentage points. Holding constant test scores and grades reduces that estimated impact to 1.9 percentage points. The raw gap in that statistic, reported in the top panel of Table 3, is 21 percent. The 29.8 percent raw gap in graduating from a 4-year institution between Black and white students who enrolled in college by age 19 would close by 4 percentage points (or 2.7 percentage points if we control for test scores and grades). Our estimates indicate that some 10 to 15 percent of the raw gap in college enrollment and graduation from a 4-year institution between Black and white students is attributable to the exclusion of uncounted assets from the EFC formula.

## V. Summary and Discussion

This paper has documented the financial disadvantage that Black families and Hispanic families – particularly those in middle-to-high income bands – face in the financial aid system because of the extensive degree of wealth inequality. FAFSA and the federal methodology for estimating financial need do not account for home equity or retirement savings, both of which are much more likely to be held by white families. This discrepancy in the treatment of assets does not affect students from lower-income families because asset holdings of any type are so low for them.

We document that the presence of these uncounted assets has the effect of making college less affordable for mid-to-high income Black families. This presents itself in the data in the differences in selectivity and cost of the institutions to which Black and white students at these higher-income levels apply. It also shows up in the much larger extent to which Black parents are forced to pay their children's tuition bills using debt, in the form of Parent Plus Loans, than

paying the institution directly. Beyond that, we show that larger savings associated with uncounted assets (the EFC reduction) are associated with improved educational (enrolling in college, attending and graduating from a 4-year institution) and financial (taking on less student debt) outcomes. We are unable to definitively provide causal evidence of these effects, but in total they provide substantial evidence indicating that the structure of the FAFSA data collection and associated EFC calculation, as currently implemented, contribute to the racial wealth gap in college access and attainment.

A relevant question becomes what, if anything, should be done to address these disparities. Closing the racial gap in education attainment would help reduce income gaps today and even wealth gaps down the road. One potential path could be to target additional grant aid to families disadvantaged by the current system, but the practical implementation of such a policy would be challenging. Alternatively, the financial aid formula could be modified somewhat to include the currently uncounted forms of assets, but then reduce the "tax" on income and assets used to estimate families' ability to pay (which is a nebulous concept in the first place). This would have the feel of a more traditional tax reform proposal where the tax base is increased, while tax rates are lowered.

There would be offsetting costs, though, associated with such a change. One shortcoming of the current financial aid system is its complexity; completing complicated forms to obtain financial aid that is difficult to forecast can stifle college-going (Levine, 2022). Legislation enacted in 2020 designed to simplify the FAFSA was based on addressing this problem, at least partially.[28] Asking for more detail regarding asset holdings works against that goal. Verifying the

[28] Note that one provision of the 2020 law would increase the income threshold below which families do not need to report any assets from $50,000 to $60,000 (the simplified needs test). Our research supports that change since those families do not have sufficient assets to generate the issue regarding treatment of assets that we identified.

validity of reported asset values also is more complicated. Finally, both targeted grant aid and changes to the financial aid formula based on home equity and retirement assets may provide disincentives to accumulating those types of wealth. We believe this is unlikely given the significant subsidies and tax advantages inherent in owning a primary residence and saving for retirement (particularly in an employer-sponsored plan).[29]

Recommending a specific policy solution or weighing these costs against the benefit of reducing inequality is outside the scope of this study. The goal in this paper is to highlight that the current version of the financial aid system (and potentially further steps to simplify it) imposes significant costs in the form of racial inequities in college access and affordability. Those costs should not be ignored.

[29]Early studies of disincentives to the accumulation of financial assets due to federal financial aid rules, including Edlin (1993) and Feldstein (1995), found strong incentive effects, but such studies typically focused on financial assets and explicitly excluded home equity on the primary residence and/or tax advantaged retirement savings accounts. Later studies, e.g. Monks (2004) and Reyes (2008), concluded that estimates from those earlier studies overstated the disincentive. Long (2004) found no evidence of a strong savings response to implicit asset taxes in the financial aid system. Finally, considering disincentives to earned income, Darolia (2017) finds no evidence that students adjust work hours even in the presence of an implicit tax to the tune of 50 cents to the dollar, likely due to lack of knowledge, abstruse formulas, and the timing of aid receipt.

REFERENCES


Andreski, Patricia, Daniel Kreisman, and Robert Schoeni. "Comparing Estimates of Student Loans Measured in the PSID-TAS with the National Postsecondary Student Aid Survey. PSID Technical Series Paper #15-02.

Auclert, Adrien, Will S. Dobbie and Paul Goldsmith-Pinkham (2019). "Macroeconomic Effects of Debt Relief: Consumer Bankruptcy Protections in the Great Recession." National Bureau of Economic Research working paper 25685.

Baum, Sandy and Michael McPherson (2022). *Can College Level the Playing Field?: Higher Education in an Unequal Society.* Princeton, NJ: Princeton University Press.

Bhutta, Neil, Andrew C. Chang, Lisa J. Dettling, and Joanne W. Hsu with assistance from Julia Hewitt (2020). "Disparities in Wealth by Race and Ethnicity in the 2019 Survey of Consumer Finances." *FEDS Notes*. Available at: https://www.federalreserve.gov/econres/notes/feds-notes/disparities-in-wealth-by-race-and-ethnicity-in-the-2019-survey-of-consumer-finances-20200928.htm, accessed 11/23/2021.

Bleemer, Zachary and Aashish Mehta (2021). "College Major Restrictions and Student Stratification." Unpublished manuscript, available at: http://zacharybleemer.com/wp-content/uploads/Working-Papers/Restrictions_Paper.pdf, accessed 12/13/2021.

Braga, Breno, Signe-Mary McKernan, Caroline Ratcliffe, and Sandy Baum. "Wealth Inequality Is a Barrier to Education and Social Mobility." Urban Institute.

Brown, Dorothy A. (2021). *The Whiteness Of Wealth: How the Tax System Impoverishes Black Americans–and How We Can Fix It*. New York: Crown.

Bulman, George, Robert Fairlie, Sarena Goodman, and Adam Isen (2021). "Parental Resources and College Attendance: Evidence from Lottery." *American Economic Review*. 111(4): 1201–1240.

Charles, Kerwin Kofi, Erik Hurst, and Matthew J. Notowidigdo (2018). "Housing Booms and Busts, Labor Market Opportunities, and College Attendance. *American Economic Review* 108(10): 2947–2994.

Chetty, Raj, John N Friedman, Emmanuel Saez, Nicholas Turner, and Danny Yagan (2020). "Income Segregation and Intergenerational Mobility Across Colleges in the United States." *Quarterly Journal of Economics*, 135(3): 1567–1633.

Cooper, Daniel, and María José Luengo-Prado (2015). House Price Growth When Children are Teenagers: A Path to Higher Earnings? *Journal of Urban Economics* 86 (March): 54-72.

Cooper, Daniel, Karen Dynan, and Hannah Rhodenhiser (2019). "Measuring Household Wealth in the Panel Study of Income Dynamics: The Role of Retirement Assets." Federal Reserve Bank of Boston, working paper 19-6.

Darolia, Rajeev (2017). "Assessing the College Financial Aid Work Penalty," *Journal of Higher Education*, 88(3): 350-375.

de Brey, Cristobal, Lauren Musu, Joel McFarland, Sidney Wilkinson-Flicker, Melissa Diliberti, Anlan Zhang, Claire Branstetter, and Xiaolei Wang (2019). *Status and Trends in the Education of Racial and Ethnic Groups 2018* (NCES 2019-038). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Available at: https://nces.ed.gov/pubs2019/2019038.pdf, accessed 12/14/2021.

Eastman, Scott (2019). "How Many Taxpayers Itemize Under Current Law?" Tax Foundation (available at: https://taxfoundation.org/standard-deduction-itemized-deductions-current-law-2019/, accessed 1/4/2022).

Edlin, Aaron S. (1993). "Is College Financial Aid Equitable and Efficient?" *Journal of Economic Perspectives*, 7(2): 143–158.

Feldstein, Martin (1995). "College Scholarship Rules and Private Saving," *American Economic Review*, 85(3): 552-566.

Haider, Steven J. and Kathleen McGarry (2018). "Postsecondary Schooling and Parental Resources: Evidence from the PSID and HRS." *Education Finance and Policy* 13 (1): 72–96.

Hesel, Richard A., Wayne Camara, and Steve Kappler (2015). "Student Perceptions on Price, Aid, and Debt Provide an Extraordinary Opportunity for Colleges and Universities." *StudentPoll.* Vol. 11, Issue 1.

Hotz, V. Joseph, Emily Wiemers, Joshua Rasmussen, and Kate Maxwell Koegel (forthcoming). "The Role of Parental Wealth and Income in Financing Children's College Attendance and Its Consequences." *Journal of Human Resources*.

Investment Company Institute (2020). *Ten Important Facts About IRAs*. Available at www.ici.org/pdf/ten_facts_iras.pdf, accessed 12/14/2021.

Johnson, Rucker C. (2020). "The Impact of Parental Wealth on College Degree Attainment: Evidence from the Housing Boom and Bust." *AEA Papers and Proceedings* 110: 405–410.

Levine, Phillip B. (2022). *A Problem of Fit: How the Complexity of College Pricing Hurts Students – and Universities.* Chicago: University of Chicago Press.

Long, Mark. (2004). "The Impact of Asset-Tested College Financial Aid on Household Savings." *Journal of Public Economics*, 88, 63–88.

Lovenheim, Michael F., and C. Lockwood Reynolds (2013). "The Effect of Housing Wealth on College Choice: Evidence from the Housing Boom." *Journal of Human Resources* 48(1): 1-35.

Lovenheim, Michael F. (2011). "The Effect of Liquid Housing Wealth on College Enrollment." *Journal of Labor Economics* 29(4): 741 – 771.

Monks, James (2004). "An Empirical Examination of the Impact of College Financial Aid on Savings." National Tax Journal, 57, 189–207.

Mullaney, Tim (2019). "Colleges Want Some of Your Retirement Cash. How to Keep That Money." *Barron's* (available at https://www.barrons.com/articles/retirement-home-equity-college-tuition-51561739799, accessed 11/29/2021).

Pfeffer, Fabian, Bob Schoeni, Arthur Kennickell, and Patricia Andreski (2016). "Measuring Wealth and Wealth Inequality." *Journal of Economic and Social Measurement,* 41(2): 103-12.

Reyes, Jessica Wolpaw. (2008). "College Financial Aid Rules and the Allocation of Savings," *Education Economics*, 16, 167–189.

Richardson, Rashida, Jason Schultz, and Kate Crawford (2019). "Dirty Data, Bad Predictions: How Civil Rights Violations Impact Police Data, Predictive Policing Systems, and Justice. New York University Law Review (94 N.Y.U. L. REV. ONLINE 192).

Smith, Ember and Richard V. Reeves (2020). "SAT Math Scores Mirror and Maintain Racial Inequity." Brookings Institution (available at: https://www.brookings.edu/blog/up-front/2020/12/01/sat-math-scores-mirror-and-maintain-racial-inequity/, accessed 1/5/2022).

Thompson, Jeffrey and Alice Henriques Volz (2021). "A New Look at Racial Disparities Using a More Comprehensive Wealth Measure." Federal Reserve Bank of Boston, available at: https://www.bostonfed.org/publications/current-policy-perspectives/2021/a-new-look-at-racial-disparities-using-a-more-comprehensive-wealth-measure.aspx, accessed 12/15/2021.

**Figure 1: Simplified Version of College Pricing System**

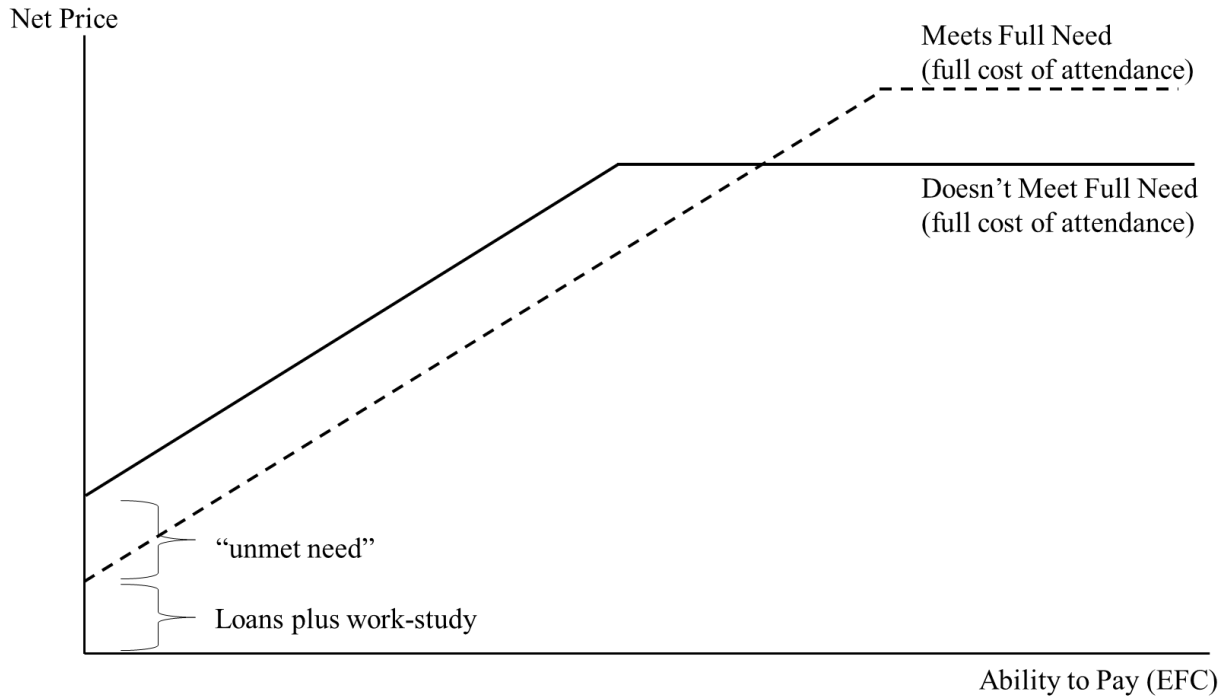
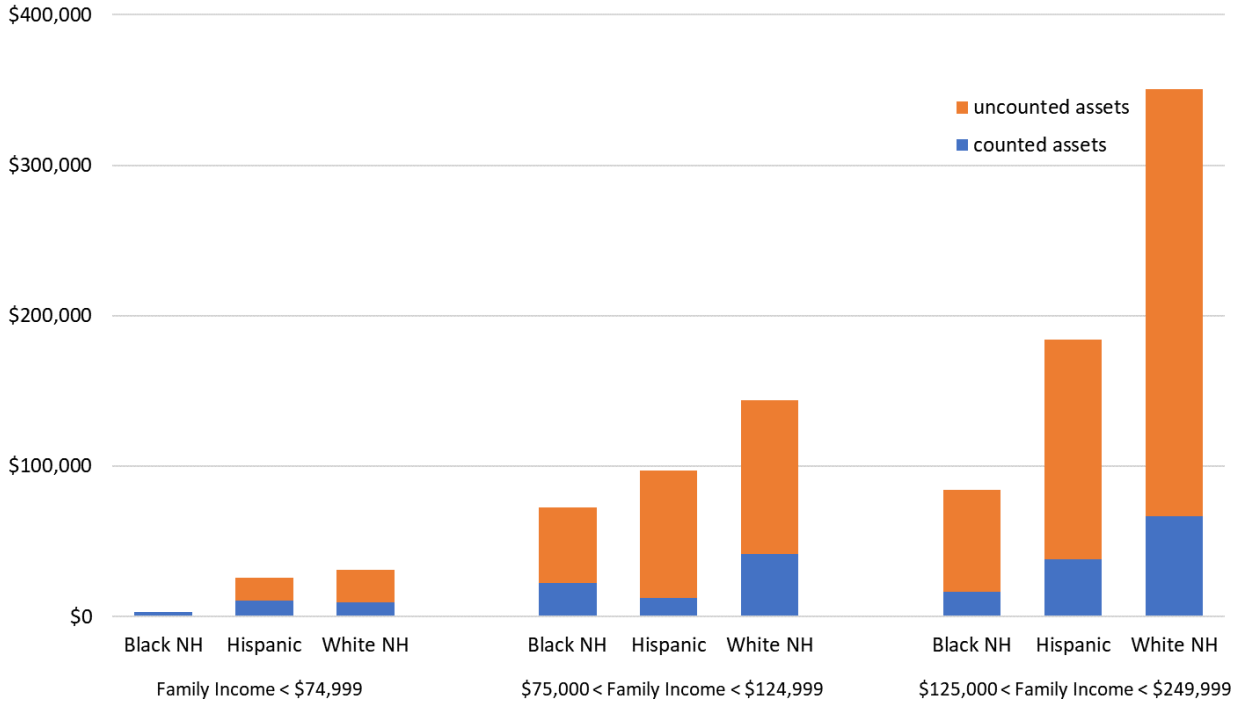
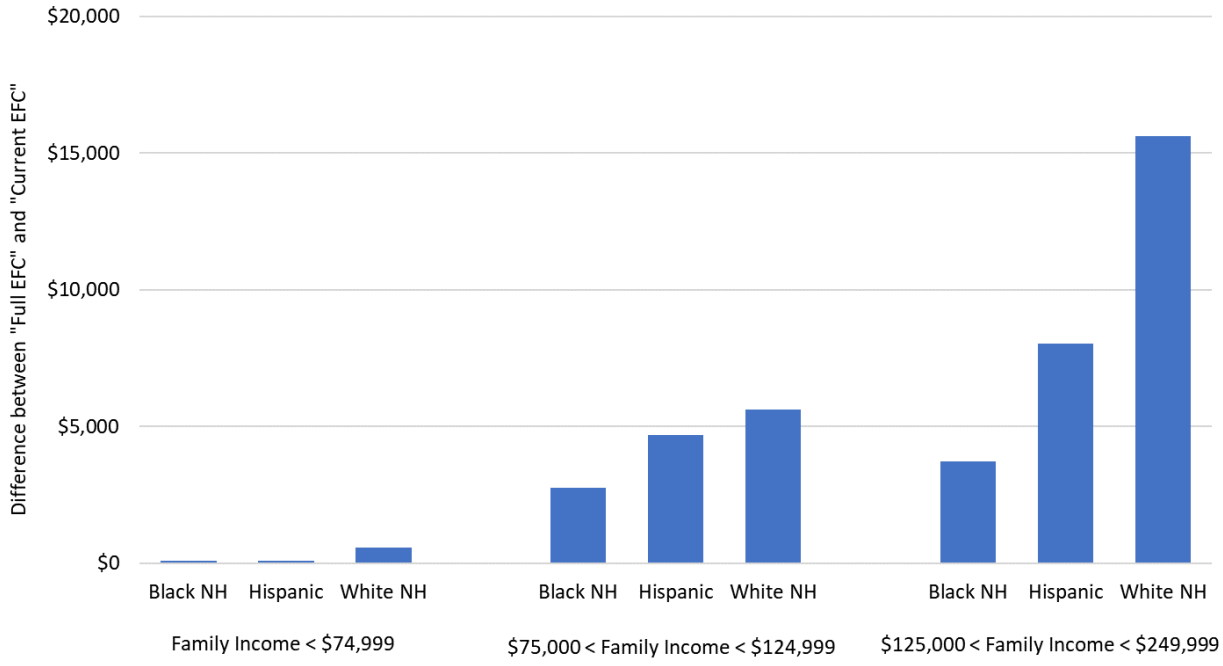


**Figure 2: Median Net Worth for Families with Children Approaching College Age, by Family Income, Race/Ethnicity, and Asset Category**




Notes: Students approaching college age are between the ages of 13 and 17.
Source: Authors' calculations based on data from the 2019 Survey of Consumer Finances.

**Figure 3: EFC Reduction Associated with Uncounted Assets, by Income Category, Race, and Ethnicity**




Source: Authors' calculations based on data from the 2019 Survey of Consumer Finances for respondents with children between the ages of 13 and 17.
Notes: Full EFC simulates EFC levels if uncounted assets were treated the same as counted assets by the financial aid system. Current EFC simulates current calculations that exclude those assets.

FIGURES 4-6 NOT YET APPROVED FOR RELEASE BY THE U.S. DEPARTMENT OF EDUCATION

Table 1: Descriptive Statistics of Family Finances and Educational Outcomes

| | All | white, non-Hispanic | Black, non-Hispanic | Hispanic |
|---|---|---|---|---|
| | Income and Assets (median/75$^{th}$ percentile), in $1,000s | | | |
| Family Income | $73/$120 | $92/$139 | $38/$65 | $45/$78 |
| Net Worth | $96/$279 | $137/$366 | $11/$64 | $44/$133 |
| Counted Assets | $20/$90 | $31/$120 | $4/$20 | $7/$31 |
| Uncounted Assets | $60/$170 | $82/$215 | $0/$38 | $30/$100 |
| | Educational Outcomes (All Students): N = 2,464 | | | |
| High School Graduate | 89.7% | 90.9% | 79.6% | 89.6% |
| Enrolled in: | | | | |
| College by Age 19 | 75.8% | 77.8% | 56.8% | 76.6% |
| Private 4 Year | 13.0% | 15.5% | 7.9% | 6.6% |
| Public 4 Year | 29.8% | 32.5% | 18.4% | 25.2% |
| Other | 33.0% | 29.8% | 30.4% | 44.8% |
| Graduated from: | | | | |
| 2 Year Institution | 9.9% | 10.5% | 5.0% | 9.8% |
| 4 Year Institution | 37.3% | 43.6% | 15.3% | 25.3% |
| Mean Student Loan Debt | $5,393 | $6,091 | $4,412 | $3,361 |
| | Educational Outcomes (Enrolled in College by Age 19): N=1,742 | | | |
| Enrolled in: | | | | |
| Private 4 Year | 17.1% | 19.9% | 13.9% | 8.6% |
| Public 4 Year | 39.3% | 41.8% | 32.5% | 32.9% |
| Other | 43.6% | 38.3% | 53.6% | 58.5% |
| Graduated from: | | | | |
| 2 Year Institution | 13.1% | 13.5% | 8.9% | 12.9% |
| 4 Year Institution | 49.3% | 56.1% | 27.0% | 33.0% |
| Mean Student Loan Debt | $6,934 | $7,672 | $7,516 | $4,244 |
| | Educational Outcomes (Bachelor's Degree): N = 752 | | | |
| Mean Student Loan Debt | $9,839 | $9,971 | $18,266 | $7,087 |

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' Transition to Adulthood Supplement

Table 2: Impact of Uncounted Assets on High School Graduation and College Enrollment

| | Graduate High School | Enroll in College | Enroll in 4 Year Private | Enroll in 4 Year Public | Enroll Other |
|---|---|---|---|---|---|
| | | | No Controls | | |
| Black | -0.113 | -0.210 | -0.076 | -0.141 | 0.007 |
| | (0.034) | (0.045) | (0.028) | (0.034) | (0.042) |
| Hispanic | -0.013 | -0.012 | -0.089 | -0.073 | 0.150 |
| | (0.024) | (0.032) | (0.020) | (0.034) | (0.037) |
| | | | With Controls (including Mother's SES) | | |
| Black | -0.047 | -0.078 | -0.008 | -0.065 | -0.005 |
| | (0.037) | (0.045) | (0.029) | (0.037) | (0.047) |
| Hispanic | 0.062 | 0.141 | 0.002 | 0.021 | 0.119 |
| | (0.029) | (0.038) | (0.026) | (0.038) | (0.043) |
| EFC | 0.012 | 0.024 | 0.007 | 0.006 | 0.011 |
| (in $10,000s) | (0.003) | (0.005) | (0.006) | (0.007) | (0.007) |
| EFC Squared | -0.0002 | -0.0005 | -0.0002 | -0.0001 | -0.0003 |
| | (0.0001) | (0.0001) | (0.0001) | (0.0002) | (0.0001) |
| EFC Reduction | 0.011 | 0.046 | 0.036 | 0.048 | -0.038 |
| (in $10,000s) | (0.007) | (0.012) | (0.013) | (0.018) | (0.016) |
| EFC Reduction | -0.0007 | -0.0027 | -0.0019 | -0.0020 | 0.0012 |
| Squared | (0.0005) | (0.0011) | (0.0007) | (0.0013) | (0.0008) |
| Sample Size | 2,464 | 2,464 | 2,464 | 2,464 | 2,464 |

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' Transition to Adulthood Supplement

Notes: Additional control variables in lower panel include mother's level of education, mother's age at birth of child, and mother's marital status at time of birth. All specifications are weighted by "individual longitudinal weights" in the PSID, measured in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24).

Table 3: Impact of Uncounted Assets on College Graduation and Student Debt

| | Received 2 Year Degree | | Received 4 Year Degree | | Student Loan Debt | |
|---|---|---|---|---|---|---|
| | Full Sample | Enrolled in College | Full Sample | Enrolled in College | Full Sample | 4 Year College Graduates |
| | | | No Controls | | | |
| Black | -0.055 | -0.039 | -0.301 | -0.298 | -1,775.4 | 9,055.5 |
| | (0.018) | (0.030) | (0.033) | (0.051) | (834.9) | (2,153.6) |
| Hispanic | -0.003 | -0.011 | -0.145 | -0.200 | -2,908.3 | -3,245.7 |
| | (0.025) | (0.030) | (0.038) | (0.045) | (855.8) | (1,757.7) |
| | | | With Controls (including Mother's SES) | | | |
| Black | -0.066 | -0.084 | -0.137 | -0.149 | -685.9 | 6,842.3 |
| | (0.023) | (0.035) | (0.039) | (0.061) | (832.1) | (2,379.3) |
| Hispanic | -0.019 | -0.078 | 0.064 | 0.014 | -502.8 | -4,254.8 |
| | (0.026) | (0.034) | (0.040) | (0.052) | (901.4) | (2,099.1) |
| EFC (in $10,000s) | 0.007 | 0.004 | 0.033 | 0.023 | -15.8 | -610.5 |
| | (0.005) | (0.005) | (0.007) | (0.008) | (175.3) | (264.3) |
| EFC Squared | -0.0001 | -0.0001 | -0.0008 | -0.0005 | -5.4 | 6.4 |
| | (0.0001) | (0.0001) | (0.0002) | (0.0002) | (3.7) | (5.6) |
| EFC Reduction (in $10,000s) | -0.021 | -0.032 | 0.080 | 0.060 | -806.1 | -1,799.6 |
| | (0.010) | (0.011) | (0.019) | (0.018) | (502.6) | (570.5) |
| EFC Reduction Squared | 0.0006 | 0.0012 | -0.0037 | -0.0027 | 108.5 | 169.4 |
| | (0.005) | (0.0006) | (0.0015) | (0.0012) | (40.4) | (30.9) |
| Sample Size | 2,371 | 1,676 | 2,160 | 1,510 | 2,370 | 778 |

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' Transition to Adulthood Supplement

Note: Additional control variables in lower panel include mother's level of education, mother's age at birth of child, and mother's marital status at time of birth. All specifications are weighted by "individual longitudinal weights" in the PSID, measured in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24).

Table 4: Simulated Impact of EFC Reduction on Gaps in Educational Outcomes

| | | White/Black Gap | | White/Hispanic Gap | |
|---|---|---|---|---|---|
| | Sample | Unadjusted | Impact of Uncounted Assets | Unadjusted | Impact of Uncounted Assets |
| Enroll in College by Age 19 | All students | 21.0% | 2.9% | 1.2% | 2.1% |
| Graduating from 2-Year Institution | Enrolling Students | 3.9% | -2.2% | 1.1% | -1.8% |
| Graduating from 4-Year Institution | Enrolling Students | 29.8% | 4.0% | 20.0% | 3.1% |
| Student Loan Debt | 4-Year Graduate | $9,056 | -$856 | $-3,246 | -$584 |

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' Transition to Adulthood Supplement

Appendix Table A.1 Form of Family Payments Towards a Child's College Education, By Expected Family Contribution at Private 4-Year Institutions

| | Student | | Parent | | |
|---|---|---|---|---|---|
| | Loan | Earnings | Loan | Direct | Other Family |
| EFC | | | white | | |
| $0 | $5,603 | $3,652 | $2,183 | $6,803 | $1,546 |
| $1-$4,999 | $5,767 | $3,836 | $2,823 | $8,080 | $1,295 |
| $5,000-$14,999 | $7,710 | $3,918 | $3,208 | $13,086 | $1,590 |
| $15,000-$29,999 | $7,141 | $3,224 | $3,346 | $15,836 | $1,252 |
| $30,000-$59,999 | $7,292 | $3,042 | $2,904 | $22,508 | $1,769 |
| | | | Black | | |
| $0 | $6,986 | $4,139 | $3,396 | $2,739 | $566 |
| $1-$4,999 | $8,202 | $3,420 | $4,695 | $6,655 | $294 |
| $5,000-$14,999 | $6,263 | $2,093 | $3,124 | $11,661 | $663 |
| $15,000-$29,999 | $7,903 | $1,363 | $5,794 | $12,194 | $177 |
| $30,000-$59,999 | $8,315 | $2,196 | $9,952 | $10,149 | $65 |
| | | | Hispanic | | |
| $0 | $4,822 | $3,011 | $2,654 | $2,688 | $691 |
| $1-$4,999 | $6,511 | $3,666 | $2,641 | $6,757 | $226 |
| $5,000-$14,999 | $6,392 | $2,635 | $5,936 | $11,907 | $1,246 |
| $15,000-$29,999 | $2,184 | $2,248 | $19,854 | $484 | $4,435 |
| $30,000-$59,999 | $2,882 | $2,196 | $25,929 | $1,675 | $4,643 |

Source: Authors' calculations based on data from the 2016 National Postsecondary Student Access Survey.

Appendix Table A.2 Form of Family Payments Towards a Child's College Education, By Expected Family Contribution at Public 4-Year Institutions (State Residents)

| | Student | | Parent | | |
|---|---|---|---|---|---|
| | Loan | Earnings | Loan | Direct | Other Family |
| EFC | | | white | | |
| $0 | $4,991 | $4,967 | $735 | $5,456 | $909 |
| $1-$4,999 | $4,876 | $4,670 | $855 | $5,670 | $1,058 |
| $5,000-$14,999 | $4,793 | $4,668 | $2,009 | $10,687 | $1,972 |
| $15,000-$29,999 | $4,771 | $4,559 | $2,144 | $12,532 | $690 |
| $30,000-$59,999 | $3,620 | $4,690 | $1,489 | $13,434 | $974 |
| | | | Black | | |
| $0 | $5,646 | $4,320 | $1,644 | $1,866 | $140 |
| $1-$4,999 | $6,142 | $4,311 | $2,055 | $2,600 | $393 |
| $5,000-$14,999 | $5,127 | $5,387 | $2,875 | $3,373 | $120 |
| $15,000-$29,999 | $5,134 | $4,582 | $2,512 | $8,946 | $306 |
| $30,000-$59,999 | $4,761 | $2,906 | $4,471 | $9,408 | $118 |
| | | | Hispanic | | |
| $0 | $3,195 | $4,285 | $496 | $3,739 | $600 |
| $1-$4,999 | $3,790 | $3,456 | $488 | $4,235 | $369 |
| $5,000-$14,999 | $5,101 | $4,102 | $2,288 | $8,761 | $495 |
| $15,000-$29,999 | $3,928 | $3,114 | $1,580 | $11,186 | $328 |
| $30,000-$59,999 | $4,364 | $2,733 | $3,433 | $12,599 | $352 |

Source: Authors' calculations based on data from the 2016 National Postsecondary Student Access Survey.

Appendix Table A.3: Impact of Uncounted Assets on High School Graduation and College Enrollment (Includes grades and test scores as explanatory variables)

| | Graduate High School | Enroll in College | Enroll in 4 Year Private | Enroll in 4 Year Public | Enroll Other |
|---|---|---|---|---|---|
| | | | No Controls | | |
| Black | -0.113 | -0.210 | -0.076 | -0.141 | 0.007 |
| | (0.034) | (0.045) | (0.028) | (0.034) | (0.042) |
| Hispanic | -0.013 | -0.012 | -0.089 | -0.073 | 0.150 |
| | (0.024) | (0.032) | (0.020) | (0.034) | (0.037) |
| | | | With Controls (including Mother's SES) | | |
| Black | 0.004 | -0.011 | 0.024 | -0.017 | -0.019 |
| | (0.033) | (0.037) | (0.029) | (0.037) | (0.046) |
| Hispanic | 0.003 | 0.110 | 0.005 | 0.016 | 0.088 |
| | (0.017) | (0.034) | (0.025) | (0.037) | (0.042) |
| EFC | 0.002 | 0.013 | 0.004 | -0.001 | 0.010 |
| (in $10,000s) | (0.002) | (0.004) | (0.006) | (0.007) | (0.007) |
| EFC Squared | 0.0000 | -0.0003 | -0.0001 | 0.0000 | -0.0002 |
| | (0.0000) | (0.0001) | (0.0001) | (0.0002) | (0.0001) |
| EFC Reduction | 0.000 | 0.031 | 0.028 | 0.037 | -0.034 |
| (in $10,000s) | (0.006) | (0.010) | (0.013) | (0.017) | (0.016) |
| EFC Reduction | 0.0000 | -0.0018 | -0.0015 | -0.0014 | 0.0012 |
| Squared | (0.0003) | (0.0007) | (0.0007) | (0.0011) | (0.0008) |
| Sample Size | 2,464 | 2,464 | 2,464 | 2,464 | 2,464 |

Source: Authors' calculations based on data from the PSID Transition to Adulthood (TAS) Survey.

Note: Additional control variables in lower panel include mother's level of education, mother's age at birth of child, and mother's marital status at time of birth. All specifications are weighted by "individual longitudinal weights" in the PSID, measured in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24).

Appendix Table A.4: Impact of Uncounted Assets on College Graduation and Student Debt
(Includes grades and test scores as explanatory variables)

| | Received 2 Year Degree | | Received 4 Year Degree | | Student Loan Debt | |
|---|---|---|---|---|---|---|
| | Full Sample | Enrolled in College | Full Sample | Enrolled in College | Full Sample | College Graduates |
| | | | No Controls | | | |
| Black | -0.055 | -0.039 | -0.301 | -0.298 | -1,775.4 | 9,055.5 |
| | (0.018) | (0.030) | (0.033) | (0.051) | (834.9) | (2,153.6) |
| Hispanic | -0.003 | -0.011 | -0.145 | -0.200 | -2,908.3 | -3,245.7 |
| | (0.025) | (0.030) | (0.038) | (0.045) | (855.8) | (1,757.7) |
| | | | With Controls (including Mother's SES) | | | |
| Black | -0.065 | -0.112 | -0.035 | -0.045 | 703.8 | 7,425.0 |
| | (0.023) | (0.036) | (0.033) | (0.052) | (762.3) | (2,418.4) |
| Hispanic | -0.032 | -0.091 | 0.059 | 0.063 | -557.1 | -3,929.5 |
| | (0.026) | (0.035) | (0.037) | (0.046) | (881.2) | (2,117.9) |
| EFC (in $10,000s) | 0.007 | 0.004 | 0.021 | 0.019 | -169.0 | -601.1 |
| | (0.005) | (0.005) | (0.007) | (0.007) | (174.7) | (261.8) |
| EFC Squared | -0.0001 | -0.0001 | -0.0005 | -0.0004 | -2.2 | 6.4 |
| | (0.0001) | (0.0001) | (0.0002) | (0.0002) | (3.7) | (5.5) |
| EFC Reduction (in $10,000s) | -0.021 | -0.028 | 0.051 | 0.042 | -1,199.2 | -1,776.3 |
| | (0.010) | (0.011) | (0.015) | (0.016) | (472.0) | (569.4) |
| EFC Reduction Squared | 0.0007 | 0.0011 | -0.0025 | -0.0021 | 128.0 | 169.1 |
| | (0.0005) | (0.0005) | (0.0010) | (0.0009) | (34.7) | (31.0) |
| Sample Size | 2,371 | 1,676 | 2,160 | 1,510 | 2,370 | 778 |

Source: Authors' calculations based on data from the PSID Transition to Adulthood (TAS) Survey.
Note: Additional control variables in lower panel include mother's level of education, mother's age at birth of child, and mother's marital status at time of birth. All specifications are weighted by "individual longitudinal weights" in the PSID, measured in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24).

Table A.5: Simulated Impact of EFC Reduction on Gaps in Educational Outcomes
(Includes grades and test scores as explanatory variables)

| | | White/Black Gap | | White/Hispanic Gap | |
|---|---|---|---|---|---|
| | Sample | Unadjusted | Impact of Uncounted Assets | Unadjusted | Impact of Uncounted Assets |
| Enroll in College by Age 19 | All students | 21.0% | 1.9% | 1.2% | 1.4% |
| Graduating from 2-Year Institution | Enrolling Students | 3.9% | -1.9% | 1.1% | -1.5% |
| Graduating from 4-Year Institution | Enrolling Students | 29.8% | 2.7% | 20.0% | 2.1% |
| Student Loan Debt | 4-Year Graduate | $9,056 | -$837 | $-3,246 | -$569 |

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' Transition to Adulthood Supplement