POSTSECONDARY

VALUE COMMISSION

THE MONETARY VALUE OF ECONOMIC AND RACIAL JUSTICE IN POSTSECONDARY EDUCATION: QUANTIFYING THE POTENTIAL FOR PUBLIC GOOD

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ABSTRACT

In this report, we present the results of a thought experiment in which we estimated the potential costs and benefits to society of achieving equality in educational attainment and related workforce outcomes by race/ethnicity, class, and gender. We conducted this thought experiment to clarify the role that education can play in reducing inequality. While education has significant value that cannot be measured in monetary terms, we focused in our analysis on monetary outcomes such as earnings, tax revenue, and effects on GDP, along with secondary effects on incarceration costs, public health expenditures, and other public programs, using a stepwise analysis to simulate what would happen if various income, racial or ethnic, and gender equity gaps were closed.

We first measured the effect of closing attainment gaps by earnings and race within the population so that low-income adults (those without earnings and those in the bottom 40 percent of earnings) matched the educational attainment of adults in the top 60 percent of earnings, and so that adults from underrepresented racial and ethnic groups matched the educational attainment of White adults. We then examined the marginal gains that would be possible if, in addition to closing attainment gaps, we were able to eliminate federal student loan debt for new completers of college credentials.

After exploring the gains that could be possible based on increases in attainment and elimination of student debt for low-income additional credential holders, we conducted a stepwise analysis to estimate the earnings gaps that would remain between White men and other race/gender groups at various equity thresholds. For example, we estimated the wealth gaps that would remain after accounting for new potential cumulative savings (accrued as a result of closing earnings gaps), with the constraint that only 55 percent of wealth on average currently comes from self-generated earnings. By focusing on savings as a first step to accumulating wealth, we were able to analyze wealth at the individual level and build a proxy link between education, earnings, and overall wealth accumulation.

We found that simply equalizing attainment by earnings and race/ethnicity would result in 30.5 million more people earning a college credential (a certificate or an associate's degree or above), bringing the total share of Americans with a college credential to 63 percent.[1] We found that reaching this target would have an initial cumulative cost of at least $3.97 trillion, but would create annual benefits to society of more than $956 billion in increased tax revenue, increased GDP, reduced public health expenses, reduced criminal justice expenditures, and reduced reliance on public support programs. The personal benefits of these gains translate to $1.03 trillion in additional annual earnings, corresponding with a $3.17 trillion increase in potential cumulative savings over the course of workers' remaining careers. If we were able to equalize attainment without creating additional debt for new low-income completers, the increase in potential cumulative savings would rise even higher, to $3.76 trillion.

It's tempting but inaccurate to interpret these numbers as suggesting that the investment we describe here would pay off in slightly more than four years. Our thought experiment assumes that all costs and benefits are realized immediately, but the harsh reality is that neither costs nor benefits would occur instantaneously. In fact, constraints related to capacity, readiness, and efficiency suggest that

1 For the purposes of comparison with Lumina Foundation's 60 percent attainment goal, we have included in this calculation people with associate's degrees or higher as well as the estimated number of people with certificates (assumed to be 5.2 percent of the population). See Lumina Foundation, "A Stronger Nation," 2019.

even in the best-case scenario—in which substantial systemic reforms allowed more low-income students and students from underrepresented racial/ethnic backgrounds to enroll and succeed in the postsecondary education system—it would take at least 34 years just to fill the gaps at various levels of educational attainment. In this scenario, annual benefits would begin to exceed annual costs after more than nine years and would continue to grow until the annual public benefit reached the maximum of $956 billion annually. Even after equalizing attainment, gaps in earnings and wealth could still take generations to close due to unrelenting inequalities in the workforce, the role of intergenerational transmission in maintaining wealth gaps, and deep structural inequalities maintained over hundreds of years though discriminatory policy and practice.[2] Substantial sustained investment will be required for postsecondary education to realize its full potential to contribute to the public good.

INTRODUCTION: THE BENEFITS TO SOCIETY OF ACHIEVING POSTSECONDARY EQUITY

Much is known about the benefits of postsecondary education to both individuals and society.[3] Higher levels of education are associated with higher median earnings and higher tax revenue, as well as higher workforce participation, lower unemployment, and less reliance on public assistance programs, to name only a few examples.[4] People with more postsecondary education show higher levels of civic participation (e.g., voting and involvement in community activities) and are incarcerated at lower rates.[5]

Much is also known about persistent gaps in educational and workforce outcomes by race, ethnicity, socioeconomic status, and gender.[6] A kindergarten student with high test scores and low family socioeconomic status (SES) is much less likely to achieve high SES as a young adult than one with low test scores and high family SES.[7] Race- and class-based inequalities begin long before college admissions officers get involved; and after college, the unequal treatment of similarly educated adults continues throughout their careers: White workers have higher median earnings than Black and Latinx workers,[8] even when workers from all three groups are in good jobs and have similar levels of educational attainment.[9] And while women earn more degrees than men at every level of educational

2 In the United States, discriminatory policies and practices and their effects vary widely by race and ethnicity. For example, Blacks have faced particularly pernicious forms of discrimination and oppression beginning with the institution of slavery and continuing through Jim Crow, redlining, and other federally supported efforts designed to prevent their full civic and economic participation in society. Native Americans, Native Hawaiians, Alaska Natives, and Pacific Islanders have encountered a variety of differently oppressive policies and practices, including displacement, compulsory assimilation, and loss of sovereignty over their land. Asian and Latinx subgroups have also faced discrimination and xenophobia, with wide variations in experience among different Asian and Latinx subgroups.

3 See Trostel, *It's Not Just the Money*, 2015; Ma et al., *Education Pays 2019*, 2019.

4 Ma et al., *Education Pays 2019*, 2019.

5 Trostel, *It's Not Just the Money*, 2015.

6 The Georgetown University Center on Education and the Workforce has explored these gaps in a variety of reports, most recently Carnevale et al., *The Unequal Race for Good Jobs*, 2019; Carnevale et al., *Born to Win, Schooled to Lose*, 2019; and Carnevale et al., *Our Separate and Unequal Public Colleges*, 2018.

7 Carnevale et al., *Born to Win, Schooled to Lose*, 2019.

8 In this document, we use the term Black to refer to people who identify as Black or African American and the term Latinx to refer to people who identify as Hispanic or Latinx. We use the term Other to refer to anyone with a race not otherwise named or more than one race.

9 Carnevale et al., *The Unequal Race for Good Jobs*, 2019. We define "good jobs" as those that pay a minimum of $35,000 annually for workers between the ages of 25 and 44 and at least $45,000 for workers between the ages of 45 and 64.

attainment, they are still concentrated in lower-paying fields and need one more degree than men on average to achieve similar earnings.[10]

In this report, we describe the results of a thought experiment in which we shed light on what society would gain by closing these gaps at the postsecondary level and by ensuring equitable educational outcomes among different demographic groups. We accomplish this by quantifying the potential value to society if the benefits associated with postsecondary education were distributed equitably by race, class, and gender.

To illustrate the potential societal value of parity in postsecondary education, we modeled the gains to society that would result if we lived in a world where educational outcomes were equal by race/ethnicity and class and where labor market outcomes were equal by race/ethnicity, class, and gender.[11] In this exercise, we assumed that interventions would improve outcomes for underprivileged groups rather than suppressing outcomes for privileged groups. We also estimated the initial public investments necessary to achieve these gains, along with the gaps that would remain due to inequality in the workforce.[12] Our estimates rest on a series of assumptions that we describe in detail in an appendix to this report; we encourage readers who are interested in our methodology to consult this appendix, along with the footnotes we have included throughout our analysis.

It's important to recognize that the new outcomes we describe here won't be reachable in a day or even in several decades. They may, in fact, take generations to reach.[13] That being said, the vision we present here can serve as a north star guiding us in the next stage of research as we explore what could actually be achievable to advance equity in society within a manageable timeframe.

In this thought experiment, we have focused on quantifiable economic gains to society: increases in tax revenue and GDP, decreased reliance on public support resulting from reduced public health expenditures, and decreased reliance on various public programs.[14] We have also accounted for monetary gains related to potential reductions in incarceration costs associated with the lower likelihood of incarceration among more educated populations. In addition, we have examined personal gains, such as increased earnings and increased potential cumulative savings, that would advance the public good by reducing earnings gaps and wealth gaps.

Of course, some important educational effects can't be measured in dollars. While much work remains to be done in this area, we include a chapter summarizing highlights from the research on the nonmonetary benefits of postsecondary education (see Part III). We describe established relationships between educational attainment and family structure, critical thinking, civic engagement, pluralistic orientation, agency and empowerment, and happiness, along with non-monetary outcomes related to health and crime. We also include our own findings on the societal value of the traditional

10 Carnevale et al., *Women Can't Win*, 2018.

11 We did not adjust educational attainment to equalize outcomes by gender because women earn more degrees than men at every level of postsecondary education. See Carnevale et al., *Women Can't Win*, 2018.

12 For this exercise, we followed as closely as possible the Postsecondary Value Commission's Postsecondary Value Framework. Both the gains and public expenditures are expressed in nominal dollars.

13 Without any changes, this would certainly be true: Asante-Muhammed et al. (2016) found that with no changes in the rate of wealth accumulation, Black families would need 228 years to reach the same levels of wealth *currently* held by White families, and Latinx families would need 84 years.

14 We included the following programs in these calculations: Temporary Assistance for Needy Families (TANF); the Supplemental Nutrition Assistance Program (SNAP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the Earned Income Tax Credit (EITC); federal housing assistance programs; and free and reduced-price school meals.

American liberal arts education in deterring authoritarianism and promoting tolerance.[15] While such nonmonetary benefits are difficult to quantify, it seems clear that postsecondary learning holds intrinsic value to individuals engaged in the "pursuit of happiness," asserted as an "unalienable right" by Thomas Jefferson in the Declaration of Independence. The exact value of these non-monetary benefits can't be easily evaluated in dollars, but these benefits are nonetheless crucial elements of the societal value of postsecondary education and should be investigated more fully in future iterations of this work.

Because this thought experiment is particularly sensitive to our assumptions, we have noted important follow-up questions, limitations, and caveats that should be considered when interpreting our findings. One crucial limitation is that we present the changes we describe as immediate; in reality, however, they would take many years to achieve. Future iterations of this work should model costs and benefits using a cohort-based analysis that would facilitate the creation of a more realistic timeframe. Our model also ignores several likely outcomes that should be incorporated into future models, including the risk of inflation (a common outcome when increased earnings and wealth are not accompanied by increased productivity) and the unanswered question of whether increased demand for postsecondary education would accelerate already-increasing higher education costs.[16]

We also assume that changing the supply of educated workers will not result in related changes in demand for educated workers; future models should investigate the relationship between supply and demand in greater detail. For example, there is currently an undersupply of postsecondary education in the workforce: 47 percent of jobs demand an associate's degree or higher,[17] but only 41 percent of people have at least an associate's degree.[18] However, equalizing educational attainment could increase the share of workers with postsecondary education above projected demands, and we would expect that the earnings premium would increase when the demand outpaces supply and decrease when supply is higher than demand. (For a more complete discussion of considerations related to supply and demand, see Threshold 1 in Part II below.)

In general, we have not attempted to establish directional causality in the relationships among educational attainment, earnings, and wealth, as causes and effects within these relationships are difficult, if not impossible, to disentangle. We recognize that outcomes associated with higher education are also connected to other factors, such as social capital, individual traits, and the accumulation of advantages and disadvantages over a person's lifetime. This complicates any attempt to assume uniform outcomes or causality from increased attainment: for example, data shows that higher educational attainment leads to higher household income, but also that higher household income leads to higher educational attainment.

15 Carnevale et al., *The Role of Education in Taming Authoritarian Attitudes*, 2020; Carnevale et al., *The Merit Myth*, 2020.

16 Tuition and fees at public four-year colleges and universities have grown 19 times faster than median household incomes since 1980; see Carnevale et al., *Career Pathways*, 2017. While our model does not take potential inflation into account, we would expect college costs to continue to rise based on these historical trends alone. The increased demand for higher education associated with educating more students as described in this thought experiment could even further accelerate the rising costs of tuition and fees, especially since many of these additional students are likely to require increased support services such as counseling. Purposeful changes in policy and practice could help counteract these trends.

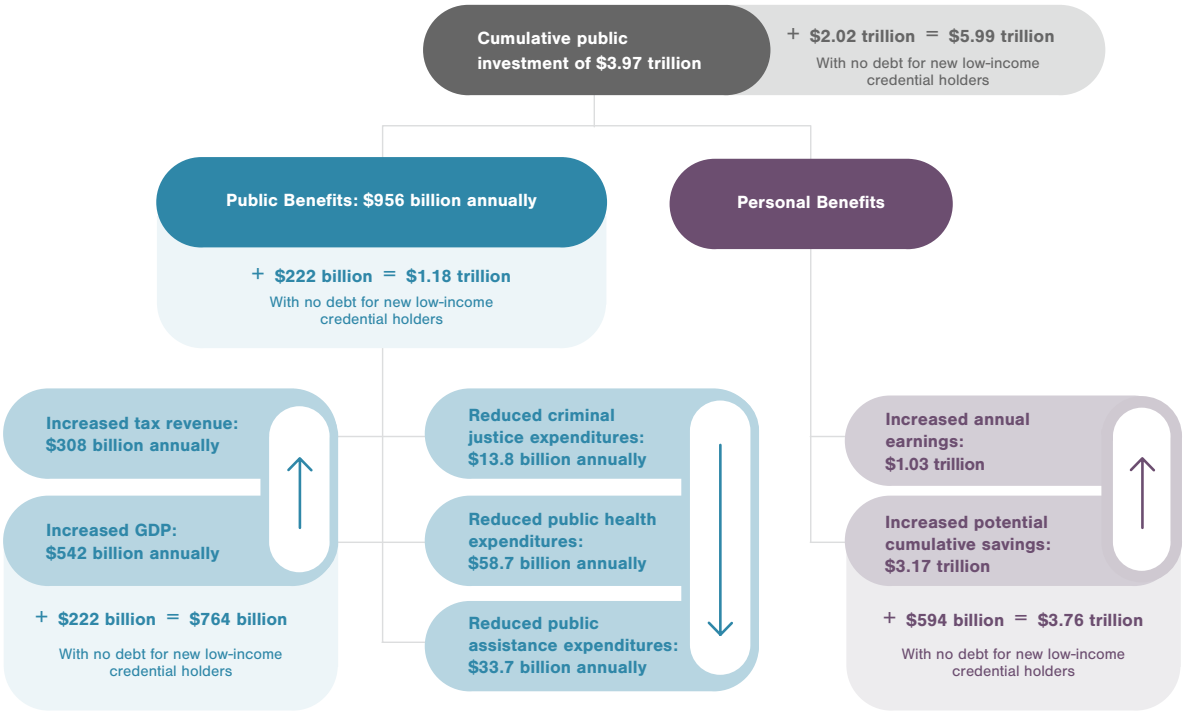
17 Georgetown University Center on Education and the Workforce analysis using data from the US Census Bureau and Bureau of Labor Statistics, Current Population Survey; US Census Bureau, American Community Survey; US Bureau of Labor Statistics; Macroeconomic Advisers LLC; and Economic Modeling Specialists International (EMSI).

18 Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, American Community Survey, 2013–17 (pooled).

Within the parameters we have described, the estimates below can be understood in two ways: as the potential economic gains to society of closing gaps in educational attainment and economic opportunity—or, alternatively, as the lost economic potential associated with continuing to accept existing inequalities.

With that in mind, we asked what the world would look like if certain conditions associated with equality in postsecondary attainment and labor market outcomes came to be.

PART I. THE VALUE OF CLOSING POSTSECONDARY ATTAINMENT GAPS



First, we explored the value to society of closing gaps in postsecondary attainment. We asked: What would society stand to gain if those in the bottom 40 percent of the earnings distribution as well as non-earners had the same educational attainment as those in the top 60 percent of earnings? And what if, in addition, adults from all racial and ethnic groups had at least the same educational attainment as White adults?

We designed our analysis to align with the Postsecondary Value Commission's Postsecondary Value Framework. As described in further detail in Part II, we found that equalizing attainment in this manner would require a total initial public investment of $3.97 trillion in educational spending at the federal, state, and local levels, assuming no limitations in capacity and not accounting for differences in completion rates and readiness among different demographic groups.[19] This estimate includes the cost of increasing students' educational attainment by the number of levels necessary to meet new attainment goals, based on current federal and state appropriations per full-time equivalent student within different educational sectors. It also includes the adjustment in spending needed to increase graduation rates as necessary to achieve attainment goals.

19 This includes $3.54 trillion to equalize attainment by earnings and $426 billion to equalize attainment by race and ethnicity. As detailed below, in addition to postsecondary spending, this figure includes the estimated costs of raising attainment at the K–12 level and of providing additional support to underserved students. Additional methodological details are in the appendix.

This investment would result in an annual aggregate earnings boost of $1.03 trillion, along with annual societal gains totaling $956 billion. The components of that total are:

- $308 billion annual increase in tax revenue;
- $542 billion annual increase in GDP from increased private earnings;
- $13.8 billion annual decrease in expenses associated with incarceration;
- $58.7 billion annual decrease in public health expenditures; and
- $33.7 billion annual decrease in expenditures for major federal public assistance programs, such as those that provide food and housing assistance for low-income individuals and families.[20]

In addition, we would expect to see gains in several personal benefits that we interpret as contributing indirectly to the public good. For example:

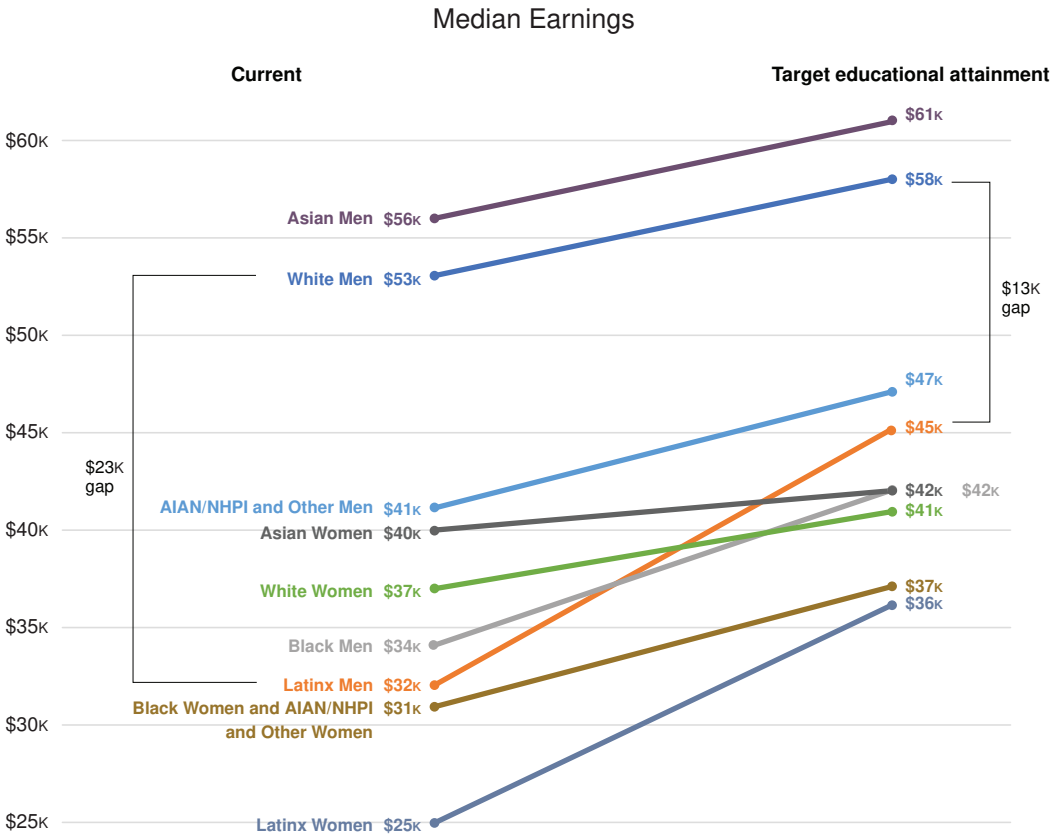
- Earnings gaps between White men and every group except for Asian men and women and White women would shrink (Figure 1 and Table 1). The largest reduction in the gap would be 17 percentage points, between White men and Latinx men. After adjusting attainment, a total of 62.1 million people, or 37 percent of people ages 25 to 64, would reach a level of earnings that we refer to as "economic mobility"[21] for the purposes of this thought experiment (defined as the bottom threshold of the current 4th quintile of earnings, or $48,523).[22]

20 This calculation includes reduced expenditures related to Temporary Assistance for Needy Families (TANF); the Supplemental Nutrition Assistance Program (SNAP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the Earned Income Tax Credit (EITC); federal housing assistance programs; and the free and reduced-price school meal programs. Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

21 The term "economic mobility" as used in this piece is a shorthand for the purposes of alignment with the Postsecondary Value Commission. Strictly speaking, however, this threshold does not represent mobility for workers whose earnings were above the fourth quintile earnings threshold before the attainment adjustment. In addition, many economists use the term economic mobility to refer to intergenerational mobility. The methodology used in this piece does not account for family income of the households in which individuals were raised, so this threshold cannot be interpreted as reflecting intergenerational mobility.

22 This calculation includes all workers ages 25 to 64 with positive earnings, not just full-time, full-year workers. Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey (ACS), 2013–17.

Figure 1. Earnings gaps (for example, the gap between Latinx men and White men) would shrink with more equal educational attainment.



Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey (ACS), 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size.

Table 1. Differences in earnings gaps after equalizing educational attainment

Sex	Race/ Ethnicity	Current median earnings	New median earnings after Threshold 1	Percent difference	Current median earnings as share of White men's	New median earnings after equalizing attainment as a share of White men's	Change in gap
Men	White	$53,000	$58,000	10%	100%	100%	0pp
	Latinx	$32,000	$45,000	42%	61%	78%	17pp
	Black	$34,000	$42,000	23%	65%	73%	8pp
	Asian	$56,000	$ 61,000	10%	106%	106%	0pp
	AIAN/NHPI and Other	$41,000	$47,000	16%	78%	82%	4pp
Women	White	$37,000	$41,000	11%	70%	70%	0pp
	Latinx	$25,000	$36,000	44%	47%	62%	15pp
	Black	$31,000	$37,000	22%	58%	65%	7pp
	Asian	$40,000	$42,000	5%	77%	73%	-4pp
	AIAN/NHPI and Other	$31,000	$37,000	19%	59%	64%	5pp

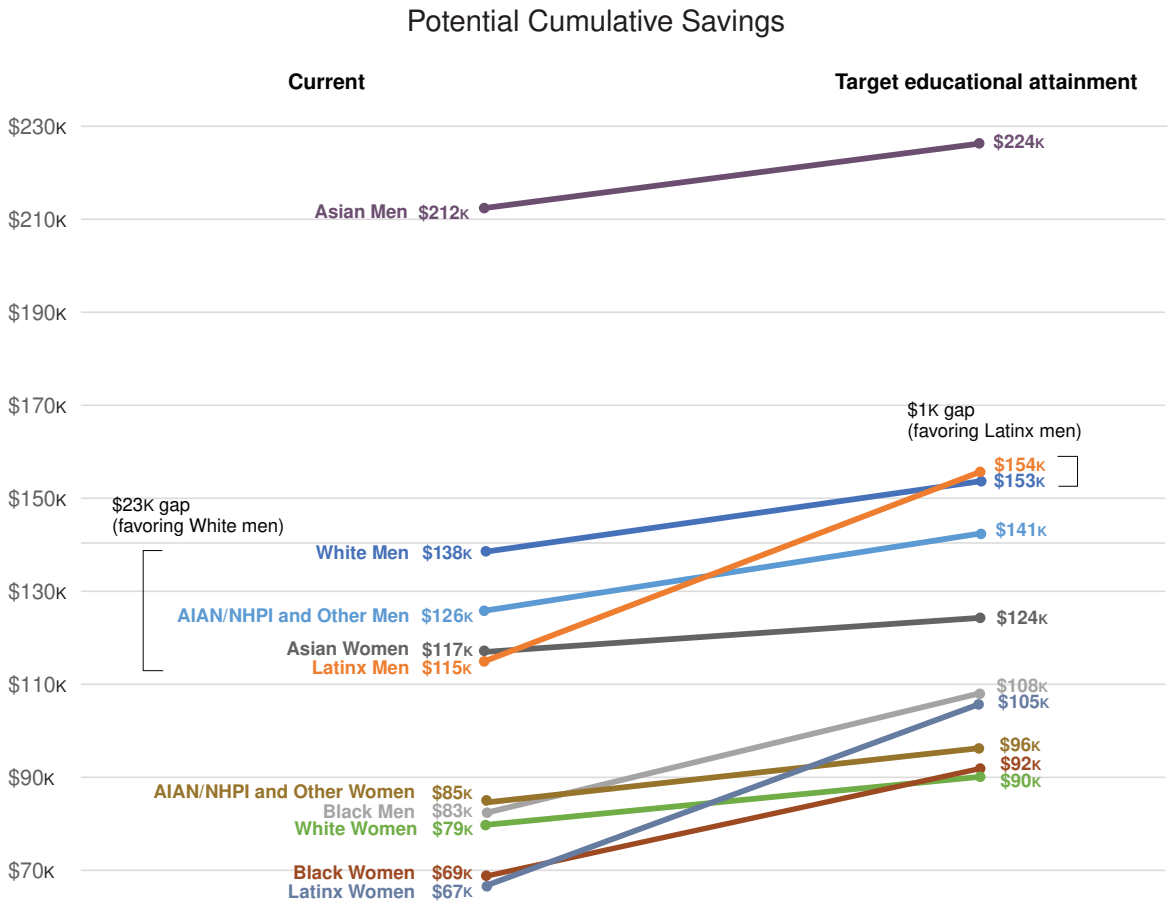
Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

- Potential cumulative savings—which can play a role in closing wealth gaps—would grow by $3.17 trillion. However, these potential cumulative savings would be distributed unevenly, consistently increasing potential cumulative savings across groups but inconsistently shrinking the gaps compared to White men (Figure 2 and Table 2). For example, Latinx women would see gains of 19 percentage points relative to White men, while AIAN/NHPI men and men of other races and ethnicities would see no gains at all relative to White men.[23] In other words, if attainment were equalized, Latinx women would gain an additional 19 cents of potential cumulative savings for every dollar of potential cumulative savings amassed by White men over their lifetimes—a change that could contribute to closing the portion of wealth gaps attributable to education.

23 In this scenario, Asian men and women would lose ground relative to White men (by 8 percentage points and 4 percentage points, respectively). This is because Asian men and women already have greater attainment than White men, so did not gain ground in the attainment adjustment. Asian men currently have greater wealth than White men, so this negative percentage point change in potential cumulative savings could actually help close wealth gaps between White men and Asian men.

Figure 2. Gaps in the potential to accumulate savings over the course of workers' remaining careers (such as the gap between Latinx men and White men) would shrink with more equal educational attainment.



Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size.

Table 2. Potential cumulative savings per person as a share of White men's potential cumulative savings

Sex	Race/ Ethnicity	Current potential cumulative savings per person	New potential cumulative savings per person after Threshold 1	Percent difference	Current potential cumulative savings per person as a share of White men's	New potential cumulative savings per person after equalizing attainment as a share of White men's	Change in gap
Men	White	$138,000	$153,000	11%	100%	100%	0pp
	Latinx	$115,000	$154,000	33%	84%	100%	16pp
	Black	$83,000	$108,000	31%	60%	71%	11pp
	Asian	$212,000	$224,000	6%	154%	146%	-8pp
	AIAN/NHPI and Other	$126,000	$141,000	12%	92%	92%	0pp
Women	White	$79,000	$90,000	15%	57%	59%	2pp
	Latinx	$67,000	$105,000	56%	49%	68%	19pp
	Black	$69,000	$92,000	34%	50%	60%	10pp
	Asian	$117,000	$124,000	6%	85%	81%	-4pp
	AIAN/NHPI and Other	$85,000	$96,000	13%	61%	62%	1pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

For a detailed discussion of the assumptions behind these findings, see Threshold 1 in Part II, along with the related section in Appendix A.

What if new low-income credential holders had no student loan debt?

The effect of higher education in improving economic equality is currently limited by the burden of student loan debt. With the policy debate about "free college" in the national spotlight,[24] we asked how the value of equalizing attainment might increase if new low-income students completed a credential without having to take on any student loan debt.[25] This model goes beyond the financial supports promised by many other free-college programs that would provide tuition-free enrollment but require students to cover non-tuition expenses.

24 Carnevale et al., *Free College 101*, 2019.

25 We eliminated the need to borrow student loans for additional credential holders without earnings and those in the bottom two quintiles.

The principal and interest associated with student loan debt for the additional low-income credential holders would be $2.02 trillion.[26] Adding these costs to the estimated $3.97 trillion initial investment needed to equalize attainment, we would need a total initial public investment of $5.99 trillion, corresponding with annual societal gains totaling $1.18 trillion ($222 billion more than if new low-income credential holders took on student debt).

Without the burden of loan payments, new low-income credential holders would have more money to spend in the economy and more money to save. As a result, both GDP and potential cumulative savings would increase:

- GDP would increase by $764 billion annually from earnings increases ($222 billion more than would occur if the new low-income credential holders took on student debt).
- Potential cumulative savings would grow by $3.76 trillion ($594 billion more than would occur if the new low-income credential holders took on student debt). All groups except for Asian men and Asian women would see gains in their savings power compared to White men, with the gaps in potential cumulative savings additionally reduced by between 1 percentage point (for White women) and 7 percentage points (for men and women who identify as AIAN/NHPI or other races and ethnicities) (Table 3).

26 This number assumes a standard 10-year repayment period with interest rates of 4 percent for undergraduate student loans and 7 percent for graduate loans. At this stage in our analysis, we consider the costs associated with these loans to be covered by public expenditures rather than assumed by low-income credential recipients. We assume that the money that additional low-income credential holders would have spent on loan payments would instead be directed toward consumption and potential cumulative savings.

Table 3. Potential cumulative savings per person as a share of White men's potential cumulative savings, after closing gaps in attainment and eliminating student loan debt for additional low-earning credential recipients

Sex	Race/ Ethnicity	Potential cumulative savings per person after Threshold 1	New potential cumulative savings per person after Threshold 1 with no borrowing for additional low-income credential holders	Percent difference	Potential cumulative savings per person after Threshold 1 as a share of White men's	New potential cumulative savings per person after equalizing attainment with no borrowing for additional low-income credential holders, as a share of White men's	Change in gap
Men	White	$153,000	$155,000	1%	100%	100%	0pp
	Latinx	$154,000	$160,000	4%	100%	103%	3pp
	Black	$108,000	$115,000	6%	71%	74%	3pp
	Asian	$224,000	$226,000	1%	146%	145%	-1pp
	AIAN/NHPI and Other	$141,000	$153,000	9%	92%	99%	7pp
Women	White	$90,000	$93,000	3%	59%	60%	1pp
	Latinx	$105,000	$111,000	6%	68%	72%	4pp
	Black	$92,000	$98,000	7%	60%	63%	3pp
	Asian	$124,000	$126,000	1%	81%	81%	0pp
	AIAN/NHPI and Other	$96,000	$107,000	12%	62%	69%	7pp

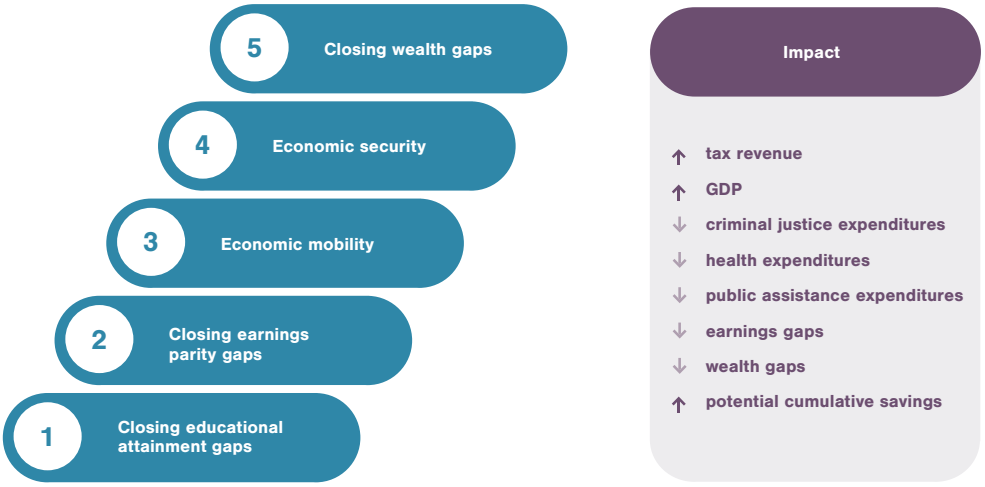
Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

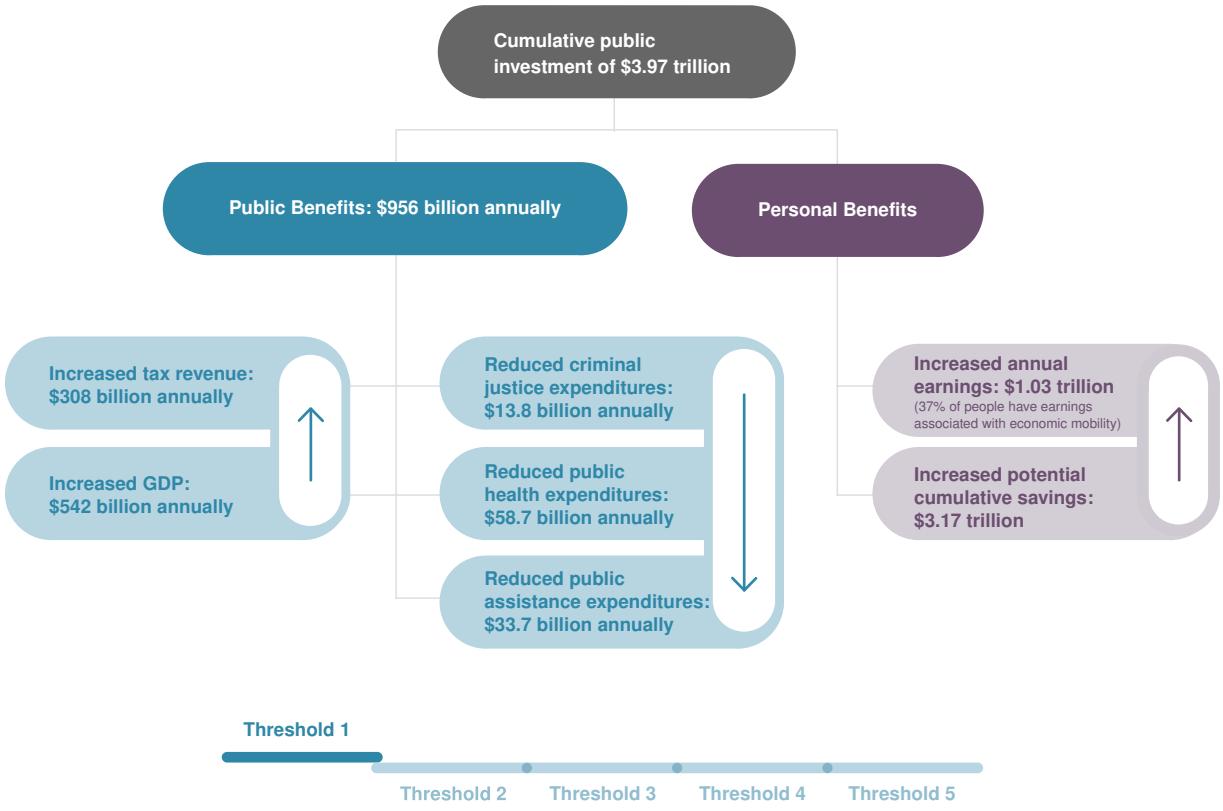
PART II. A STEPWISE MODEL FOR ADVANCING EQUITY

In this section, we adopt the stepwise approach outlined in the Postsecondary Value Commission's Postsecondary Value Framework to model the economic gains associated with closing gaps in postsecondary education and to estimate the additional gains possible with changes in the labor market. We estimated the impact of equity at the five thresholds described below.

Value to society of greater income, racial, & gender equity



Threshold 1: If educational attainment gaps were closed



First, we asked: what would the world look like if the lowest-earning groups had the same educational attainment as those at higher earnings levels,[27] and if Blacks, Latinxs, and American Indians, Alaska Natives, Native Hawaiians, and Pacific Islanders (AIAN/NHPIs)[28] had the same educational attainment as Whites?[29]

To model an equitable distribution of educational attainment, we first determined the number of people at each education level, disaggregated by earnings (Table 4) and race (Table 5).

27 In this exercise, we matched the attainment distribution for non-earners and those in the bottom two earnings quintiles with the attainment distribution of those in the top three earnings quintiles.

28 Asians have higher average educational attainment than Whites, and we did not adjust Asian attainment downward to match White attainment. We recognize that specific Asian subgroups face educational and economic disparities, but the data did not allow for disaggregation at the subgroup level.

29 We did not adjust for gender equity in attainment because women already earn more degrees than men at every level of attainment while also needing one more degree than men to make similar earnings. See Carnevale et al., *Women Can't Win*, 2018.

Table 4. Original distribution of population (ages 25 to 64, in thousands) by educational attainment and individual earnings (share of earnings group at each level of attainment)

Attainment (in thousands)	Zero earnings	Quintile 1–2 ($1–$31,667)	Quintile 3 ($31,668–$48,522)	Quintiles 4–5 ($48,523+)	Total	Quintiles 3–5 (target distribution)
Less than high school	8,749 (20%)	7,500 (15%)	1,802 (7%)	1,341 (3%)	19,392 (12%)	3,143 (4%)
High school/GED	14,086 (32%)	15,879 (32%)	6,813 (27%)	7,256 (15%)	44,034 (26%)	14,069 (19%)
Some college	9,173 (21%)	12,052 (24%)	6,067 (24%)	8,497 (17%)	35,790 (21%)	14,564 (20%)
Associate's degree	3,156 (7%)	4,614 (9%)	2,799 (11%)	4,582 (9%)	15,151 (9%)	7,381 (10%)
Bachelor's degree	6,056 (14%)	7,125 (14%)	5,310 (21%)	15,925 (32%)	34,416 (20%)	21,235 (28%)
Master's degree	2,023 (5%)	2,090 (4%)	1,696 (7%)	8,433 (17%)	14,242 (8%)	10,130 (14%)
Professional degree	529 (1%)	362 (1%)	215 (1%)	2,245 (5%)	3,352 (2%)	2,460 (3%)
Doctoral degree	250 (1%)	224 (0%)	160 (1%)	1,504 (3%)	2,138 (1%)	1,665 (2%)
Total	44,023 (100%)	49,846 (100%)	24,863 (100%)	49,784 (100%)	168,515 (100%)	74,647 (100%)

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, American Community Survey, 2013–17 (pooled).

Note: Numbers may not sum due to rounding.

Table 5. Original distribution of population (ages 25 to 64, in thousands) by educational attainment and race/ethnicity (share of racial/ethnic group at each level of attainment)

Attainment (in thousands)	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	6,560 (6%)	8,732 (31%)	2,583 (12%)	197 (14%)	1,054 (11%)	265 (9%)	19,392 (12%)
High school/GED	27,138 (26%)	7,823 (28%)	6,530 (31%)	462 (34%)	1,406 (14%)	676 (22%)	44,034 (26%)
Some college	22,839 (22%)	5,149 (18%)	5,437 (26%)	366 (27%)	1,214 (12%)	785 (26%)	35,790 (21%)
Associate's degree	10,416 (10%)	1,798 (6%)	1,828 (9%)	127 (9%)	686 (7%)	297 (10%)	15,151 (9%)
Bachelor's degree	24,602 (23%)	3,007 (11%)	2,848 (14%)	143 (10%)	3,144 (32%)	673 (22%)	34,416 (20%)
Master's degree	10,055 (10%)	954 (3%)	1,263 (6%)	49 (4%)	1,649 (17%)	272 (9%)	14,242 (8%)
Professional degree	2,438 (2%)	252 (1%)	191 (1%)	9 (1%)	396 (4%)	67 (2%)	3,352 (2%)
Doctoral degree	1,453 (1%)	123 (0%)	129 (1%)	8 (1%)	382 (4%)	44 (1%)	2,138 (1%)
Total	105,501 (100%)	27,837 (100%)	20,809 (100%)	1,360 (100%)	9,931 (100%)	3,078 (100%)	168,515 (100%)

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, American Community Survey, 2013–17 (pooled).

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

We then calculated the changes that would need to occur for educational attainment among non-earners and the bottom 40 percent of earners to match the attainment distribution among the top 60 percent of earners within each racial/ethnic group (Table 6).[30] This adjustment would result in attainment of an associate's degree or higher by 12.9 million more Whites, 8.09 million more Latinxs, 5.15 million more Blacks, 377,000 more AIAN/NHPIs, 498,000 more Asians, and 457,000 more people from other racial or ethnic groups.

Crucially, addressing attainment gaps among different earnings groups would not be sufficient to fully address gaps by race and ethnicity.

Table 6. Change in educational attainment after first adjustment (in thousands), in which people in the bottom 40 percent of earnings and those with zero income have the same educational attainment as people in the top 60 percent (percent change)

Attainment (in thousands)	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	-3,083 (-47%)	-6,495 (-74%)	-1,759 (-68%)	-134 (-68%)	-675 (-64%)	-151 (-57%)	-12,296 (-63%)
High school/GED	-7,368 (-27%)	-2,079 (-27%)	-2,435 (-37%)	-173 (-37%)	-72 (-5%)	-146 (-22%)	-12,273 (-28%)
Some college	-2,461 (-11%)	484 (9%)	-953 (-18%)	-70 (-19%)	249 (20%)	-160 (-20%)	-2,911 (-8%)
Associate's degree	222 (2%)	861 (48%)	283 (15%)	17 (13%)	123 (18%)	6 (2%)	1,512 (10%)
Bachelor's degree	6,228 (25%)	4,037 (134%)	2,712 (95%)	204 (143%)	14 (4%)	226 (34%)	13,521 (39%)
Master's degree	4,437 (44%)	2,278 (239%)	1,485 (118%)	110 (224%)	158 (10%)	157 (58%)	8,625 (61%)
Professional degree	1,142 (47%)	527 (209%)	396 (208%)	27 (313%)	70 (18%)	40 (60%)	2,203 (66%)
Doctoral degree	883 (61%)	387 (315%)	271 (211%)	18 (241%)	33 (9%)	27 (62%)	1,620 (76%)

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, American Community Survey, 2013–17 (pooled).

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

30 The top cutoff for the second quintile ($31,667) is less than 250 percent of the federal poverty line for an individual in the contiguous 48 states ($12,760); see US Department of Health and Human Services, "Poverty Guidelines," 2020.

Using these figures, we calculated the new educational attainment distribution (Table 7).

Table 7. Distribution of population by educational attainment after first adjustment (in thousands), reflecting educational equity by earnings (share of racial/ethnic group at each level of attainment)

Attainment (in thousands)	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	3,478 (3%)	2,238 (8%)	824 (4%)	63 (5%)	379 (4%)	114 (4%)	7,095 (4%)
High school/GED	19,769 (19%)	5,744 (21%)	4,095 (20%)	289 (21%)	1,334 (13%)	530 (17%)	31,761 (19%)
Some college	20,378 (19%)	5,633 (20%)	4,483 (22%)	296 (22%)	1,463 (15%)	625 (20%)	32,878 (20%)
Associate's degree	10,637 (10%)	2,659 (10%)	2,111 (10%)	144 (11%)	809 (8%)	303 (10%)	16,663 (10%)
Bachelor's degree	30,830 (29%)	7,044 (25%)	5,560 (27%)	346 (25%)	3,258 (33%)	899 (29%)	47,937 (28%)
Master's degree	14,492 (14%)	3,232 (12%)	2,749 (13%)	159 (12%)	1,807 (18%)	428 (14%)	22,868 (14%)
Professional degree	3,580 (3%)	779 (3%)	587 (3%)	36 (3%)	466 (5%)	107 (3%)	5,555 (3%)
Doctoral degree	2,337 (2%)	509 (2%)	400 (2%)	26 (2%)	415 (4%)	71 (2%)	3,758 (2%)
Total	105,501 (100%)	27,837 (100%)	20,809 (100%)	1,360 (100%)	9,931 (100%)	3,078 (100%)	168,515 (100%)

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, American Community Survey, 2013–17 (pooled).

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

Crucially, addressing attainment gaps among different earnings groups would not be sufficient to fully address gaps by race and ethnicity. To close racial and ethnic gaps, we calculated the additional changes that would need to occur for educational attainment among Latinx, Black, and AIAN/NHPI groups to match the new educational attainment distribution among Whites (Table 8). This would result in an additional 2.1 million Latinxs with an associate's degree or higher, 797,000 more Blacks, and 86,000 more AIAN/NHPIs. (Because the Asian and Other groups have higher educational attainment than Whites, we did not make adjustments to attainment for these groups.)

Table 8. Change in educational attainment after second adjustment (in thousands), bringing underrepresented racial and ethnic groups to the same educational attainment as Whites (percent change)

Attainment (in thousands)	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	-	-1,320 (-59%)	-138 (-17%)	-18 (-29%)	-	-	-1,476 (-21%)
High school/GED	-	-528 (-9%)	-196 (-5%)	-34 (-12%)	-	-	-758 (-2%)
Some college	-	-256 (-5%)	-464 (-10%)	-34 (-11%)	-	-	-754 (-2%)
Associate's degree	-	148 (6%)	-13 (-1%)	-7 (-5%)	-	-	128 (1%)
Bachelor's degree	-	1,091 (15%)	520 (9%)	51 (15%)	-	-	1,662 (3%)
Master's degree	-	592 (18%)	110 (4%)	27 (17%)	-	-	729 (3%)
Professional degree	-	166 (21%)	119 (20%)	10 (28%)	-	-	295 (5%)
Doctoral degree	-	107 (21%)	61 (15%)	4 (17%)	-	-	172 (5%)

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, American Community Survey, 2013–17 (pooled).

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding. Empty columns reflect no change at this step.

Finally, we calculated a distribution reflecting equitable distribution of educational attainment by earnings and race/ethnicity (Table 9).

Table 9. Distribution of population by educational attainment (in thousands), if educational equality were achieved by earnings and race/ethnicity (share of racial/ethnic group at each level of attainment)

Attainment (in thousands)	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	3,478 (3%)	918 (3%)	686 (3%)	45 (3%)	379 (4%)	114 (4%)	5,620 (3%)
High school/GED	19,769 (19%)	5,216 (19%)	3,899 (19%)	255 (19%)	1,334 (13%)	530 (17%)	31,003 (18%)
Some college	20,378 (19%)	5,377 (19%)	4,019 (19%)	263 (19%)	1,463 (15%)	625 (20%)	32,124 (19%)
Associate's degree	10,637 (10%)	2,807 (10%)	2,098 (10%)	137 (10%)	809 (8%)	303 (10%)	16,791 (10%)
Bachelor's degree	30,830 (29%)	8,135 (29%)	6,081 (29%)	397 (29%)	3,258 (33%)	899 (29%)	49,599 (29%)
Master's degree	14,492 (14%)	3,824 (14%)	2,858 (14%)	187 (14%)	1,807 (18%)	428 (14%)	23,597 (14%)
Professional degree	3,580 (3%)	945 (3%)	706 (3%)	46 (3%)	466 (5%)	107 (3%)	5,850 (3%)
Doctoral degree	2,337 (2%)	617 (2%)	461 (2%)	30 (2%)	415 (4%)	71 (2%)	3,930 (2%)
Total	105,501 (100%)	27,837 (100%)	20,809 (100%)	1,360 (100%)	9,931 (100%)	3,078 (100%)	168,515 (100%)

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, American Community Survey, 2013–17 (pooled).

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

In sum, we found that closing the gaps in postsecondary attainment by earnings and race would mean increasing the number of people with an associate's degree or higher by 10.2 million Latinxs, 5.9 million Blacks, 462,000 AIAN/NHPIs, 498,000 Asians, 12.9 million low-income Whites, and 457,000 people of other races and ethnicities (Table 10).

Table 10. Total change in educational attainment (in thousands) to reach attainment parity by earnings and race/ethnicity (percent change)

Attainment (in thousands)	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	-3,083 (-47%)	-7,815 (-89%)	-1,897 (-73%)	-152 (-77%)	-675 (-64%)	-151 (-57%)	-13,772 (-71%)
High school/GED	-7,368 (-27%)	-2,607 (-33%)	-2,631 (-40%)	-207 (-45%)	-72 (-5%)	-146 (-22%)	13,030 (-30%)
Some college	-2,461 (-11%)	228 (4%)	-1,417 (-26%)	-104 (-28%)	249 (20%)	-160 (-20%)	-3,665 (-10%)
Associate's degree	222 (2%)	1,009 (56%)	270 (15%)	10 (8%)	123 (18%)	6 (2%)	1,640 (11%)
Bachelor's degree	6,228 (25%)	5,128 (171%)	3,233 (114%)	255 (179%)	114 (4%)	226 (34%)	15,183 (44%)
Master's degree	4,437 (44%)	2,870 (301%)	1,595 (126%)	138 (280%)	158 (10%)	157 (58%)	9,355 (66%)
Professional degree	1,142 (47%)	693 (275%)	515 (270%)	37 (429%)	70 (18%)	40 (60%)	2,498 (75%)
Doctoral degree	883 (61%)	494 (403%)	332 (258%)	23 (299%)	33 (9%)	27 (62%)	1,792 (84%)

Source: Georgetown University Center on Education and the Workforce calculations based on data from the US Census Bureau, American Community Survey, 2013–17 (pooled).

Note: Calculations are based on the distribution of educational attainment among earners in the top three quintiles and the distribution of educational attainment among Whites. See Appendix A for a detailed explanation of the methodology behind these calculations. AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

There is no doubt that closing attainment gaps by earnings and race/ethnicity to reach these attainment goals would be expensive. By our estimate, in order for educational attainment levels to match those described above, a total initial public investment—in terms of federal, state, and local expenditures—of at least $3.97 trillion would be necessary.[31] This amount represents the total educational spending we would expect to see to bring about the attainment changes described in Table 10. In addition to postsecondary spending, this figure includes the estimated costs of raising attainment at the K–12 level by 13.7 million additional graduates and of providing additional support to underserved students.[32]

31 This investment includes a $3.54 trillion investment to equalize attainment by earnings and an additional $426 billion to also equalize attainment by race and ethnicity.

32 For simplicity, we based this government expenditures analysis on the aggregate numbers of additional credential holders who would need to reach the next level of educational attainment, along with the annual cost per full-time equivalent (FTE) student by educational sector. We did not base these estimates on data disaggregated by race, ethnicity, gender, or income. A more nuanced analysis would take into account the potential differences in cost and time necessary to educate different populations to the target levels. In other words, among some racial/ethnic subgroups, there are not enough associate's degree holders to meet target goals for bachelor's degrees by increasing people's education by only one level. We estimate that accounting for the need to reach farther back in the education pipeline to meet attainment goals among some racial/ethnic groups would add an additional $500 billion to the cost estimate presented here. Our analysis also does not account for the additional costs needed to expand the capacity of higher education or maintain equal attainment among each new cohort; we would expect an annual cost associated with maintaining this equilibrium. See Appendix A for additional discussion of our methodology for calculating public expenditures.

Such a significant investment would be associated with an aggregate earnings boost of $1.03 trillion annually, which would feed into the following societal gains, which total $956 billion annually:

- *Tax revenue:* Increased revenue from taxes on higher earnings would help to offset increased public spending. Based on an estimated average income tax rate of 30 percent, tax revenue would increase by $308 billion annually.[33]
- *GDP:* Increased earnings result in significant increases in GDP.[34] Every dollar spent in the economy has a ripple effect in spending as it travels from person to person in the exchange of money for goods and services. Accounting for those ripple effects, the attainment gains described above could result in an increase in GDP from earnings of $542 billion annually.[35]
- *Criminal justice expenditures:* With the highest per-capita incarceration rate in the world, the United States spends a significant amount of public money on prisons.[36] Many factors, including racial bias in the criminal justice system, lead to disparate incarceration rates by race and ethnicity.[37] At the same time, data show that people with higher levels of educational attainment are less likely to be incarcerated, so closing the attainment gap might result in reduced spending on this part of the criminal justice system. Based on current correlations between education and incarceration, after equalizing educational attainment, we might expect to have 380,000 fewer incarcerated individuals than at present (88,000 Whites, 171,000 Blacks, 100,000 Latinxs, and 21,000 individuals of other races and ethnicities). This reduction in the number of incarcerated individuals corresponds to a cost savings of $13.8 billion annually.[38]
- *Public health expenditures:* Postsecondary educational attainment has been broadly associated with healthier behaviors and better health outcomes among those who attended college, including a lower incidence of smoking, a higher likelihood of regular exercise, and a longer life expectancy.[39] It's no surprise, then, that public health expenditures—which include expenditures from Medicare, Medicaid, Veterans Affairs/ the Civilian Health and Medical Program of the Department of Veterans Affairs, and other

33 This represents an annual increase in tax revenue of $282 billion after equalizing attainment by earnings, with an additional increase in tax revenue of $26 billion after equalizing attainment by earnings and race. See Appendix A for a discussion of the assumptions behind these tax rates.

34 Our GDP calculations for Thresholds 1, 2, and 3 take into account the effect of increased student loan balances associated with higher levels of educational attainment. By our calculations, the educational attainment shifts described above would result in an increased student loan debt of $1.25 trillion in principal and $1.02 trillion in interest, amounting to $2.26 trillion with interest over ten years. The annual effect would be a reduction in the contribution of earnings to GDP by $226 billion annually for ten years (assuming a ten-year loan repayment schedule). For more detail about our student loan debt calculations, see Appendix A.

35 This represents an annual increase in GDP of $501 billion after equalizing attainment by income, with an additional increase in GDP of $41 billion after equalizing attainment by income and race. See Appendix A for a discussion of the assumptions behind these GDP calculations.

36 Gramlich, "America's Incarceration Rate is at a Two-Decade Low," 2018.

37 See, for example, Balko, "21 More Studies Showing Racial Disparities in the Criminal Justice System," 2019; Schanzenbach and Yaeger, "Prison Time, Fines, and Federal White-Collar Criminals," 2006.

38 This calculation assumes a degree of causality between education and incarceration that has not been established empirically. That said, while our methodology relies on correlations at the postsecondary level, some researchers have attempted to establish a causal relationship between K–12 education and incarceration; see Lochner, "Education and Crime," 2020; and Moretti, "Does Education Reduce Participation in Criminal Activities?," 2005. In our two-step process, the total savings was $12.5 billion after equalizing attainment by earnings, with an additional $1.26 billion savings after equalizing attainment by race and ethnicity. These calculations assume that in the present system, the overall number of incarcerated individuals remains stable, and the distribution by race/ethnicity consistent, as individuals enter and leave the prison system.

39 Trostel, *It's Not Just the Money*, 2015. While Trostel's analysis focuses on correlations, some researchers have explored a causal relationship between increased educational attainment and reduced mortality rates; see Christenson and Johnson, "Educational Inequality in Adult Mortality," 1995; Lleras-Muney, "The Relationship between Education and Adult Mortality in the United States," 2005.

federal, state, local, and miscellaneous public sources—are also negatively correlated with educational attainment. Based on the current relationships between educational attainment and public health expenditures for different demographic groups, we would expect that equalizing attainment rates would result in a reduction in public health spending of $58.7 billion annually.[40]

- *Public assistance program expenditures:* With the higher earnings associated with postsecondary education, individuals and families would be less reliant on public assistance programs for such necessities as food and housing. We anticipate that equalizing attainment rates would result in a decrease in public expenditures of $33.7 billion annually across a variety of federal programs: Temporary Assistance for Needy Families (TANF); the Supplemental Nutrition Assistance Program (SNAP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the Earned Income Tax Credit (EITC); federal housing assistance programs; and free and reduced-price school meals. (Notably, these estimates include only per-person and per-family distribution amounts, so the savings could be even larger than anticipated here if reduced participation rates led to lower overall administrative costs.)[41]

In addition, we would anticipate that several personal benefits would occur that would contribute indirectly to the public good. To the extent that these private benefits are distributed in a way that narrows equity gaps, we interpret these benefits as having intrinsic societal value:

- *Earnings gaps:* Gaps in earnings are a considerable source of inequality. As established above, closing attainment gaps by income and race/ethnicity would result in higher earnings—but would it also close earnings gaps between different demographic groups? To answer this question, we conducted a statistical simulation to estimate new median earnings for each race/gender group at each level of educational attainment.[42]

  We found that the new educational attainment distribution resulted in a 10 percent increase in earnings for White men by raising educational attainment among low-income White men, with even higher growth rates for all other race/gender subgroups except for Asian men and women (Table 11). The highest growth occurred for Latinx women (44 percent growth).

40 This represents a savings of $53.9 billion after equalizing attainment by income, with an additional $4.81 billion in savings after equalizing attainment by income and race. It amounts to an overall reduction in public health spending of 22 percent.

41 This represents a savings of $30.4 billion after equalizing attainment by income, with an additional $3.33 billion in savings after equalizing attainment by income and race/ethnicity. It amounts to an overall reduction in public assistance program expenditures of 33 percent. These savings are based on benefits paid to individuals; over time, additional savings from reduced administrative expenditures would also be expected.

42 For more about our methodology, see Appendix A.

Table 11. Differences in earnings gaps after equalizing educational attainment

Sex	Race/ Ethnicity	Current median earnings	New median earnings after Threshold 1	Percent difference	Current median earnings as share of White men's	New median earnings after Threshold 1 as share of White men's	Change in gap
Men	White	$53,000	$58,000	10%	100%	100%	0pp
	Latinx	$32,000	$45,000	42%	61%	78%	17pp
	Black	$34,000	$42,000	23%	65%	73%	8pp
	Asian	$56,000	$ 61,000	10%	106%	106%	0pp
	AIAN/NHPI and Other	$41,000	$47,000	16%	78%	82%	4pp
Women	White	$37,000	$41,000	11%	70%	70%	0pp
	Latinx	$25,000	$36,000	44%	47%	62%	15pp
	Black	$31,000	$37,000	22%	58%	65%	7pp
	Asian	$40,000	$42,000	5%	77%	73%	-4pp
	AIAN/NHPI and Other	$31,000	$37,000	19%	59%	64%	5pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

The greater increase for groups that currently have lower median earnings suggests that increasing educational attainment would indeed help narrow, but not fully close, earnings gaps. In fact, we found that earnings gaps between each group (except Asian men and women and White women) and White men would shrink by between 4 percentage points (for AIAN/NHPI and Other men) and 17 percentage points (for Latinx men).[43]

The continued presence of significant gaps after equalizing educational attainment speaks to the powerful impact of labor market discrimination by race/ethnicity and gender on earnings.[44] It also illustrates the fact that increased educational attainment does not necessarily result in equal opportunity: members of groups with higher rates of nonemployment are less likely to experience economic uplift as a result of increased educational attainment.[45]

After closing attainment gaps as described above, we also found that a total of 62.1 million people (37 percent of people ages 25 to 64) would have a level of earnings that offers economic mobility. (For the purposes of this thought experiment, we defined earnings associated with economic mobility as those at the 4th income quintile and above for workers

43 The gap between Asian women and White men would grow by 4 percentage points.

44 For more on the impact of discrimination on earnings, see Carnevale et al., *The Unequal Race for Good Jobs*, 2019; and Carnevale et al., *Women Can't Win*, 2018.

45 For example, following the Great Recession, the average unemployment rate of young Black college graduates (ages 22 to 27) was higher than the overall average (see Jones and Schmitt, *A College Degree is No Guarantee*, 2014). To account for differences in workforce participation among groups, we use employment as a percentage of the population (EPOP) to calculate earnings gains (see Appendix A).

with positive earnings.) With attainment gaps closed, 39 percent of Whites, 31 percent of Blacks, 32 percent of Latinxs, 40 percent of Asians, and 32 percent of AIAN/NHPIs and people of other races and ethnicities would have jobs and earnings associated with economic mobility (those with earnings at the 4th quintile and above). (See Table A11 in Appendix A for data by race and sex.)

- *Potential cumulative savings gaps:* Wealth gaps are a considerable source of inequality in the United States—and since wealth is often transmitted intergenerationally, the consequences of wealth gaps can span decades and even centuries. In fact, economists estimate that as much as 45 percent of wealth is inherited.[46] The higher earnings associated with higher educational attainment can't close wealth gaps by themselves, but they can help alleviate those gaps by translating into higher potential savings that can be used to build wealth.

  Our model illustrates how education can play a role in closing existing wealth gaps by improving individual workers' marginal earnings and therefore their potential to build wealth through savings and investment over a career. These "potential cumulative savings" could help narrow wealth gaps;[47] in fact, some recent studies show that earnings and income gaps are the leading contributors to racial/ethnic wealth gaps in the United States.[48] We present our findings with the caveat that, as noted above, different groups see different returns to educational attainment. These differences are amplified in potential cumulative savings gaps.[49] In addition, increased earnings do not automatically translate to increased savings or equal returns on investment; workers' ability to save may be constrained by factors such as credit market discrimination,[50] which results in higher-interest loans for Black and Latinx workers and negatively affects their ability to save. Discrimination in the housing market, the mortgage lending market, and the financial markets can also limit potential savings.[51]

  After accounting for associated increases in educational debt, the increases in educational attainment described above would result in an increase in potential cumulative savings of $3.17 trillion from higher wages and higher workforce participation over the projected remainder of workers' careers.[52] Distributed according to new attainment rates and current earnings by gender and race or ethnicity, these increases in potential cumulative savings would help narrow the gaps in potential cumulative savings per person between White men and people of other races and ethnicities by up to 19

46 Kopczuk and Lupton place the range of wealth that is inherited at 35 to 45 percent based on a meta-analysis of research in "To Leave or Not to Leave," 2005.

47 To calculate potential cumulative savings, we assume that people save 7 percent of their post-tax annual income and see a 7 percent annual return. For more about our methodology, see Appendix A.

48 Aliprantis et al., "The Dynamics of the Racial Wealth Gap," 2019; Ashman and Neumuller, "Can Income Differences Explain the Racial Wealth Gap?," 2019.

49 For more on how differential returns to education affect wealth gaps, see Emmons and Ricketts, "College is Not Enough," 2017. Our Threshold 1 methodology accounts for these differential returns.

50 For a discussion of credit market discrimination, see Weller, "Credit Access, the Costs of Credit and Credit Market Discrimination," 2009.

51 Ashman and Neumuller, "Can Income Differences Explain the Racial Wealth Gap?," 2019.

52 This includes $2.9 trillion in new potential cumulative savings after equalizing attainment by earnings, and an additional $266 billion after equalizing attainment by race. We adjusted the savings period based on age for different demographic and education groups within the age band (25–64) and assumed a savings rate of 7 percent and a rate of return of 7 percent. The age-adjusted savings periods were weighted averages assuming 40 years for 25-to-34-year-olds, 30 years for 35-to-44-year-olds, 20 years for 45-to-54-year-olds, and 10 years for 55-to-64-year-olds. For more on the methodology, see Appendix A.

percentage points (for Latinx women).[53] While Latinx men's potential cumulative savings would be on par with those of Asian men and White men, these three groups would continue to have markedly more potential cumulative savings than Black men or the aggregate group of AIAN/NHPI men and men of other races and ethnicities, and women of any race (Table 12).

Table 12. Potential cumulative savings per person as a share of White men's potential cumulative savings

Sex	Race/ Ethnicity	Current potential cumulative savings per person	New potential cumulative savings per person after Threshold 1	Percent difference	Current potential cumulative savings per person as a share of White men's	New potential cumulative savings per person after Threshold 1 as a share of White men's	Change in gap
Men	White	$ 138,000	$ 153,000	11%	100%	100%	0pp
	Latinx	$ 115,000	$ 154,000	33%	84%	100%	16pp
	Black	$ 83,000	$ 108,000	31%	60%	71%	11pp
	Asian	$ 212,000	$ 224,000	6%	154%	146%	-8pp
	AIAN/NHPI and Other	$ 126,000	$ 141,000	12%	92%	92%	0pp
Women	White	$ 79,000	$ 90,000	15%	57%	59%	2pp
	Latinx	$ 67,000	$ 105,000	56%	49%	68%	19pp
	Black	$ 69,000	$ 92,000	34%	50%	60%	10pp
	Asian	$ 117,000	$ 124,000	6%	85%	81%	-4pp
	AIAN/NHPI and Other	$ 85,000	$ 96,000	13%	61%	62%	1pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

53 Asian men and Asian women would lose ground relative to White men, with their potential cumulative savings relative to those of White men falling by 8 percentage points and 4 percentage points, respectively—a change that corresponds with narrowing of the gap between Asian men and White men but a widening gap between Asian women and White men.

Relative to other thresholds, the effects of Threshold 1 would be as shown (Table 13).

Table 13. Threshold 1 outcomes compared to other thresholds

	Threshold 1 Attainment	Threshold 2 Earnings	Threshold 3 Mobility	Total Thresholds 1, 2, 3		Threshold 4 Security	Threshold 5 Wealth
Public Investment (cumulative)	($3.97 trillion)	N/A	N/A	($3.97 trillion)		N/A	N/A
Personal Benefits							
Aggregate Earnings	$1.03 trillion	+$2.29 trillion	+$1.75 trillion	$5.07 trillion	**Aggregate Personal Wealth**	$1.38 trillion	$2.29 trillion
Share with Mobility	37%	50%	65%	65%			
Aggregate Potential Cumulative Savings	$3.17 trillion	+$9.81 trillion	+$6.62 trillion	$19.6 trillion			
Public Benefits (annual)							
Tax Revenue (increase)	$308 billion	+$686 billion	+$526 billion	$1.52 trillion			
GDP (increase)	$542 billion	+$1.76 trillion	+$1.35 trillion	$3.65 trillion			
Criminal Justice Expenditures (decrease)	$13.8 billion	N/A	N/A	$13.8 billion			
Public Health Expenditures (decrease)	$58.7 billion	+$18.1 billion	+$10.0 billion	$86.8 billion			
Public Assistance Expenditures (decrease)	$33.7 billion	+$9.33 billion	+$5.51 billion	$48.54 billion			
Total Public Benefits *(annual)*	**$956 billion**	**+$2.47 trillion**	**+$1.89 trillion**	**$5.32 trillion**			

Source: Georgetown University Center on Education and the Workforce summary analysis based on previous tables.

What about supply and demand?

Importantly, our earnings calculations do not account for the effects of changes in the supply of, and demand for, college-educated workers. Historically, as the supply of college-educated workers has risen, the demand for these workers has also increased due to skill-biased technological change. During some periods, however, the increase in supply has outpaced the increase in demand. When the supply of college-educated workers rises relative to demand for these workers, the college earnings premium generally declines.

At present, the average earnings premium that workers with a bachelor's degree or higher enjoy over workers with a high school diploma is 85 percent; for workers with a bachelor's degree as their highest level of education, the earnings premium over workers with a high school diploma is 70

percent.[54] In part, this is because the current supply of college-educated workers is smaller than the demand for such workers. In contrast, the earnings premium for workers with an associate's degree over workers with a high school diploma is 40 percent;[55] the similar premium for workers with a certificate is 15 percent.[56]

We expect that the demand for college-educated workers will rise over time relative to the demand for workers with less education.[57] If increases in supply occur at the same rate as increases in demand, the college earnings premium is likely to remain constant. But if, after equalizing educational attainment as described above, the increased supply of college-educated workers outpaces labor market demand, the college earnings premium could fall. In fact, economists estimate that a 10 percent increase in relative supply of workers is associated with a 6 percent decrease in the earnings premium associated with a bachelor's degree or higher.[58]

Even if the earnings premium for a bachelor's degree or higher falls, it is unlikely to fall below 46 percent, a threshold known as the equilibrium earnings premium.[59] As long as the earnings premium is at least 46 percent, the earnings boost associated with a bachelor's degree or higher will be high enough to make borrowing the money to attend college a good investment.[60] If the premium falls below 46 percent, fewer people will earn bachelor's degrees, and the premium will eventually rise above 46 percent again as the supply of workers with a bachelor's degree or higher falls.[61] That said, if the cost of college continues to grow—as might be expected when the demand for a college education rises—this equilibrium earnings premium might also increase.

A decrease in the earnings premium would not necessarily be bad news. The size of the college earnings premium, along with unequal access to jobs that pay this premium, is a core reason for why earnings inequality among those with different levels of educational attainment has risen since the 1980s.[62] Therefore, a decrease in the premium—especially for workers at the bachelor's degree level and above—should decrease inequality. Moreover, as more people earn college credentials, high school-educated workers should become scarcer in the labor market and experience an increase in earnings.

So what impact would we expect to see on these supply-and-demand curves in the world of our thought experiment? In short, with a substantial increase in the supply of college-educated workers, we would expect the earnings premium to decrease. However, in any real-world scenario, constraints on capacity, readiness, and efficiency would limit how quickly the supply of college-educated workers could grow.[63] Therefore, while we would not expect that the earnings premium for workers

54 Georgetown University Center on Education and the Workforce analysis of US Census Bureau, Current Population Survey, 2009–18.
55 Georgetown University Center on Education and the Workforce analysis of US Census Bureau, Current Population Survey, 2009–18.
56 Georgetown University Center on Education and the Workforce analysis of US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.
57 See Carnevale et al., *Technology, Jobs, and Education*, forthcoming.
58 Autor et al., "Extending the Race Between Education and Technology," 2020.
59 We estimate an earnings premium of 46 percent because it represents the average college earnings premium that occurred between 1950 and 1970—a time when the supply of college-educated workers kept fairly even pace with demand—and is also the consistent college earnings premium of other industrialized countries with higher educational attainment. Carnevale and Rose, *The Undereducated American*, 2011.
60 At an earnings premium of 46 percent, the compounded rate of return for each of the four years of college attendance is 10 percent. Carnevale and Rose, *The Undereducated American*, 2011.
61 Osterman, "College for All?," 2008.
62 Carnevale and Rose, *The Undereducated American*, 2011; Autor et al., "Extending the Race Between Education and Technology," 2020.
63 Based on the sizes of recent graduating cohorts, we estimate it would take 34 years to educate a sufficient number of additional associate's degree holders to increase attainment as described at this threshold.

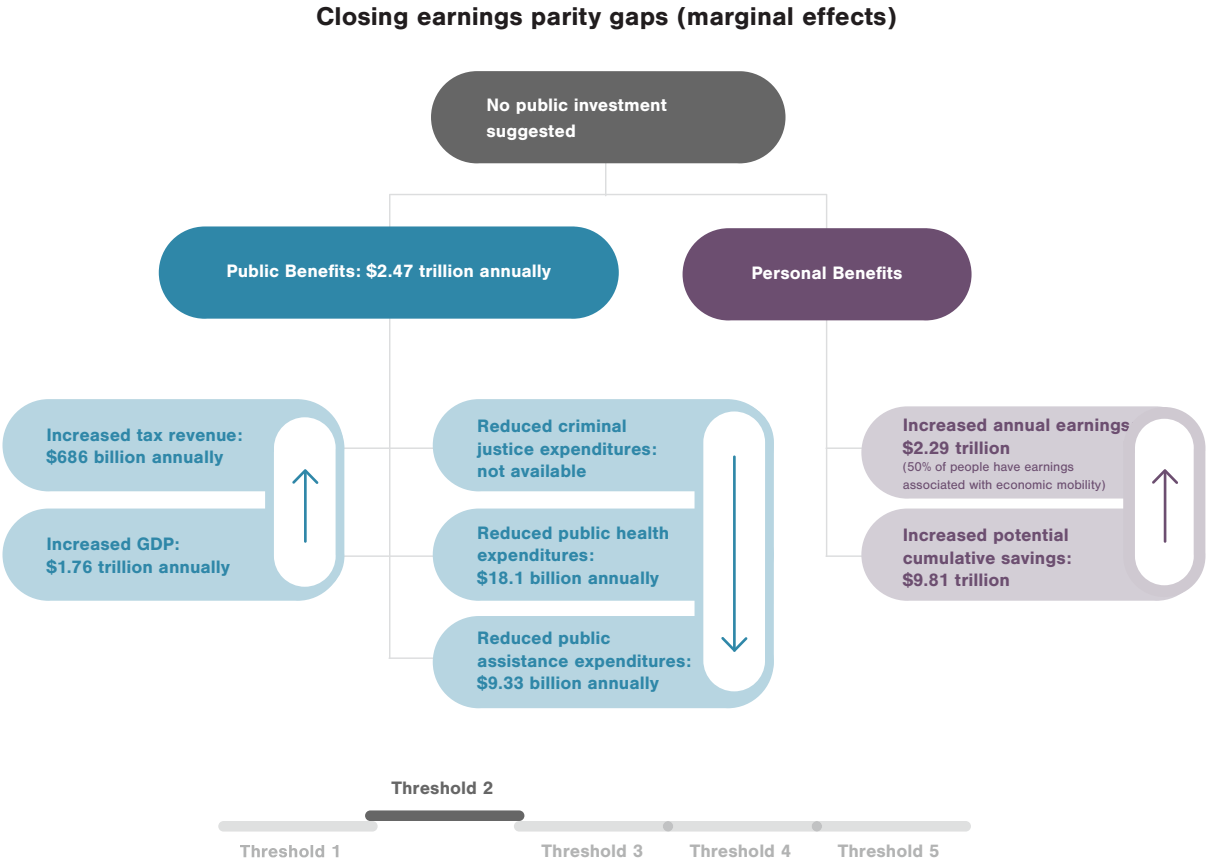
with a bachelor's degree or higher would stay at 85 percent, we also would not expect it to fall as low as 46 percent. It is possible that demand might keep pace with supply as educational attainment slowly rises, resulting in only minor changes to the college earnings premium over time.

The Value of Postsecondary Attainment During a Recession

History has shown that postsecondary educational attainment consistently protects workers from the worst of the economic fallout during recessions and recoveries,[64] although the exact college earnings premium will fluctuate in response to specific changes in supply and demand. Workers with postsecondary education not only benefit from an earnings premium, but also are less likely than workers with lower levels of education to face unemployment during recessions. During the Great Recession (between December 2007 and January 2010), workers with bachelor's degrees or higher gained 187,000 net jobs, while workers with associate's degrees or some college and those with high school diplomas or less lost 1.8 million and 5.6 million jobs, respectively. In the first six years of the recovery following that recession, workers with a bachelor's degree or higher gained 8.4 million jobs, compared to 3.1 million for workers with an associate's degree or some college and 80,000 for workers with a high school diploma or less.[65] Similarly, during the COVID-19 recession, workers with higher levels of education were protected from initial losses of household income: adults with bachelor's degrees were significantly less likely to experience loss of household income between March and May 2020 than those without a bachelor's degree.[66] Thus, regardless of their exact effect on the college earnings premium, recessions tend to increase the value of a college degree.

64 Carnevale et al., *America's Divided Recovery*, 2016.
65 Carnevale et al., *America's Divided Recovery*, 2016.
66 Carnevale and Gulish, "Education, Race, and Jobs in the COVID-19 Crisis," 2020.

Threshold 2: If earnings parity gaps were closed



Even among people who have the same level of educational attainment, gaps in earnings still exist. On average, women earn less than men with the same credentials,[67] and Black and Latinx workers earn less than White workers with similar educational attainment.[68] As a result, even after closing gaps in attainment, significant earnings gaps would still remain based on differences in earnings among different demographic groups.

At this threshold, we asked how far the effect of closing attainment gaps would leave us from the effect of closing earnings gaps directly (by race/ethnicity and gender). That is, we compared the outcomes described above to the possible outcomes if everyone at each level of education were paid the same as White men at that level of education.[69]

We found that after closing attainment gaps, an additional $2.29 trillion earnings boost could still be possible by closing earnings parity gaps among all workers ages 25 to 64.[70] This implies that the role that higher education can play in achieving equality is severely restricted by inequality in the labor market.

67 Carnevale et al., *Women Can't Win*, 2018.
68 Carnevale et al., *The Unequal Race for Good Jobs*, 2019.
69 Because Asian men with master's and doctoral degrees already have earnings exceeding those of White men, we did not adjust their earnings downward.
70 We did not equalize employment-to-population ratio (EPOP) for groups that already had a higher EPOP than White men. Among the additional credential holders from Threshold 1, the possible earnings gains at this threshold are $601 billion annually.

After closing degree attainment gaps, the $2.29 trillion in increased earnings from closing earnings gaps could generate an additional $2.47 trillion in total annual benefits to society, as follows:[71]

- *Tax revenue:* Closing attainment gaps and earnings gaps would generate $686 billion more annually (in federal and state tax revenue) than the gains associated with closing attainment gaps alone.[72]
- *GDP:* Closing attainment gaps and earnings gaps would generate $1.76 trillion more annually in increased GDP from earnings than closing attainment gaps alone.[73]
- *Criminal justice expenditures:* Current data do not support a correlation between earnings and incarceration.
- *Public health expenditures:* Closing attainment gaps and earnings gaps would result in $18.1 billion less annually in public health expenditures than the savings after closing attainment gaps alone.[74]
- *Public assistance program expenditures:* Closing attainment and earnings gaps would result in $9.33 billion less annually in expenditures related to TANF, SNAP, WIC, EITC, federal housing programs, and free and reduced-price school meals.

Additional gains would still be possible in terms of indirect benefits as well:

- *Earnings gaps:* After accounting for the effects of closing attainment gaps, the effects of earnings parity would reduce earnings gaps by up to 43 additional percentage points (for Latinx women compared to White men) (Table 14). In fact, the gap closures at this threshold would be larger than the gap closures we estimated in Threshold 1, suggesting that labor-market factors play a bigger role than educational attainment in maintaining earnings gaps. Notably, after closing earnings gaps, women in every racial or ethnic group would have higher median earnings than White men, largely as a result of women's higher educational attainment; if women were paid on par with men at the same level of attainment, they would make significantly more money than they do at present.

  If earnings and attainment gaps were closed as described above, a total of 84.7 million people (50 percent of the population ages 25 to 64) would reach a level of earnings that offers economic mobility. At this threshold, 50 percent of Whites, 50 percent of Blacks, 51 percent of Latinxs, 54 percent of Asians, and 50 percent of AIAN/NHPIs and people of other races and ethnicities would have earnings associated with economic mobility. (See Table A14 in Appendix A for data by race/ethnicity and sex.)

71 The additional annual benefit to society associated with closing earnings parity gaps only for new credential holders from Threshold 1 would be $644 billion.

72 Closing the earnings gap among just the additional credential holders from Threshold 1 would yield additional tax revenue of $180 billion annually.

73 Closing the earnings gap among just the additional credential holders from Threshold 1, the additional GDP would be $463 billion annually.

74 This includes the gains associated with closing earnings parity gaps only for additional credential holders from Threshold 1, which would decrease public health expenditures by $1.35 billion annually.

Table 14. Differences in earnings gaps after equalizing educational attainment and earnings

Sex	Race/ Ethnicity	Median earnings after Threshold 1	New median earnings after Threshold 2	Percent difference	Median earnings after Threshold 1 as share of White men's	New median earnings after Threshold 2 as share of White men's	Change in gap
Men	White	$58,000	$58,000	0%	100%	100%	0pp
	Latinx	$45,000	$57,000	25%	78%	98%	20pp
	Black	$42,000	$57,000	35%	73%	98%	25pp
	Asian	$61,000	$64,000	5%	106%	111%	5pp
	AIAN/NHPI and Other	$47,000	$58,000	23%	82%	100%	18pp
Women	White	$41,000	$61,000	50%	70%	105%	35pp
	Latinx	$36,000	$61,000	71%	62%	105%	43pp
	Black	$37,000	$61,000	64%	65%	106%	41pp
	Asian	$42,000	$63,000	49%	73%	109%	36pp
	AIAN/NHPI and Other	$37,000	$61,000	66%	64%	106%	42pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

- *Potential cumulative savings gaps:* Compared to the effects of closing attainment gaps alone, the effects of closing both earnings and attainment gaps would result in an additional $9.81 trillion in potential cumulative savings from higher wages over the remainder of workers' careers.[75] (See the Threshold 1 section of Appendix A for more about our methodology for calculating potential cumulative savings, which accounts for differences in the time over which workers of different ages can accumulate wealth.) This private benefit would help close gaps in potential cumulative savings, which can play a role in closing gaps in wealth; we interpret the closure of wealth gaps as a contribution to the public good because we assume that a more equal society is a better-functioning society. Importantly, with a new earnings distribution affecting all workers ages 25 to 64, White men's potential cumulative savings would actually be smaller than the potential cumulative savings of other groups (see Table A16 in Appendix A).[76] In general, within racial/ethnic groups, men's potential cumulative savings would be smaller than women's.

75 Among additional credential holders from Threshold 1, potential cumulative savings would increase by $2.47 trillion annually if both attainment and earnings gaps were closed.

76 This is in part because women have higher educational attainment rates than men.

This shortfall in higher education's ability to close gender gaps in potential cumulative savings as compared to the effects of closing attainment and earnings gaps is partly because women currently need a higher level of educational attainment than men to achieve equal earnings. If they were paid equitably, women would have greater potential than men for accumulating wealth, allowing for progress in reducing existing wealth gaps. Future research should explore whether women's higher educational attainment relative to that of men reflects demand in the labor market and whether equalized pay would lead to lower attainment among women because women would have less incentive to pursue higher levels of education.

Relative to other thresholds, the effects of Threshold 2 would be as shown below (Table 15).

Table 15. Threshold 2 outcomes compared to other thresholds

	Threshold 1 Attainment	Threshold 2 Earnings	Threshold 3 Mobility	Total Thresholds 1, 2, 3		Threshold 4 Security	Threshold 5 Wealth
Public Investment (cumulative)	($3.97 trillion)	N/A	N/A	($3.97 trillion)		N/A	N/A
Personal Benefits							
Aggregate Earnings	$1.03 trillion	+$2.29 trillion	+$1.75 trillion	$5.07 trillion	**Aggregate Personal Wealth**	$1.38 trillion	$2.29 trillion
Share with Mobility	37%	50%	65%	65%			
Aggregate Potential Cumulative Savings	$3.17 trillion	+$9.81 trillion	+$6.62 trillion	$19.6 trillion			
Public Benefits (annual)							
Tax Revenue (increase)	$308 billion	+$686 billion	+$526 billion	$1.52 trillion			
GDP (increase)	$542 billion	+$1.76 trillion	+$1.35 trillion	$3.65 trillion			
Criminal Justice Expenditures (decrease)	$13.8 billion	N/A	N/A	$13.8 billion			
Public Health Expenditures (decrease)	$58.7 billion	+$18.1 billion	+$10.0 billion	$86.8 billion			
Public Assistance Expenditures (decrease)	$33.7 billion	+$9.33 billion	+$5.51 billion	$48.54 billion			
Total Public Benefits *(annual)*	**$956 billion**	**+$2.47 trillion**	**+$1.89 trillion**	**$5.32 trillion**			

Source: Georgetown University Center on Education and the Workforce summary analysis based on previous tables.

Possible Postsecondary Levers: Field of Study Gaps

Increasing attainment isn't the only possible way for postsecondary education to affect earnings gaps. Another area in which postsecondary providers might have an impact (for example, through counseling, advising, and guided career pathways) is in the distribution of field of study, which currently varies greatly by gender at the associate's degree (Table 16) and bachelor's degree (Table 17) levels.[77] When exploring the possible effects of closing gaps in postsecondary attainment, it's logical to also wonder about the additional effects of closing gaps in field of study. Preliminary analyses we conducted confirm that closing gaps in field of study in addition to gaps in degree attainment would result in significant earnings changes across groups. The exact nature of these changes, however, would depend on a complicated set of dynamics related to supply and demand, labor market discrimination, current wage penalties in female-dominated fields, and a variety of other factors that affect wage gaps.

In other parts of this analysis, we interpreted current outcomes for White men as the target outcomes for other race/gender groups because this group has experienced historical advantages due to systemic racism and sexism. But applying that approach at the level of field distribution is problematic. For one thing, women tend to be concentrated in fields that have high social value but low wages.[78] Redistributing women's fields of study according to the distribution among White men would create shortages in some fields that are currently female-dominated, such as education. Shortages in these fields could lead to increased demand and, perhaps, a related increase in wages. In an ideal world, of course, jobs in the caring professions would be compensated at higher wages that reflect their true social value.[79] But the evidence suggests that these jobs may instead be compensated based on who fills them: occupations with higher shares of women tend to have lower wages than those with higher shares of men,[80] and wages tend to fall as women enter male-dominated professions.[81] On the other hand, women have carved out relatively high-paying niches in the sub-baccalaureate sector, particularly in healthcare, and field equalization would squeeze women out of these jobs.

Within occupations, women generally have lower wages than men, and racial and ethnic minority groups generally have lower wages than Whites. For example, among equivalently qualified, full-time, full-year workers, women earn 91 cents for every dollar paid to men working within the same occupations. When earnings are aggregated across occupations so that differences in pay among fields come into play, the gaps are even starker: in general, White women earn 74 percent of the salary of White men, compared to 82 percent for Asian women, 62 percent for Black women, and 52 percent for Latinx women.[82] Black men earn 73 percent of the wages of White men, with Latinx and Asian men earning 71 percent and 124 percent, respectively.[83]

Regardless of pay, people should have the freedom to choose their field of study based on their talents, goals, and interests. Unfortunately, the evidence suggests that field choice is presently

77 Program-of-study distribution does not vary substantially by race and ethnicity.
78 Carnevale et al., *Women Can't Win*, 2018.
79 In addition to being undercompensated relative to their societal value, these professions place substantial burdens related to the costs of delivering social services on workers—one consequence of public policy that underfunds social services relative to their costs. Carnevale et al., "Educational Adequacy in the Twenty-First Century," 2018.
80 Carnevale et al., *Women Can't Win*, 2018.
81 Levanon et al., "Occupational Feminization and Pay," 2009.
82 Carnevale et al., *Women Can't Win*, 2018.
83 Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, Current Population Survey, March supplement, 2017.

constrained by systemic and societal barriers, including socialization and discrimination.[84] Too often, implicit bias among faculty, administrators, and students or "chilly climates" within certain fields or on a campus can discourage students from pursuing their areas of interest.[85] Postsecondary providers could move the needle toward equity by ensuring that all students have equal opportunity to thrive in their fields of study, regardless of their gender, race, or socioeconomic status.

Future iterations of this research should explore the effect of equity in field distribution in a way that takes these and other issues into account. In projecting societal costs associated with new field of study distributions, it should also account for differences in costs associated with different fields of study.[86] Such research should also explore the possibility that redistributing fields of study might not meet workforce demand: for example, it might result in too many architects and engineers and too few teachers and nurses to meet societal and economic needs.

84 Carnevale et al., *Women Can't Win*, 2018.

85 For a discussion of the intersection between STEM culture and campus culture and its effect on diversity in STEM, see, for example, Griffin, *Achieving Diversity at the Intersection of STEM Culture and Campus Culture*, 2019.

86 See, for example, Quinton, "Why Universities Charge Extra for Engineering, Business and Nursing Degrees," 2017.

Table 16. Field-of-study distribution by race/ethnicity and gender for associate's degrees awarded

	Distribution of Associate's Degrees Awarded											
CIP	Field of Study	White		Latinx		Black		Asian		AIAN/NHPI		Other	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
1	Agriculture, agriculture operations, and related sciences	1.4%	0.6%	0.3%	0.1%	0.1%	0.0%	0.1%	0.1%	0.7%	0.4%	0.5%	0.3%
3	Natural resources and conservation	0.5%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.3%	0.2%	0.1%
4	Architecture and related services	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%
5	Area, ethnic, cultural, and gender studies	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.6%	0.8%	0.1%	0.2%
9	Communication, journalism, and related programs	0.6%	0.5%	1.1%	1.1%	0.7%	0.4%	0.8%	0.9%	0.5%	0.3%	1.0%	1.0%
10	Communications technologies/technicians and support services	0.7%	0.3%	0.7%	0.2%	1.1%	0.2%	0.5%	0.2%	0.6%	0.2%	1.2%	0.3%
11	Computer and information sciences and support services	7.1%	1.1%	4.8%	0.7%	7.9%	1.5%	7.6%	1.6%	6.2%	1.4%	6.2%	1.3%
12	Personal and culinary services	1.4%	1.5%	1.2%	1.3%	2.2%	2.0%	1.2%	1.1%	1.7%	1.5%	1.6%	1.8%
13	Education	0.5%	2.5%	0.5%	2.6%	0.7%	2.6%	0.2%	1.0%	1.4%	4.6%	0.5%	1.8%
14	Engineering	1.1%	0.1%	1.1%	0.1%	0.8%	0.1%	1.8%	0.3%	0.9%	0.1%	1.0%	0.1%
15	Engineering technologies/technicians	7.7%	0.7%	4.1%	0.4%	6.0%	0.6%	3.8%	0.6%	6.3%	0.9%	4.6%	0.7%
16	Foreign languages, literatures, and linguistics	0.1%	0.3%	0.3%	0.6%	0.0%	0.1%	0.2%	0.2%	0.1%	0.2%	0.2%	0.4%
19	Family and consumer sciences/human sciences	0.1%	1.1%	0.2%	2.0%	0.2%	1.7%	0.1%	1.3%	0.2%	1.3%	0.1%	0.9%
22	Legal professions and studies	0.3%	1.2%	0.3%	1.0%	0.5%	1.2%	0.2%	0.5%	0.3%	0.9%	0.3%	1.0%
23	English language and literature/letters	0.2%	0.2%	0.4%	0.5%	0.1%	0.1%	0.3%	0.4%	0.2%	0.2%	0.3%	0.4%
24	Liberal arts and sciences, general studies, and humanities	36.3%	37.4%	38.2%	41.7%	37.7%	36.6%	32.1%	34.2%	32.6%	34.5%	39.4%	42.0%
25	Library sciences	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
26	Biological and biomedical sciences	0.3%	0.4%	0.7%	1.0%	0.3%	0.3%	1.0%	1.5%	0.5%	0.8%	0.5%	0.7%
27	Mathematics and statistics	0.4%	0.1%	1.0%	0.2%	0.2%	0.0%	1.6%	0.7%	0.4%	0.1%	0.7%	0.2%
29	Military technologies	0.3%	0.0%	0.2%	0.0%	0.3%	0.0%	0.2%	0.0%	0.3%	0.0%	0.3%	0.1%
30	Multi/interdisciplinary studies	2.8%	2.3%	4.1%	4.2%	2.0%	1.7%	6.5%	6.8%	2.2%	2.1%	3.8%	3.7%

Table 16. Field-of-study distribution by race/ethnicity and gender for associate's degrees awarded *(continued)*

		Distribution of Associate's Degrees Awarded											
CIP	Field of Study	White		Latinx		Black		Asian		AIAN/NHPI		Other	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
31	Parks, recreation, leisure, and fitness studies	0.6%	0.3%	0.9%	0.5%	0.7%	0.2%	0.8%	0.5%	0.8%	0.4%	0.9%	0.5%
38	Philosophy and religious studies	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%	0.1%	0.0%
39	Theology and religious studies	0.2%	0.1%	0.1%	0.0%	0.3%	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%
40	Physical sciences	0.6%	0.3%	1.0%	0.4%	0.4%	0.3%	1.9%	1.2%	0.8%	0.5%	1.1%	0.5%
41	Science technologies/technicians	0.5%	0.2%	0.5%	0.2%	0.5%	0.2%	0.5%	0.3%	0.3%	0.1%	0.4%	0.2%
42	Psychology	0.4%	0.8%	1.4%	2.8%	0.4%	0.7%	1.1%	1.7%	0.6%	1.5%	0.9%	1.7%
43	Security and protective services	5.8%	2.2%	7.3%	4.3%	5.4%	4.4%	2.9%	0.9%	5.2%	3.0%	4.7%	2.6%
44	Public administration and social service professions	0.2%	0.9%	0.3%	1.0%	0.8%	2.2%	0.1%	0.3%	0.5%	1.6%	0.3%	1.0%
45	Social sciences	1.1%	1.2%	3.0%	4.0%	1.3%	1.2%	2.9%	3.7%	2.4%	2.4%	2.5%	2.9%
46	Construction trades	1.5%	0.0%	0.6%	0.0%	1.0%	0.0%	0.6%	0.1%	2.2%	0.2%	1.1%	0.1%
47	Mechanic and repair technologies/ technicians	5.7%	0.2%	4.2%	0.2%	3.5%	0.2%	2.7%	0.1%	6.9%	0.4%	4.4%	0.2%
48	Precision production	1.5%	0.1%	0.7%	0.0%	0.4%	0.0%	0.5%	0.0%	1.3%	0.2%	0.9%	0.1%
49	Transportation and materials moving	0.4%	0.0%	0.3%	0.0%	0.2%	0.0%	0.3%	0.1%	0.4%	0.0%	0.4%	0.1%
50	Visual and performing arts	1.8%	2.0%	2.4%	1.8%	2.2%	1.1%	1.8%	2.5%	2.0%	1.5%	2.5%	2.4%
51	Health professions and related clinical services	8.1%	30.7%	6.6%	17.4%	8.6%	26.9%	10.6%	21.8%	9.2%	24.5%	6.9%	20.6%
52	Business, management, marketing, and related support services	9.7%	10.3%	10.7%	9.3%	13.2%	12.7%	14.6%	15.2%	10.6%	12.8%	9.9%	10.0%
54	History	0.2%	0.1%	0.5%	0.2%	0.1%	0.0%	0.2%	0.1%	0.2%	0.1%	0.3%	0.2%
Total		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013–14 through 2017–18 (pooled data).

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

Table 17. Field-of-study distribution by race/ethnicity and gender for bachelor's degrees awarded

		Distribution of Bachelor's Degrees Awarded											
CIP	Field of Study	White		Latinx		Black		Asian		AIAN/NHPI		Other	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
1	Agriculture, agriculture operations, and related sciences	1.4%	1.2%	0.6%	0.6%	0.4%	0.3%	0.3%	0.5%	1.1%	0.9%	0.7%	0.9%
3	Natural resources and conservation	1.4%	1.0%	0.7%	0.6%	0.3%	0.2%	0.5%	0.7%	1.5%	1.1%	1.1%	1.1%
4	Architecture and related services	0.6%	0.3%	0.8%	0.4%	0.4%	0.2%	0.6%	0.6%	0.5%	0.2%	0.5%	0.4%
5	Area, ethnic, cultural, and gender studies	0.2%	0.4%	0.4%	0.9%	0.5%	0.7%	0.3%	0.7%	1.4%	1.5%	0.5%	0.9%
9	Communication, journalism, and related programs	4.0%	5.7%	4.1%	5.4%	5.7%	5.4%	1.9%	3.3%	3.1%	3.8%	4.3%	6.4%
10	Communications technologies/technicians and support services	0.3%	0.1%	0.4%	0.1%	0.5%	0.2%	0.2%	0.2%	0.4%	0.2%	0.5%	0.2%
11	Computer and information sciences and support services	6.0%	0.8%	5.6%	0.8%	6.6%	1.3%	10.7%	2.8%	6.0%	1.1%	6.7%	1.3%
12	Personal and culinary services	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%
13	Education	2.6%	8.3%	1.5%	4.6%	2.4%	4.2%	0.7%	2.2%	2.8%	7.2%	1.7%	4.5%
14	Engineering	10.2%	1.9%	8.9%	1.7%	4.6%	0.9%	15.0%	4.3%	6.5%	1.3%	10.1%	2.4%
15	Engineering technologies/technicians	2.0%	0.2%	1.5%	0.2%	1.9%	0.2%	1.0%	0.2%	2.5%	0.3%	1.3%	0.2%
16	Foreign languages, literatures, and linguistics	0.7%	1.1%	1.2%	2.1%	0.3%	0.5%	0.5%	1.0%	0.6%	0.6%	0.9%	1.5%
19	Family and consumer sciences/human sciences	0.3%	2.1%	0.4%	2.1%	0.7%	2.2%	0.4%	1.5%	0.4%	2.0%	0.4%	1.9%
22	Legal professions and studies	0.2%	0.2%	0.2%	0.3%	0.3%	0.4%	0.1%	0.2%	0.2%	0.4%	0.2%	0.3%
23	English language and literature/letters	1.8%	3.2%	1.8%	2.6%	1.4%	2.1%	0.9%	1.7%	1.6%	2.1%	2.0%	3.5%
24	Liberal arts and sciences, general studies, and humanities	1.9%	2.5%	1.8%	2.9%	3.6%	3.3%	0.8%	1.3%	3.2%	3.6%	2.0%	2.6%
25	Library sciences	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
26	Biological and biomedical sciences	5.2%	5.8%	5.4%	5.6%	3.8%	5.0%	11.9%	13.8%	4.9%	5.0%	6.8%	7.3%
27	Mathematics and statistics	1.5%	0.8%	1.3%	0.7%	0.7%	0.4%	2.4%	1.4%	0.9%	0.4%	1.6%	0.8%
29	Military technologies	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
30	Multi/interdisciplinary studies	1.9%	2.8%	2.3%	3.8%	2.8%	3.3%	1.7%	2.7%	2.6%	3.0%	2.3%	3.3%

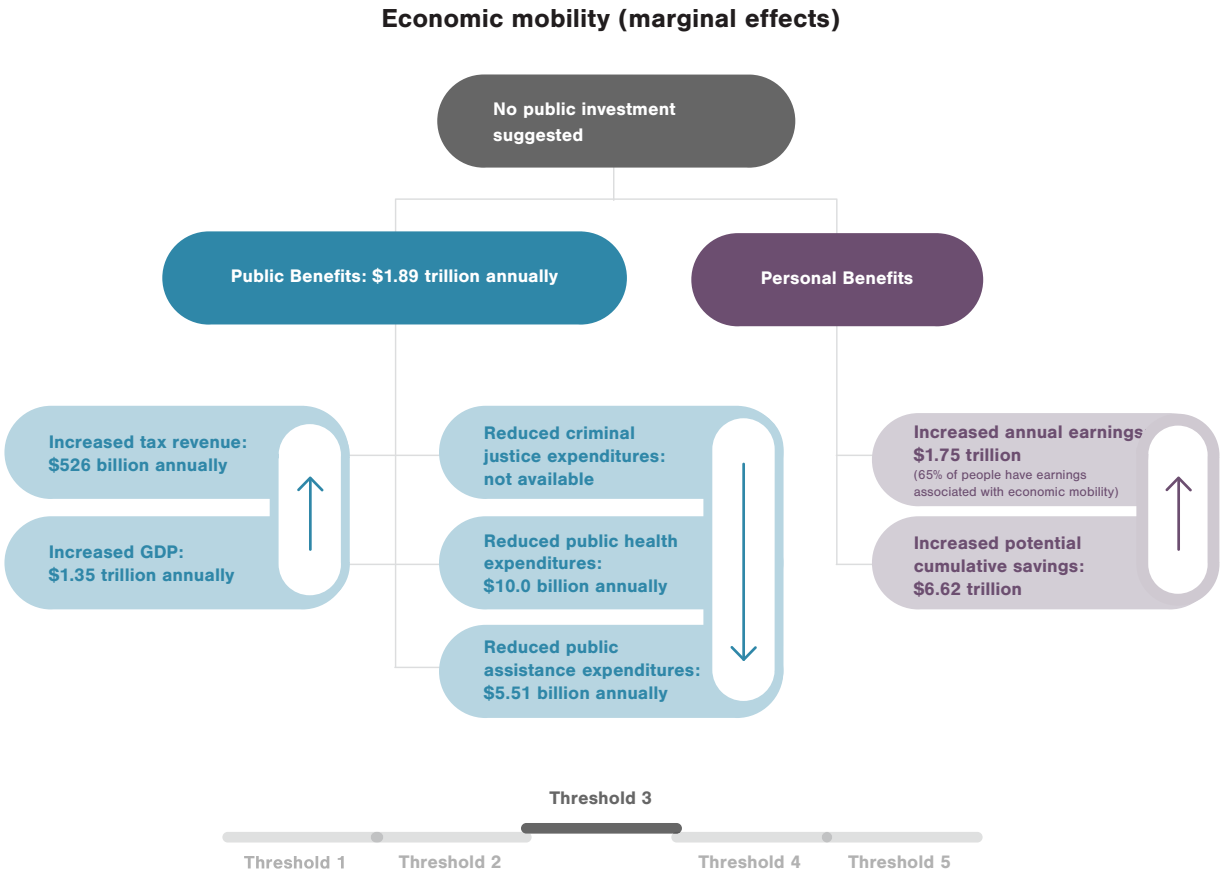
Table 17. Field-of-study distribution by race/ethnicity and gender for bachelor's degrees awarded *(continued)*

		Distribution of Bachelor's Degrees Awarded											
CIP	Field of Study	White		Latinx		Black		Asian		AIAN/NHPI		Other	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
31	Parks, recreation, leisure, and fitness studies	3.4%	2.5%	3.3%	2.0%	4.7%	2.0%	2.0%	1.4%	3.5%	2.4%	3.5%	2.5%
38	Philosophy and religious studies	0.9%	0.4%	0.8%	0.3%	0.7%	0.3%	0.5%	0.3%	0.8%	0.3%	0.9%	0.5%
39	Theology and religious studies	1.1%	0.3%	0.3%	0.2%	0.6%	0.3%	0.2%	0.1%	0.7%	0.2%	0.4%	0.2%
40	Physical sciences	2.4%	1.1%	1.8%	0.8%	1.0%	0.7%	2.6%	1.8%	1.7%	1.0%	2.6%	1.3%
41	Science technologies/technicians	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%
42	Psychology	2.9%	7.8%	4.6%	11.0%	4.3%	9.4%	3.3%	7.4%	3.8%	8.0%	4.0%	9.3%
43	Security and protective services	3.7%	1.9%	5.8%	4.3%	6.9%	5.6%	1.5%	0.8%	5.8%	3.7%	3.3%	2.4%
44	Public administration and social service professions	0.6%	2.3%	1.0%	3.1%	1.8%	5.1%	0.4%	1.1%	1.2%	3.7%	0.7%	2.3%
45	Social sciences	7.7%	5.4%	9.3%	8.8%	8.1%	7.1%	8.2%	7.5%	7.2%	6.0%	9.4%	8.2%
46	Construction trades	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
47	Mechanic and repair technologies/ technicians	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
48	Precision production	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
49	Transportation and materials moving	0.5%	0.1%	0.3%	0.0%	0.4%	0.0%	0.2%	0.0%	0.6%	0.1%	0.5%	0.1%
50	Visual and performing arts	4.3%	5.4%	5.2%	4.6%	4.4%	2.9%	3.2%	4.9%	4.7%	4.1%	5.5%	6.5%
51	Health professions and related clinical services	4.1%	18.6%	4.3%	13.5%	5.5%	17.8%	6.1%	17.3%	5.9%	17.6%	4.1%	13.2%
52	Business, management, marketing, and related support services	23.7%	14.5%	22.2%	15.3%	23.6%	17.4%	21.1%	17.8%	21.9%	17.2%	19.4%	12.9%
54	History	2.3%	1.2%	1.9%	0.9%	1.1%	0.5%	0.7%	0.5%	1.8%	0.8%	1.9%	1.1%
Total		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Georgetown University Center on Education and the Workforce analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 2013–14 through 2017–18 (pooled data).

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

Threshold 3: If economic mobility were achieved



Even closing earnings gaps would not bring everyone to a level of earnings associated with economic mobility (defined in this thought experiment as earnings of at least the bottom threshold of the 4th quintile, or $48,523).[87] To calculate the additional gains that would be possible if workers with an associate's degree or higher had this level of earnings, we assigned new wages above this threshold for all workers with at least an associate's degree who had not already reached this earnings threshold based on previous adjustments. We found that an additional increase in aggregate earnings of $1.75 trillion would be possible if everyone with an associate's degree or higher had earnings associated with economic mobility.

With this adjustment, between 61 percent (for Black men) and 71 percent (for Asian men) of each subgroup would reach economic mobility (Table 18).

87 "Mobility" is defined here in keeping with the definition put forth by the Postsecondary Value Commission. This threshold was informed by field research on economic mobility. For example, Opportunity Insights' measurement of economic mobility assesses whether students move into the fifth income quintile. As noted above, this threshold measures the percentage of students earning enough to enter the fourth or upper-middle income quintile ($48,523). It therefore takes a slightly broader interpretation of mobility than is used by Opportunity Insights, measuring whether students move into at least the upper-middle class. For students from low-income backgrounds, entering the fourth income quintile represents a significant improvement in their economic condition.

Table 18. If everyone with at least an associate's degree had earnings associated with economic mobility, at least 61 percent of people in each subgroup would have earnings that allow for economic mobility.

	White	Latinx	Black	Asian	AIAN/NHPI and Other
Total	64%	65%	64%	70%	65%
Men	63%	64%	61%	71%	62%
Women	66%	67%	67%	69%	67%

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size.

After closing attainment and earnings gaps, the total annual benefit to society could still be increased by $1.89 trillion annually (based on an aggregate earnings increase of $1.75 trillion) if all workers with at least an associate's degree achieved earnings associated with economic mobility:

- *Tax revenue:* Federal and state tax revenue would increase by an additional $526 billion annually.[88]
- *GDP:* GDP due to earnings would increase by an additional $1.35 trillion annually.
- *Criminal justice expenditures:* Data do not support a correlation between earnings and incarceration.
- *Public health expenditures:* Public health expenditures would decrease by an additional $10.0 billion annually.[89]
- *Public assistance program expenditures:* Expenditures related to public assistance programs would decrease by $5.51 billion annually.

Additional gains would also be possible in terms of indirect benefits:

- *Earnings gaps:* If all workers with at least an associate's degree attained economic mobility, earnings gaps would close by an additional 1 percentage point for some groups (Latinx men and Black men) beyond the effect of earnings equalization. Importantly, however, ensuring that all earners reach the threshold for economic mobility would pare back the earnings advantages established in threshold 2 for all women except for Asian women (by up to 3 percentage points) (Table 19). This is because after equalizing earnings by degree level, men have farther to go than women to reach the 4th earnings quintile.

88 Our methodology did not allow us to differentiate the gains for additional credential holders at this threshold.
89 This represents an additional 5 percent reduction in public health expenditures relative to the previous threshold.

If attainment gaps and earnings gaps were closed as described above, 109.4 million people (or 65 percent of people ages 25 to 64) would reach a level of earnings that offers economic mobility. At this threshold, 64 percent of Whites, 64 percent of Blacks, 65 percent of Latinxs, 70 percent of Asians, and 65 percent of AIAN/NHPIs and people of other races and ethnicities would have earnings associated with economic mobility. (See Table 18 above for data by race and sex.)

Table 19. Differences in earnings gaps after equalizing educational attainment and earnings, if everyone with an associate's degree or higher achieves economic mobility

Sex	Race/ Ethnicity	Median earnings after Threshold 2	New median earnings after Threshold 3	Percent difference	Median earnings after Threshold 2 as share of White men's	New median earnings after Threshold 3 as share of White men's	Change in gap
Men	White	$58,000	$72,000	25%	100%	100%	0pp
	Latinx	$57,000	$71,000	26%	98%	99%	1pp
	Black	$57,000	$72,000	25%	98%	99%	1pp
	Asian	$64,000	$80,000	25%	111%	111%	0pp
	AIAN/NHPI and Other	$58,000	$72,000	25%	100%	100%	0pp
Women	White	$61,000	$75,000	23%	105%	103%	-2pp
	Latinx	$61,000	$75,000	22%	105%	103%	-2pp
	Black	$61,000	$75,000	22%	106%	104%	-2pp
	Asian	$63,000	$79,000	25%	109%	109%	0pp
	AIAN/NHPI and Other	$61,000	$75,000	22%	106%	103%	-3pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

- *Potential cumulative savings gaps:* If all workers ages 25 to 64 with at least an associate's degree achieved earnings associated with economic mobility, we could see an additional $6.62 trillion in potential cumulative savings from higher wages over the remainder of workers' careers over the gains associated with closing attainment and earnings gaps. At this threshold, all racial/ethnic/gender groups would continue to have higher potential cumulative savings than White men (see Table A19 in Appendix A).

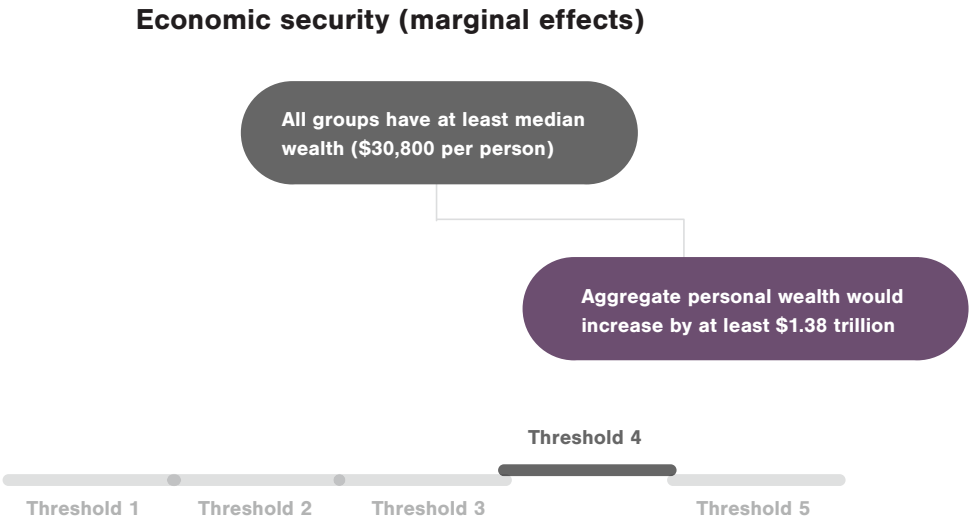
Relative to other thresholds, the effects of Threshold 3 would be as shown below (Table 20).

Table 20. Threshold 3 outcomes compared to other thresholds

	Threshold 1 Attainment	Threshold 2 Earnings	Threshold 3 Mobility	Total Thresholds 1, 2, 3		Threshold 4 Security	Threshold 5 Wealth
Public Investment (cumulative)	($3.97 trillion)	N/A	N/A	($3.97 trillion)		N/A	N/A
Personal Benefits							
Aggregate Earnings	$1.03 trillion	+$2.29 trillion	+$1.75 trillion	$5.07 trillion	**Aggregate Personal Wealth**	$1.38 trillion	$2.29 trillion
Share with Mobility	37%	50%	65%	65%			
Aggregate Potential Cumulative Savings	$3.17 trillion	+$9.81 trillion	+$6.62 trillion	$19.6 trillion			
Public Benefits (annual)							
Tax Revenue (increase)	$308 billion	+$686 billion	+$526 billion	$1.52 trillion			
GDP (increase)	$542 billion	+$1.76 trillion	+$1.35 trillion	$3.65 trillion			
Criminal Justice Expenditures (decrease)	$13.8 billion	N/A	N/A	$13.8 billion			
Public Health Expenditures (decrease)	$58.7 billion	+$18.1 billion	+$10.0 billion	$86.8 billion			
Public Assistance Expenditures (decrease)	$33.7 billion	+$9.33 billion	+$5.51 billion	$48.54 billion			
Total Public Benefits *(annual)*	**$956 billion**	**+$2.47 trillion**	**+$1.89 trillion**	**$5.32 trillion**			

Source: Georgetown University Center on Education and the Workforce summary analysis based on previous tables.

Threshold 4: If economic security were achieved



The possible societal benefits associated with economic security (defined for this exercise as median individual wealth, which provides a strong financial safety net) would be greater than the possible benefits of economic mobility. For analysis of individual wealth (as opposed to potential cumulative savings, which does not account for inherited wealth, as described and modeled above), we used median net worth from the Survey of Income and Program Participation (SIPP).[90] We have chosen to use SIPP data rather than data from the Survey of Consumer Finances because the latter is known to underrepresent low-income individuals.[91] These data also enable us to measure wealth at an individual level, which allows us to conceptualize a link, through earnings, between education and wealth.

At present, White men and women and Asian men and women have higher median wealth than the overall median for the population, while men and women in every other racial or ethnic group have wealth far below the median. In fact, there are considerable gaps between the wealth of male and female Latinxs, Blacks, and AIAN/NHPIs and people of other races and ethnicities and the wealth of White men.[92] If all groups had at least the median individual wealth ($31,000 per person),[93] wealth gaps would narrow considerably, but they would still remain significant—Latinxs, Blacks, and AIAN/NHPIs and people of other races and ethnicities would still have only 47 cents for every dollar of wealth held by White men (Table 21).

90 This metric of median net worth, used in Threshold 4 and Threshold 5, differs from the potential cumulative savings metric used elsewhere in this analysis. Our calculations at these thresholds are not directly tied to earnings; therefore, the potential cumulative savings metric is not applicable. We make this adjustment to our methodology at this threshold so we can directly address questions about changes in wealth, as opposed to extrapolating changes in wealth based on changes in earnings that affect potential cumulative savings.

91 Bricker et al., "Changes in US Family Finances from 2013 to 2016: Evidence from the Survey of Consumer Finances," 2017.

92 Analysis of the spread of wealth across deciles shows that 41 percent of Whites have wealth in the bottom half, compared to 69 percent of Blacks, 72 percent of Latinxs, 46 percent of Asians, and 67 percent of AIAN/NHPIs and people of other races and ethnicities. Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, Survey of Income and Program Participation, 2014.

93 According to the US Census Bureau's Survey of Income and Program Participation (SIPP), 2014, the median wealth at the individual level is $30,800 and the median wealth per household is $88,000, lower than the $97,000 suggested by the Board of Governors of the Federal Reserve, "Changes in U.S. Family Finances from 2013 to 2016," 2017. We used the SIPP median for consistency with the data set.

Table 21. If all groups had at least the median wealth, wealth gaps would narrow but remain significant.

Sex	Race/ Ethnicity	Current median personal wealth	New personal wealth after Threshold 4	Current median personal wealth as a share of White men's	New personal wealth after Threshold 4 as a share of White men's	Change in gap
Men	White	$65,000	$65,000	100%	100%	0pp
	Latinx	$7,000	$31,000	11%	47%	36pp
	Black	$5,000	$31,000	7%	47%	40pp
	Asian	$96,000	$96,000	148%	148%	0pp
	AIAN/NHPI and Other	$10,000	$31,000	16%	47%	32pp
Women	White	$48,000	$48,000	74%	74%	0pp
	Latinx	$3,000	$31,000	5%	47%	43pp
	Black	$3,000	$31,000	4%	47%	43pp
	Asian	$49,000	$49,000	75%	75%	0pp
	AIAN/NHPI and Other	$6,000	$31,000	8%	47%	39pp

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, Survey of Income and Program Participation, 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

Our analysis ties wealth accumulation directly to education via earnings, which is one area where postsecondary education can have an effect. While higher education can move the needle on closing wealth gaps via its effect on earnings, a complete closure of wealth gaps is outside of the scope of higher education policy due to the role of inheritance and other intergenerational advantages in wealth. Therefore, the additional public investment required to produce this outcome is beyond the scope of our analysis. That said, we estimate that if all groups had at least the median wealth, the aggregate amount of personal wealth in the nation would increase by $1.38 trillion.

Because wealth does not factor into our calculations of tax revenue, GDP, criminal justice expenditures, public health expenditures, debt levels, and earnings gaps, we do not calculate a dollar amount for additional societal gains at this threshold. The narrowing of wealth gaps described above therefore represents the additional value to society at this threshold. In other words, we assume that a more equal society is, by its nature, a better-functioning society.

The effects of Threshold 4 would be as shown below (Table 22).

Table 22. Threshold 4 outcomes compared to other thresholds

	Threshold 1 Attainment	Threshold 2 Earnings	Threshold 3 Mobility	Total Thresholds 1, 2, 3		Threshold 4 Security	Threshold 5 Wealth
Public Investment (cumulative)	($3.97 trillion)	N/A	N/A	($3.97 trillion)		N/A	N/A
Personal Benefits							
Aggregate Earnings	$1.03 trillion	+$2.29 trillion	+$1.75 trillion	$5.07 trillion	**Aggregate Personal Wealth**	$1.38 trillion	$2.29 trillion
Share with Mobility	37%	50%	65%	65%			
Aggregate Potential Cumulative Savings	$3.17 trillion	+$9.81 trillion	+$6.62 trillion	$19.6 trillion			
Public Benefits (annual)							
Tax Revenue (increase)	$308 billion	+$686 billion	+$526 billion	$1.52 trillion			
GDP (increase)	$542 billion	+$1.76 trillion	+$1.35 trillion	$3.65 trillion			
Criminal Justice Expenditures (decrease)	$13.8 billion	N/A	N/A	$13.8 billion			
Public Health Expenditures (decrease)	$58.7 billion	+$18.1 billion	+$10.0 billion	$86.8 billion			
Public Assistance Expenditures (decrease)	$33.7 billion	+$9.33 billion	+$5.51 billion	$48.54 billion			
Total Public Benefits *(annual)*	**$956 billion**	**+$2.47 trillion**	**+$1.89 trillion**	**$5.32 trillion**			

Source: Georgetown University Center on Education and the Workforce summary analysis based on previous tables.

What role can potential cumulative savings play in closing wealth gaps?

The Georgetown University Center on Education and the Workforce devised the idea of potential cumulative savings as a way to connect education to wealth via the increased earnings associated with educational attainment. In Thresholds 1 through 3 of this analysis, we explored how changes in education and earnings would contribute to closing gaps in potential cumulative savings. In Thresholds 4 and 5, we instead explore differences in overall wealth. How do these two measures connect?

Before answering this question, it's important to note that wealth gaps in the United States are untenable: on the whole, the top 1 percent holds 40 percent of all wealth, while the bottom 90 percent hold less than a quarter.[94] In addition, wealth gaps are the best cumulative indicator of

94 Leiserson et al, "The Distribution of Wealth in the United States and Implications for a Net Worth Tax," 2019.

intergenerational racial/ethnic and class inequality in economic opportunity, and these gaps are unlikely to be appreciably affected by improvements in college going.[95] Differences in wealth matter because they translate into differences in social mobility: those who have less wealth have less of a safety net, as well as less capital to invest. Thus, narrowing wealth gaps is essential to establishing equity in society.

Measured by decile cutoffs, the wealth gaps by race/ethnicity and gender near the end of workers' careers (ages 55 to 65) are stark (Table 23).[96] Whites and Asians are more heavily concentrated in the upper deciles of the wealth distribution, while Blacks and Latinxs are more heavily concentrated in the lower deciles, along with AIAN/NHPIs and people of other races and ethnicities. At the extremes, 18 percent of Blacks have negative wealth when nearing the end of their careers, and only 2 percent have wealth in the top decile (above $826,700, with a median of $1,357,900). In contrast, 15 percent of Asians have wealth in the top decile, while 8 percent have negative wealth. Across most of the distribution, women generally have less wealth than men of the same race and ethnicity, although White and Asian women are more heavily concentrated at higher deciles than women of all other racial/ethnic groups.

So what role can higher education play in narrowing these gaps? Educational attainment can't close the 45 percent of wealth gaps that are related to inheritance,[97] but it can help narrow gaps in wealth accumulated through earnings. In other words, it can help close gaps in the more than half of wealth, on average, that is built within a generation. In fact, for many people, it can make a huge difference: for the 90 percent of the population that holds one-fourth of all wealth, earnings may be the primary means of building wealth, at least in the absence of policies resulting in wealth transfer.

Education affects an individual's ability to build wealth through savings. Because higher education correlates with higher earnings, individuals with more education tend to have more potential cumulative savings. In the example below, we show how education, through potential cumulative savings, might affect wealth accumulation for a hypothetical individual Black female worker, holding constant all other assets and liabilities that contribute to total wealth.[98] This worker's wealth would increase with education, narrowing—but not closing—the wealth gap between her and a hypothetical individual White male worker with a bachelor's degree at age 65, as they both enter their late careers. In this example, we assumed that the Black female worker inherits $6,300 and the White male worker inherits $70,000, based on the differences in average inheritance by race and gender group.[99]

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95 Darity and Mullen, *From Here to Equality*, 2020.

96 We measure wealth gaps at the end of workers' careers to capture most savings from earnings and most transmitted inheritances. According to the Federal Reserve, the average age at which people receive an inheritance is 40; see Yellen, "Perspectives on Inequality and Opportunity from the Survey of Consumer Finances," 2014.

97 Kopczuk and Lupton, "To Leave or Not to Leave," 2005.

98 These calculations rest on a series of assumptions: Both workers earn median wages for their demographic and education group; pay 30 percent of their salaries for federal, state, and local taxes; save 7 percent of their post-tax earnings annually; and invest their savings at a 7 percent annual return per year over a 40-year career. Each worker borrows the average amount for his or her demographic group to pay for his or her education and pays back those loans under a standard repayment plan over the first 10 years of the career, assuming a 4 percent interest rate on undergraduate student loans and a 7 percent interest rate on graduate student loans. We subtracted annual student loan payments from post-tax earnings for the first 10 years of each worker's career. By the time workers reach the age of 55, each worker also receives in full any intergenerational transfer of wealth that would come from their parents. For simplicity, we also assumed that both workers have no other assets and no liabilities, and that they were able to cover any non-education-related liabilities without drawing on their savings or reducing their contributions toward potential cumulative savings, and that they have equal access to credit markets and investment opportunities despite known limitations such as credit market discrimination.

99 We assume that an average of 45 percent of each worker's wealth at age 65 comes from their inheritance. These inheritance figures represent 45 percent of the median wealth for each worker's demographic group at ages 55 to 65. The median wealth figures are from the Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau Survey of Income and Program Participation (SIPP), 2014.

Table 23. Wealth decile thresholds by race/ethnicity, adults ages 55 to 65

Decile		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
Range		Negative Wealth (Debt > Assets)	$0 to $2,500	$2,501 to $20,000	$20,001 to $55,600	$55,601 to $100,200	$100,201 to $160,200	$160,201 to $255,400	$255,401 to $423,700	$423,701 to $826,700	More than $826,700	ALL	
Median		-$6,700	$0	$8,700	$36,300	$76,000	$127,300	$205,300	$327,100	$564,500	$1,357,900	$100,200	Mean
White	Men	6%	6%	8%	10%	9%	10%	10%	12%	13%	14%	100%	$494,200
	Women	7%	8%	9%	8%	11%	11%	12%	12%	11%	10%	100%	$328,300
	Total	7%	7%	9%	9%	10%	11%	11%	12%	12%	12%	100%	$408,700
Latinx	Men	9%	20%	21%	15%	10%	7%	6%	6%	4%	2%	100%	$110,600
	Women	12%	25%	16%	13%	11%	10%	4%	2%	4%	3%	100%	$144,400
	Total	11%	23%	18%	14%	10%	9%	5%	4%	4%	3%	100%	$128,000
Black	Men	18%	26%	9%	10%	8%	9%	7%	6%	4%	3%	100%	$86,200
	Women	18%	22%	12%	12%	10%	8%	6%	5%	4%	2%	100%	$97,000
	Total	18%	24%	11%	11%	10%	9%	7%	5%	4%	2%	100%	$92,200
Asian	Men	5%	5%	12%	8%	4%	8%	15%	8%	13%	22%	100%	$465,100
	Women	9%	15%	8%	7%	9%	4%	9%	10%	17%	11%	100%	$354,200
	Total	8%	11%	9%	7%	7%	6%	12%	9%	16%	15%	100%	$398,700
AIAN/ NHPI and Other	Men	14%	25%	11%	8%	14%	7%	6%	6%	2%	8%	100%	$363,500
	Women	12%	18%	9%	12%	7%	12%	10%	7%	3%	8%	100%	$366,400
	Total	13%	22%	10%	10%	11%	10%	8%	6%	2%	8%	100%	$365,000

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

Building on this illustrative example, we found that the prototypical individual Black female worker with a bachelor's degree who is nearing retirement age would have wealth of $389,500, 53 percent of the wealth held by a prototypical White male worker with a bachelor's degree of similar age. The same Black female worker with some college coursework, but no degree, would have wealth of $255,300, 34 percent of the wealth that a White male worker with a bachelor's degree would have (Table 24). In this example, we see the potential value of reducing wealth differences between two hypothetical individuals through increased education: a Black female worker with some college but no degree could potentially generate $134,200 more wealth over her career by earning a bachelor's degree. She would have barely half the wealth of the White male worker with a bachelor's degree at retirement, but nevertheless, would have significantly narrowed the wealth gap between them.

Table 24. Education reduces differences in wealth at the individual level, but does not eliminate wealth gaps.

Education level, Black female worker	Late-career wealth, Black female worker	Late-career wealth, White male worker with a bachelor's degree	Black female worker's late-career wealth as a share of White male worker's late-career wealth
Less than high school	$166,200	$740,100	22%
High school	$229,400	$740,100	31%
Some college	$255,300	$740,100	34%
Associate's degree	$288,000	$740,100	39%
Bachelor's degree	$389,500	$740,100	53%
Master's degree	$467,700	$740,100	63%
Professional degree	$459,600	$740,100	62%
Doctoral degree	$568,000	$740,100	77%

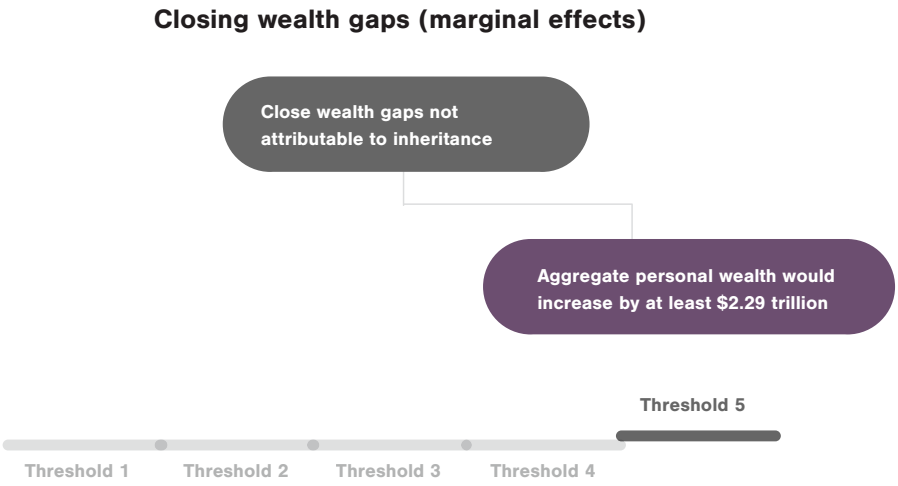
Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: "Late-career wealth" refers to estimated wealth at age 65. These totals account for both inherited wealth and wealth accumulated over the worker's career.

This example comparing outcomes for two hypothetical individuals shows that educational attainment can move the needle on wealth creation through potential cumulative savings, particularly for workers in the bottom half of the wealth distribution. But education alone won't close wealth gaps at the societal level, in part because of persistent racial/ethnic and gender earnings disparities among equivalently qualified workers. According to economists at the Federal Reserve Bank of Cleveland, the racial earnings gap plays a larger role in maintaining the wealth gap than bequests or rates of return on investments.[100] To more fully close racial wealth gaps, we will need to address disparities in earnings among equally qualified workers alongside disparities in educational attainment.

100 Aliprantis et al., "The Dynamics of the Racial Wealth Gap," 2019. Other researchers have estimated that 26 percent of the racial wealth gap is attributable to "intergenerational transfers of wealth"; see Ashman and Neumuller, "Can Income Differences Explain the Racial Wealth Gap?" 2019.

Threshold 5: If wealth gaps were closed



As a final step, we extended our analysis to determine the share of wealth gaps that could be closed via equitable educational attainment and earnings and the share that would remain due to intergenerational wealth transfers. As noted above, 45 percent of wealth is intergenerational, bequeathed by one generation to another. We therefore assumed that societal investments could affect only the 55 percent of wealth that is not associated with inheritance—that is, the portion people can accrue through earnings. (Future research should consider the racial gaps in the share of wealth attributable to inheritance; for more about this recommendation, see Appendix A.)

We found that by raising the wealth attributable to education and earnings of all racial/ethnic and gender groups to match that of White men (except for Asian men, whose individual wealth already exceeds that of White men), we could make significant strides toward closing wealth gaps, with aggregate wealth increasing by $2.29 trillion. But large gaps would still remain, particularly for Latinx, Black, and AIAN/NHPI and Other individuals (Table 25).[101]

101 We assume that 45 percent of wealth among all groups is attributable to inheritance because our data set does not allow us to establish differences in inheritance among groups. As a result, these estimates may overstate the percentage of wealth attributable to inheritance among some groups and understate the percentage attributable to inheritance among others. For additional analysis related to this consideration, see Appendix A.

Table 25. If all wealth connected with education and earnings were equalized, overall racial wealth gaps would narrow considerably, but large gaps would still remain.

Sex	Race/ Ethnicity	Current median personal wealth	New personal wealth after Threshold 5	Current median personal wealth as a share of White men's	New personal wealth after Threshold 5 as a share of White men's	Change in gap
Men	White	$65,000	$65,000	100%	100%	0pp
	Latinx	$7,000	$39,000	11%	60%	49pp
	Black	$5,000	$38,000	7%	58%	51pp
	Asian	$96,000	$96,000	148%	148%	0pp
	AIAN/NHPI and Other	$10,000	$40,000	16%	62%	46pp
Women	White	$48,000	$58,000	74%	88%	14pp
	Latinx	$3,000	$37,000	5%	57%	53pp
	Black	$3,000	$37,000	4%	57%	53pp
	Asian	$49,000	$58,000	75%	89%	14pp
	AIAN/NHPI and Other	$6,000	$38,000	8%	59%	50pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

The societal value of closing gaps in the portion of wealth that is self-generated would be significant. In fact, economists at the Federal Reserve Bank of Cleveland have found that the racial earnings gap plays a larger role in maintaining the wealth gap than bequests or rates of return on investments.[102] Moreover, for those at the lower end of the wealth distribution—who have little or no wealth to begin with—closing earnings gaps can result in real, material improvements in their overall wealth.[103] For the many people without wealth or savings, the increased earnings described in this experiment would represent a life-altering economic opportunity.

At the same time, the numbers above illustrate the strength of intergenerational transfer in maintaining racial wealth gaps, which contribute to gaps in educational and economic opportunity in a self-reinforcing cycle that perpetuates inequality for generations.[104] In fact, the Federal Reserve researchers found that even after closing racial earnings gaps, it would take approximately 100 years to close racial wealth gaps.[105] Clearly, to fully address the disparities caused by historical

102 Aliprantis et al., "The Dynamics of the Racial Wealth Gap," 2019. Other researchers have estimated that 26 percent of the racial wealth gap is attributable to "intergenerational transfers of wealth"; see Ashman and Neumuller, "Can Income Differences Explain the Racial Wealth Gap?," 2019.

103 For example, Hershbein and colleagues found that increased educational attainment rates would significantly increase economic security and reduce poverty for low-income individuals, as well as shrink earnings gaps between low-income individuals and the 90th percentile of earners; see Hershbein et al., "College Attainment, Income Inequality, and Economic Security," 2020.

104 Sullivan et al., *The Racial Wealth Gap*, 2016.

105 In a contrasting simulation, these researchers found that closing the wealth gap without closing the earnings gap would allow the wealth gap to nearly return within 50 years. See Aliprantis et al., "The Dynamics of the Racial Wealth Gap," 2019. Thompson and Suarez also provide a useful discussion of racial wealth gaps in "Exploring the Racial Wealth Gap Using the Survey of Consumer Finances," 2015.

injustices, we would need to do more than close the portion of the wealth gap that can be affected by education and earnings. Postsecondary equity would have great societal value, but it would not create a completely equal world.

The effects of Threshold 5 would be as shown below (Table 26).

Table 26. Threshold 5 outcomes compared to other thresholds

	Threshold 1 Attainment	Threshold 2 Earnings	Threshold 3 Mobility	Total Thresholds 1, 2, 3		Threshold 4 Security	Threshold 5 Wealth
Public Investment (cumulative)	($3.97 trillion)	N/A	N/A	($3.97 trillion)		N/A	N/A
Personal Benefits							
Aggregate Earnings	$1.03 trillion	+$2.29 trillion	+$1.75 trillion	$5.07 trillion	**Aggregate Personal Wealth**	$1.38 trillion	$2.29 trillion
Share with Mobility	37%	50%	65%	65%			
Aggregate Potential Cumulative Savings	$3.17 trillion	+$9.81 trillion	+$6.62 trillion	$19.6 trillion			
Public Benefits (annual)							
Tax Revenue (increase)	$308 billion	+$686 billion	+$526 billion	$1.52 trillion			
GDP (increase)	$542 billion	+$1.76 trillion	+$1.35 trillion	$3.65 trillion			
Criminal Justice Expenditures (decrease)	$13.8 billion	N/A	N/A	$13.8 billion			
Public Health Expenditures (decrease)	$58.7 billion	+$18.1 billion	+$10.0 billion	$86.8 billion			
Public Assistance Expenditures (decrease)	$33.7 billion	+$9.33 billion	+$5.51 billion	$48.54 billion			
Total Public Benefits *(annual)*	**$956 billion**	**+$2.47 trillion**	**+$1.89 trillion**	**$5.32 trillion**			

Source: Georgetown University Center on Education and the Workforce summary analysis based on previous tables.

Possible Postsecondary Levers: Eliminating Student Loan Debt for Low-Income Individuals

With the aid of improved federal policy, postsecondary institutions could further close equity gaps by ensuring that low-income students do not graduate with the burden of federal educational debt. As described elsewhere in this paper, educational debt plays a significant role in dampening the potential for college graduates to build wealth.

The role of educational debt in individuals' long-term economic outcomes has become increasingly relevant due to rising concerns about college costs and an increasing need to finance college

through debt. According to the College Board, on average, about 15 percent of college costs are paid through student borrowing. Close to a third of college costs are paid for with family savings and parental loans, with another 28 percent coming from grants and scholarships.[106] Federal student loan debt stood at about $1.5 trillion in 2019, up from $250 billion in 2004.[107] Increases in overall student loan debt reflect increases in average debt per student. Average cumulative debt at graduation for student borrowers with a bachelor's degree was $31,790 in 2016, up from $26,150 in 2000.[108]

For many people, student loans may be the only way to access a college education—and reliance on loans varies startlingly by race and class. Research shows, for example, that among dependent students who graduated with a bachelor's degree in 2015–16, 68 percent held some student debt, but the share of students with debt varies by income: among those with parental incomes of $120,000 or more, 59 percent held student loan debt, compared to 75 percent of graduates whose parents had incomes below $35,000.[109] Differences are also apparent by race: four years after graduating from college, Black students have almost twice as much remaining student loan debt on average as their White peers.[110] Because Black students take on more debt, the wage discrimination they face in the labor market makes repayment that much more of a financial struggle.

Differences in student loan debt are inextricably tied to differences in family wealth. Relatively low wealth creates a disproportionate burden on low-income and underrepresented racial and ethnic groups, who tend to max out their federal student loans in order to finance their educations.[111] The problem is particularly acute for Black students: in general, Black families have fewer resources to draw upon to finance their college educations.[112] In addition, once students take on debt, their debt burden functions as a negative balance against their potential to build wealth. Moreover, Black students have much higher student loan default rates than students from other racial/ethnic groups,[113] which affects their ability to obtain credit as a means to build wealth. Thus, the relationship between wealth and student loan debt is multifaceted and can be self-defeating: wealth protects students from having to take on debt, and those who take on debt are hindered in their ability to accrue wealth.

Policymakers have suggested a range of potential options for reducing student debt or eliminating the need for students to borrow, including debt-free college and increasing need-based grant aid. Some have suggested canceling federal student debt as a possible means of alleviating the burden associated with student debt—but there are debates about the equity implications of this approach. High loan balances are typically concentrated among those with higher earnings and graduate degrees (who are thus better positioned to pay off their debt), even while low-balance borrowers may be at more risk of default, so some see massive student loan cancellation as providing resources to those who do not need assistance.[114] On the other hand, racial and socioeconomic disparities in educational debt demand attention. Some have argued that a straightforward and substantial debt

106 Looney and Lee, "Parents Are Borrowing More and More to Send Their Kids to College," 2018.
107 Domestic Policy Council and Council of Economic Advisers, "Taking Action," 2014; Miller et al., "Addressing the $1.5 Trillion in Federal Student Loan Debt," 2019.
108 Amounts are in 2018–19 dollars as reported in the National Center for Education Statistics, Digest of Education Statistics Tables, Table 331.95, 2019.
109 Baum et al., *Trends in Student Aid* 2019, 2019.
110 Huelsman, "The Debt Divide," 2015.
111 For more on how differential wealth affects student loan debt, see Scott-Clayton and Li, "Black-White Disparity in Student Loan Debt More than Triples after Graduation," 2016, and Addo et al., "Young, Black, and (Still) in the Red," 2016.
112 For example, White families have an average of $155,000 in home equity, while Black families have an average of $93,000. Kahn, Huelsman, and Mishory, *Bridging Progressive Policy Debates*, 2019.
113 Miller, "The Continued Student Loan Crisis for Black Borrowers," 2019.
114 Looney and Yannelis, *Borrowers with Large Balances*, 2018.

forgiveness plan or eliminating the need to borrow funds to pay for college could address disparities that current loan and financial aid policies do not take into account.

Recommending a specific approach to eliminating student loan debt is beyond the scope of this thought experiment. Nevertheless, because eliminating federal student loan debt for non-earners and people in the bottom two earnings quintiles can have substantial effects on potential cumulative savings by gender and race or ethnicity, it is imperative that policymakers and higher education leaders identify ways to close the gaps in educational debt.

Getting from Here to There

Based on our calculations discussed in this paper, even though it would not result in complete equality, closing or narrowing educational attainment gaps would have considerable value to society. That said, our model lacks a realistic timeframe for moving from where we are today to our north star of equality in postsecondary educational outcomes. We know that systemic barriers faced by students from low-income and underrepresented racial and ethnic backgrounds, along with constraints related to institutional capacity, efficiency in graduating students, and readiness for postsecondary education, limit the rate at which change might be possible. So where do we go from here?

An obvious first step would be to increase attainment among the 500,000 high school students each year who have shown themselves to be college ready but who have not earned any college credential within 10 years of their sophomore year.[115] We might also look to increase attainment among the students who undershoot their potential by stopping out with a lower-level credential than they might have attained (for example, earning a certificate instead of a bachelor's degree).

Improving attainment rates among these college-ready students would require a sizable societal investment directed toward preventing losses of potential talent and optimizing system efficiencies. To get a sense of the scale of the investment required, we might look toward the differences in private subsidies provided at institutions in the highest decile of selectivity, where high graduation rates are achieved among students with all levels of test scores, compared to those at the lowest decile. It's no surprise that these top institutions have high graduation rates given that the average per-capita student subsidy at colleges in the highest decile of selectivity is approximately $20,000 more annually than at colleges in the lowest decile of selectivity.[116] A per-student investment of this scale could make a significant difference in student success rates. Strides could also be made through lower-cost interventions—such as college and career counseling—that improve college-ready students' expectations and support their postsecondary success.

Students who aren't among the top 500,000 forgotten college-ready students also stand to benefit from postsecondary education—and we cannot meet our equity goals without them. To improve attainment among the underserved students, we would need significant improvements to K–12 alongside greater investments in academic and non-academic student support at the postsecondary level, including through developmental education. We would also need clearer pathways through the postsecondary system, including improved transfer options. And we would need to better support the engagement and

115 Georgetown University Center on Education and the Workforce, "The Forgotten 500,000 College-Ready Students: Methodology," 2018.

116 For example, students in the bottom socioeconomic quartile graduate at a rate of 76 percent at tier 1 institutions, but only 40 percent at tier 4 institutions. Carnevale and Strohl, "How Increasing College Access Is Increasing Inequality, and What to Do About It," 2010; see also Winston, "Economic Stratification and Hierarchy among U.S. Colleges and Universities," 2000.

postsecondary success of adult and other nontraditional students, who face high barriers to success when navigating an educational system typically designed to fill the developmental needs and financial and life circumstances of traditionally-aged students.[117] It's difficult to estimate the amount of time or financial investment required to meet these ends, but we know they would be even greater than what would be necessary to improve attainment among college-ready students.

What we would need first is a better understanding of what incremental change would look like. To gain this understanding, we would recommend revisiting the steps above, but with the goal of modeling incremental change over a set time period. We would also recommend refining the methodology to better take into account the caveats and limitations described throughout this document.

For a more detailed exploration of mobility, we would recommend turning to longitudinal data sources—in this case, the Education Longitudinal Study of 2002, which tracks the high school class of 2004 through 2012–13 and includes information about both the socioeconomic status of students later in life and their parents' socioeconomic status when the students were in high school.[118] This data source allows us to explore mobility-oriented questions in a longitudinal fashion. Future research could include a similar longitudinal analysis to more fully estimate the impact of educational attainment on nontraditional students.

For now, we will conclude with an approximation of how long it might take to close attainment gaps. Even in the best-case scenario, if all the new credential holders needed to close these gaps could move through the education system at the same time and with no constraints, it would take five years to graduate enough people at the postsecondary credential level and six years to produce enough graduates with high school diplomas in order to meet the attainment goals outlined above.[119] This calculation is based on the aggregate number of people who would need to move from each level of education to the next in order to reach the target educational attainment distribution described in Threshold 1 (Figure 3). Based on median time to degree, we assumed that students would need an additional three years of schooling to move from high school to the associate's degree, two years to move from the associate's degree to the bachelor's degree, three years to move from the bachelor's degree to the master's degree, and five years to move from the master's degree to the professional or doctoral degree.

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117 The National Center for Education Statistics has associated "non-traditional" student status with seven characteristics: "delayed enrollment in postsecondary education beyond the first year after high school graduation; part-time attendance; financial independence from parents; full-time work, having dependents (other than a spouse); being a single parent; and no high school diploma (or GED)." For a summary of the specific barriers facing adult learners and possible ways to lower these barriers through policy and practice, see Kazis et al., *Adult Learners in Higher Education*, 2007.

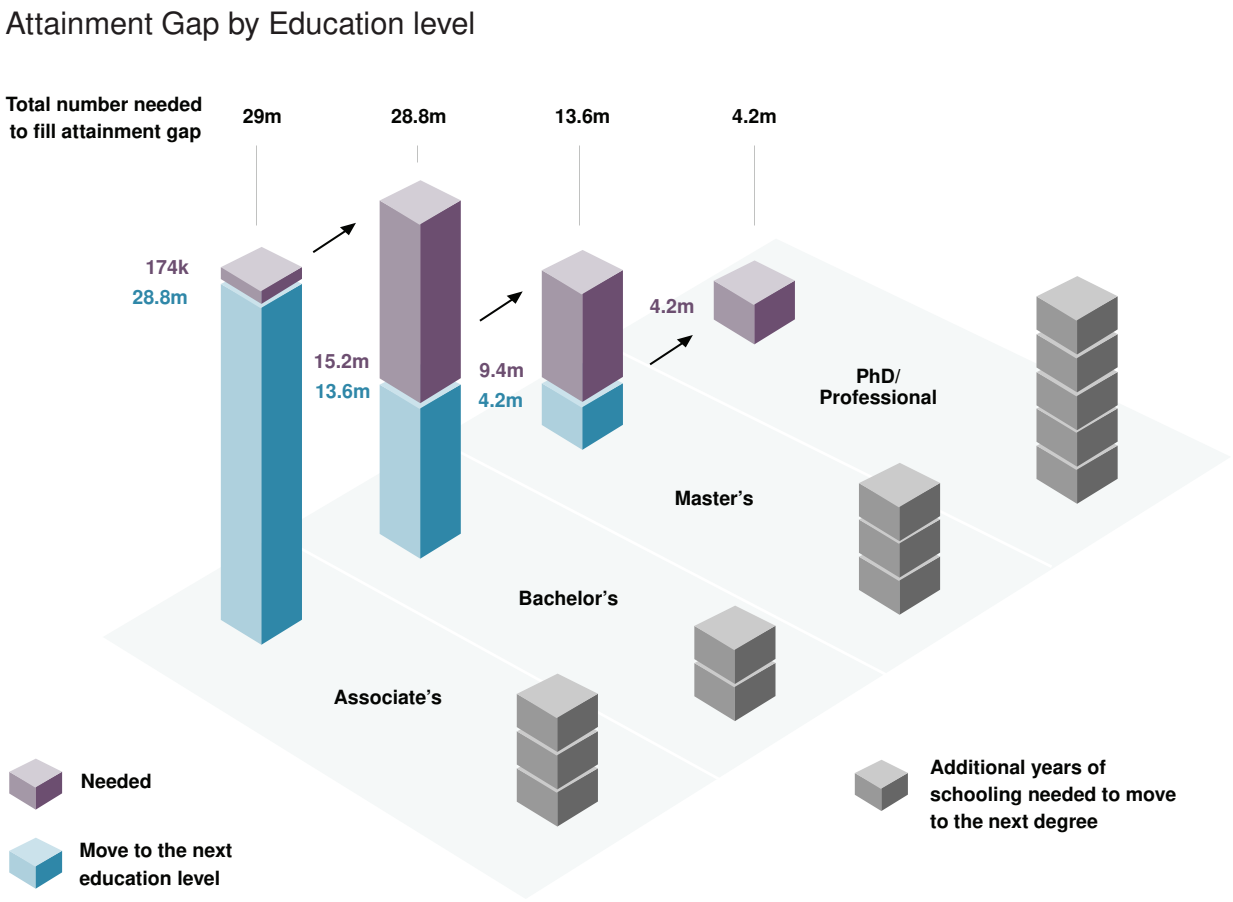
118 When investigating mobility, we advise considering socioeconomic status (SES) rather than income because SES—based on income, education, and occupational prestige—is more stable than income from year to year.

119 This assumes that the additional credentials at each level of postsecondary education can be generated by giving people below that level of education the years of schooling necessary to advance to that level of education. The additional number of high school diplomas needed to meet attainment goals is based on the estimated decline in the population with less than a high school diploma following closure of attainment gaps at higher levels of education. These calculations do not account for the need to continue educating future cohorts of students at current output levels, which would require a doubling of capacity during the years when attainment was ramping up. It also does not account for limitations related to workers who reach retirement age upon completing their credentials. The methodology for this calculation is similar to the methodology used to estimate public expenditures; for more specifics, see Threshold 1 in Appendix A.

If we also account for constraints related to capacity, readiness, and efficiency, based on the current size of graduating cohorts at each degree level, it would take 34 years to graduate enough people at the associate's degree level, 18 years to graduate enough people at the bachelor's degree level, 21 years to graduate enough people at the master's degree level, and 21 years to graduate enough people at the professional and doctoral level to reach our target attainment numbers (Figure 4).[120]

On the whole, in this scenario, it would take more than nine years for the interventions to generate an annual surplus and more than 17 years for the benefits to start outpacing the costs (Figures 5 and 6)—and that is without fully accounting for the systemic changes that will be necessary to close equity gaps in postsecondary progress and completion. These sobering calculations suggest real challenges to realizing the full potential public benefits associated with equality in postsecondary outcomes.

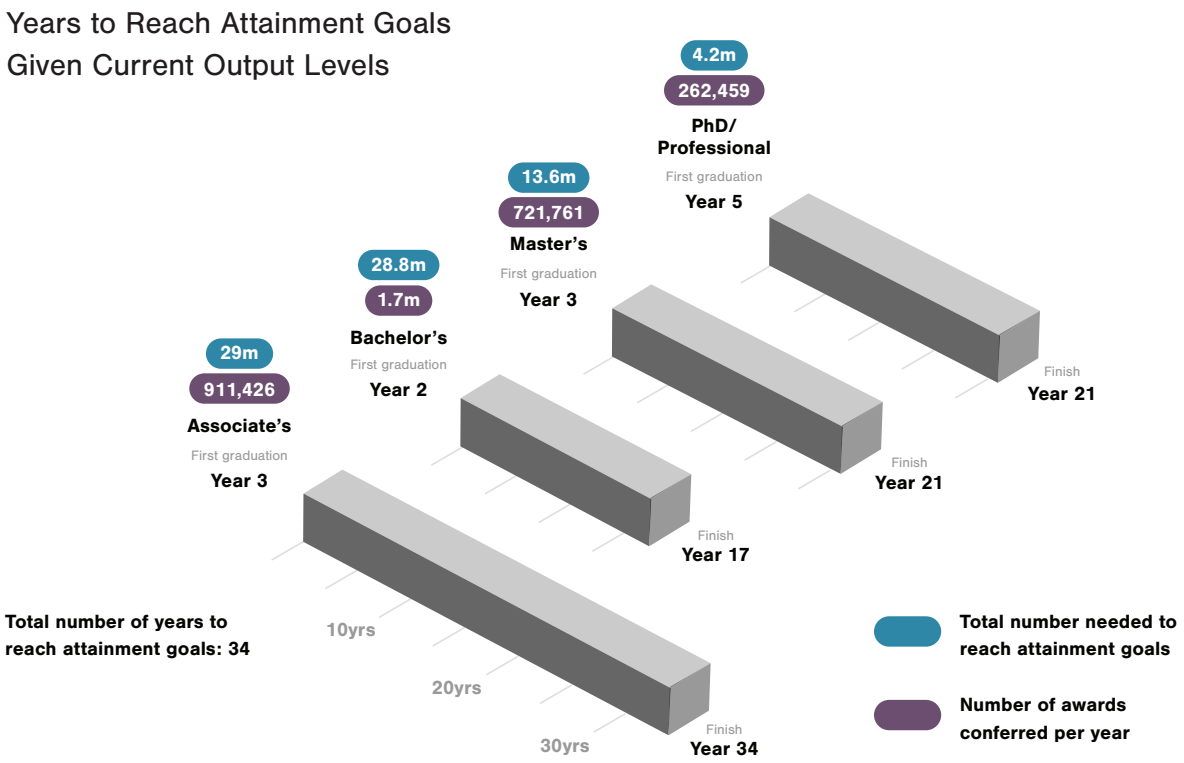
Figure 3. Meeting attainment goals would require moving credential holders to the next attainment level and adding new credential holders to the pipeline.



Source: Georgetown University Center on Education and the Workforce analysis based on compiled statistics as described in Appendix A.

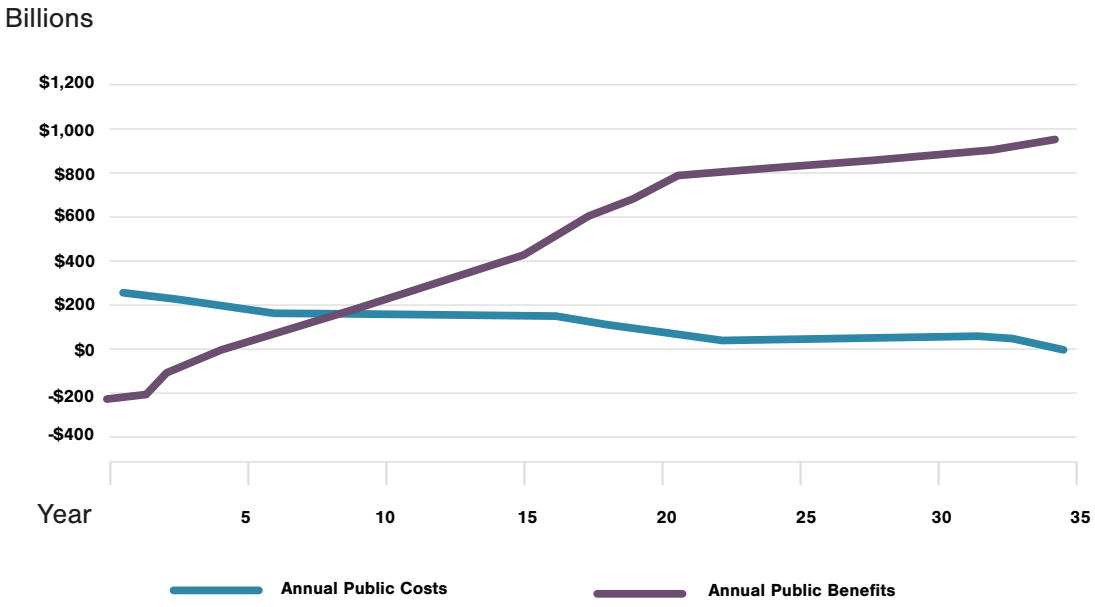
120 In this analysis, 40 percent of people with "some college" are included in the associate's degree category for the purposes of estimating time to attainment. The annual number of graduates at each postsecondary level is based on ten-year averages of the size of graduating cohorts for each credential type, as summarized in US Department of Education, National Center for Education Statistics, Digest of Education Statistics tables 321.20, 322.20, 323.30, 324.20, 324.50, 2007–2017.

Figure 4. At current output levels, it would take at least 34 years to reach these attainment goals.



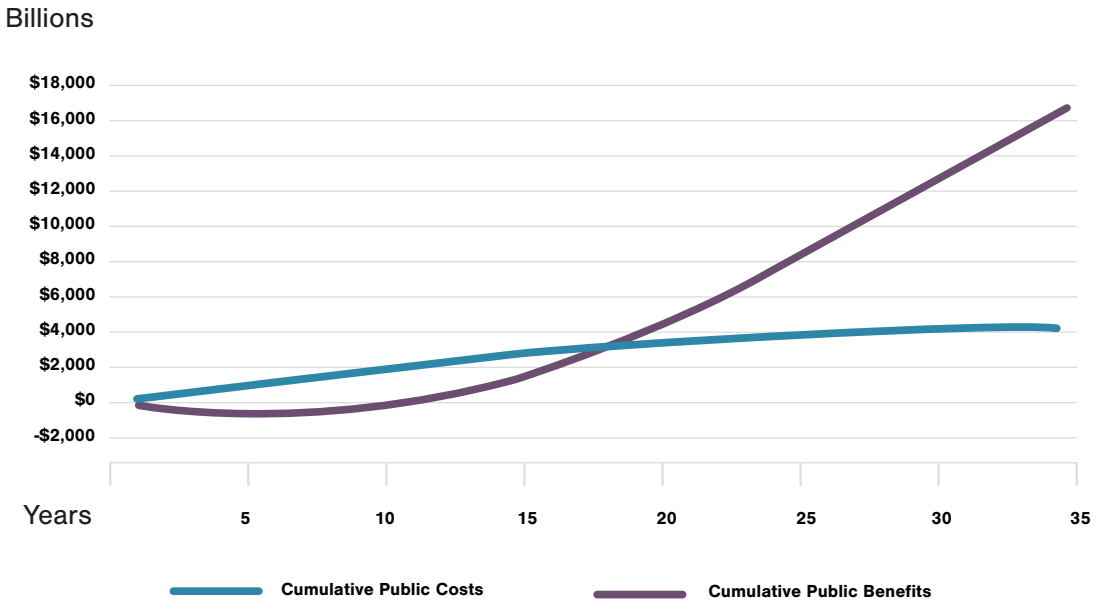
Source: Georgetown University Center on Education and the Workforce analysis based on compiled statistics as described in Appendix A.

Figure 5. The initial societal benefits associated with increased attainment would outweigh the initial public costs in more than nine years.



Source: Georgetown University Center on Education and the Workforce analysis based on compiled statistics as described in Appendix A.

Figure 6. The cumulative benefits would exceed the cumulative public costs associated with increased educational attainment in more than 17 years.



Source: Georgetown University Center on Education and the Workforce analysis based on compiled statistics as described in Appendix A.

PART III. THE NEXT FRONTIER: THE NON-MONETARY BENEFITS OF POSTSECONDARY EDUCATION

It is all too easy to fixate on the monetary value of postsecondary education: the monetary benefits of postsecondary attainment are straightforward and clear, and even the value of non-monetary outcomes like public health can seem clearer when measured in monetary terms. Assigning monetary value to educational attainment also seems appropriate because, in a capitalist democracy where education is the primary pathway to the workforce, we tend to view postsecondary education as an investment in the future. As individuals, we are often compelled to weigh this investment in terms of its market value as well as, or even instead of, its value to personal or societal well-being, particularly as the costs of education rise.

Although our focus in this report has been on the monetary benefits to society of racial and economic justice in postsecondary education, it is impossible to deny the importance of postsecondary education's non-monetary benefits—those outcomes that simply cannot be measured in dollars. We would do a disservice to education and those who would benefit from it if we relied on monetary metrics alone to measure its impact. We would also do a disservice to the American public, which has grappled throughout history with the idea that an educated citizenry is crucial to the functioning of a representative democracy.

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We have only just begun the robust additional research that would be needed in order to model the non-monetary societal returns associated with closing racial and socioeconomic gaps in postsecondary education in the manner we have done for monetary returns. Nonetheless, in this final chapter, we provide general context on this topic by summarizing existing research on the non-monetary benefits associated with educational attainment.

Our summary encompasses research on nine topics: health, crime and incarceration, family structure, critical thinking, civic engagement, authoritarianism, pluralistic orientation, agency and empowerment, and happiness.

We present this summary with a series of caveats. First, it is difficult, if not impossible, to establish causal relationships between higher education and non-monetary benefits. It is often unclear whether educational attainment leads to a particular benefit, or whether the benefit might instead lead a person to pursue higher education. For example, coming from a high-income background may encourage pursuit of a professional degree as much as a professional degree might lead to high income. In this summary, we include studies that establish correlation but not necessarily causality.

In many cases, it is also difficult to distinguish between direct and indirect benefits, including those that might accrue as a result of the higher earnings associated with higher educational attainment. For example, some researchers have found that the likelihood of volunteering increases as income

increases; as a result, while postsecondary education may increase volunteerism directly, it may also increase volunteerism indirectly (through the effect of education on income and the effect of income on volunteerism).[121] These relationships are complex, and we do not attempt to disentangle them.

In some areas, the effects of postsecondary education are both monetary ***and*** non-monetary. Non-monetary benefits may actually contribute to or amplify monetary benefits,[122] and vice versa. In the stepwise analysis, we have accounted for the monetary effects of the areas noted below wherever possible—for example, when we estimate reductions in public health expenditures associated with improved health. In this chapter, however, we focus on non-monetary measures alone.

Finally, many of the outcomes described here can be interpreted as private as well as public benefits. Some researchers have attempted to disentangle public and private effects in these areas. For example, Münich and Psacharopoulos differentiate at a theoretical level between the gains experienced by those who receive an education and the "spillover" gains that accrue to society at large, noting that non-monetary public benefits are particularly difficult to measure.[123] However, most of the research summarized in this chapter does not make such distinctions. Further research is needed to establish a model that distinguishes more fully between private and public non-monetary benefits.

Health Outcomes

Postsecondary education has a relationship with numerous positive health outcomes, including better self-reported health status, lower incidence of mortality, and a greater chance of healthy behaviors.[124] According to Trostel's analysis, approximately 73 percent of working-age individuals with a bachelor's degree and no further education self-reported a "very good" or "excellent" health status, compared to only 55 percent of individuals whose education ended with a high school diploma.[125] Furnée and colleagues use a fixed-effects model to estimate the marginal effect of education on self-reported health status and find a positive and significant effect. They note, however, that responses may show bias related to respondents' education levels, as some evidence suggests that better-educated individuals are more likely to accurately report their health statuses.[126]

In general, life expectancy appears to be positively correlated with educational attainment. For example, Meara and colleagues use 2000 US Census data to estimate life expectancies at age 25 and find that life expectancy is seven years longer for individuals who have enrolled in at least some college coursework than for individuals who never enrolled in college. In fact, they find that the educational gap in health returns is growing even as racial and gender gaps related to health are decreasing or remaining constant.[127] On average, women with at least 13 years of education live approximately five years longer than women with 12 years or fewer. Among men, that disparity jumps to an approximately eight-year gap, with the difference slightly higher for Black men than for White men.[128] In contrast,

121 Detollenaere at al., "Volunteering, Income and Health," 2017; Hackl et al., "Volunteering and Income," 2007; Wilson, "Volunteering," 2000.
122 Münich and Psacharopoulos discuss the entanglements of cause and effect in "Education Externalities," 2018.
123 Münich and Psacharopoulos, "Education Externalities," 2018.
124 Cutler and Lleras-Muney, "Education and Health," 2006; Trostel, "It's Not Just the Money," 2015; Groot and Maassen van den Brink, "The Health Effects of Education," 2007.
125 Trostel, "It's Not Just the Money," 2015. Throughout this literature review, "working-age" is defined as adults between the ages of 27 and 66.
126 Furnée et al., "The Health Effects of Education," 2008.
127 Meara indicates that racial gaps related to health are narrowing within as well as across different educational attainment groups. Meara, "The Gap Gets Bigger," 2008.
128 Meara, "The Gap Gets Bigger," 2008.

Everett and colleagues find that Black men have lower health returns from education than White men or women of either race.[129]

Studies also indicate that mortality rates are inversely correlated with educational attainment.[130] For example, citing Phelan and colleagues, Hummer and Hernandez note that among adults between the ages of 45 and 64, the risk of mortality from "highly preventable causes of death" is 93 percent higher for those with nine to 11 years of schooling than for their counterparts with 17 years or more of schooling. These "highly preventable causes of death" include preventable diseases (e.g., diabetes and lung cancer), respiratory diseases, and external incidents (e.g., accidents or homicides).[131] Cutler and Lleras-Muney find a similar relationship between education and incidence of chronic diseases, noting that attending college is associated with an increase in life expectancy. Specifically, they estimate that four additional years of school at any level moderates the risk of heart disease by 2.16 percentage points and reduces the risk of diabetes by 1.3 percentage points. This effect dissipates with less-preventable diseases, like certain forms of cancer.[132]

Educational attainment affects health behaviors that contribute to some of the leading causes of mortality. Multiple studies establish that those who attended college are less likely to smoke,[133] develop alcoholism,[134] use drugs,[135] and consume unhealthy diets.[136] Kenkel was among the earliest to specifically examine the positive relationship between educational attainment and healthy behaviors with a focus on the role that health knowledge plays in that association. His findings support the theory that the knowledge gained from additional years of education is a key factor in reductions in smoking and alcohol use and increases in exercise.[137] Specifically, Cutler and Lleras-Muney estimate that four additional years of education are associated with an 11-percentage-point decrease in the likelihood of smoking relative to a mean of 23 percent, a five-percentage-point decrease in the likelihood of being overweight relative to a mean of 23 percent, and a half-percentage-point decrease in the likelihood of using illegal drugs relative to a mean of 5 percent.[138] Aizer and Stroud examine the effect of the 1964 Surgeon General Report on Smoking and Health (the first widely publicized report in the United States to address the risks of smoking while pregnant) on pregnant women's smoking behaviors and find that more-educated mothers reduced smoking at greater rates following the report. Before 1964, about 47 percent of American women smoked while pregnant, and there was little difference in smoking patterns between women who had completed high school and those who had not. By 1966, an approximate 10-percentage-point gap in smoking rates emerged between women who completed high school and those who had not.[139]

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129 Everett et al., "The Nonlinear Relationship between Education and Mortality," 2013.

130 Trostel, "It's Not Just the Money," 2015; Meara et al., "The Gap Gets Bigger," 2008; Hummer and Hernandez, "The Effect of Educational Attainment on Adult Mortality in the United States," 2013; Everett et al., "The Nonlinear Relationship between Education and Mortality," 2013.

131 This study measured education attainment levels by years of schooling instead of by completion of credentials. See Hummer and Hernandez, "The Effect of Educational Attainment on Adult Mortality in the United States," 2011; Phelan et al., "'Fundamental Causes' of Social Inequalities in Mortality," 2004.

132 Cutler and Lleras-Muney, "Education and Health," 2006. This study did not differentiate between primary, secondary, and postsecondary effects.

133 Sander, "The Effects of Schooling and Cognitive Ability on Smoking and Marijuana Use by Young Adults," 1998.

134 Sander, "Cognitive Ability, Schooling and the Demand for Alcohol by Young Adults," 1999.

135 Cutler and Lleras-Muney, "Education and Health," 2006.

136 Sander, "Cognitive Ability, Schooling and the Demand for Alcohol by Young Adults," 1999; Mokdad et al., "Actual Causes of Death in the United States," 2004; Cutler and Lleras-Muney, "Education and Health," 2006.

137 Kenkel, "Health Behavior, Health Knowledge, and Schooling," 1991.

138 Cutler and Lleras-Muney, "Education and Health," 2006.

139 Aizer and Stroud, ""Education, Knowledge and the Evolution of Disparities in Health," 2010.

In their recent book focused on the welfare of the White working class in the United States, Case and Deaton find that the share of White individuals between the ages of 45 and 54 who report suffering from chronic pain is approximately 15 percentage points higher among those without college degrees than among college graduates.[140] White individuals with a college education are also less likely to report depression than White individuals with lower levels of educational attainment, and that gap is widening.[141]

Educational attainment is also associated with better health through increased investment in preventative care and avoidance of risky situations.[142] Vila demonstrates that better-educated individuals are more likely to avoid living in polluted areas and less likely to take jobs with significant working hazards.[143] Cutler and Lleras-Muney find that four additional years of education are associated with an increased likelihood of obtaining regular flu shots, mammograms, Pap smears, and colonoscopies. Four additional years of education also increases seat belt usage by 12 percentage points relative to a mean of 68 percent. Individuals with higher levels of education are also less likely to self-report having depression or anxiety. However, Cutler and Lleras-Muney note that further research needs to examine whether there is variation in the effect of additional years of schooling at every level or if an additional year of high school, for example, has a greater effect than an additional year of college.[144] In an earlier study, Hartog and Oosterbeck find evidence that secondary education has larger effects on health than other levels of education.[145]

Crime and Incarceration

A substantial body of research indicates that education contributes to a safer society.[146] Lochner and Moretti present a comprehensive analysis of the relationship between educational attainment and criminal activity, finding an association between lower levels of education and a higher likelihood of being arrested for murder, assault, and motor vehicle theft.[147] However, their findings suggest diminishing returns for additional education: based on Lochner and Moretti, Trostel estimates that the "reduction in crimes" that result due to high school completion is 5.4 times higher than the reduction due to completing college. He also estimates that there are four fewer murders, 406 fewer assaults, and 648 fewer property crimes for every 100,000 bachelor's degrees issued nationally.[148]

If higher levels of education are associated with lower levels of criminal activity, it logically follows that there would be a strong negative association between educational attainment and incarceration.[149] Lochner and Moretti confirm this relationship for men, finding that the incarceration rate falls from just under 4 percent for male high school dropouts to 0.75 percent for male high school graduates without

140 Case and Deaton, *Deaths of Despair and the Future of Capitalism*, 2020.
141 Case and Deaton, *Deaths of Despair and the Future of Capitalism*, 2020.
142 Vila, "The Non-Monetary Benefits of Education," 2000; Lochner, "Nonproduction Benefits of Education," 2011; Cutler and Lleras-Muney, "Education and Health," 2006.
143 Vila, "The Non-Monetary Benefits of Education," 2000.
144 Cutler and Lleras-Muney, "Education and Health," 2006. The finding of a negative relationship between educational attainment and depression and anxiety is further supported by Bjelland et al., "Does a Higher Education Level Protect Against Anxiety and Depression?" 2008. Bauldry has found that these positive returns to education are greater for individuals from disadvantaged backgrounds than those with more resources; see Bauldry, "Variation in the Protective Effect of Higher Education against Depression," 2015.
145 Hartog and Oosterbeck, "Health, Wealth and Happiness," 1998.
146 Vila, "The Non-Monetary Benefits of Education," 2000; Lochner and Moretti, "The Effect of Education on Crime," 2004; Trostel, "It's Not Just the Money," 2015.
147 Lochner and Moretti, "The Effect of Education on Crime," 2004.
148 Trostel, "It's Not Just the Money," 2015.
149 Lochner and Moretti, "The Effect of Education on Crime," 2004; Trostel, "It's Not Just the Money," 2015.

a college degree. Though incarceration rates decline with increasing education across racial groups, Black men are incarcerated more frequently than their White counterparts at every level of educational attainment.[150] In fact, Lochner and Moretti find that White male high school graduates without any further education are incarcerated at approximately half the rate of Black male college graduates.[151] Differences in incarceration rates may reflect differential treatment in the criminal justice system: in their research on sentencing for white-collar crimes, Schanzenbach and Yaeger find that education is associated with reduced incarceration, and racial disparities exist in sentencing trends.[152] On average, Blacks receive sentences that are approximately a month longer, and Latinxs receive sentences that are just over a month longer, than those received by Whites for committing the same white-collar crimes, after controlling for education levels and other factors.[153]

Lochner and Moretti also find larger effects of education on incarceration for men than women and present evidence that there is a two-way correlation between incarceration and education, as criminal activity in youth can inhibit one's ability to complete an education.[154] Further, the negative correlation between being in school and delinquency is well-established.[155]

Family Structure

While decisions about family structure are intensely personal, it is worth noting that educational attainment is positively correlated with marriage rates,[156] and it is inversely correlated with divorce.[157] The most conspicuous disparities in marriage and divorce rates occur between individuals who have completed some college and those who have obtained bachelor's degrees.[158] According to the 2012 American Community Survey, 55 percent of working-age adults with high school diplomas are married, compared to 67 percent of individuals with bachelor's degrees and 71 percent of individuals with advanced degrees.[159] Since the 1980s, marriage rates have fallen across all education levels, but the drop is most significant for individuals without a college education. Case and Deaton find that the share of non-college-educated White individuals (ages 45 to 54) who are married has fallen from more than 80 percent in 1980 to slightly more than 60 percent in 2015, while that number for White college graduates remains around 75 percent.[160] In their seminal work on the relationship between education and marriage, Stevenson and Wolfers examine 150 years of marriage and divorce trends in the United States, finding, on average, a 10 percentage point gap in divorce rates from first marriages between college graduates and those with less than a bachelor's degree. Further, they find that divorced individuals who did not graduate from college are less likely to remarry than individuals with bachelor's degrees, and if nongraduates do remarry, they are more likely to get divorced again.[161]

Consistent with these findings, Aughinbaugh and colleagues find that people with higher educational

150 Lochner and Moretti, "The Effect of Education on Crime," 2004.
151 Lochner and Moretti, "The Effect of Education on Crime," 2004.
152 Schanzenbach and Yaeger, "Prison Time, Fines, and Federal White-Collar Criminals," 2006.
153 Schanzenbach and Yaeger, "Prison Time, Fines, and Federal White-Collar Criminals," 2006.
154 Lochner and Moretti, "The Effect of Education on Crime," 2004.
155 Vila, "The Non-Monetary Benefits of Education," 2000; Anderson, "In School and Out of Trouble?," 2009.
156 Oreopoulos and Salvanes, "Priceless," 2011; Trostel, "It's Not Just the Money," 2015.
157 Stevenson and Wolfers, "Marriage and Divorce," 2007; Aughinbaugh et al., "Marriage and Divorce," 2013.
158 Aughinbaugh et al., "Marriage and Divorce," 2013; Trostel, "It's Not Just the Money," 2015.
159 Trostel, "It's Not Just the Money," 2015.
160 Case and Deaton, *Deaths of Despair and the Future of Capitalism*, 2020.
161 Stevenson and Wolfers, "Marriage and Divorce," 2007.

attainment marry at higher rates and divorce at lower rates than their less-educated counterparts. Using data from the 1979 National Longitudinal Survey of Youth, they find that 89 percent of individuals with at least a bachelor's degree married by age 46, compared to 81 percent of individuals with less than a high school diploma. In addition, the divorce rate for first marriage is almost 20 percentage points lower for college graduates than it is for those with a high school diploma or less. Notably, the educational gap in both marriage and divorce rates is larger for men than for women. Though both men and women tend to marry and remain in marriages at higher rates when they are more educated, the gap between highly educated and less-educated men is larger than the gap between highly educated and less-educated women.[162] Oreopoulos and Salvanes indicate that there is also some evidence that individuals tend to choose partners with similar education levels, which can contribute to the success of their marriages. Future research on this subject should consider the direction of causality and how schooling affects marriage and partner preferences as an avenue for impacting some of these outcomes.[163]

A relationship between educational attainment and family size also exists, with more-educated women generally having fewer children than their less-educated counterparts. This circumstance could be because more educated women begin having children later.[164] Using US Census data, Jones and Tertilt have estimated that more than half of the decline in fertility rates since the late 1800s can be attributed to education increases; they observe an inverse correlation between educational attainment and fertility rates and find that for both men and women, higher levels of education correspond with lower fertility.[165] This finding contradicts other studies asserting that only women's education has a significant relationship with fertility.[166]

It is difficult to determine whether larger family size should be seen as a positive or a negative. Angrist and colleagues investigate the concept of a quality-quantity trade-off, in which larger families are less able to invest in each child's development, and find no evidence of such a trade-off.[167] In contrast, Black and colleagues find that family size is negatively correlated with children's educational attainment.[168]

Critical Thinking Skills

Research indicates that there is a link between educational attainment and the development of critical thinking skills,[169] the ability to synthesize information,[170] and the ability to make informed decisions.[171] Green and Riddell use International Adult Literacy Survey data from the 1990s to test the relationships between earnings, education, and cognitive skills.[172] Unsurprisingly, they find that

162 Aughinbaugh et al., "Marriage and Divorce," 2013.
163 Oreopoulos and Salvanes, "Priceless," 2011.
164 Black et al., "The More the Merrier?," 2008.
165 Jones and Tertilt, "An Economic History of Fertility in the U.S.," 2006.
166 Hotz and Miller, "An Empirical Analysis of Life Cycle Fertility," 1988; Heckman and Walker, "The Relationship between Wages and Income and the Timing and Spacing of Births," 1990.
167 Angrist et al., "New Evidence on the Causal Link between the Quantity and Quality of Children," 2005.
168 This study controls for mother's and father's educational level but does not control for family income. The study uses data from the full population of Norway between 1986 and 2000. Black et al., "The More the Merrier?" 2005.
169 Trostel, "It's Not Just the Money," 2015. Arum and colleagues are currently investigating the relationship between postsecondary education and outcomes like critical thinking in their Next Generation Undergraduate Success Measurement Project; see Arum et al., "Ensuring a More Equitable Future: Assessing Student Learning and Growth in Higher Education," 2021 (this volume).
170 Vila, "The Non-Monetary Benefits of Education," 2000.
171 Milligan et al., "Does Education Improve Citizenship?" 2004.
172 Green and Riddell, "Literacy and Earnings," 2003. Our own research establishes earnings premiums attached to the use of various competencies (such as problem solving and complex thinking) in the workforce, although those monetary benefits are beyond the

education appears to have a strong, positive association with literacy skills.[173] Similarly, Glaeser and colleagues posit that educational attainment empowers citizens to understand complex issues and provides them with the tools needed to interact effectively with their governments. Further, they find that education is a strong predictor of economic growth because it contributes significantly to the development of human capital.[174]

Heckman proposes an alternative theory, asserting that cognitive ability, whether inherent or learned, could be a key determinant of educational attainment. However, he acknowledges that many socioeconomic and familial factors influence both cognitive development and educational outcomes.[175] Consistent with much of the earlier literature, Falch and colleagues find a positive correlation between education and cognitive ability, as measured by IQ scores, using a Swedish longitudinal dataset and controlling for many confounding factors, like family income and baseline cognitive ability at youth. Based on Ordinary Least Squares regressions, they estimate that an additional year of school is associated with a 2.9-to-3.5-point increase in IQ.[176]

Civic Engagement

Civic engagement is one area where improved critical thinking skills can pay dividends in positive societal outcomes, as multiple studies point to a positive relationship between educational attainment and civic engagement.[177] With his sociological work on the conditions needed for a well-functioning democracy, Lipset argued that education plays a role in producing an informed citizenry with the critical thinking skills to make electoral decisions and resist tyranny.[178] Friedman also argued that education allows individuals to better understand political issues and national values.[179] In more recent literature, Verba and colleagues assert that education helps people develop the skills needed to distill political concepts,[180] and Hanushek believes that education fosters an interest in politics.[181] Consistent with these early discussions, Lewis-Beck and colleagues argue that education increases individuals' interest in and knowledge of political issues, thereby increasing political participation.[182]

Milligan and colleagues test whether schooling increases civic participation as measured by voting in the United States and the United Kingdom. Using National Election Studies data from 1948 to 2000, they find that 52 percent of US high school dropouts, 67 percent of high school graduates, 74 percent of individuals who complete some college, and 84 percent of college graduates report voting in national elections. They note, however, that because these reported voting rates are significantly higher than the actual turnout rates in recent elections, it is possible that respondents misreported their own voting participation. In both countries, they find that better-educated individuals are more inclined to

scope of this discussion. See Carnevale et al., *Workplace Basics*, 2020.

173 Green and Riddell, "Literacy and Earnings," 2003.

174 Glaeser et al., "Do Institutions Cause Growth?," 2004.

175 Heckman, "Lessons from the Technology of Skill Formation," 2006.

176 Falch et al., "The Effect of Education on Cognitive Ability," 2011.

177 Lipset, "Some Social Requisites of Democracy," 1959. As described elsewhere in the Postsecondary Value Commission's body of work, Arum and colleagues are building on what is known about postsecondary education and civic engagement by investigating civic attitudes through their Next Generation Undergraduate Success Measurement Project; see Arum et al., "Ensuring a More Equitable Future: Assessing Student Learning and Growth in Higher Education," 2021 (this volume). *https://www.postsecondaryvalue.org/wp-content/uploads/2021/05/PVC-Arum-FINAL.pdf*

178 Lipset, "Some Social Requisites of Democracy," 1959.

179 Friedman, "Capitalism and Freedom," 1962.

180 Verba et al., *Voice and Equality*, 1995.

181 Hanushek, "Publicly Provided Education," 2002.

182 Lewis-Beck et al., *The American Voter Revisited*, 2008.

follow elections, discuss politics, identify with a political group, and work on community issues.[183]

Using High School and Beyond survey data from the US Department of Education, Dee finds that having some college education increased the likelihood of an individual voting in the 1988 presidential election by 28 percent.[184] However, Dee believes that omitted variable bias may cause his results to overstate the effect of beginning college on voting behaviors. Adding instruments to control for other inherent differences between individuals who enroll in college and those who do not, he estimates that starting college actually increases voter participation by between 17 and 22 percentage points. He also finds that additional schooling is associated with increased newspaper readership, community involvement, and support for free speech.[185]

According to Trostel's analysis of government surveys on voting and civic engagement, 28 percent of high school graduates with no college education said they always vote in local elections, while 41 percent of college graduates with no further education and 45 percent of advanced degree holders said they do so. In national elections, the positive association between education and voting persists, although the percentage of individuals who report having voted is even higher across all educational attainment levels. Approximately 85 percent of bachelor's degree holders report that they voted in the 2012 presidential election, compared to 62 percent of individuals with only high school diplomas and approximately 42 percent of individuals with less than a high school diploma. In the 2012 presidential election, however, the overall voting rate did not surpass 60 percent, which indicates significant overreporting of voter participation; future research should examine this discrepancy.[186] Some evidence suggests that individuals with higher levels of educational attainment are more inclined to report having voted even when they have not.[187]

Educational attainment is also positively correlated with an array of behaviors indicating political engagement aside from voting, including boycotting or purchasing products based on a company's political or social platform, contacting a public official, and discussing politics. In general, participation in community organizations rises with educational attainment. Participation in a community organization of any kind, including school or community associations, service or civic organizations, and religious institutions, jumps from just under 20 percent for high school graduates to approximately 36 percent for individuals who completed some college, approximately 48 percent for bachelor's degree holders, and approximately 59 percent for advanced degree holders. There is also a positive association between educational attainment and working on a community project or attending a community meeting.[188]

Individuals with at least a bachelor's degree are more likely to volunteer, to pursue nonprofit employment, and to make charitable contributions than their less-educated counterparts. Trostel uses data from the 2012 Volunteer Supplement of the Current Population Survey to estimate that 17 percent of high school graduates, 28 percent of individuals with some college, 40 percent of bachelor's degree holders, and 49 percent of holders of a more advanced degree regularly

183 Milligan et al., "Does Education Improve Citizenship?" 2004.
184 The individuals included in this study were high school sophomores in 1980 and would have been in their early twenties during the 1988 presidential election. This is worth noting because young adults (ages 18 to 24) in the United States have consistently voted at lower rates than other age groups since at least 1964 (see File, "Young-Adult Voting," 2014). Future analysis should examine whether these effects deepen or diminish with age.
185 Dee, "Are There Civic Returns to Education?" 2004.
186 Trostel, "It's Not Just the Money," 2015.
187 Silver et al., "Who Overreports Voting?" 1986; Hansen and Tyner, "Educational Attainment and Social Norms of Voting," 2019.
188 Trostel, "It's Not Just the Money," 2015.

volunteer.[189] Ma and colleagues also note that volunteering trends upward with education, but that across all education levels, women volunteer more than men.[190] On the other hand, Dee does not find evidence of a significant relationship between educational attainment and the likelihood that one volunteers.[191]

Authoritarianism

One critical way in which higher education affects civic life in a democracy is by mitigating some people's tendencies to hold authoritarian viewpoints. Our own research shows an inverse relationship between higher levels of education and preferences for authoritarianism. At each successively higher level of educational attainment, people are less inclined to support authoritarian regimes or express a lack of support for democracy. People with higher educational attainment are also less inclined to express authoritarian attitudes about childrearing practices. This disinclination toward authoritarianism is particularly strong among college graduates.[192]

Our research affirms not only that higher education plays a role in mitigating authoritarian tendencies, but also that certain types of postsecondary education play a stronger role than others. Liberal arts majors are particularly disinclined to express authoritarian preferences and attitudes when compared to majors in science, technology, engineering, and mathematics (STEM) or business-related majors.[193] This speaks to the important role of liberal arts education in sustaining American democracy.

Pluralistic Orientation

Among the learning outcomes that postsecondary institutions frequently aim to impart are those that prepare students for engagement with diversity and complexity, such as "intercultural knowledge and competence" and "ethical reasoning and action."[194] These skills and dispositions are at once important to navigating the 21st-century workforce and crucial to justice-oriented leadership in society. Because some college-educated individuals go on to hold influential positions in various sectors, higher education should play a role in combating inequality by helping students develop the skills and dispositions they will need to seek justice in their future careers and communities.[195]

One subset of these skills and dispositions—political and social tolerance—is generally associated with postsecondary educational attainment, particularly at the baccalaureate level.[196] Postsecondary education has also been shown to promote "egalitarian racial attitudes," although this effect is not uniform across racial/ethnic groups and does not always translate into support for racially egalitarian policies.[197] On the whole, debate over whether education leads to deep and lasting appreciation for difference or simply teaches individuals to more adeptly promote their own and their group's self-

189 Trostel, "It's Not Just the Money," 2015.
190 Ma et al., *Education Pays 2019*, 2019.
191 Dee, "Are There Civic Returns to Education?" 2004.
192 This research measures authoritarian mindsets using survey data on political preferences as well as preferences related to childrearing practices; see Carnevale et al., *The Role of Education in Taming Authoritarian Attitudes,* 2020.
193 Carnevale et al., *The Role of Education in Taming Authoritarian Attitudes,* 2020.
194 Association of American Colleges and Universities, "The LEAP Challenge," 2015.
195 Elliott and Jones, "Ensuring a More Equitable Future: The Role of Colleges in Educating Students to Become Change Agents," 2021 *https://www.postsecondaryvalue.org/wp-content/uploads/2021/05/PVC-Jones-Elliott-FINAL.pdf*
196 Dražanová, *Education and Tolerance,* 2017.
197 For example, White Americans with higher educational attainment are not necessarily more likely to support affirmative action in hiring than those with lower levels of formal education. Wodtke, "The Impact of Education on Inter-Group Attitudes," 2012.

interest, including by voicing an egalitarian mindset in order to conform with social norms, persists.[198]

That said, there is evidence that learning environments that promote meaningful engagement with diversity can succeed in instilling "a pluralistic orientation."[199] Engberg and Hurtado have found that the development of such an orientation is associated with "positive interactions across race" as well as engagement in courses and co-curricular programs with a focus on diversity. In contrast, cross-racial interactions that were negative in nature were associated with increased "intergroup anxiety."[200] The presence of racial diversity on campus has been shown to increase interactions across race, particularly for White students.[201] These interracial interactions have been associated with outcomes such as "openness to diversity, cognitive development, and self-confidence,"[202] along with other benefits, such as "intellectual ability, civic interest, and social skills."[203]

This body of research suggests that while postsecondary education may not intrinsically produce a pluralist orientation or appreciation for diversity among students, it nonetheless has a significant opportunity to create learning opportunities that promote these outcomes. Importantly, both the presence of compositional diversity and opportunities for positive engagement across different racial and ethnic groups are essential to this work.[204]

Agency and Empowerment

In general, people with higher levels of education tend to have a greater sense of empowerment and control over their lives. Researchers have theorized that this greater sense of control leaves them less prone to feel threatened by difference, more tolerant of those unlike themselves, and less susceptible to authoritarianism.[205]

Markus and Kitayama define agency as idea and values frameworks that guide individuals' actions.[206] Snibbe and Markus build upon existing research that studies the linkage between individuals' socioeconomic statuses and their decision-making independence to explore the relationship between educational attainment and agency. Using music genre preferences (rock vs. country) as representations of White Americans' cultural preferences, they find that college-educated respondents value expressions of uniqueness, control over their environments, and their ability to influence others. In contrast, high school-educated respondents are more inclined to prefer upholding integrity, personal improvement, and resisting influence. Further, Snibbe and Markus's findings suggest that individuals with bachelor's degrees value choice more than their high school-

198 Dražanová, *Education and Tolerance*, 2017; Wodtke, "The Impact of Education on Inter-Group Attitudes," 2012.

199 Engberg and Hurtado, "Developing Pluralistic Skills and Dispositions in College," 2011. Engberg and Hurtado measure pluralistic orientation according to "students' self-ratings regarding their ability to see the world from someone else's perspective, tolerance of others with different beliefs, openness to having one's views challenged, ability to work cooperatively with diverse people, and ability to discuss and negotiate controversial issues."

200 Engberg and Hurtado, "Developing Pluralistic Skills and Dispositions in College," 2011. The authors found that these effects were not uniform across racial/ethnic groups, and that pluralistic orientation upon college entry seemed to play a role in pluralistic orientation after two years in college.

201 Chang et al., "Cross-Racial Interaction among Undergraduates," 2004.

202 Chang et al., "The Educational Benefits of Sustaining Cross-Racial Interaction among Undergraduates," 2006.

203 Chang et al., "Cross-Racial Interaction among Undergraduates," 2004.

204 In fact, college environments characterized by "White habitus" can increase "colorblind ideological orientations" among White students, potentially undermining the role of college in promoting racial justice. See Jayakumar, "The Shaping of Postcollege Colorblind Orientation Among Whites," 2015.

205 Carnevale et al., *The Role of Education in Taming Authoritarian Attitudes*, 2020; Dražanová, *Education and Tolerance*, 2017; Stenner, *The Authoritarian Dynamic*, 2005.

206 Markus and Kitayama, "Models of Agency," 2003.

educated peers.[207]

It is also possible that agency and empowerment lead to, rather than stem from, educational attainment. For example, Martin and colleagues examine the non-cultural-capital factors that contribute to community college students' persistence, finding a positive relationship between empowerment and college graduation rates based on a qualitative study of a public community college in the southeastern United States.[208] Specifically, they observe that students who graduate from community colleges, which traditionally have lower graduation rates than four-year colleges, share certain characteristics, including having clear goals, strong senses of motivation and self-empowerment, a self-driven desire for success, and an ability to manage external demands.

Happiness

Evidence on the relationship between educational attainment and happiness is somewhat mixed and can be difficult to interpret definitively due to its subjective nature.[209] Blanchflower and Oswald note a positive correlation, independent of income, between educational attainment and happiness levels in the United States and Great Britain but find that the relationship is stronger for men than for women. Interestingly, they also note that Americans with both high and low levels of education have experienced downward trends in self-reported happiness levels since the 1970s, and that the decline has been approximately equivalent regardless of education level.[210]

In their research on the White working class, Case and Deaton find that the happiness gap between Whites who had graduated from college and those with less than a college education has grown since the late 20th century. Whites without a college education are more likely to report regular feelings of unhappiness than college graduates in the same demographic group.[211]

Oreopoulos and Salvanes find that the positive relationship between education and self-reported levels of happiness persists even after controlling for factors associated with both, such as income. Controlling for income, they find that high school graduates are four percentage points more likely than high school dropouts to report that they are happy, and college graduates are two percentage points more likely than high school graduates to report that they are happy.[212] This evidence of an independent, albeit minor, happiness effect of educational attainment challenges literature claiming that the increased happiness of more-educated individuals occurs because of the related gains in income and socioeconomic status.

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207 Snibbe and Markus, "You Can't Always Get What You Want," 2014.

208 Martin, Galentino, and Townsend, "Community College Student Success," 2014.

209 It is possible, for example, that groups reporting higher levels of happiness are not happier *per se* but are simply more likely to say that they are happy due to socialization or other factors.

210 Blanchflower and Oswald, "Well-being Over Time in Britain and the USA," 2004.

211 The data set includes Whites ages 45 to 54, and the study does not discuss other racial/ethnic groups. Case and Deaton, *Deaths of Despair and the Future of Capitalism*, 2020.

212 Oreopoulos and Salvanes, "Priceless," 2011.

In their survey of recent happiness literature, Blanchflower and Oswald estimate that an extra year of education in the United States is associated with a 0.017 percentage point increase in self-reported happiness. However, in this analysis, they contradict their earlier finding that the relationship is independent of income, noting that recent empirical studies demonstrate that the link runs primarily through the higher income associated with educational attainment.[213]

Conclusion

In sum, postsecondary education has many positive outcomes that cannot be adequately measured in monetary terms. The degree to which these outcomes constitute private versus public benefits is an open question. The same can be said of the effect that economic and racial justice in postsecondary education would have on society. Future research should establish a framework for distinguishing between private and public benefits and a means of measuring the impact that closing postsecondary learning gaps would have on both.

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213 Blanchflower and Oswald, "International Happiness," 2011.

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APPENDIX A. METHODOLOGY

Our methodology for Part I aligns with our methodology for the stepwise analysis described in Part II (Thresholds 1 through 5). Where applicable, exceptions are noted below.

Threshold 1

First, we calculated equitable distribution of educational attainment as described in the body of the text above. We then performed the following calculations:[214]

To calculate public expenditures, we determined the number of people who would need to move from each level of education to the next in order to obtain the distribution described above.[215] Based on median time to degree, we assumed that students would need an additional three years of schooling to move from high school to the associate's degree, two years to move from the associate's degree to the bachelor's degree, three years to move from the bachelor's degree to the master's degree, and five years to move from the master's degree to the professional or doctoral degree.[216] We determined the number of full-time equivalent (FTE) students by sector (public, nonprofit, and for-profit, disaggregated by two-year and four-year institutions)[217] and assumed that the distribution of new credentials would follow the distribution of current enrollments.[218] In other words, we assumed that the target number of additional associate's degree recipients would be distributed among public and private nonprofit and private for-profit two-year colleges according to the current distribution of enrollments among two-year colleges. We assumed that the target numbers of additional bachelor's, master's, professional, and doctoral degree recipients would be distributed among public and private nonprofit and private for-profit four-year colleges based on the current distribution of undergraduate and graduate enrollments among four-year colleges. Using the annual federal, state, and local expenditures per FTE student for each sector (Table A1),[219] along with the additional years of schooling necessary to advance students by one level of education, we calculated the public expenditures necessary to increase attainment to meet Threshold 1 goals.

214 We did not include tables for every step of our analysis; additional tables are available on request.

215 For this analysis, we combined professional and doctoral degrees for simplicity.

216 We divided the "some college" population based on the share of individuals who typically complete two or more years of college (40 percent, assigned to the associate's degree attainment group) and the share who complete less than two years of college (60 percent, assigned to the high school attainment group). We estimated these shares based on data from the Education Longitudinal Study of 2002 and the US Census Bureau, Current Population Survey, 2017.

217 FTE estimates are a common way of accounting for both full-time and part-time students. Our data source was the US Department of Education, Integrated Postsecondary Education Data System, 2016–17.

218 For simplicity, the current model does not adjust for differences in graduation rates among groups or spending on students who never complete a postsecondary credential. Instead, we use an adjustment factor based on the differences in spending between selective institutions and other institutions to approximate the additional expenditures necessary to achieve near-universal graduation for all additional enrolled students to meet the attainment targets in Threshold 1. Future iterations of this work focused on concrete interventions should account for differences in efficiency and effectiveness among different institutions in different sectors, including differences in graduation rates, average time to degree, and expenses associated with educating students who never complete a credential. Future work should also determine whether distribution of enrollments would need to be adjusted among sectors to achieve target attainment goals.

219 We obtained these expenditures from the US Department of Education, National Center for Education Statistics, Digest of Education Statistics, 2016–17. For public institutions, we included only non-operating grants and appropriations.

Table A1. Annual federal, state, and local expenditures per FTE student

Annual expenditures per FTE student						
Institution sector	Public 4-year	Public 2-year	Nonprofit 4-year	Nonprofit 2-year	For-profit 4-year	For-profit 2-year
Federal expenditures per FTE	$1,881	$2,544	$7,384	$914	$729	$792
State and local expenditures per FTE	$8,435	$8,425	$615	$134	$277	$270

Source: Georgetown University Center on Education and the Workforce analysis of the US Department of Education, Digest of Education Statistics 2016–17, Tables 333.10, 333.50, and 333.55.

Note: FTE stands for full-time equivalent.

Notably, increasing attainment as described above would require additional public investment to move K–12 dropouts to higher levels of education. To account for these additional costs, we used the distribution of dropouts by last grade completed and anticipated expenditures based on the number of years of additional schooling they would need to complete high school.[220] We also accounted for the additional instructional spending necessary to support underserved college students. Based on the differences in spending between selective institutions and other institutions, we applied an adjustment ratio of 1.84. We calculated this adjustment factor by comparing instructional and academic spending at selective colleges to the average for all institutions.[221]

To calculate the impact on society, we modeled the effects of closing attainment gaps:

- *Impact on earnings:* Many of our impact calculations are based on the change in earnings that would occur at each threshold. In Threshold 1, we calculated earnings for the new education distribution based on (1) current earnings by attainment level and (2) current rates of employment. In both cases, we used data specific to each subgroup (sex and race or ethnicity).[222] Our changes in earnings were as follows (Table A2, Table A3, Table A4).[223] We included lost earnings at the lower education levels as a cost of increased attainment.

220 We calculated this distribution based on data from the US Census Bureau, American Community Survey, 2015–17. For twelfth graders, we assumed that one additional year of K–12 education would be needed for high school completion.

221 We used a methodology similar to that described in Carnevale and Strohl, *Separate and Unequal*, 2013.

222 Based on data from the US Census Bureau, American Community Survey, 2013–17.

223 We assume that the increase in supply of higher education workers does not result in decreased earnings among credential holders and that the decrease in the supply of workers without credentials does not increase their relative earnings.

Table A2. Change in earnings resulting from adjustment to match the educational distribution of the top 60 percent of earners within each racial/ethnic group

	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	-$37.2B	-$89.8B	-$14B	-$1.2B	-$8.7B	-$1.5B	-$152.5B
Men	-$26.1B	-$64.6B	-$7.2B	-$0.7B	-$5.3B	-$1B	-$105B
Women	-$11.1B	-$25.3B	-$6.8B	-$0.4B	-$3.4B	-$0.5B	-$47.5B
High school/GED	-$169.6B	-$39.6B	-$40.2B	-$2.8B	-$1.3B	-$2.7B	-$256.3B
Men	-$110.1B	-$26B	-$21.3B	-$1.7B	-$0.8B	-$1.6B	-$161.4B
Women	-$59.5B	-$13.6B	-$18.9B	-$1.2B	-$0.5B	-$1.1B	-$94.9B
Some college	-$71.4B	$12.1B	-$21.1B	-$1.4B	$6.1B	-$3.7B	-$79.5B
Men	-$45.7B	$7.5B	-$11.1B	-$0.8B	$3.4B	-$2.2B	-$48.9B
Women	-$25.7B	$4.5B	-$10B	-$0.6B	$2.7B	-$1.5B	-$30.6B
Associate's degree	$7.8B	$25.4B	$7.8B	$0.5B	$3.5B	$0.2B	$45.2B
Men	$4.8B	$15.4B	$4.1B	$0.3B	$2B	$0.1B	$26.7B
Women	$3B	$10B	$3.7B	$0.2B	$1.6B	$0.1B	$18.5B
Bachelor's degree	$306.7B	$156.3B	$106.9B	$7.5B	$5.3B	$9.4B	$592.1B
Men	$193.8B	$92.9B	$55B	$4.3B	$3.1B	$5.5B	$354.5B
Women	$112.9B	$63.4B	$52B	$3.2B	$2.2B	$3.9B	$237.6B
Master's degree	$275.3B	$128B	$77.6B	$5.2B	$10.6B	$8.8B	$505.4B
Men	$169.1B	$75.9B	$39.9B	$2.8B	$6.5B	$5.1B	$299.3B
Women	$106.2B	$52.1B	$37.6B	$2.5B	$4.1B	$3.6B	$206.1B
Professional degree	$97.4B	$30.6B	$26.9B	$1.4B	$6.2B	$3B	$165.4B
Men	$60.8B	$18.8B	$13.8B	$0.7B	$3.6B	$1.7B	$99.3B
Women	$36.6B	$11.8B	$13.1B	$0.7B	$2.7B	$1.3B	$66.1B
Doctoral degree	$69.8B	$25.2B	$18.6B	$1.1B	$2.6B	$1.8B	$119.2B
Men	$40.5B	$14.8B	$9.3B	$0.5B	$1.4B	$1B	$67.7B
Women	$29.3B	$10.4B	$9.3B	$0.5B	$1.2B	$0.9B	$51.5B
Total	$478.7B	$248.1B	$162.6B	$10.2B	$24.3B	$15.3B	$939.1B
Total Men	$287B	$134.7B	$82.6B	$5.4B	$13.9B	$8.6B	$532.2B
Total Women	$191.7B	$113.3B	$80B	$4.8B	$10.4B	$6.7B	$406.9B

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

Table A3. Change in earnings resulting from additional adjustment to match the educational distribution of Whites

	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	-	-$18.3B	-$1.1B	-$0.2B	-	-	-$19.5B
Men	-	-$13.1B	-$0.6B	-$0.1B	-	-	-$13.8B
Women	-	-$5.1B	-$0.5B	-$0.1B	-	-	-$5.7B
High school/GED	-	-$10.1B	-$3.2B	-$0.6B	-	-	-$13.9B
Men	-	-$6.6B	-$1.7B	-$0.3B	-	-	-$8.6B
Women	-	-$3.5B	-$1.5B	-$0.2B	-	-	-$5.2B
Some college	-	-$6.4B	-$10.3B	-$0.7B	-	-	-$17.3B
Men	-	-$4B	-$5.4B	-$0.4B	-	-	-$9.8B
Women	-	-$2.4B	-$4.9B	-$0.3B	-	-	-$7.6B
Associate's degree	-	$4.4B	-$0.4B	-$0.2B	-	-	$3.8B
Men	-	$2.7B	-$0.2B	-$0.1B	-	-	$2.4B
Women	-	$1.7B	-$0.2B	-$0.1B	-	-	$1.5B
Bachelor's degree	-	$42.2B	$20.5B	$1.9B	-	-	$64.6B
Men	-	$25.1B	$10.5B	$1.1B	-	-	$36.7B
Women	-	$17.1B	$10B	$0.8B	-	-	$27.9B
Master's degree	-	$33.3B	$5.7B	$1.3B	-	-	$40.3B
Men	-	$19.7B	$3B	$0.7B	-	-	$23.4B
Women	-	$13.5B	$2.8B	$0.6B	-	-	$16.9B
Professional degree	-	$9.6B	$8.1B	$0.5B	-	-	$18.3B
Men	-	$5.9B	$4.1B	$0.3B	-	-	$10.3B
Women	-	$3.7B	$3.9B	$0.3B	-	-	$7.9B
Doctoral degree	-	$7B	$4.2B	$0.3B	-	-	$11.4B
Men	-	$4.1B	$2.1B	$0.1B	-	-	$6.3B
Women	-	$2.9B	$2.1B	$0.1B	-	-	$5.1B
Total	-	$61.8B	$23.6B	$2.3B	-	-	$87.7B
Total Men	-	$33.8B	$11.9B	$1.2B	-	-	$46.9B
Total Women	-	$28B	$11.7B	$1.1B	-	-	$40.8B

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

Table A4. Total change in earnings after two-step (earnings and race) adjustment

	White	Latinx	Black	AIAN/NHPI	Asian	Other	Total
Less than high school	-$37.2B	-$108.1B	-$15.1B	-$1.3B	-$8.7B	-$1.5B	-$172B
Men	-$26.1B	-$77.7B	-$7.8B	-$0.8B	-$5.3B	-$1B	-$118.8B
Women	-$11.1B	-$30.4B	-$7.3B	-$0.5B	-$3.4B	-$0.5B	-$53.2B
High school/GED	-$169.6B	-$49.7B	-$43.4B	-$3.4B	-$1.3B	-$2.7B	-$270.1B
Men	-$110.1B	-$32.6B	-$23B	-$2B	-$0.8B	-$1.6B	-$170B
Women	-$59.5B	-$17.1B	-$20.5B	-$1.4B	-$0.5B	-$1.1B	-$100.1B
Some college	-$71.4B	$5.7B	-$31.3B	-$2.1B	$6.1B	-$3.7B	-$96.9B
Men	-$45.7B	$3.5B	-$16.4B	-$1.2B	$3.4B	-$2.2B	-$58.6B
Women	-$25.7B	$2.1B	-$14.9B	-$0.9B	$2.7B	-$1.5B	-$38.2B
Associate's degree	$7.8B	$29.8B	$7.5B	$0.3B	$3.5B	$0.2B	$49B
Men	$4.8B	$18.1B	$3.9B	$0.2B	$2B	$0.1B	$29B
Women	$3B	$11.7B	$3.5B	$0.1B	$1.6B	$0.1B	$20B
Bachelor's degree	$306.7B	$198.5B	$127.5B	$9.4B	$5.3B	$9.4B	$656.8B
Men	$193.8B	$118B	$65.5B	$5.4B	$3.1B	$5.5B	$391.3B
Women	$112.9B	$80.6B	$62B	$4B	$2.2B	$3.9B	$265.5B
Master's degree	$275.3B	$161.2B	$83.3B	$6.5B	$10.6B	$8.8B	$545.7B
Men	$169.1B	$95.6B	$42.9B	$3.5B	$6.5B	$5.1B	$322.7B
Women	$106.2B	$65.6B	$40.4B	$3.1B	$4.1B	$3.6B	$223.1B
Professional degree	$97.4B	$40.2B	$35B	$1.9B	$6.2B	$3B	$183.7B
Men	$60.8B	$24.7B	$17.9B	$1B	$3.6B	$1.7B	$109.6B
Women	$36.6B	$15.5B	$17B	$0.9B	$2.7B	$1.3B	$74.1B
Doctoral degree	$69.8B	$32.2B	$22.8B	$1.3B	$2.6B	$1.8B	$130.6B
Men	$40.5B	$18.9B	$11.4B	$0.7B	$1.4B	$1B	$74B
Women	$29.3B	$13.3B	$11.4B	$0.6B	$1.2B	$0.9B	$56.6B
Total	$478.7B	$309.8B	$186.1B	$12.6B	$24.3B	$15.3B	$1,026.8B
Total Men	$287B	$168.5B	$94.4B	$6.6B	$13.9B	$8.6B	$579.1B
Total Women	$191.7B	$141.3B	$91.7B	$5.9B	$10.4B	$6.7B	$447.7B

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. Numbers may not sum due to rounding.

These calculations provided the basis for our impact metrics:

- *Impact on tax revenue:* We assumed a federal income tax rate of 20 percent based on historical averages.[224] We assumed an average state and local income tax rate of 10 percent in alignment with the "tax wedge," or the average difference between salary and take-home pay.[225] Future iterations of this work should include a more nuanced approach to calculating the state and local tax impact and should account for differences in tax rates according to income levels.
- *Impact on GDP:* To calculate the impact of increased earnings on GDP, we multiplied the increase in earnings (after subtracting taxes and student loan payments, where applicable) by a factor of 1.1, a Keynesian multiplier based on the marginal propensity to consume (MPC) where the multiplier is equal to 1/(1-MPC). The marginal propensity to consume represents the percentage of an infusion of income that workers tend to spend rather than save. While the marginal propensity to consume varies depending on factors like whether the increase is permanent or temporary,[226] recent research has found that consumers spend an average of 10 percent of their marginal income,[227] leading to a relatively small multiplier effect. This MPC is based on a conservative interpretation of what an individual might do with money added to current earnings.

    A note about student loan debt: Without policy changes, increased educational attainment would almost certainly involve increased student loan debt. In the stepwise analysis, we accounted for the effect of this additional debt by considering it as a reduction in the earnings that could contribute to GDP for the first ten years after program completion (since earnings that might be used for consumption would instead be used to repay student loans).[228] We estimated the effect of this additional student loan debt to be $226 billion annually (or one-tenth of the total student principal and interest associated with the new debt). We estimated the effect of increased attainment on student loan debt by calculating the median amount borrowed by completers at each credential level (by sex and race or ethnicity)[229] and multiplying by the changes in completion by subgroup. We assumed a 10-year repayment schedule with 4 percent interest for undergraduate loans and 7 percent interest for graduate loans, resulting in an additional $2.27 trillion in federal student loan debt over 10 years.[230] (This number is larger than the number we used to eliminate student loan debt because this number includes the debt for all additional credential holders, not only those who are low income.)

224 See Tax Policy Center, "Historical Average Federal Tax Rates for All Households," 2019.
225 See Bellafiore, "The U.S. Tax Burden on Labor, 2019," 2019.
226 Jappelli and Pistaferri, "The Consumption Response to Income Changes," 2010.
227 We based this 10 percent figure on research by Fisher et al., "Estimating the Marginal Propensity to Consume Using the Distributions of Income, Consumption and Wealth," 2019. Importantly, as the authors note, the 10 percent marginal propensity to consume is a much lower rate than has been suggested by other research. Likewise, research on government spending suggests a wide range of possible multipliers: for example, Ramey (2011) has asserted that the multiplier for temporary government spending funded through deficits may range between 0.8 and 1.5, an estimate she refined and reduced to a range of 0.6 to 1 (see Ramey, "Ten Years after the Financial Crisis," 2019). For further discussion of multiplier effects for government spending, see Carroll, "Why Do Economists Still Disagree over Government Spending Multipliers?," 2014.
228 We subtracted the estimated annual student loan payments from post-tax earnings and calculated annual savings from the remaining income, using a savings rate of 7 percent.
229 Based on Georgetown University Center on Education and the Workforce analysis of data from the National Postsecondary Student Aid Study, 2016.
230 We based these assumptions on the standard repayment schedule for federal loans (US Department of Education, Federal Student Aid, "Choose the Federal Student Loan Repayment Plan That's Best for You") and historical precedents for interest rates (US Department of Education, Federal Student Aid, "Understand How Interest Is Calculated and What Fees Are Associated with Your Federal Student Loan").

- *Impact on criminal justice expenditures:* To estimate incarceration rates by educational attainment and race or ethnicity, we calculated the total number of incarcerated individuals in each educational and racial group[231] and divided those numbers by the comparable total population numbers (Table A5).[232] (Data on incarceration by income are not available.)

Table A5. Likelihood of being incarcerated by educational attainment and race and ethnicity

Attainment	White	Latinx	Black	Other
Less than high school	1.00%	0.99%	4.19%	1.49%
High school diploma	0.78%	1.46%	3.26%	1.52%
Some college	0.19%	0.38%	0.65%	0.31%
Bachelor's degree	0.04%	0.04%	0.05%	0.01%
Graduate degree	0.03%	0.21%	0.00%	0.00%

Source: Georgetown University Center on Education and the Workforce analysis of Program for the International Assessment of Adult Competencies US Prison Survey, 2014 and US Census Bureau, American Community Survey, 2014.

Note: Due to data constraints, we are unable to separate associate's degrees from some college or to distinguish among types of graduate degree. In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race.

We used these incarceration rates to estimate the change in the incarcerated population by subgroup: with the increases in educational attainment in our model, we would expect to see the overall incarceration rate fall by 0.23 percentage points (0.08 percentage points for Whites, 0.36 percentage points for Latinxs, 0.82 percentage points for Blacks, and 0.14 percentage points for people of other races or ethnicities). We then multiplied the total change in population by the average annual cost per incarcerated person ($36,300) to calculate the change in incarceration expenditures (Table A6).[233] These figures include the national average per-person costs associated with staffing and maintaining prisons and providing all prison services. These estimates do not account for differences in the average cost of incarceration by state, which varies from $14,780 in Alabama to $69,355 in New York.[234] Future iterations of this research should address these variations.

231 We obtained these numbers from the Program for the International Assessment of Adult Competencies US Prison Study, 2014.
232 Based on data from the US Census Bureau, American Community Survey, 2014.
233 US Federal Bureau of Prisons, "Annual Determination of Average Cost of Incarceration" (83 FR 18863), April 30, 2018, *https://www.federalregister.gov/documents/2018/04/30/2018-09062/annual-determination-of-average-cost-of-incarceration*.
234 Mai and Subramanian, *The Price of Prisons*, 2017.

Table A6. Total change in incarceration expenditures after adjustments in educational attainment

Attainment	White	Latinx	Black	Other	Total
Less than high school	-$1,121M	-$2,802M	-$2,886M	-$529M	-$7,338M
High school diploma	-$2,089M	-$1,378M	-$3,114M	-$234M	-$6,815M
Some college	-$158M	$170M	-$270M	$14M	-$243M
Bachelor's degree	$90M	$67M	$58M	$2M	$217M
Graduate degree	$82M	$305M	-	-	$386M
Total	-$3,196M	-$3,638M	-$6,212M	-$747M	-$13,793M

Source: Georgetown University Center on Education and the Workforce analysis of Program for the International Assessment of Adult Competencies US Prison Survey, 2014 and US Census Bureau, American Community Survey, 2013–17, and US Federal Bureau of Prisons, "Annual Determination of Average Cost of Incarceration" (83 FR 18863).

Note: Due to data constraints, we are unable to separate associate's degree from some college or type of graduate degree. In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

- *Impact on public health expenditures:* We first identified the mean public health expenditures (accounting for instances of $0 spending) for each subgroup (by sex, race or ethnicity, and educational attainment) (Table A7).

Table A7. Mean annual public health expenditures per population subgroup (per person)

Attainment	Sex	White	Latinx	Black	Other
Less than high school	Men	$3,129	$1,603	$6,186	$1,159
	Women	$5,261	$2,612	$4,748	$2,057
High school diploma	Men	$1,278	$932	$2,955	$2,771
	Women	$2,164	$1,792	$3,208	$2,222
Some college	Men	$2,148	$1,203	$1,878	$1,639
	Women	$1,792	$1,350	$2,762	$1,954
Bachelor's degree	Men	$516	$723	$267	$382
	Women	$494	$753	$552	$262
Graduate degree	Men	$211	$88	$672	$54
	Women	$274	$207	$1,382	$86

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17 and Medical Expenditure Panel Survey (MEPS), 2017 Full Year Consolidated Data File.

Note: Due to data constraints, we are unable to separate associate's degree from some college or distinguish among types of graduate degrees. In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

To calculate the total savings or cost related to these expenditures, we multiplied the

subgroup means by the change in population for that subgroup (Table A8).[235] These expenditures include spending on Medicare, Medicaid, Veterans Affairs/the Civilian Health and Medical Program of the Department of Veterans Affairs, and other federal, state, local, and miscellaneous public sources.

Table A8. Total change in public health expenditures after adjustments in educational attainment

Attainment	White	Latinx	Black	Other	Total
Less than high school	-$12.9B	-$16.4B	-$10.3B	-$1.6B	-$41.2B
High school diploma	-$12.7B	-$3.5B	-$8.1B	-$1.1B	-$25.4B
Some college	-$4.4B	$1.6B	-$2.7B	$0.2B	-$5.3B
Bachelor's degree	$3.1B	$3.8B	$1.4B	$0.2B	$8.5B
Graduate degree	$1.6B	$0.6B	$2.6B	$0.05B	$4.8B
Total	-$25.3B	-$14.0B	-$17.2B	-$2.2B	-$58.7B

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17 and Medical Expenditure Panel Survey (MEPS), 2017 Full Year Consolidated Data File.

Note: Due to data constraints, we are unable to separate associate's degree from some college or type of graduate degree. In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

- *Impact on public assistance program expenditures:* We used data from the Survey of Income and Program Participation (SIPP) to measure participation in the following federal assistance programs: Temporary Assistance for Needy Families (TANF); the Supplemental Nutrition Assistance Program (SNAP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the Earned Income Tax Credit (EITC); federal housing assistance programs; and the federal school meal programs.

  For programs providing cash benefits, SIPP includes the monthly benefits that individuals received. For other programs (EITC, housing assistance, and school meal programs), we used additional sources to estimate average benefits: for the EITC and housing assistance programs, we assumed that each participant's annual benefit equaled the average per-person benefit reported for their state by the federal government for 2016.[236] For the federal school meal programs, we used the reported 2016 reimbursement rates in the Federal Register (specifically, the rates for schools where less than 60 percent of students qualify for the free lunch program and schools with non-severe needs).[237]

235 Based on data from the Medical Expenditure Panel Survey (MEPS) 2017 Full Year Consolidated Data File.
236 Internal Revenue Service, "Statistics for 2016 Tax Returns with EITC," 2019; United States Department of Housing and Urban Development, "Picture of Subsidized Households" dataset.
237 Food and Nutrition Service, "National School Lunch, Special Milk, and School Breakfast Programs, National Average Payments/Maximum Reimbursement Rates," 2016.

Finally, we made an adjustment to account for the fact that many of these program benefits are allocated to families rather than to individuals. We summed the total benefits a family received and divided the sum among the family's adults (ages 25 to 64). For the EITC alone, we took a different approach: if a person filed for themselves, we assumed that they received the whole benefit; but if they filed jointly with a spouse, we assumed that they received half of the benefit.

We used these calculations to estimate the mean public program expenditures (accounting for instances of $0 spending) for each subgroup (by sex, race or ethnicity, and educational attainment) (Table A9).

Table A9. Average total public assistance program expenditure benefit per person (ages 25 to 64)

Attainment	Sex	White	Latinx	Black	Other
Less than high school	Men	$979	$1,030	$1,785	$1,477
	Women	$2,243	$1,907	$4,899	$2,339
High school diploma	Men	$659	$1,066	$1,296	$948
	Women	$1,022	$2,258	$3,346	$1,325
Some college	Men	$476	$792	$791	$706
	Women	$918	$1,883	$2,790	$1,651
Associate's degree	Men	$352	$617	$325	$831
	Women	$653	$1,418	$1,895	$1,135
Bachelor's degree	Men	$194	$658	$611	$326
	Women	$293	$716	$955	$158
Graduate degree	Men	$81	$237	$257	$154
	Women	$136	$527	$313	$145

Source: Georgetown University Center on Education and the Workforce analysis of data from the Survey of Income and Program Participation (SIPP), 2014 wave 4.

Note: In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

To calculate the total savings or cost related to these expenditures, we multiplied the subgroup means by the change in population for that subgroup. This resulted in $33.7 billion in total savings (Table A10).

Table A10. Total change in public assistance program expenditures after adjustments in educational attainment

Attainment	White	Latinx	Black	Other	Total
Less than high school	-$5.0 billion	-$11.4 billion	-$6.5 billion	-$1.9 billion	-$24.8 billion
High school diploma	-$6.2 billion	-$4.3 billion	-$6.3 billion	-$0.5 billion	-$17.3 billion
Some college	-$1.7 billion	$0.3 billion	-$2.6 billion	-$0.001 billion	-$4.0 billion
Associate's degree	-$0.1 billion	$1.0 billion	$0.3 billion	$0.1 billion	$1.6 billion
Bachelor's degree	$1.5 billion	$3.5 billion	$2.6 billion	$0.1 billion	$7.7 billion
Graduate degree	$0.7 billion	$1.5 billion	$0.7 billion	$0.1 billion	$3.0 billion
Total	-$10.6 billion	-$9.3 billion	-$11.8 billion	-$2.0 billion	-$33.7 billion

Source: Georgetown University Center on Education and the Workforce analysis of data from the Survey of Income and Program Participation (SIPP), 2014 wave 4.

Note: In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

- *Impact on earnings gaps:* To estimate the impact on earnings gaps, we conducted a simulation: for each group in our experiment that experienced gains in educational attainment, we randomly selected an equal number of employed individuals with the characteristics of that group and randomly assigned earnings for their race and sex at the higher level of educational attainment. We then calculated new race/attainment medians based on the new distribution. To reduce unintentional bias and ensure randomness, we conducted this simulation 50 times and used the average of our results (see Table 11 in Part II).[238]

238 This simulation was necessary because it is not possible to obtain new medians at the aggregate level simply by averaging the new medians at the subgroup level. Our method is inspired by bootstrapping methodology. To remove unintentional bias, we do a random move from one distribution to another, repeating the process and averaging the results to further ensure that no single draw is particularly good or bad. For a discussion of bootstrapping, see Mooney and Duval, *Bootstrapping*, 1993.

We also calculated the share of people who reached earnings associated with economic mobility after equalizing attainment (Table A11).

Table A11. Rates of economic mobility after equalizing educational attainment

Share of the current population that has economic mobility					
	White	Latinx	Black	Asian	AIAN/NHPI and Other
Total	34%	17%	20%	37%	24%
Men	43%	23%	22%	47%	30%
Women	25%	12%	18%	29%	19%
Share of the population that would reach economic mobility after equalizing educational attainment					
	White	Latinx	Black	Asian	AIAN/NHPI and Other
Total	39%	32%	31%	40%	32%
Men	49%	39%	33%	50%	38%
Women	30%	25%	29%	31%	26%

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size.

- *Impact on potential cumulative savings:* We estimated the impact on wealth by calculating the potential to accumulate savings. As noted above, we assumed an overall tax rate (federal, state, and local combined) of 30 percent. We also assumed a personal savings rate of 7 percent[239] and an annualized rate of return of 7 percent.[240] We accounted for both higher earnings and higher employment rates among the more highly educated populace (resulting in 6.56 million more people in the labor force). In addition, we applied an age adjustment to account for different savings horizons across the populace; the age adjustment was based on people's current age and assumed retirement between the ages of 65 and 75. We used a weighted average of saving horizons (by race and ethnicity, gender, and education level), assuming that workers who are 25 to 34 have 40 more years to save and grow their savings while in the workforce, workers who are 35 to 44 have 30 more years, workers who are 45 to 54 have 20 more years, and workers who are 55 to 64 have 10 more years. For the first 10 years, we subtracted annual student loan debt payments prior to applying the savings rate.[241]

239 Based on US Bureau of Economic Analysis, Personal Savings Rate, 2017.

240 This rate is commonly used as the presumed annual rate of return on long-term private investments. See White House Office of Management and Budget, Circular A-94.

241 To estimate current potential cumulative savings, we subtract the outstanding $1.5 trillion in student loan debt distributed by race and gender groups, based on each demographic group's share of the overall student debt as reflected in the Survey of Income and Program Participation (SIPP), 2014.

With these assumptions, we found moderate changes in the gaps between different subgroups' potential cumulative savings and the potential cumulative savings of White men (see Table 12 in Part II).[242] We also performed this calculation without subtracting debt payments for new low-income attainers to determine the impact on potential cumulative savings if this population did not need to borrow to finance their education (see Table 3 in Part I).

Threshold 2

To estimate the effect of closing earnings gaps (in addition to degree attainment gaps), we first computed the current earnings and employment-to-population ratios (EPOPs) for White men at each level of educational attainment. We then changed the number of workers for each subgroup (by sex, race or ethnicity, and educational attainment) to match the EPOP of White men and assigned White men's current earnings to all other subgroups at each additional level of education to calculate the aggregate earnings change. We did not change the EPOP or earnings for any group whose EPOP or earnings were already higher than those of White men. This approach equalizes labor market engagement and earnings without imposing penalties on any group. We estimate that EPOP adjustments account for approximately 20 percent of the earnings gains at this stage, while earnings adjustments account for 80 percent.

We used the resulting numbers to calculate societal impacts as described above, with the following modifications.

To calculate the impact on public health expenditures at this threshold, we calculated coefficients representing the correlation between earnings and public health expenditures, conditional on education level.[243] We assumed the relationship was constant across race/ethnicity and sex.[244] We applied the coefficients to the earnings change numbers to estimate changes in public health expenditures (Table A12).

242 Our potential cumulative savings calculations are over the remainder of workers' careers, while the median wealth amounts described elsewhere represent wealth at a single point in time.

243 Based on data from the Medical Expenditure Panel Survey (MEPS) 2017 Full Year Consolidated Data File.

244 Regression analyses confirmed this assumption.

Table A12. Total change in public health expenditures after earnings adjustment

Attainment	White	Latinx	Black	Other	Total
Less than high school	-$316.1M	-$117.7M	-$153.7M	-$89.9M	-$677.4M
High school diploma	-$1,973.7M	-$1,007.3M	-$830.7M	-$416.4.M	-$4,228.0M
Some college	-$3,885.1M	-$1,664.7M	-$1,403.1M	-$750.2M	-$7,703.1M
Bachelor's degree	-$1,940.9M	-$904.9M	-$652.8M	-$378.9M	-$3,877.5M
Graduate degree	-$822.2M	-$356.2M	-$271.8M	-$154.6M	-$1,604.8M
Total	-$8,938.0M	-$4,050.8M	-$3,312.1M	-$1,790.1M	-$18,090.9M

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17 and Medical Expenditure Panel Survey (MEPS), 2017 Full Year Consolidated Data File.

Note: Due to data constraints, we are unable to separate associate's degrees from some college or to distinguish among types of graduate degrees. In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

As above, we performed these calculations separately for credential holders ages 25 to 64 and for the additional credential degree holders from Threshold 1.

To calculate the impact on public assistance program expenditures at this threshold, we calculated coefficients representing the correlation between earnings and public assistance program expenditures, conditional on education level. We then applied the coefficients to the earnings change numbers to estimate changes in public assistance program expenditures (Table A13).

Table A13. Total change in public assistance program expenditures after earnings adjustment

Attainment	White	Latinx	Black	Other	Total
Less than high school	-$0.10 billion	-$0.04 billion	-$0.05 billion	-$0.03 billion	-$0.21 billion
High school diploma	-$1.30 billion	-$0.66 billion	-$0.55 billion	-$0.27 billion	-$2.78 billion
Some college	-$1.10 billion	-$0.47 billion	-$0.40 billion	-$0.21 billion	-$2.18 billion
Associate's degree	-$0.73 billion	-$0.32 billion	-$0.26 billion	-$0.15 billion	-$1.45 billion
Bachelor's degree	-$0.92 billion	-$0.43 billion	-$0.31 billion	-$0.18 billion	-$1.84 billion
Graduate degree	-$0.45 billion	-$0.19 billion	-$0.15 billion	-$0.08 billion	-$0.87 billion
Total	-$4.59 billion	-$2.11 billion	-$1.71 billion	-$0.92 billion	-$9.33 billion

Source: Georgetown University Center on Education and the Workforce analysis of data from the Survey of Income and Program Participation (SIPP), 2014 wave 4.

Note: In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

We were not able to calculate the impact on incarceration expenditures at this threshold because we do not have adequate data to estimate the relationship between earnings and incarceration rates.

We used the methodology described in Threshold 1 to calculate the differences in earnings gaps after equalizing educational attainment and equalizing earnings (and EPOPs) (see Table 14 in Part II).

We also calculated the share of people who would reach earnings associated with economic mobility after equalizing attainment and earnings (Table A14)

Table A14. Rates of economic mobility after equalizing educational attainment and earnings

Share of the current population that has economic mobility					
	White	Latinx	Black	Asian	AIAN/NHPI and Other
Total	34%	17%	20%	37%	24%
Men	43%	23%	22%	47%	30%
Women	25%	12%	18%	29%	19%
Share of the population that would reach economic mobility after equalizing educational attainment					
	White	Latinx	Black	Asian	AIAN/NHPI and Other
Total	39%	32%	31%	40%	32%
Men	49%	39%	33%	50%	38%
Women	30%	25%	29%	31%	26%
Share of the population that would reach economic mobility after equalizing educational attainment and earnings					
	White	Latinx	Black	Asian	AIAN/NHPI and Other
Total	50%	51%	50%	54%	50%
Men	49%	50%	48%	55%	49%
Women	51%	51%	52%	53%	51%

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size.

Using the assumptions outlined in Threshold 1, we also calculated the potential cumulative savings relative to those of White men after earnings and EPOPs were equalized to those of White men for additional credential recipients (Table A15) and for all workers ages 25 to 64 (Table A16). Our primary findings are for all workers ages 25 to 64. We include both tables here to provide a sense of the difference if earnings were equalized for the smaller versus the larger group.

Table A15. Potential cumulative savings per person as a share of White men's potential cumulative savings, after closing gaps in attainment and earnings for additional credential recipients

Sex	Race/ Ethnicity	Potential cumulative savings per person after Threshold 1	New potential cumulative savings per person after Threshold 2 for additional credential holders	Percent difference	Potential cumulative savings per person after Threshold 1 as a share of White men's	New potential cumulative savings per person after Threshold 2 for additional credential holders as a share of White men's	Change in gap
Men	White	$153,000	$153,000	0%	100%	100%	0pp
	Latinx	$154,000	$170,000	10%	100%	111%	11pp
	Black	$108,000	$123,000	13%	71%	80%	9pp
	Asian	$224,000	$225,000	1%	146%	147%	1pp
	AIAN/NHPI and Other	$141,000	$160,000	14%	92%	105%	13pp
Women	White	$90,000	$109,000	20%	59%	71%	12pp
	Latinx	$105,000	$150,000	43%	68%	98%	30pp
	Black	$92,000	$113,000	23%	60%	74%	14pp
	Asian	$124,000	$158,000	27%	81%	103%	22pp
	AIAN/NHPI and Other	$96,000	$132,000	38%	62%	86%	24pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

Table A16. Potential cumulative savings per person as a share of White men's potential cumulative savings, after closing gaps in attainment and earnings for all workers ages 25 to 64 (as described in the main analysis)

Sex	Race/ Ethnicity	Potential cumulative savings per person after Threshold 1	New potential cumulative savings per person after Threshold 2	Percent difference	Potential cumulative savings per person after Threshold 1 as a share of White men's	New potential cumulative savings per person after Threshold 2 as a share of White men's	Change in gap
Men	White	$ 153,000	$ 153,000	0%	100%	100%	0pp
	Latinx	$ 154,000	$ 204,000	33%	100%	133%	33pp
	Black	$ 108,000	$ 175,000	62%	71%	114%	43pp
	Asian	$ 224,000	$ 241,000	7%	146%	157%	11pp
	AIAN/NHPI and Other	$ 141,000	$ 206,000	46%	92%	135%	43pp
Women	White	$ 90,000	$ 177,000	96%	59%	115%	56pp
	Latinx	$ 105,000	$ 230,000	119%	68%	150%	82pp
	Black	$ 92,000	$ 184,000	100%	60%	120%	60pp
	Asian	$ 124,000	$ 246,000	99%	81%	161%	80pp
	AIAN/NHPI and Other	$ 96,000	$ 229,000	139%	62%	150%	88pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

As discussed above, future iterations of this research should also explore the implications of closing program of study gaps as a postsecondary lever for closing earnings gaps.

Threshold 3

To estimate the effect of closing mobility gaps, we calculated the share of each group that would reach mobility after equalizing attainment and earnings for all workers with an associate's degree or higher. We defined mobility as having been achieved when earnings are in the top 40 percent (above the bottom threshold for the 4th quintile, or $48,523) in the *initial* earnings distribution, prior to any adjustments. At this threshold, for the population with at least an associate's degree who had not yet attained mobility based on our previous adjustments, we assigned earnings from the top 40 percent. To assign these new earnings levels, we used the same simulation methodology used to calculate new medians for race/sex/attainment groups at other thresholds.

As above, we used the resulting earnings to calculate societal impacts, with the following addenda.

We applied the same coefficients used in previous thresholds to the earnings change numbers to estimate changes in public health expenditures (Table A17).

Table A17. Total change in public health expenditures after all workers with an associate's degree or higher achieve earnings associated with mobility

Attainment	White	Latinx	Black	Other	Total
Less than high school	-	-	-	-	-
High school diploma	-	-	-	-	-
Some college	-$2,799.8M	-$731.8M	-$537.8M	-$320.9M	-$4,390.1M
Bachelor's degree	-$2,692.0M	-$704.2M	-$526.1M	-$392.2M	-$4,314.5M
Graduate degree	-$814.0M	-$214.5M	-$160.2M	-$117.7M	-$1,306.5M
Total	-$6,305.8M	-$1,650.5M	-$1,224.1M	-$830.8M	-$10,011.2M

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17 and Medical Expenditure Panel Survey (MEPS), 2017 Full Year Consolidated Data File.

Note: We are unable to separate associate's degrees from some college or to distinguish among types of graduate degrees. Other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

We applied the same coefficients used in Threshold 2 to calculate the impact on public assistance program expenditures at this threshold (Table A18).

Table A18. Total change in public assistance program expenditures after all workers with an associate's degree or higher achieve earnings associated with mobility

Attainment	White	Latinx	Black	Other	Total
Less than high school	$0.00	$0.00	$0.00	$0.00	$0.00
High school diploma	$0.00	$0.00	$0.00	$0.00	$0.00
Some college	$0.00	$0.00	$0.00	$0.00	$0.00
Associate's degree	-$1.47 billion	-$0.39 billion	-$0.28 billion	-$0.17 billion	-$2.31 billion
Bachelor's degree	-$1.28 billion	-$0.33 billion	-$0.25 billion	-$0.19 billion	-$2.04 billion
Graduate degree	-$0.72 billion	-$0.19 billion	-$0.14 billion	-$0.10 billion	-$1.15 billion
Total	-$3.47 billion	-$0.91 billion	-$0.67 billion	-$0.46 billion	-$5.51 billion

Source: Georgetown University Center on Education and the Workforce analysis of data from the Survey of Income and Program Participation (SIPP), 2014 wave 4.

Note: In this table, other includes Asians, Native Americans, Native Hawaiians, Pacific Islanders, and people of more than one race. Numbers may not sum due to rounding.

Consistent with other thresholds, we were not able to calculate the impact on incarceration expenditures at this threshold because we do not have adequate data to estimate the relationship between earnings and incarceration rates.

We used the methodology described in Threshold 1 to calculate the differences in earnings gaps after equalizing educational attainment and earnings and ensuring that everyone with an associate's degree or higher achieves economic mobility (see Table 19 in Part II).

The table below shows potential cumulative savings relative to those of White men after closing attainment and earnings gaps and assigning earnings associated with economic mobility to all workers ages 25 to 64 with an associate's degree or higher who are not yet at that level (Table A19).[245]

Table A19. Potential cumulative savings per person as a share of White men's potential cumulative savings if attainment and earnings gaps were closed and everyone with at least an associate's degree had earnings associated with economic mobility

Sex	Race/ Ethnicity	Potential cumulative savings per person after Threshold 2	New potential cumulative savings per person after Threshold 3	Percent difference	Potential cumulative savings per person after Threshold 2 as a share of White men's	New potential cumulative savings per person after Threshold 3 as a share of White men's	Change in gap
Men	White	$153,000	$185,000	21%	100%	100%	0pp
	Latinx	$204,000	$245,000	20%	133%	132%	-1pp
	Black	$175,000	$211,000	20%	114%	114%	0pp
	Asian	$241,000	$282,000	17%	157%	152%	-5pp
	AIAN/NHPI and Other	$206,000	$254,000	23%	135%	137%	2pp
Women	White	$177,000	$218,000	23%	115%	118%	3pp
	Latinx	$230,000	$278,000	21%	150%	150%	0pp
	Black	$184,000	$225,000	23%	120%	122%	2pp
	Asian	$246,000	$301,000	22%	161%	163%	2pp
	AIAN/NHPI and Other	$229,000	$284,000	24%	150%	154%	4pp

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: In this thought experiment, we define "mobility" as having earnings in the top two quintiles (defined according to the current distribution). AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size. Numbers may not sum due to rounding.

245 We calculated potential cumulative savings for this step based on simulated median earnings by race and ethnicity, gender, and education.

Threshold 4

To estimate the effect of achieving economic security, we calculated the current median net worth at the individual level by race and sex.[246] We then calculated the ratio between the median net worth of each race/sex group and White men's median net worth to estimate current wealth gaps. To model economic security across all groups, we assigned the current overall median wealth to all groups whose current median wealth was below the median for White men (that is, all groups except White men, White women, Asian men, and Asian women). We then calculated the new gaps as a share of White men's wealth (see Table 21 in Part II).

Threshold 5

To calculate the value to society if wealth gaps were closed, we calculated the overall median net worth for each racial/ethnic and sex group and focused on the portion that might be affected by changes in educational attainment and earnings.

To set a baseline for current wealth (including inherited wealth), we determined the median individual net worth by race or ethnicity and sex[247] and multiplied those numbers by each subgroup's population.[248]

We estimated that only 55 percent of this wealth is affected by education (through earnings), while 45 percent is attributable to inheritance.[249] We therefore set 55 percent of the wealth for each group as being equal to the 55 percent of wealth for White men that we would attribute to education and earnings, while holding the other 45 percent of wealth constant, to calculate the new wealth per person. (Because Asian men already have greater individual wealth than White men, we kept their wealth constant.)

To calculate current wealth gaps (represented as a share of White men's wealth), we divided the current median wealth for each race/sex subgroup by the current median wealth for White men. To calculate the wealth gaps that would remain after equalizing wealth attributable to education and earnings, we divided the new wealth per person for each race/sex subgroup by the wealth per person for White men.

We present these findings with the caveat that they do not account for differences among groups in the share of wealth attributable to inheritance. To estimate the effect that these differences would have on our calculations, we recalculated the numbers above with an adjustment for the different shares of net worth that are attributable to inheritance among different racial/ethnic groups. We adjusted the share of wealth from inheritance derived from Kopczuk and Lupton, "To Leave or Not to Leave," 2005 based on differences in inheritance among racial/ethnic groups described by Wolff, "Inheritances and Wealth Inequality," 2002 (Table A20).[250]

246 All calculations for Threshold 4 are based on the US Census Bureau's Survey of Income and Program Participation (SIPP), 2014.
247 Based on Georgetown University Center on Education and the Workforce analysis of US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.
248 Based on Georgetown University Center on Education and the Workforce analysis of US Census Bureau, American Community Survey, 2013–17 (pooled).
249 Kopczuk and Lupton, "To Leave or Not to Leave," 2005.
250 Wolff groups Asian and Other together, so we applied the same adjustment for these groups to both Asian and AIAN/NHPI and Other.

Table A20. Comparison of wealth gaps due to education and earnings after equalizing to White men's wealth attributable to earnings

Current wealth per person as share of White men's wealth (median wealth per person)					
	White	Latinx	Black	Asian	AIAN/NHPI and Other
Men	100% ($65,000)	11% ($7,000)	7% ($4,600)	148% ($96,000)	16% ($10,000)
Women	74% ($48,000)	5% ($2,900)	4% ($2,700)	75% ($49,000)	8% ($5,500)
Wealth per person as share of White men's wealth, after closing wealth gaps (wealth per person)					
	White	Latinx	Black	Asian	AIAN/NHPI and Other
Men	100% ($65,000)	60% ($39,000)	58% ($38,000)	148% ($96,000)	62% ($40,000)
Women	88% ($58,000)	57% ($37,000)	57% ($37,000)	89% ($57,000)	59% ($38,000)
Wealth per person as share of White men's wealth, after closing wealth gaps and adjusting for different shares of wealth attributable to inheritance (wealth per person)					
	White	Latinx	Black	Asian	AIAN/NHPI and Other
Men	100% ($65,000)	56% ($36,000)	60% ($39,000)	148% ($96,000)	58% ($38,000)
Women	88% ($57,000)	55% ($36,000)	57% ($37,000)	75% ($49,000)	56% ($37,000)

Source: Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, American Community Survey, 2013–17; US Department of Education, National Postsecondary Student Aid Study, 2016; and US Census Bureau, Survey of Income and Program Participation (SIPP), 2014.

Note: AIAN/NHPI stands for American Indian, Alaska Native, Native Hawaiian, and Pacific Islander. We have combined the AIAN/NHPI and Other groups here to bolster the sample size.

Notably, this modified methodology resulted in fairly minor differences when compared to our primary approach. The one notable exception occurred for Asian women. With the adjustments in the modified methodology, the wealth attributable to education and earnings is higher for Asian women than it is for White men, so we did not equalize Asian women's wealth attributable to education and earnings to that of White men.

In our primary analysis, we keep the proportion due to inheritance the same across groups for two reasons. First, data on inheritances and wealth among Asian American, American Indian/Alaska Native, and Native Hawaiian/Pacific Islander are limited in the wealth gap literature, making it difficult to ascertain precise differences in inheritance across all racial groups. (The data used for the calculations in the table above are more than 20 years old, and additional research is needed to update these data before incorporating them into the primary findings.)

Second, our analysis does not take a longitudinal approach, so it does not account for changes over time in the proportion of wealth due to inheritance. As people's earnings rise, the share of wealth from inheritance versus earnings would likely change; for example, after equalizing the 55 percent of wealth initially attributable to education and earnings, we found that the overall share attributable to inheritance would fall to 34 percent. Future analysis should account for longitudinal change by racial/ethnic group.

In addition to differences in the share of wealth attributable to inheritance, other differences related to wealth may affect racial wealth gaps. For example, a higher percentage of White families receive inheritance compared to Black and Latinx families, and the average inheritance received is higher for White families.[251]

251 Thompson and Suarez, "Exploring the Racial Wealth Gap Using Survey of Consumer Finances," 2015; Taylor and Meschede, "Inherited Prospects," 2018.