

RESEARCH REPORT

# Understanding and Quantifying Crossroads Moments

How Context and Decisions Can Affect Economic Mobility  
and Racial and Ethnic Disparities

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The nonprofit Urban Institute is a leading research organization dedicated to developing evidence-based insights that improve people's lives and strengthen communities. For 50 years, Urban has been the trusted source for rigorous analysis of complex social and economic issues; strategic advice to policymakers, philanthropists, and practitioners; and new, promising ideas that expand opportunities for all. Our work inspires effective decisions that advance fairness and enhance the well-being of people and places.



## ABOUT CHILD TRENDS

Child Trends is the nation's leading research organization focused exclusively on improving the lives of children and youth, especially those who are most vulnerable. At Child Trends, we work to ensure that all kids thrive by conducting independent research and partnering with practitioners and with community, federal, and state policymakers to apply that knowledge. We believe that programs, practices, and policies that serve children are most effective when they are informed by data and evidence and grounded in deep knowledge of child and youth development. Child Trends' work helps set the national agenda on child well-being, inform policies that affect children and their families, and elevate important issues for children and youth.



## ABOUT THE SOCIAL GENOME PROJECT

The Social Genome Model, originally developed by Isabel Sawhill at the Brookings Institution, is now a partnership between the Brookings Institution, Child Trends, and the Urban Institute. The current version of the model (2020) was developed by Child Trends and Urban under grants from the Chan Zuckerberg Initiative and the Bill & Melinda Gates Foundation. Learn more at [www.urban.org/research/data-methods/data-analysis/quantitative-data-analysis/microsimulation/social-genome-project](http://www.urban.org/research/data-methods/data-analysis/quantitative-data-analysis/microsimulation/social-genome-project).

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# 1. Overview

Across their lifetime, people navigate “crossroads moments,” critical moments that can set them on an upward or downward path of economic mobility. Crossroads moments include such decisions as what job to take, where to live, whether to go back to school, and what program to enroll in if they do. But many forces—such as available information and financial constraints, as well as structural and social barriers—affect the types of choices people get to make. Moreover, these crossroads moments begin to take shape well before people enter adulthood; circumstances and experiences during childhood and adolescence can affect the choices that are available as people grow up.

Individuals, policymakers, and philanthropic organizations would benefit from understanding the implications of key crossroads moments that arise during the lifetime and how these lead to upward or downward economic mobility. By understanding how impactful these divergent moments are for mobility and what factors—either structural or personal—shape the outcomes for varied population subgroups, stakeholders will be able to prioritize and support changes at the individual and societal levels that lead to more economic and social mobility and reduced disparities based on race, ethnicity, and sex.

To better understand how structural factors influence crossroads moments and how changes at those moments in adolescence and young adulthood can influence long-term adult outcomes, we use the Social Genome Model (SGM).<sup>1</sup> The SGM is a powerful analytic tool that can project how the experiences and circumstances of children, youth, and young adults influence their well-being in adulthood. Structured around developmentally significant periods early in a person’s life, the model can be used to assess how policies, programs, and practices targeting young people ultimately affect adult outcomes such as lifetime earnings. The model is ideal for asking “what if” questions about factors that promote or impede future success. What if we provided effective high school mentoring and postsecondary job training or apprenticeship programs? What if we increased the share of young adults with bachelor’s degrees? The model can trace the effects of such interventions on outcomes like school performance, educational attainment, and adult earnings. Such “virtual experiments” can provide estimates of the long-term benefits of policies and actions earlier in life as well as the costs of inaction.

Here, we use the SGM to conduct eight virtual experiments. Our eight simulation exercises fall into two categories: what-if and “aspirational” simulations (for which there is no clear path to achieving the change) and “expansion” simulations (where we extend policies, programs, and practices that have been found to be effective in certain settings to broader populations). In our aspirational simulations, we

explore the costs of structural racism for Black and Hispanic people, the potential benefits of criminal justice reform for young Black men, and the benefits of improving the quality of low-wage jobs for all young adult workers. In our expansion simulations, we consider the benefits of expanding various proven programs to improve schools; increasing the attainment of high school diplomas, associate's degrees, and bachelor's degrees; and providing additional training to workers. For the expansion simulations, we can compare the costs of those programs with the benefits that accrue to participants. Although benefits can range from higher levels of educational attainment to improved mental and physical health in all our simulations, we focus on growth in lifetime earnings and changes in the disparities of lifetime earnings between racial and ethnic groups.

Below, we provide additional background on the SGM and summarize our key findings. Then, for each of our eight virtual experiments, we discuss the motivation behind each simulation, how we implemented the simulation, and our main findings.

## Background

The SGM is a regression-based simulation model built on a matched panel dataset starting with people's circumstances at birth and tracking them through age 30. It provides a structured way to compare the potential long-term effects of changes in different aspects of a child or young adult's outcomes at different critical developmental junctures.

The flexibility and richness of the SGM come from both its theoretical underpinnings and the detailed nationally representative databases used to build it. The SGM is deeply embedded in available research and theory, specifically, a "whole-person" perspective, the ecological framework, and the life course perspective.

**Whole-person framework.** A key step in constructing the model involved defining and measuring important outcomes based on the whole-person perspective. Thus, it encompasses multiple domains: cognitive and academic development, emotional and psychological development, physical health and safety, social behaviors, and relationships. At birth and as young people move into early adulthood, we also consider economic well-being.

**Ecological model.** The "ecological" model posits that development is a function of various influences (Bronfenbrenner 1979), including the person's own characteristics, family and household characteristics, child care or educational settings, peers, neighborhoods, and the larger social context.

**The life course perspective.** This perspective posits that outcomes at any given life stage are influenced by factors from earlier life stages (Elder 1998; Shonkoff and Phillips 2000). In the SGM, the stages are as follows:

1. circumstances at birth
2. early childhood (completed at age 2)
3. preschool (completed at age 5)
4. early elementary school (completed at age 8)
5. middle childhood (completed at age 11)
6. early adolescence (completed at age 14)
7. adolescence (completed at age 19)
8. transition to adulthood (completed at age 24)
9. adulthood (completed at age 30)

At each life stage, we identify key developmental outcomes and the factors and life contexts that influence those outcomes. The SGM uses data from three nationally representative longitudinal surveys: the Early Childhood Longitudinal Study, Birth Cohort; the Early Childhood Longitudinal Study, Kindergarten Cohort; and the National Longitudinal Survey of Youth–1997. We use statistical matching techniques to link information across datasets, ultimately creating a matched panel dataset of around 400,000 observations.

At its core, the SGM consists of a series of ordinary least squares regressions. At each life stage, every individual-level variable is estimated as an outcome with all individual-level variables at earlier life stages potentially acting as explanatory variables with the potential for intervention.<sup>2</sup> The model also includes select contextual variables that are unique to each stage and do not carry forward in the model.

Structural factors can affect economic mobility by constraining individual behaviors or by constraining the consequences of those behaviors. The world clearly operates differently for men and women and for Black people and White people. For this reason, we have built the effects of certain structural barriers directly into the SGM by estimating all associations in the model separately by race or ethnicity and sex. Specifically, the regressions underlying the SGM are run separately for the following groups:

- non-Hispanic Black men
- non-Hispanic Black women
- Hispanic men
- Hispanic women
- White men
- White women

For ease of exposition, we use “White” to refer to non-Black, non-Hispanic people. The vast majority of the people in this group (93.4 percent) identify as White, 0.9 percent identify as Native American, 3.3 percent identify as Asian or Pacific Islander, and 2.4 percent identify as more than one race. But because of sample size constraints, we cannot estimate simulations separately for the individual racial groups in this combined category. Our model allows the benefits of various changes (e.g., attaining a bachelor’s degree) and the costs of various changes (e.g., having a criminal conviction) to vary for each of these population subgroups. For example, when considering earnings at age 30, Black men benefit more from attaining a bachelor’s degree and are harmed more by a criminal conviction than White men.

The model is best viewed as a structured tool for projecting how changes earlier in the life course reverberate through future aspects of a child and youth’s life into adulthood rather than as a model that can determine cause and effect. The relationships captured in the model reflect correlations in the underlying data that emerge after accounting for a host of observable differences in individuals’ characteristics, circumstances, and actions at earlier life stages.

## Using the SGM to Project Future Outcomes

To use the model for simulations, we alter the characteristics and circumstances affected by the policy or program and then assess how that change flows through people’s subsequent outcomes across the life course. For example, if we wanted to see the benefits of increasing high school graduation rates, we could take some or all of the people in the data without high school diplomas at age 19 and confer diplomas upon them. The model then would trace out how that high school diploma would contribute to outcomes in adulthood, such as further educational attainment, better physical and mental health, and higher earnings. The model allows its users to define many dimensions of a hypothetical intervention (or combination of interventions), including the life stages at which interventions occur, the immediate outcomes that change in response, the target population for the intervention, the share of the target



population affected, and the sizes of the effect on those the intervention affects. The model also enables us to test the costs and benefits of *combinations* of effective interventions, because we know that no single “silver bullet” can fully address all the barriers to upward mobility.

The adult outcomes we consider at age 30 include educational attainment, earnings, and health, but we focus our projections on the discounted present value of lifetime earnings measured in 2018 dollars. We focus on the discounted present value of future earnings to better compare the cost of interventions today with their long-term value for people benefiting from them. Without discounting, lifetime earnings would be about twice as high. Our estimate of lifetime earnings is informed by earnings at age 30, health status, and educational attainment, as well as by race, ethnicity, and sex. Economic mobility and security are important pillars for adult and intergenerational well-being, and lifetime earnings provide a useful summary metric for capturing them. Also, by assessing how changes to barriers and individual choices influence lifetime earnings, we can both assess how racial and ethnic disparities may change over time and, when appropriate, compare the potential costs of policies and programs to the benefits as measured by changes in lifetime earnings.

When comparing the costs of a program or policy with the potential gains in lifetime earnings, it is important to note the scale and scope of the intervention considered. A highly effective intervention that targets a narrow swath of the population will show large benefits for those affected but may do little to move population averages or narrow lifetime earnings disparities between groups. Nevertheless, a well-targeted program may show benefits that far outweigh the costs for people the program serves. For example, a proven job training intervention may have a high per person cost, but most, if not all, participants may realize earnings increases relative to a scenario where they did not receive the training. Other programs or policies may be broader in scope, such as reforms to the public education system. In those situations, program costs may be spread across many people, some of whom would have “done well” without the change. For example, improving teacher quality in a school district may increase high school graduation rates, but many students in the district would have graduated from high school anyway. The cost applies to all students, but the direct benefits apply only to those students who otherwise would not have graduated.

In presenting our results, we focus on those who directly benefit from changes in policies, programs, and practices—in other words, we focus on those who came to crossroads moments and were able to take a different path. For completeness, we also discuss the scale and scope of those changes and the implications for population-level disparities.

# Main Findings

## What-If and Aspirational Simulations

### THE COSTS OF STRUCTURAL RACISM

We asked what would happen to the lifetime earnings of Black and Hispanic people if, from birth to adulthood, they experienced society in the same way White people do. (We implemented this by assigning Black and Hispanic people the coefficients of White people of the same sex.) We project that lifetime earnings would increase by more than \$250,000 for Black people and by almost \$130,000 for Hispanic people. The gap in mean lifetime earnings between Black people and White people (as measured as the ratio of Black earnings to White earnings) would narrow from 53 percent to 87 percent (that is, Black people would earn 87 percent of what White people earn), while the gap between Hispanic people and White people would narrow from 69 percent to 86 percent.

### CRIMINAL JUSTICE REFORM

After reviewing the literature on the deleterious impacts of aggressive policing on young Black men, we implemented a scenario in which those adverse effects were reversed for all young Black men. Specifically, we reduced absenteeism, raised test scores, and improved mental health in accordance with the negative impacts of aggressive policing identified in the literature. We also reduced conviction rates for Black men to those observed for White men. Overall, these changes increased the lifetime earnings of Black men by about \$25,000. For those who had a conviction erased as a result of the simulation, the projected gain in lifetime earnings are more than \$86,000.

### IMPROVING JOB QUALITY

For people working in low-paying jobs at age 24, we simulated improving job quality by increasing earnings and employer-sponsored benefits such as health insurance (which we add using the monetized value of those benefits). On average, for workers whose job quality we improve, the value of that improvement is \$9,500, and the increase in lifetime earnings is \$52,000, with larger increases for White people than for Black and Hispanic people.

## Expansion Simulations

### COMMUNITY SCHOOLS AND INTEGRATED STUDENT SUPPORTS

We simulated an integrated approach to improving schools for children from low-earnings families that is associated with modest improvements in students' mental health, the positive and negative behaviors

of their peers, and test scores, as well as reductions in absenteeism, gang presence, and suspensions. The cost per pupil of such programs is about \$5,400 across six years. Even though this program has very small effects on any one aspect of children's lives, the cumulative effect is notable, ranging from better mental health and greater educational attainment to less poverty. Modest improvements in lifetime earnings parity are found for those benefiting from the program; lifetime earnings increased by an average of about \$37,000, with larger increases for White and Black men than for women and Hispanic people.

### INCREASING HIGH SCHOOL DIPLOMA ATTAINMENT

We increased the share of people with high school diplomas by 5 percentage points based on the “small schools of choice” intervention, with slightly larger increases for groups with lower levels of high school diploma attainment in the data. The cost of the intervention is about \$625 per enrollee per year, and findings indicate that it increases lifetime earnings by more than \$14,000, on average, with slightly larger increases for Hispanic and Black people than for White people and much larger gains for Black and Hispanic men than for Black and Hispanic women. Those who gain a high school diploma as a *result* of the intervention see their lifetime earnings rise by about \$270,000, with Hispanic people seeing the largest benefit.

### INCREASING ASSOCIATE'S DEGREE ATTAINMENT

To simulate increased associate's degree attainment among students enrolled in associate's programs, we drew on evaluations of the Accelerated Study in Associate Programs (ASAP) intervention. Based on those evaluations, we set a target associate's degree completion rate of 50 percent for all those who were enrolled in associate's programs. The cost of ASAP per enrollee falls between \$10,000 and \$14,000, and we project that bringing associate's degree completion rates up to 50 percent would increase the lifetime earnings of completers by almost \$175,000 overall, with larger increases for Black and Hispanic people than for White people.

### INCREASING BACHELOR'S DEGREE ATTAINMENT

To simulate increases in bachelor's degree attainment, we consider the potential benefits of low-cost informational interventions aimed toward improving the college match of low-earnings, high-achieving high school students. For students who are simulated to earn bachelor's degrees, lifetime earnings are projected to increase by more than \$420,000, with particularly large increases for Black and Hispanic men.

## JOB TRAINING

We looked at evaluations of several job training programs targeting young people without a college degree and used the estimated average impact of those programs on earnings at age 24 to implement our simulations and project those increases to future educational attainment and lifetime earnings. The average cost per participant in such training programs is \$19,600, and the associated increase in lifetime earnings is about \$21,000, with larger increases for White people than for Black and Hispanic people.

# 2. Estimating the Costs of Structural Racism

## Summary and Key Findings

Regardless of circumstances at birth, the challenges many people face because of their race or ethnicity could dramatically affect their life trajectory. Structural racism manifests itself in many ways across a lifetime. We do not have an explicit measure of these barriers in the SGM, so we cannot explicitly simulate removing these barriers. Instead, we assess what the predicted adult outcomes would be for Black and Hispanic children if they received the same benefit from their childhood and early adult experiences as White children of the same sex. We find substantial impacts on educational attainment and lifetime earnings, particularly for Black men.

## Review of Relevant Research and Motivation

Black and Hispanic people face structural barriers that affect their adult outcomes.<sup>3</sup> Black and Hispanic children are more likely than White children to be enrolled in underresourced schools (Darling-Hammond 2001), to be exposed to environmental pollutants (Bell and Ebisu 2012; Chakraborty and Zandbergen 2007),<sup>4</sup> and to be exposed to violence and other adverse childhood experiences (Sheats et al. 2018; Slopen et al. 2016; Zimmerman and Messner 2013).<sup>5</sup> Black and Hispanic adults are more likely to experience traffic stops and violence from police officers (Weisburd and Majmundar 2018), to face racial discrimination in the labor market (Lang and Lehmann 2012) and housing,<sup>6</sup> and to have difficulties receiving adequate health care (Williams and Rucker 2000).

## Overview of the Simulation

In this simulation, we ask: what if, from birth forward, society treated Black and Hispanic children the same way it treats White children? In other words, what if Black and Hispanic children enjoyed the same benefits from childhood and adolescent experiences in school, at home, and in their communities as White children do? Would their adult outcomes resemble those of White adults? To do this, we applied the parameters that were estimated for White children to the sample, leaving the initial data (i.e., the circumstances at birth) for Black and Hispanic children unchanged.<sup>7</sup> In other words, Black and Hispanic

children and young people were given the same coefficients as White children, so they received the same return on their activities and characteristics as White children.

Because we are not altering children's circumstances at birth, our results do not reflect the removal of deeper historic inequities, such as segregation, redlining, excessive incarceration, and other practices that were present at and long before the person's birth. These policies, which could adversely affect start-of-life circumstances—such as family earnings and wealth, family structure, parental health, and birthweight (Ratnasiri et al. 2018)—are still present in our model. In addition, childhood contextual factors, such as neighborhood safety, parenting style, and household structure, still affect outcomes.

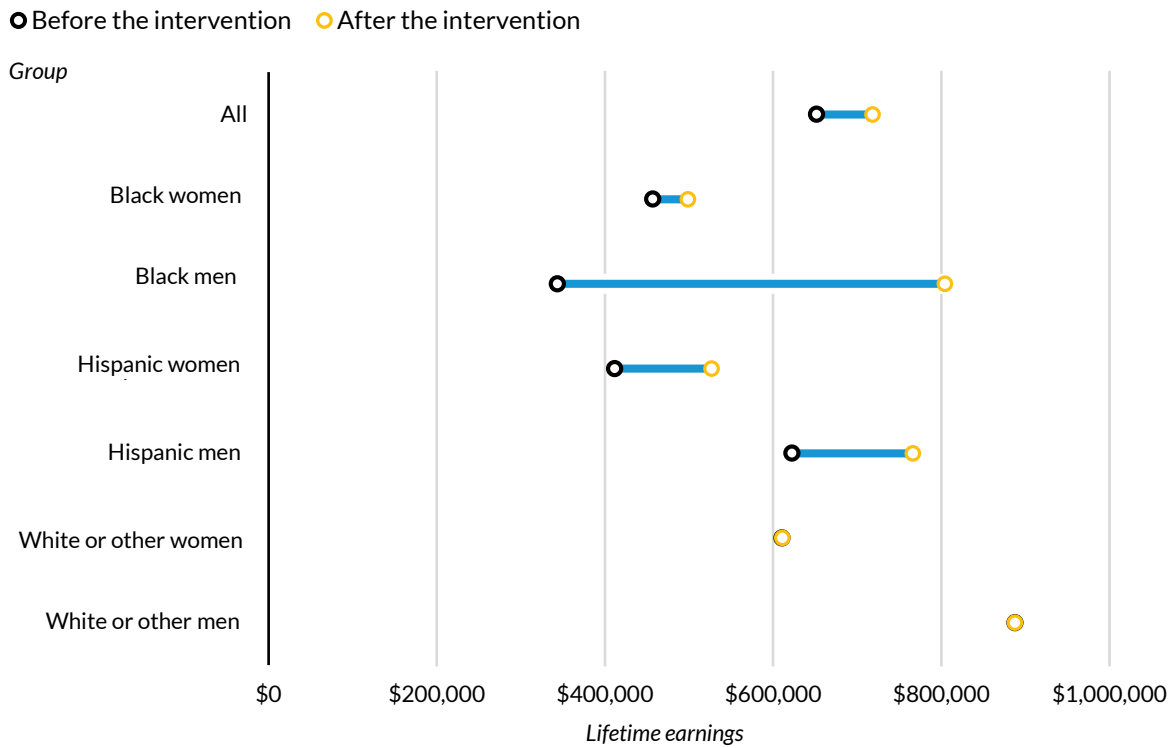
## Results

When we run our simulation, we find that Black and Hispanic children generally have better outcomes when they receive the same benefits that White children do. The share predicted to attain an associate's degree increases by 2.5 percentage points for Black people and 1.7 percentage points for Hispanic people, and the share predicted to attain a bachelor's degree increases by 6.0 and 6.4 percentage points, respectively, for Black and Hispanic people.

Projected lifetime earnings increase, on average, by about 64 percent for Black adults and by 25 percent for Hispanic adults. Increases in associate's degree attainment, earnings, and lifetime earnings tend to be more concentrated among men than among women. Percentage increases in bachelor's degree attainment are roughly equal between men and women.

FIGURE 1

Estimating the Costs of Structural Racism: Change in Lifetime Earnings, by Race or Ethnicity and Sex



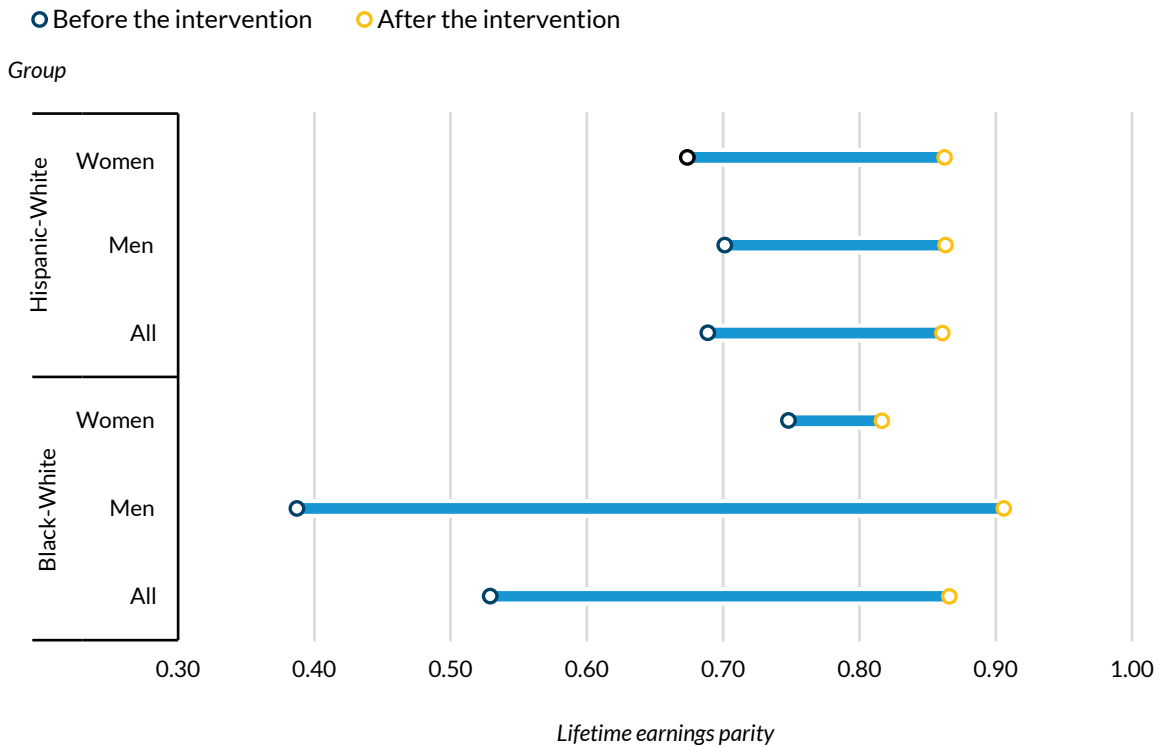
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Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

This simulation substantially increases lifetime earnings parity for Black and Hispanic people, relative to White people. Similar to the overall lifetime earnings increase, we find a larger increase in parity among men. For Black men, in particular, the effects of this aspirational change are transformative. Before the intervention, Black men were predicted to earn 39 cents in lifetime earnings for every dollar of lifetime earnings earned by White men. After the intervention, that figure increases to 91 cents per dollar.

**FIGURE 2**  
**Estimating the Costs of Structural Racism: Change in Mean Lifetime Earnings Parity, by Race or Ethnicity and Sex**



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Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

These gains may have been even larger if not for a surprising decline in projected high school diploma attainment among Hispanic people and Black women. This occurs because certain early life circumstances and social contexts exert a larger influence on the future outcomes of White people than those of Black and Hispanic people. For example, exposure to gang activity in school or in the neighborhood exerts a stronger influence (i.e., has a larger coefficient) on certain outcomes (e.g., delinquent behavior and peer relationships) for White people than for Black and Hispanic people. This may occur because contextual factors such as the presence of gangs in schools or neighborhoods are less common among the White population in the SGM and thus carry a larger “penalty” for later life outcomes. Despite the projected decline in high school completion, a greater proportion of Black and Hispanic people complete postsecondary degrees and enjoy substantially higher earnings than they otherwise would have.



## Discussion and Policy Implications

No single policy intervention can undo centuries of past and present discrimination people of color face, particularly the legacy of slavery and continued repercussions of Jim Crow and other discriminatory policies the Black community experiences. Our results show that the costs of structural racism are high. The differential treatment and experiences of Black and Hispanic children relative to White children substantially lower their relative lifetime earnings. Even when we eliminate those differences in treatment and experience, disparities in outcomes remain. These results point to the continued inequities experienced by Black and Hispanic children in the US, which could include such factors as explicit racial discrimination, lower-resourced schools, exposure to a higher level of environmental pollutants, and overpolicing.

TABLE 1A

**Adult Outcomes for Educational Attainment**

*Overall population and people who actually benefit*

	High School Diploma, Transition to Adulthood			Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
All	75.1%	74.3%	-0.9 p.p.	10.7%	11.4%	0.7 p.p.	26.6%	28.8%	2.2 p.p.
Black	67.5%	65.0%	-2.5 p.p.	8.1%	10.6%	2.5 p.p.	13.9%	19.9%	6.0 p.p.
Hispanic	69.8%	67.5%	-2.4 p.p.	10.7%	12.4%	1.7 p.p.	16.3%	22.7%	6.4 p.p.
White or other	78.7%			11.4%			32.9%		
Women	78.7%	77.1%	-1.6 p.p.	12.6%	13.0%	0.4 p.p.	30.6%	33.0%	2.4 p.p.
Men	71.8%	71.6%	-0.2 p.p.	8.9%	10.0%	1.1 p.p.	22.9%	24.9%	2.0 p.p.
Black women	75.7%	69.3%	-6.4 p.p.	11.3%	12.8%	1.5 p.p.	17.0%	23.4%	6.5 p.p.
Black men	59.5%	60.8%	1.3 p.p.	5.0%	8.4%	3.5 p.p.	10.9%	16.5%	5.6 p.p.
Hispanic women	73.7%	70.9%	-2.8 p.p.	14.3%	14.9%	0.6 p.p.	20.1%	27.2%	7.1 p.p.
Hispanic men	66.2%	64.3%	-2.0 p.p.	7.4%	10.1%	2.7 p.p.	12.7%	18.5%	5.9 p.p.
White or other women	81.1%			12.5%			37.3%		
White or other men	76.4%			10.4%			28.9%		

Source: Social Genome Model.

Notes: N = 400,040; there are 141,724 Black and Hispanic people represented in the dataset. p.p. = percentage points. Entries for “post” and “change” columns are blank for population subgroups not subject to the simulation exercise.

**TABLE 1B**

**Adult Outcomes for Earnings**

Overall population and people who actually benefit

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$33,491	\$35,825	\$2,335	\$651,889	\$718,318	\$66,430
Black	\$19,136	\$31,152	\$12,016	\$399,435	\$653,776	\$254,340
Hispanic	\$30,559	\$32,478	\$1,919	\$519,898	\$649,869	\$129,971
White or other	\$37,998			\$754,881		
Women	\$27,250	\$28,554	\$1,304	\$546,941	\$576,031	\$29,091
Men	\$39,320	\$42,617	\$3,298	\$749,924	\$851,233	\$101,309
Black women	\$18,559	\$24,275	\$5,716	\$456,872	\$498,764	\$41,892
Black men	\$19,695	\$37,822	\$18,127	\$343,725	\$804,131	\$460,406
Hispanic women	\$23,875	\$25,696	\$1,821	\$411,516	\$526,835	\$115,319
Hispanic men	\$36,878	\$38,889	\$2,011	\$622,377	\$766,202	\$143,825
White or other women	\$30,523			\$610,858		
White or other men	\$44,891			\$887,662		

Source: Social Genome Model.

Notes: N = 400,040; there are 141,724 Black and Hispanic people represented in the dataset. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much. Because the factors affecting outcomes differ across racial and ethnic groups, these simulations required an additional step that included reassigning stochastic variation in some variables. As a result, the lifetime income projections shown for this simulation are slightly different than other models.

**TABLE 2**

**Lifetime Earnings Parity in the Overall Population**

		Black-White				Hispanic-White			
		Mean	Median	25th percentile	75th percentile	Mean	Median	25th percentile	75th percentile
All	Pre	0.53	0.52	0.49	0.52	0.69	0.70	0.62	0.67
	Post	0.87	0.93	0.95	0.84	0.86	0.90	0.88	0.86
Men	Pre	0.39	0.37	0.32	0.37	0.70	0.69	0.64	0.70
	Post	0.91	0.95	1.04	0.87	0.86	0.91	0.86	0.88
Women	Pre	0.75	0.72	0.86	0.73	0.67	0.67	0.68	0.70
	Post	0.82	0.84	0.87	0.81	0.86	0.90	0.98	0.84

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

# 3. Criminal Justice Reform

## Summary and Key Findings

In this simulation, we model the potential effects of revamping police practices that have negative impacts on Black teenagers and young men. We draw on literature demonstrating how interactions with police, including arrest and conviction, negatively affect Black men. We then imagine a scenario in which these practices are limited and reverse some of those negative impacts. We do not model any specific changes to police practices, nor do we suggest any specific changes that should be made for this simulation. Rather, we look at the potential effects of an unspecified police reform that reduces harmful interactions between young Black men and police.

We find modest effects on lifetime earnings for our sample of all Black men, with lifetime earnings increasing by around \$25,000. For the subset of Black men whom we model to not be convicted of a crime when they otherwise would have been, the effects are much larger: their average lifetime earnings increase by more than \$86,000.

## Review of Relevant Research and Motivation

Evidence consistently finds that Black men are subject to more frequent and negative police attention and more police violence than people of other races and ethnicities (Buehler 2017; Kramer and Remster 2018; Schleiden et al. 2020). In the wake of George Floyd's murder, activists have been calling for ways to reduce encounters and change the nature of encounters that occur between police and people of color, for example, by shifting some emergency response duties away from police.<sup>7</sup>

Beyond the risk of bodily harm and death, these police practices can have various negative impacts on Black men, such as reducing school attendance and test scores (Legewie and Fagan 2019) and harming their mental health (Geller et al. 2014; Sugie and Turney 2017). Through an aspirational change in police practices, we reduce the encounters between Black men and the police. Because we do not have police practices or encounters with police measured directly in the SGM, we model the result of this change by reducing absenteeism and increasing Armed Services Vocational Aptitude Battery (ASVAB) scores in early adolescence, improving mental health in adolescence, and reducing rates of criminal conviction rates during adolescence and the transition to adulthood for Black men.

## Overview of the Simulation

We reduce the incidence of being convicted of a crime for Black youth and men to the levels for White youth and men in adolescence (measured at age 19) and the transition to adulthood (measured at age 24). In adolescence, the share of Black men convicted of a crime is about 4 percentage points higher than the share of White men convicted of a crime, while the difference is about 10 percentage points at age 24. To reduce the level of convictions for Black youth and men to the levels of White youth, we randomly remove convictions from enough Black youth (at age 19) so that the Black and White conviction rates are roughly the same. Note that the people from whom we remove convictions remain in the model; they just have their underlying conviction data altered to indicate they have not been convicted.

To equalize conviction rates at age 24 (transition to adulthood), we first make sure anyone whose conviction we took away in adolescence remains without a conviction in the transition to adulthood. We then randomly take away convictions from additional Black men who are first convicted during the transition to adulthood until the Black and White men's conviction rates are roughly the same.

In addition to reducing convictions, we make several other changes for young Black men. Legewie and Fagan (2019) reports that aggressive policing increases school absences by 1.35 days and decreases English language arts test scores by 0.15 standard deviations for young Black men. As such, policing reform could be expected to reduce school absences by 1.35 days and improve ASVAB scores by 0.15 standard deviations in early adolescence. Additionally, Sugie and Turney (2017) finds that interactions with the criminal justice system, starting with arrests, reduce mental health (as measured using the National Longitudinal Survey of Youth mental health scale) by about 0.33 standard deviations. Based on that finding, we improve mental health by 0.3 standard deviations in adolescence for Black male teenagers.

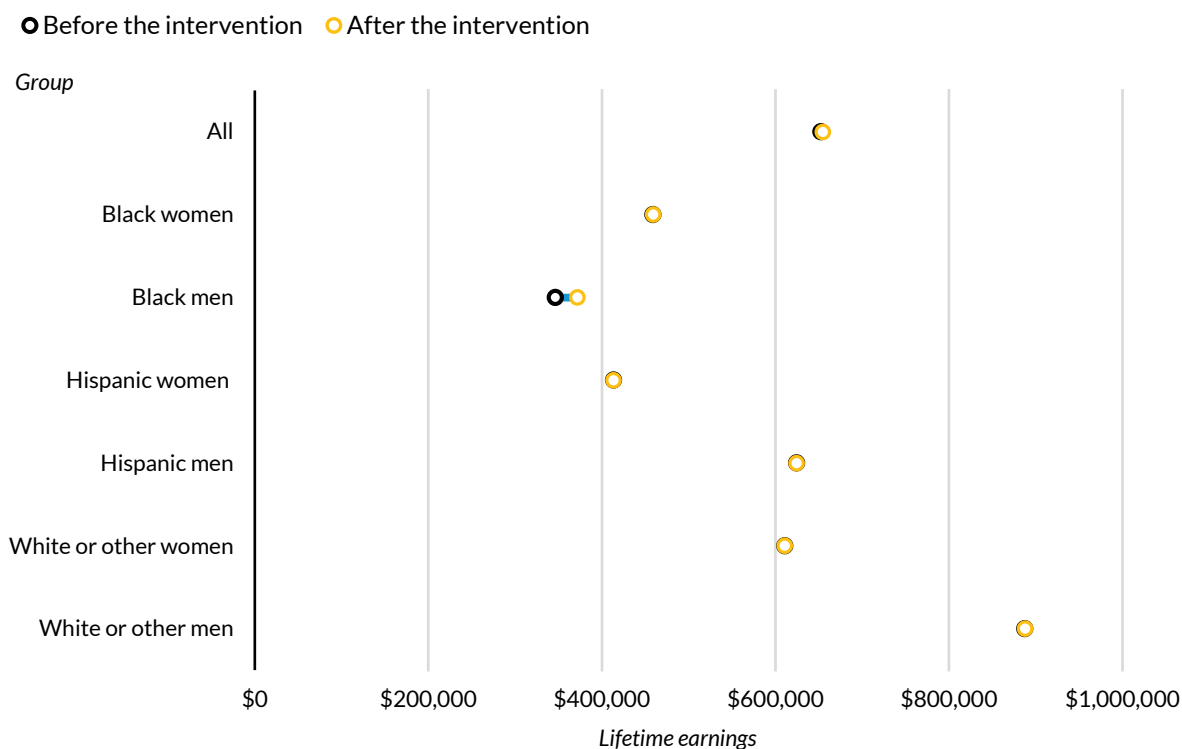
We assume this intervention has no cost because the changes in police practices would be achieved by reallocating police budgets to achieve better public safety practices.

## Results

Figure 3 shows the average benefits from this simulation in terms of lifetime earnings for all Black men. Lifetime earnings increase by about \$25,000, on average, across the population of Black men. This increase is a result of improvements in ASVAB scores, mental health, and absenteeism for all Black men and the eliminated convictions for a small subset of Black men. (Table 3A shows the effects this

simulation has on other outcomes for all Black men.) After this simulation, Black men have slightly higher high school, associate’s degree program, and bachelor’s degree program graduation rates than before the simulated change to policing. Black men are 2.2 percentage points more likely to graduate from high school, 0.4 percentage points more likely to earn an associate’s degree, and 1.6 percentage points more likely to earn a bachelor’s degree. Annual earnings at age 30 are nearly \$1,500 higher as well.

**FIGURE 3**  
**Criminal Justice Reform: Change in Lifetime Earnings, by Race or Ethnicity and Sex**



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Source: Social Genome Model.

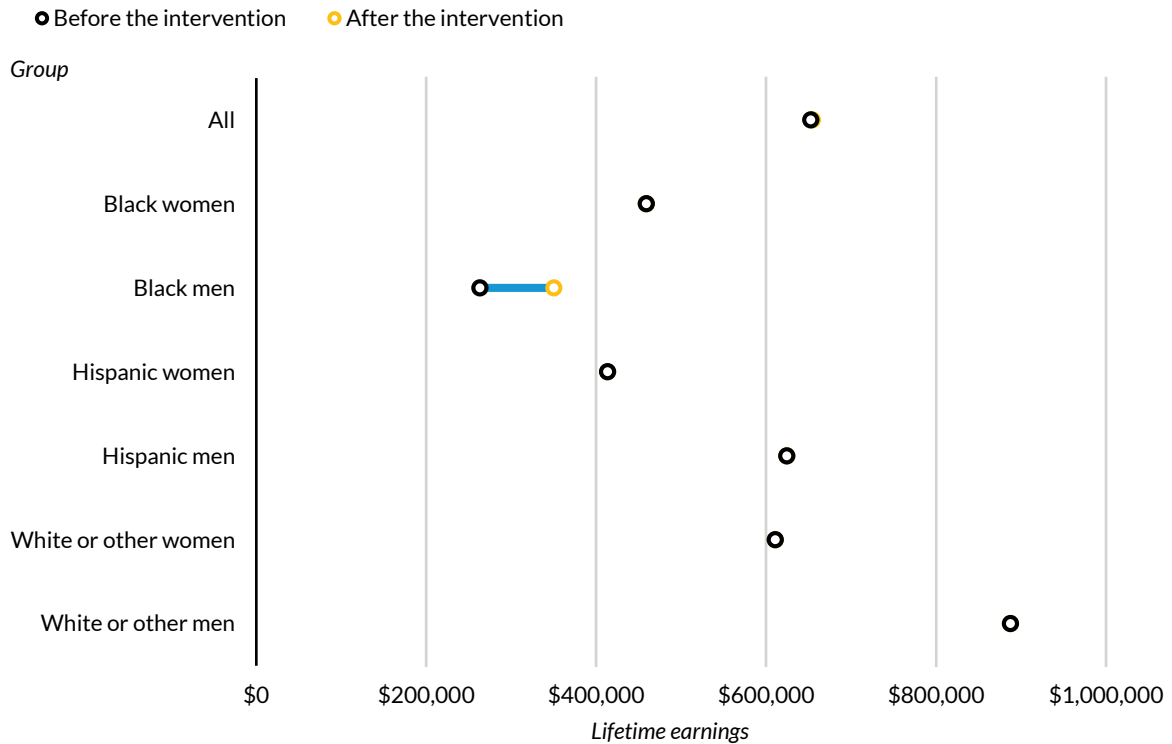
Notes: N = 400,040. Only Black men are affected by this intervention. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

### Results for People with Convictions Removed

Although all Black men benefit from the improvements in ASVAB scores, mental health, and absenteeism, the effects of this intervention are larger for the subset of people who were randomly selected to have a conviction eliminated (figure 4). Approximately 10 percent of Black men are in this group. For these men, lifetime earnings increase by more than \$86,000, an increase nearly three times

larger than the increase for all Black men. Table 4A shows the other outcomes for this subset of Black men. High school graduation increases by about 7 percentage points. Bachelor’s degree attainment also increases by more than 7 percentage points. These changes are especially notable because Black men in this subset have a lower baseline of degree attainment than Black men overall. Earnings at age 30 for this group of Black men increase by more than 40 percent. In dollar terms, this means Black men who had a conviction removed by this simulation earn \$5,000 more per year at age 30. This large increase demonstrates the strong negative impact of criminal conviction and how reducing overpolicing can shift the trajectory of Black men who would have otherwise been subject to it.

**FIGURE 4**  
**Criminal Justice Reform: Change in Lifetime Earnings among People Who Have Convictions Removed, by Race or Ethnicity and Sex**



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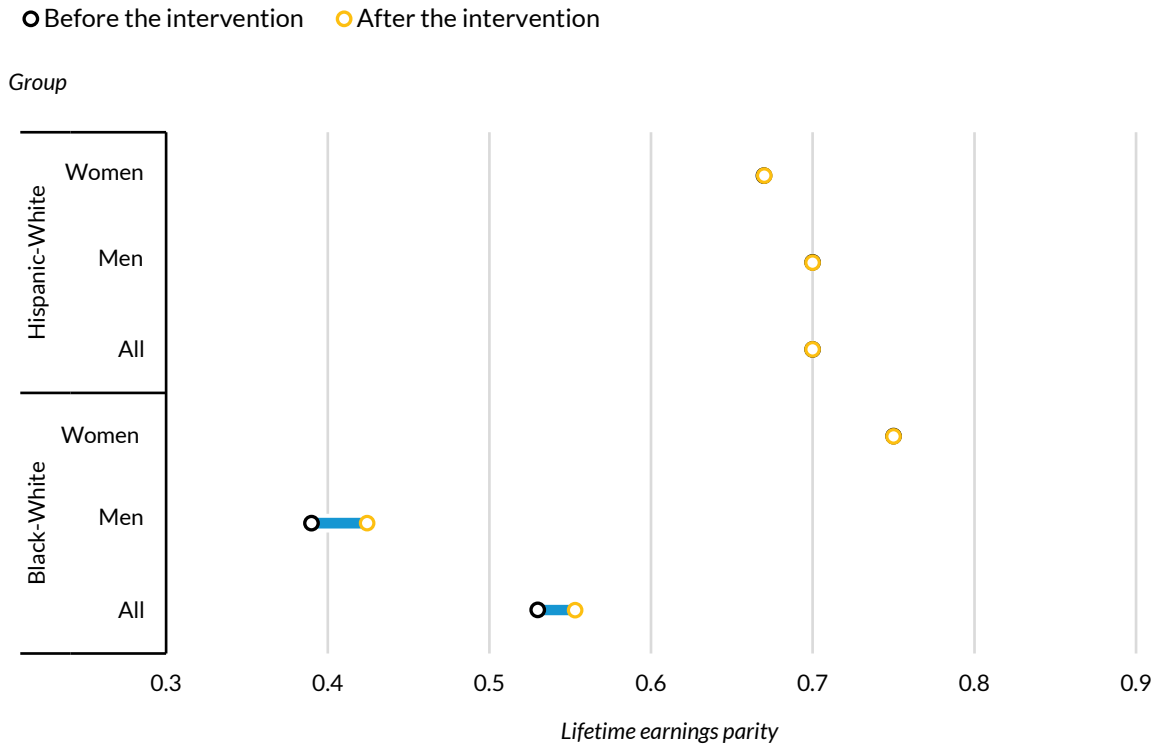
Source: Social Genome Model.

Notes: N = 400,040; there are 3,200 Black men with a conviction removed in our dataset. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

Finally, figure 5 shows how Black-White inequality in the overall population changes because of the intervention for the overall population. Before the intervention, mean Black lifetime earnings were 53

percent of mean White lifetime earnings. After the intervention, mean Black lifetime earnings are 55 percent of mean White lifetime earnings. Similar changes occur in median earnings. More details are in table 5.

**FIGURE 5**  
**Criminal Justice Reform: Change in Mean Lifetime Earnings Parity, by Race or Ethnicity and Sex**



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Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

## Discussion and Policy Implications

We simulate several improvements in the lives of Black teenagers and men that could result from decreased or revamped police interaction. At the population level, these improvements result in a modest increase in lifetime earnings and increases in the likelihood of degree attainment. Among the subset of Black men who were convicted of a crime that we modeled to no longer be convicted, the benefits were larger.



There are potentially some effects of reforming policing that our simulation does not capture. For instance, it is possible that police interaction may have negative secondary effects on the families and communities of the Black men and adolescents who have these interactions with police. We do not capture these effects in the model. Another aspect of policing we do not capture is the effect of police in schools. Decreasing absenteeism among Black adolescents may actually subject them to more police interactions from school resource officers (Homer 2019). Despite these limitations, we believe the simulation shows how reducing harmful police encounters can be beneficial.

We did not model any specific intervention on police behavior. The research cited in this chapter shows how police interactions harm Black men, but it does not show what actions can be taken to reduce those interactions. Proposals to shift some responsibilities away from the police and toward social, health, or emergency workers may be one way to accomplish this. Our simulation also shows that reducing convictions can be highly beneficial. Importantly, our model does not differentiate between types of convictions, so we cannot say that reducing a certain kind of conviction (e.g., drug possession) would necessarily have the same size impact we show here. That said, one way to reduce convictions for Black men would be to eliminate disparities in arrest rates for drug crimes (Koch, Lee, and Lee 2016). Research also suggests that decriminalization of drug-related crime would shrink much of the Black-White conviction gap (Goldman 2018). In all, our simulation suggests that cities and counties across the country could improve economic conditions for Black adolescents and men by reforming policing practices.

TABLE 3A

Adult Outcomes for Educational Attainment

Overall population

	High School Diploma, Transition to Adulthood			Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
All	75.1%	75.3%	0.2 p.p.	10.7%	10.7%	0.0 p.p.	26.6%	26.7%	0.1 p.p.
Black	67.5%	68.6%	1.1 p.p.	8.1%	8.3%	0.2 p.p.	13.9%	14.7%	0.8 p.p.
Hispanic	69.8%	69.8%	0.0 p.p.	10.7%	10.7%	0.0 p.p.	16.3%	16.3%	0.0 p.p.
White or other	78.7%	78.7%	0.0 p.p.	11.4%	11.4%	0.0 p.p.	32.9%	32.9%	0.0 p.p.
Women	78.7%	78.7%	0.0 p.p.	12.6%	12.6%	0.0 p.p.	30.6%	30.6%	0.0 p.p.
Men	71.8%	72.1%	0.4 p.p.	8.9%	9.0%	0.1 p.p.	22.9%	23.2%	0.2 p.p.
Black women	75.7%	75.7%	0.0 p.p.	11.3%	11.3%	0.0 p.p.	17.0%	17.0%	0.0 p.p.
Black men	59.5%	61.7%	2.2 p.p.	5.0%	5.4%	0.4 p.p.	10.9%	12.5%	1.6 p.p.
Hispanic women	73.7%	73.7%	0.0 p.p.	14.3%	14.3%	0.0 p.p.	20.1%	20.1%	0.0 p.p.
Hispanic men	66.2%	66.2%	0.0 p.p.	7.4%	7.4%	0.0 p.p.	12.7%	12.7%	0.0 p.p.
White or other women	81.1%	81.1%	0.0 p.p.	12.5%	12.5%	0.0 p.p.	37.3%	37.3%	0.0 p.p.
White or other men	76.4%	76.4%	0.0 p.p.	10.4%	10.4%	0.0 p.p.	28.9%	28.9%	0.0 p.p.

Source: Social Genome Model.

Notes: N = 400,040; there are 33,284 Black men represented in our dataset. p.p. = percentage points.

TABLE 3B

Adult Outcomes for Earnings

Overall population

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$33,491	\$33,612	\$122	\$652,696	\$654,781	\$2,085
Black	\$19,136	\$19,880	\$744	\$401,986	\$414,703	\$12,717
Hispanic	\$30,559	\$30,559		\$521,945	\$521,950	
White or other	\$37,998	\$37,998		\$754,881	\$754,881	
Women	\$27,250	\$27,250		\$547,710	\$547,710	
Men	\$39,320	\$39,556	\$236	\$750,767	\$754,800	\$4,033
Black women	\$18,559	\$18,559		\$459,094	\$459,094	
Black men	\$19,695	\$21,161	\$1,466	\$346,594	\$371,646	\$25,052
Hispanic women	\$23,875	\$23,875		\$413,593	\$413,595	
Hispanic men	\$36,878	\$36,878		\$624,395	\$624,404	
White or other women	\$30,523	\$30,523		\$610,858	\$610,857	
White or other men	\$44,891	\$44,891		\$887,662	\$887,662	

Source: Social Genome Model.

Notes: N = 400,040; there are 33,284 Black men represented in our dataset. The “change” columns are blank for groups who did not experience any intervention in this simulation.

TABLE 4A

Adult Outcomes for Educational Attainment

People who have convictions removed

	High School Diploma, Transition to Adulthood			Associate’s Degree, Adulthood			Bachelor’s Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
Black men	34.8%	42.0%	7.1 p.p.	2.7%	3.1%	0.4 p.p.	1.3%	8.8%	7.4 p.p.

Source: Social Genome Model.

Notes: There are 3,200 Black men with a conviction removed in our dataset. p.p. = percentage points.

TABLE 4B

**Adult Outcomes for Earnings**

*People who have convictions removed*

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
Black men	\$11,135	\$16,223	\$5,088	\$263,484	\$350,149	\$86,665

Source: Social Genome Model.

Note: There are 3,200 Black men with a conviction removed in our dataset.

TABLE 5

**Lifetime Earnings Parity in the Overall Population**

		Black-White			
		Mean	Median	25th percentile	75th percentile
All	Pre	0.53	0.52	0.49	0.53
	Post	0.55	0.53	0.53	0.53
Men	Pre	0.39	0.37	0.32	0.37
	Post	0.42	0.39	0.36	0.41

Source: Social Genome Model.

Notes: N = 400,040; there are 3,200 Black men with a conviction removed in our dataset. Lifetime earnings are discounted present values in 2018 dollars.

# 4. Job Quality

## Summary and Key Findings

In this what-if simulation, we model the potential effects of providing young adults better jobs as they transition to adulthood (around age 24). This estimate includes only the subsample of the population who earns no more than \$30,000 a year and has no bachelor's degree later in life.

Improvements in pay, benefits, and worker health (as well as an assumed increase in worker productivity) are equivalent to a cost of \$9,480 per worker and change workers' lifetime earnings by about \$52,000. Despite improvements in working conditions more likely to affect Black and Hispanic people, we only find modest changes in the ratios of lifetime earnings for Hispanic people compared with White people.

## Review of Relevant Research and Motivation

Research finds connections between several characteristics of good jobs, such as wages, benefits, hours and scheduling, leave, working conditions, and worker outcomes (including their economic situation, subjective well-being, physical and mental health, and even children's outcomes; Congdon et al. 2020; Ross et al. 2018). However, the research connecting those job elements to economic mobility is limited, and more research is required to understand how certain job characteristics can improve workers' subsequent job prospects (Congdon et al. 2020).

There is no standardized definition of a good job nor a dataset that includes all the relevant measures researchers and policymakers discuss (Ross et al. 2018). Several frameworks have tried to define job quality using one or more of the following elements: pay, benefits, working conditions, business culture and job design, and on-the-job skill development (Congdon et al. 2020).

Without an agreed-upon threshold for a good job, some researchers focus on a "living wage" based on the level of wages required to meet basic consumption needs (Congdon et al. 2020). However, most frameworks define a good job relative to a threshold based on peers' wages, because studies have found that workers care about their own wages compared with those of others. For instance, a good job has been defined as paying two-thirds of the median wage (Howell and Kalleberg 2019), the average weighted weekly wage calculated for different industry groups (Alpert et al. 2020), and the weighted

average of different segments of the earnings distribution to account for earnings inequality (Cazes, Hijzen, and Saint-Martin 2016).

## Overview of the Simulation

In this what-if simulation, we model the potential effects of providing young adults better jobs as they transition to adulthood (around age 24). We focus on level of pay and benefits as our measure of job quality, as these two elements are mentioned in almost every framework defining job quality and are elements that can be changed in the SGM during the transition to adulthood. We also include a modest improvement in mental and physical health in the simulation.

This simulation can be considered only a partial equilibrium exercise; we cannot simulate a general equilibrium model where agents respond to the changes in incentives caused by the increased earnings. In other words, we do not model how firms and the labor market would react to the increases in wages and benefits.

### By How Much Are We Changing It?

We avoid defining what a good job is and instead focus on a simulation of better jobs that considers the workers' wage distribution and benefits. The SGM data used in the transition to adulthood include information on yearly earnings from work. We increase earnings for young people who are working (i.e., having earnings above \$0) and receiving a low wage. Specifically, we increase the earnings at this stage by 35 percent for those making between \$1 and \$12,000; by 25 percent for those making \$12,001 to \$24,000; and by 15 percent for those making \$24,001 to \$30,000. The rationale for this staircase approach is that very low-wage workers need a large earnings increase to simulate an improvement in job quality. Further, we exclude workers whose current low wages may reflect attendance in a postsecondary education program by limiting the simulation to workers who do not attain a bachelor's degree in adulthood.<sup>8</sup> The rationales for this exclusion are (1) that, for those who do attain bachelor's degrees, their low earnings could be temporary, perhaps reflecting the kinds of low-wage jobs that students typically have while earning a postsecondary degree; and (2) that ultimately the benefits of obtaining a postsecondary degree would open up higher-quality jobs, even without any intervention in the transition to adulthood.

We also simulate an increase in employer-provided fringe benefits, such as health insurance, retirement plans, and paid time off, because these benefits can facilitate a healthy and stable life (Ross

et al. 2018). On average, in 2020, workers received 31.3 percent of their salary in employer-provided benefits.<sup>9</sup> However, because workers who are the target of the simulation may have been receiving benefits through their current job, we limit the increase in the level of benefits to 30 percent of their final earnings (after the simulated salary increase). For example, a worker making \$10,000 before the simulation will receive a salary of \$17,550 after the simulation ( $\$10,000 * 1.35 * 1.3$ ).<sup>10</sup>

Finally, benefits have positive effects on physical and mental health (Bullinger 2019; Finkelstein et al. 2012; Goldin, Lurie, and McCubbin 2021), particularly health benefits and access to paid leave. Accordingly, we conservatively add a 0.1 standard-deviation change in both mental and physical health scales in the transition to adulthood to account for these potential effects of better benefits.

## What Are the Associated Costs to the Change?

Whether through increased pay, productivity, or both, the intervention has an increased value equivalent to an average of \$9,480 per worker. This estimate includes only the subsample of the population earning up to \$30,000 with no bachelor's degree by age 30.

# Results

## People Who Actually Benefit

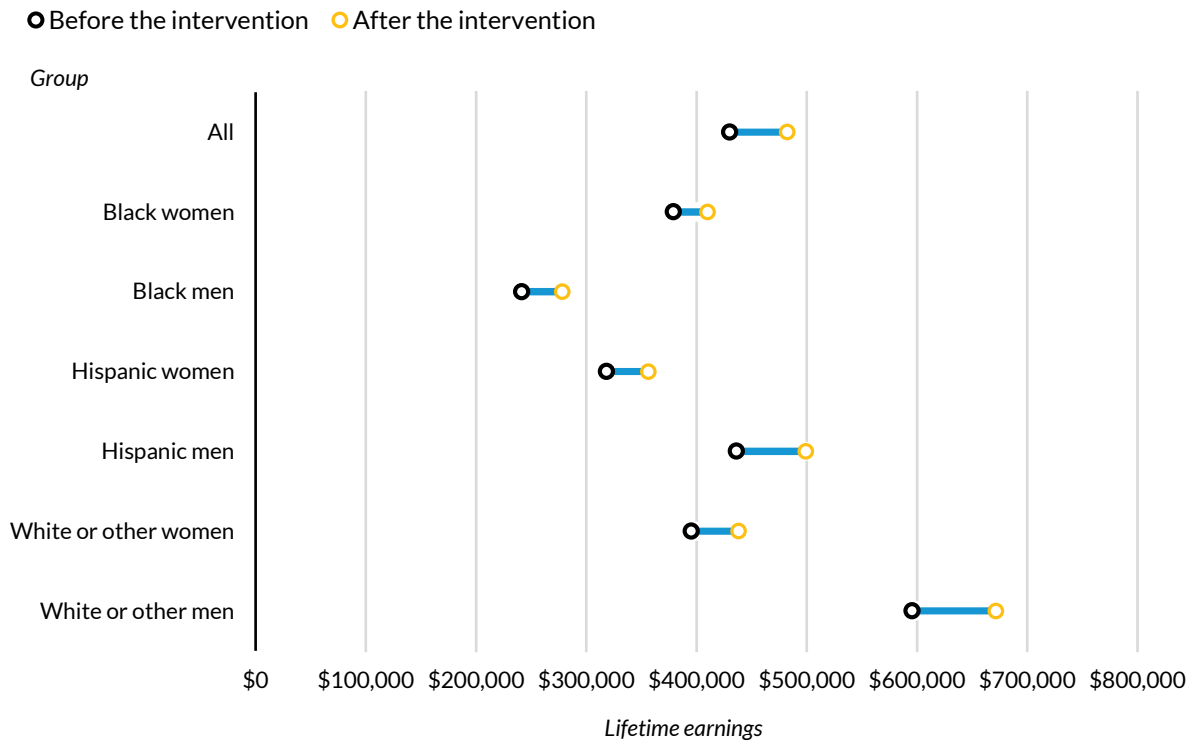
Thirty-six percent of the overall population was eligible for, and benefited from, an improvement in job quality because they were earning between \$1 and \$30,000 at age 24 and were not on track to earn a bachelor's degree by age 30. Between 41 and 44 percent of Black and Hispanic people fall into this group who received the intervention versus about 30 percent of the White population.

For the people who actually benefit, having a better job at age 24 translates to better pay at age 30; this group sees an increase of about \$4,800 in their yearly earnings in adulthood and an increase in their lifetime earnings of about \$52,000 (figure 6). Because of their lower starting pay, Black workers see the smallest change in earnings by age 30 in absolute dollars, but all groups see a similar and substantial increase of 20 to 22 percent in their earnings by age 30. More substantive differences can be seen in the groups' lifetime earnings, particularly for different sexes: while Black women see an 8 percent earnings increase, Black men see a larger increase (a 15 percent change). The largest increases in absolute terms are for Hispanic and White men (figure 6). Tables 7A and 7B show the other outcomes for people who actually benefit.

FIGURE 6

**Job Quality: Change in Lifetime Earnings among Young Adults Who Earn No More Than \$30,000 and Do Not Have a Bachelor’s Degree, by Race or Ethnicity and Sex**

*People who actually benefit*



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Source: Social Genome Model.

Notes: N = 143,520. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

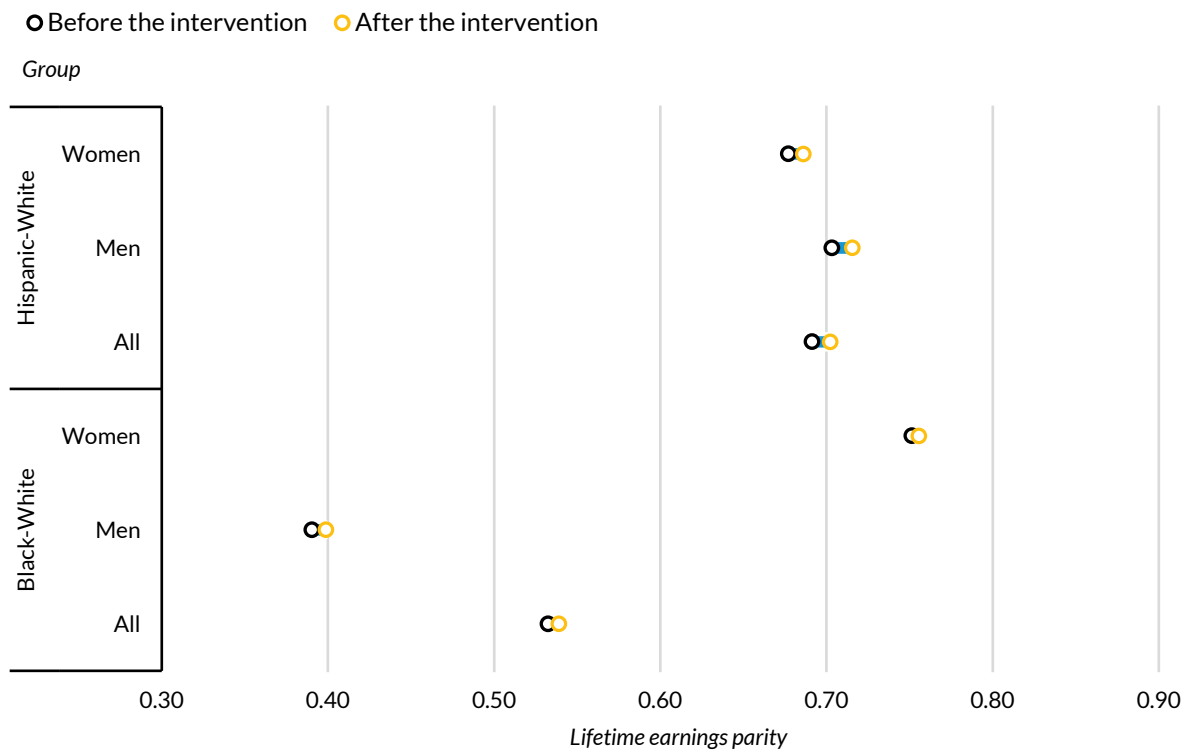
### Overall Population

As would be expected from a simulation that affects outcomes of low-earnings earners, we find only small increases in the lifetime earnings of the population as a whole. Given that about a third of the overall population was eligible for, and benefited from, an improvement in job quality, the majority of the population does not see any benefit in this simulation. Black people overall see the largest increase (7.0 percent) in their earnings in adulthood but see the lowest change in absolute dollars because of their low starting pay. Despite having a starting pay lower than that of White people, Hispanic people see the largest change in adult earnings in absolute dollars, led by Hispanic men. Tables 6A and 6B show additional details for educational attainment and earnings in the overall population.



The ratios of lifetime earnings in the overall population across groups do not change significantly. Despite improvements in working conditions more likely to affect Black and Hispanic workers, White people have a better starting point and hence a larger absolute earnings increase. In other words, structural conditions, such as access to better education or better labor market opportunities, cannot be fully offset by improving job quality in an equal manner for all races and ethnicities. Larger shares of Black and Hispanic people received and benefited from better jobs than White people, and these same groups had larger relative (percentage) changes in their lifetime earnings. However, these improvements do not offset White people's earnings increases because White people start at a higher earning level than all other racial and ethnic groups. The largest improvement in the lifetime earnings ratio can be seen when comparing the 25th percentile for Hispanic men with the 25th percentile for White men and men of other races. More detail appears in table 8.

**FIGURE 7**  
**Job Quality: Change in Mean Lifetime Earnings Parity, by Race or Ethnicity and Sex**



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Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

## Discussion and Policy Implications

Policies and programs promoting economic growth should consider not only the quantity of jobs created but their quality. Job quality is a key determinant of individual and family well-being and can be an important driver of increased labor force participation, productivity, and aggregate economic performance (Cazes, Hijzen, and Saint-Martin 2016). Additionally, better jobs can create savings in social programs and help employers by reducing turnover (Cazes, Hijzen, and Saint-Martin 2016).

Whether through increased pay and benefits or increased productivity, we find that a what-if intervention equivalent to \$9,480 per worker increases workers' lifetime earnings by about \$52,000. Yet despite improvements in working conditions more likely to affect Black and Hispanic workers, we do not find significant changes in the ratios of lifetime earnings parity across racial and ethnic groups. Structural conditions, such as access to better education or labor market opportunities, cannot be fully offset by improving job quality in an equal manner for all races and ethnicities. Despite this, the simulation does bring the salaries of three groups of workers closer together.

This simulation has limitations. It can be considered only a partial equilibrium exercise; we cannot simulate a general equilibrium model where agents respond to the changes in incentives as a result of the increased earnings. Additionally, we are limited in terms of measuring workers' well-being over time; we measure only a few outcomes at age 30, and lifetime earnings are calculated using earnings at age 30 (as well as health status and educational attainment). Finally, our simulation is truly a what-if exercise that looks at what the results would be if we made a particular change and does not discuss the paths or inputs necessary to achieve the desired changes in job quality.

Although the simulation does not speak about actual ways to improve jobs, studies have shown that several policies and programs can be effective levers to promote improvements in access to and availability of good jobs. For instance, Ross and coauthors (2016) suggests that work-based learning can link young adults to employers and contacts they would likely never reach on their own, hence accessing better jobs. Other alternatives include increasing wages in low-wage jobs through legislation, expanding access to nonmonetary benefits, strengthening workplace practices and worker protections, and encouraging employees to participate in workplace decisions around job practices through expanded worker engagement (Loprest et al. 2019).

TABLE 6A

**Adult Outcomes for Educational Attainment***Overall population*

	Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change
All	10.7%	10.8%	0.1 p.p.	26.6%	26.9%	0.3 p.p.
Black	8.1%	8.2%	0.1 p.p.	13.9%	14.2%	0.3 p.p.
Hispanic	10.7%	10.8%	0.0 p.p.	16.3%	16.3%	0.1 p.p.
White or other	11.4%	11.5%	0.0 p.p.	32.9%	33.2%	0.3 p.p.
Women	12.6%	12.7%	0.1 p.p.	30.6%	31.1%	0.5 p.p.
Men	8.9%	9.1%	0.1 p.p.	22.9%	23.0%	0.0 p.p.
Black women	11.3%	11.5%	0.1 p.p.	17.0%	17.6%	0.6 p.p.
Black men	5.0%	5.0%	0.0 p.p.	10.9%	11.0%	0.0 p.p.
Hispanic women	14.3%	14.3%	0.0 p.p.	20.1%	20.2%	0.1 p.p.
Hispanic men	7.4%	7.4%	0.0 p.p.	12.7%	12.7%	0.0 p.p.
White or other women	12.5%	12.5%	0.0 p.p.	37.3%	37.8%	0.5 p.p.
White or other men	10.4%	10.5%	0.2 p.p.	28.9%	28.9%	0.1 p.p.

Source: Social Genome Model.

Notes: N = 400,040. p.p. = percentage points.

TABLE 6B

Adult Outcomes for Earnings

Overall population

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$33,491	\$35,200	\$1,709	\$652,696	\$671,339	\$18,643
Black	\$19,136	\$20,473	\$1,337	\$401,986	\$416,981	\$14,995
Hispanic	\$30,559	\$32,570	\$2,011	\$521,945	\$543,359	\$21,414
White or other	\$37,998	\$39,713	\$1,715	\$754,881	\$773,634	\$18,752
Women	\$27,250	\$28,759	\$1,509	\$547,710	\$562,404	\$14,694
Men	\$39,320	\$41,216	\$1,897	\$750,767	\$773,100	\$22,333
Black women	\$18,559	\$19,858	\$1,299	\$459,094	\$472,716	\$13,622
Black men	\$19,695	\$21,069	\$1,374	\$346,594	\$362,921	\$16,327
Hispanic women	\$23,875	\$25,560	\$1,685	\$413,593	\$429,211	\$15,617
Hispanic men	\$36,878	\$39,197	\$2,319	\$624,395	\$651,290	\$26,895
White or other women	\$30,523	\$32,033	\$1,511	\$610,858	\$625,555	\$14,697
White or other men	\$44,891	\$46,794	\$1,903	\$887,662	\$910,153	\$22,491

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 7A

**Adult Outcomes for Educational Attainment**

*People who actually benefit*

	Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change
All	11.9%	12.1%	0.2 p.p.	0.3%	1.0%	0.7 p.p.
Black	10.1%	10.3%	0.2 p.p.	0.3%	1.0%	0.7 p.p.
Hispanic	10.7%	10.9%	0.1 p.p.	0.2%	0.4%	0.2 p.p.
White or other	12.9%	13.3%	0.3 p.p.	0.3%	1.3%	0.9 p.p.
Women	15.3%	15.4%	0.1 p.p.	0.3%	1.6%	1.3 p.p.
Men	8.4%	8.8%	0.4 p.p.	0.3%	0.4%	0.1 p.p.
Black women	15.5%	15.8%	0.3 p.p.	0.2%	1.7%	1.5 p.p.
Black men	4.9%	5.0%	0.1 p.p.	0.4%	0.4%	0.0 p.p.
Hispanic women	16.7%	16.8%	0.1 p.p.	0.2%	0.4%	0.2 p.p.
Hispanic men	5.4%	5.5%	0.1 p.p.	0.2%	0.3%	0.1 p.p.
White or other women	14.8%	14.8%	0.0 p.p.	0.4%	2.0%	1.6 p.p.
White or other men	11.0%	11.6%	0.6 p.p.	0.3%	0.5%	0.2 p.p.

Source: Social Genome Model.

Notes: N = 143,520. p.p. = percentage points. The people selected for the improvements in job quality were not on track to receive a bachelor's degree in adulthood.

**TABLE 7B**

**Adult Outcomes for Earnings**

*People who actually benefit*

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$22,206	\$26,971	\$4,765	\$430,229	\$482,190	\$51,960
Black	\$14,583	\$17,613	\$3,031	\$309,176	\$343,149	\$33,973
Hispanic	\$22,958	\$27,733	\$4,776	\$380,230	\$431,078	\$50,848
White or other	\$24,588	\$29,956	\$5,368	\$492,101	\$550,800	\$58,699
Women	\$18,327	\$22,368	\$4,041	\$375,811	\$415,162	\$39,352
Men	\$26,128	\$31,624	\$5,496	\$485,232	\$549,936	\$64,704
Black women	\$14,061	\$17,004	\$2,944	\$379,071	\$409,927	\$30,857
Black men	\$15,089	\$18,205	\$3,115	\$241,328	\$278,327	\$36,998
Hispanic women	\$18,576	\$22,665	\$4,089	\$318,337	\$356,233	\$37,896
Hispanic men	\$26,933	\$32,331	\$5,399	\$436,379	\$498,978	\$62,599
White or other women	\$19,664	\$24,054	\$4,391	\$395,279	\$437,991	\$42,712
White or other men	\$29,852	\$36,265	\$6,413	\$595,613	\$671,404	\$75,791

Source: Social Genome Model.

Note: N = 143,520. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

**TABLE 8**

**Lifetime Earnings Parity in the Overall Population**

		Black-White				Hispanic-White			
		Mean	Median	25th percentile	75th percentile	Mean	Median	25th percentile	75th percentile
All	Pre	0.53	0.52	0.49	0.53	0.69	0.70	0.62	0.67
	Post	0.54	0.53	0.48	0.54	0.70	0.72	0.66	0.68
Men	Pre	0.39	0.37	0.32	0.37	0.70	0.70	0.64	0.70
	Post	0.40	0.36	0.33	0.39	0.72	0.70	0.66	0.71
Women	Pre	0.75	0.72	0.87	0.73	0.68	0.67	0.68	0.70
	Post	0.76	0.72	0.88	0.73	0.69	0.68	0.67	0.70

Source: Social Genome Model.

Note: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

# 5. Community Schools and Integrated Student Supports

## Summary and Key Findings

Research indicates that academic success is not solely attributable to educational practices but is related to student, family, and community factors. To assess the implications of approaches to education that focus on the whole child, such as community schools and integrated student support schools, this simulation assessed the long-term effects of attending a school in early adolescence that implemented such an approach. Students from families with earnings up to 200 percent of the federal poverty level were simulated to experience improvements in mental and physical health, better test scores, more positive and fewer negative peer behaviors, no suspensions in their school, and fewer gangs in their school and community. The simulated changes in each of those factors were intentionally conservative, based on available evaluations of these types of approaches. The improvements in long-term outcomes are modest but broadly positive, ranging from better mental health and greater educational attainment to less poverty and greater lifetime earnings. Modest improvements in lifetime earnings parity are found, but they do not erase the substantial differences found across racial and ethnic subgroups.

## Review of Relevant Research and Motivation

Education is a critical credential for occupational and economic success,<sup>11</sup> but an accumulating body of research indicates that academic competencies alone do not ensure school success (Moore et al. 2017; National Academies of Science, Engineering, and Medicine 2019b). Research finds that student engagement and learning are affected by the presence of risk and protective factors, ranging from family issues to safety and poverty, as well as student physical and mental health (National Academies of Science, Engineering, and Medicine 2019a; Steinberg 2020). Several interrelated lines of practice have arisen as educators have similarly recognized that student success reflects not only the quality of teaching in the school but the students' physical health, social skills, mental and emotional health, and the supportiveness and safety of the larger school climate (National Academies of Science, Engineering, and Medicine 2019b; OECD 2021). These whole-child, whole-school approaches are variously referred to as community schools or integrated student support approaches, and the general approach is strongly supported by the conceptual frameworks that underlie child development, including the

ecological model, the whole-child perspective, and the life course model (Moore et al. 2017). Moreover, the growing body of rigorous evaluations of such approaches suggests generally positive outcomes, though many null effects as well, and essentially no negative effects (Bowden et al. 2020; Moore et al. 2017).

A recent report on community schools prepared by the Brookings Institution’s Task Force on Next Generation Community Schools (2021, 13) encourages an “integrated focus on academics, health and social services, youth and community development, and community engagement.” Similarly, many schools have developed integrated student support models that provide in-school and expanded learning time, an enhanced school climate and educational effectiveness, parent education and family counseling, social services for families, and programs to address physical and mental health (Moore et al. 2017). Many practices and activities in the community schools and integrated student supports models align with school climate approaches, which recognize the importance of ensuring all students feel safe, supported, and engaged in school (Payne 2018).

## Overview of the Simulation

Schools and districts that have adopted whole-child approaches tailor their services to reflect the issues and concerns in a given student body, school, and community. However, given the commonality in the practices and outcomes sought across perspectives, we have selected an array of variables in the SGM that reflect the types and levels of improvement that can be achieved in children’s immediate outcomes and environments. These include an eradication of suspension (reflecting a change in the school’s approach to discipline), a reduction in absences (an effect of students’ greater engagement in school, given the supportive school practices and policies), higher ASVAB and PIAT (Peabody Individual Achievement Test) math scores (a reflection of stronger teaching and greater school engagement among students), more peers engaging in positive behaviors such as participation in extracurricular activities and fewer peers engaging in negative behaviors such as substance use (a result of an improved school climate), and a reduction in the prevalence of gangs in the school or community (a result of improved student behavior). This whole-school intervention is implemented in early adolescence, and we extend the reduction in the prevalence of gangs and the elimination of suspensions into adolescence, assuming people continue to attend the same schools and that gangs do not return.



## By How Much Are We Changing It?

Despite strong theoretical support and support from basic research underlying each of these approaches, the evidence regarding outcomes has been limited (Moore et al. 2017). Accordingly, we employ modest effect sizes for each variable in the simulation. The exception is suspension, which can be eliminated through a school's discipline policy, so we reduced suspensions to zero. Changes to the other variables are smaller. Specifically, the share of students reporting gangs in their school or community is reduced by half in early adolescence and maintains that reduction in adolescence, and the number of days absent from school is reduced by half for students reporting being absent more than three days during the school year (we did not change the attendance of students who had three or fewer absences). Students' perceptions of positive peer behaviors, perceptions of negative peer behaviors, individual mental health scores, and individual ASVAB academic and PIAT math scores are each improved by a small effect size of 0.1 standard deviations.

The simulation was implemented for students whose family earnings were no more than 200 percent of the federal poverty level. This reflects the policy focus of implementing these types of approaches in schools that predominantly serve students from households with low earnings, such as Title 1 schools (Task Force on Next Generation Community Schools 2021).

## What Are the Costs of the Intervention?

Cost estimates of community schools or integrated support models vary greatly. An evaluation of Communities in Schools in Chicago estimated the program's cost to be \$50 per student (Figlio 2015), though the estimate for the national Communities in Schools program is \$200.<sup>12</sup> These estimates assume, though, that the services provided to students, such as mental health counseling, are available and not part of the program cost (Moore et al. 2017). On the other hand, an evaluation of the Harlem Children's Zone reports that in-school incremental costs were \$4,657 (plus an estimated \$2,172 for other programs provided after school and wraparound programs for a total cost of \$6,829) in 2008–09 (Dobbie and Fryer 2011). However, these one-year costs for the Harlem Children's Zone are much higher than other estimates. The City Connects program estimated the median total cost per student for services from kindergarten through fifth grade as \$4,570 (Bowden et al. 2018), an amount that includes some of the costs of services community agencies provide. This cost reflects the incremental costs to the school and some of the costs that might be incurred by nonschool organizations serving students that go beyond the costs that would occur absent an integrated student supports program. Building on this work, a careful methodological study arrived at a best estimate of \$5,410 for a

“comprehensive student support” model for the six years from kindergarten through fifth grade (Bowden et al. 2020). Costs for older students might be somewhat higher, given lower well-being among adolescents than elementary school-age children (Moore et al. 2007).

## Results

### People with Low Earnings

Because community schools and integrated student support programs are most often recommended for schools in low-earnings communities, we focus on students whose families have earnings of up to 200 percent of the federal poverty level. The results focused on a low-earnings population are presented in tables 10A and 10B and figure 8.

This whole-school model serves all students in a school. Although the individual effect sizes for this simulation tend to be small, several changes are incorporated into this scenario. This reflects the breadth of the conceptual frameworks for community schools, integrated student support models, and school climate approaches. Accordingly, we find that this intervention changed the outcomes through various mechanisms (available upon request) following the intervention; specifically, changes found during adolescence include high school diplomas, higher GPAs, reduced delinquency, improved mental health, and, for Black and Hispanic young men, reduced criminal conviction. Areas of change found during the transition to adulthood include the young person’s poverty-to-earnings ratio, mental health, physical health, criminal conviction for Black and Hispanic men, earnings, and educational attainment. The effects are individually small, but they translate into effects on the poverty ratio, which are notable, ranging from 7 to 17 percentage points, depending on the group of interest.

The share of each group graduating from high school increases by 1.9 to 3.8 percentage points, with Hispanic women and Black women experiencing the smallest increases. The share attaining an associate’s degree increases as well by 0.4 to 1.5 percentage points, with Hispanic women experiencing the smallest increase. Similarly, the share completing a bachelor’s degree increases overall and for all subpopulations, rising by 3 percentage points, except for Hispanic women, among whom the increase was 2.2 percentage points. More details are in table 10A.

Table 10B provides data on earnings at age 30 for young adults from families with earnings of up to 200 percent of the federal poverty level. Differences by race or ethnicity and sex are apparent both before and after the simulation, with women and Black people having considerably lower earnings than

men and White people. All groups benefit from the simulation, with earnings gains averaging about \$1,900; the exceptions are Hispanic men, among whom the increase is small, and White men, who experience an earnings gain of nearly \$2,800 at age 30.

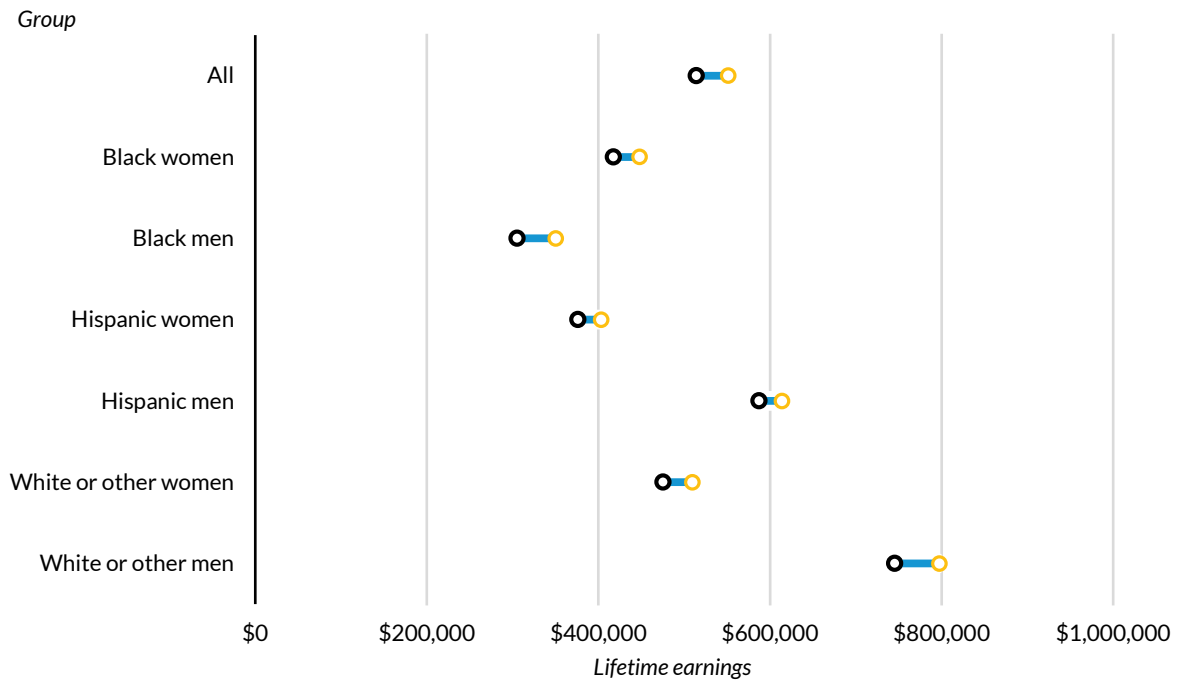
Net present-value lifetime earnings are about \$37,250 greater for the overall low-earnings population, and increases are apparent for each subpopulation. (Undiscounted earnings increases would be approximately twice as large.) White and Black men benefit the most, with earnings increases of \$51,958 and \$44,967, respectively. Comparisons by sex also favor these groups, with Black and White men having larger earnings increases than Black or White women. On the other hand, Hispanic women have slightly larger increases in lifetime earnings than Hispanic men. Nevertheless, considering not gains in earnings but the absolute amount of earnings received over the lifetime, substantial differences in earnings remain, with White men having the highest lifetime earnings and Black men having the lowest (table 10B and figure 8).

FIGURE 8

**Community Schools and Integrated Student Supports: Change in Lifetime Earnings among Students Whose Families Had Earnings up to 200 Percent of the Federal Poverty Level in Middle Childhood, by Race or Ethnicity and Sex**

*People who actually benefit*

● Before the intervention    ● After the intervention



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Source: Social Genome Model.

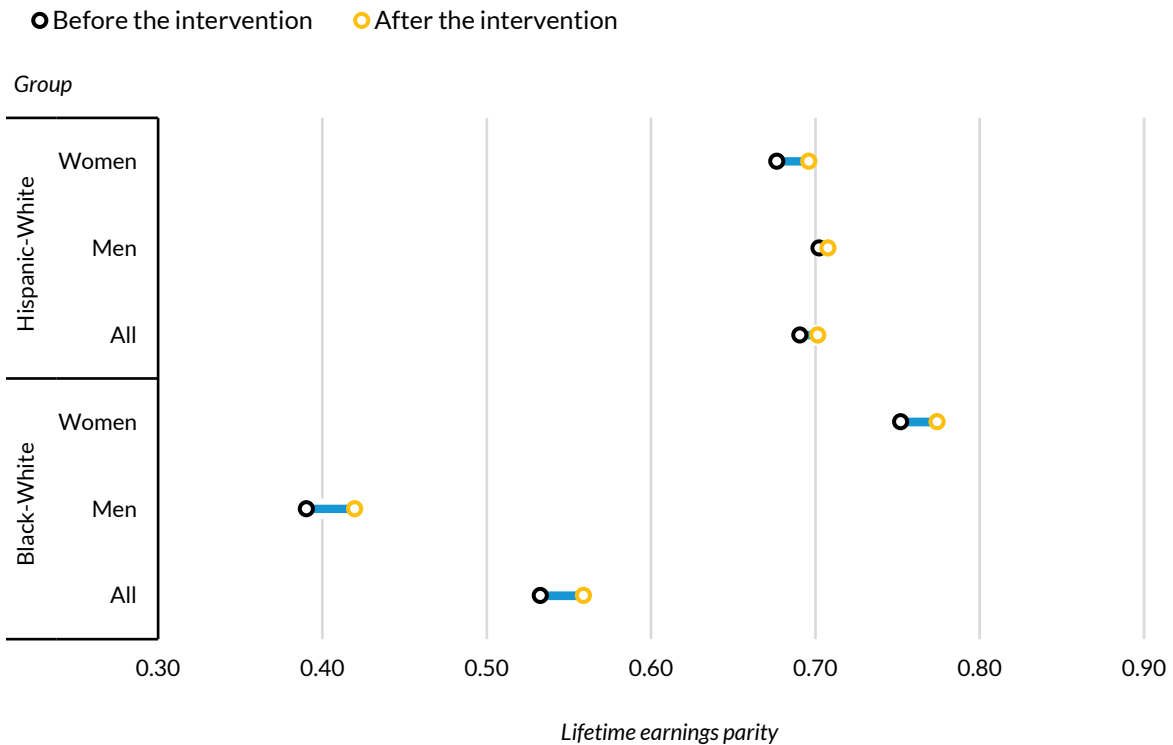
Notes: N = 184,323. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

### Results for the Overall Population

Across the entire population, the community schools and integrated student services simulation produces real but modest improvements in mean lifetime earnings parity among the overall population (table 11 and figure 9). Among men, mean Black-White earnings parity improves slightly from 0.39 to 0.42. Among women, parity improves from 0.75 to 0.77.

FIGURE 9

Community Schools and Integrated Student Supports: Change in Mean Lifetime Earnings Parity, by Race or Ethnicity and Sex



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Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

Hispanic-White lifetime earnings parity provides a different picture. Among men, median Hispanic-White parity increases from 0.70 to 0.71. Among women, parity increases from 0.68 to 0.69.

These gains in parity are modest but reasonable in that the simulation focuses on students from families with earnings of up to 200 percent of the federal poverty level, whereas parity is estimated for the entire population; thus the simulation’s effect on parity is diluted across the overall population. Also, community schools, integrated student supports, and school climate interventions are whole-school models and, although all students should benefit at least incrementally, a subset of students should benefit more. For example, students who had more than three absences, who had any suspensions, or who reported gangs in their school or community experience larger reductions in these negative outcomes than the rest of the population. Students with three or fewer absences and no suspensions and no gangs in their neighborhood benefit more modestly. It is worth noting that students of color are among the subset of the population that receives the largest benefits from this intervention. More than

half of Hispanic and Black students (68 percent of Hispanic men, 60 percent of Hispanic women, 50 percent of Black men, and 57 percent of Black women) receive the most benefits from this intervention, compared with 24 percent of White women and 29 percent of White men.

## Discussion and Policy Implications

This simulation takes a cautious approach to assess the long-term benefits to students of attending a community or integrated student supports school, assuming the benefits are modest albeit widespread. This aligns with available evaluations of community schools and integrated student support programs, in that the effects, on average, are frequently positive but often null and generally modest. But the results of evaluation studies are also varied, and this whole-child, whole-school approach to academic success is promising. Weak evaluation results likely reflect the fact that whole-school models vary in the details of their approach and in the quality with which they are implemented. This whole-child educational model is aligned with both theories and research on the factors associated with student success (Moore et al. 2017). Specifically, the approach acknowledges that nonacademic challenges, such as mental health issues, negative peer behaviors, and gangs, undermine student engagement and learning. The approach also recognizes that schools are a reasonable venue for identifying needs and supporting student development writ broad. For these reasons, these whole-child, whole-school education models are expanding at the same time that new research and evaluation work is proceeding.

TABLE 9A

**Adult Outcomes for Educational Attainment***Overall population*

	High School Diploma, Transition to Adulthood			Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
All	75.1%	76.5%	1.3 p.p.	10.7%	11.1%	0.4 p.p.	26.6%	28.0%	1.4 p.p.
Black	67.5%	69.5%	2.0 p.p.	8.1%	8.8%	0.7 p.p.	13.9%	15.9%	2.0 p.p.
Hispanic	69.8%	71.8%	2.0 p.p.	10.7%	11.4%	0.7 p.p.	16.3%	18.1%	1.8 p.p.
White or other	78.7%	79.6%	1.0 p.p.	11.4%	11.6%	0.2 p.p.	32.9%	34.0%	1.1 p.p.
Women	78.7%	79.8%	1.1 p.p.	12.6%	13.0%	0.4 p.p.	30.6%	31.9%	1.3 p.p.
Men	71.8%	73.3%	1.6 p.p.	8.9%	9.3%	0.4 p.p.	22.9%	24.3%	1.4 p.p.
Black women	75.7%	77.1%	1.4 p.p.	11.3%	12.0%	0.7 p.p.	17.0%	18.9%	1.9 p.p.
Black men	59.5%	62.0%	2.5 p.p.	5.0%	5.6%	0.7 p.p.	10.9%	13.0%	2.1 p.p.
Hispanic women	73.7%	75.0%	1.3 p.p.	14.3%	14.6%	0.3 p.p.	20.1%	21.6%	1.5 p.p.
Hispanic men	66.2%	68.8%	2.6 p.p.	7.4%	8.4%	1.0 p.p.	12.7%	14.8%	2.2 p.p.
White or other women	81.1%	82.0%	0.9 p.p.	12.5%	12.8%	0.3 p.p.	37.3%	38.4%	1.2 p.p.
White or other men	76.4%	77.4%	1.0 p.p.	10.4%	10.5%	0.2 p.p.	28.9%	29.9%	1.0 p.p.

Source: Social Genome Model.

Notes: N = 400,040. p.p. = percentage points.

TABLE 9B

Adult Outcomes for Earnings

Overall population

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$33,491	\$34,360	\$870	\$652,696	\$669,860	\$17,164
Black	\$19,136	\$20,593	\$1,457	\$401,986	\$428,844	\$26,858
Hispanic	\$30,559	\$31,238	\$679	\$521,945	\$540,279	\$18,334
White or other	\$37,998	\$38,776	\$777	\$754,881	\$769,240	\$14,358
Women	\$27,250	\$28,132	\$882	\$547,710	\$562,301	\$14,591
Men	\$39,320	\$40,178	\$859	\$750,767	\$770,334	\$19,566
Black women	\$18,559	\$19,990	\$1,431	\$459,094	\$481,375	\$22,281
Black men	\$19,695	\$21,177	\$1,482	\$346,594	\$377,891	\$31,297
Hispanic women	\$23,875	\$25,135	\$1,260	\$413,593	\$431,915	\$18,322
Hispanic men	\$36,878	\$37,008	\$130	\$624,395	\$642,740	\$18,345
White or other women	\$30,523	\$31,149	\$626	\$610,858	\$622,331	\$11,474
White or other men	\$44,891	\$45,807	\$916	\$887,662	\$904,679	\$17,017

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted earnings would be about twice as large.



TABLE 10A

**Adult Outcomes for Educational Attainment**

*People who actually benefit*

	High School Diploma, Transition to Adulthood			Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
All	64.3%	67.2%	2.9 p.p.	9.9%	10.8%	0.8 p.p.	14.4%	17.4%	3.0 p.p.
Black	62.6%	65.4%	2.8 p.p.	7.8%	8.7%	0.9 p.p.	9.6%	12.4%	2.8 p.p.
Hispanic	65.7%	68.6%	2.9 p.p.	9.7%	10.7%	1.0 p.p.	12.5%	15.2%	2.7 p.p.
White or other	64.4%	67.3%	2.9 p.p.	11.2%	11.9%	0.7 p.p.	18.2%	21.4%	3.2 p.p.
Women	69.4%	71.7%	2.3 p.p.	12.8%	13.6%	0.8 p.p.	17.5%	20.4%	2.9 p.p.
Men	59.4%	62.8%	3.4 p.p.	7.2%	8.1%	0.9 p.p.	11.4%	14.4%	3.0 p.p.
Black women	71.6%	73.6%	2.0 p.p.	11.5%	12.4%	0.9 p.p.	11.6%	14.2%	2.7 p.p.
Black men	53.5%	57.1%	3.7 p.p.	4.0%	4.9%	1.0 p.p.	7.6%	10.6%	3.0 p.p.
Hispanic women	70.0%	71.9%	1.9 p.p.	14.0%	14.4%	0.4 p.p.	15.3%	17.5%	2.2 p.p.
Hispanic men	61.7%	65.5%	3.8 p.p.	5.7%	7.2%	1.5 p.p.	9.9%	13.0%	3.1 p.p.
White or other women	67.7%	70.5%	2.7 p.p.	12.8%	13.7%	0.9 p.p.	22.2%	25.6%	3.4 p.p.
White or other men	61.1%	64.2%	3.1 p.p.	9.7%	10.2%	0.5 p.p.	14.3%	17.4%	3.0 p.p.

Source: Social Genome Model.

Notes: N = 184,323. p.p. = percentage points.

TABLE 10B

Adult Outcomes for Earnings

People who actually benefit

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$26,889	\$28,777	\$1,888	\$514,173	\$551,423	\$37,250
Black	\$16,535	\$18,587	\$2,052	\$361,649	\$399,465	\$37,817
Hispanic	\$28,585	\$29,583	\$998	\$485,893	\$512,835	\$26,942
White or other	\$31,477	\$33,813	\$2,336	\$613,862	\$657,021	\$43,159
Women	\$20,807	\$22,695	\$1,889	\$433,027	\$464,275	\$31,247
Men	\$32,721	\$34,608	\$1,887	\$591,973	\$634,979	\$43,006
Black women	\$16,090	\$18,064	\$1,974	\$417,412	\$448,151	\$30,740
Black men	\$16,985	\$19,114	\$2,130	\$305,310	\$350,277	\$44,967
Hispanic women	\$21,451	\$23,323	\$1,872	\$376,118	\$403,346	\$27,228
Hispanic men	\$35,185	\$35,375	\$189	\$587,459	\$614,136	\$26,677
White or other women	\$23,057	\$24,908	\$1,851	\$475,558	\$509,477	\$33,919
White or other men	\$39,494	\$42,292	\$2,798	\$745,553	\$797,511	\$51,958

Source: Social Genome Model.

Notes: N = 184,323. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 11

Lifetime Earnings Parity for the Overall Population

		Black-White				Hispanic-White			
		Mean	Median	25th percentile	75th percentile	Mean	Median	25th percentile	75th percentile
All	Pre	0.53	0.52	0.49	0.53	0.69	0.70	0.62	0.67
	Post	0.56	0.55	0.53	0.56	0.70	0.72	0.66	0.69
Men	Pre	0.39	0.37	0.32	0.37	0.70	0.70	0.64	0.70
	Post	0.42	0.38	0.36	0.41	0.71	0.70	0.64	0.71
Women	Pre	0.75	0.72	0.87	0.73	0.68	0.67	0.68	0.70
	Post	0.77	0.75	0.92	0.75	0.70	0.69	0.68	0.70

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

# 6. High School Diploma Attainment

## Summary and Key Findings

A high school diploma represents an essential foundation for accessing entry-level jobs, training, and postsecondary education opportunities. Yet around 15 percent of students do not graduate from their high school within four years (McFarland et al. 2020). The status dropout rate—the share of people not enrolled in school and without a high school credential or an equivalent credential (e.g., GED)—among 16-to-24-year-olds was 5.4 percent.<sup>13</sup> We simulate a program intervention—Small Schools of Choice (SSC)—for all students, which research suggests would increase on-time high school diploma attainment by an average of 5 percentage points overall.

For the overall population, aggregate changes in attainment and lifetime earnings are small, because only a small share of students in the overall population newly attain a high school diploma. Among those who attain a diploma because of the intervention, we estimate that lifetime earnings roughly double and postsecondary attainment increases 7 percentage points for an associate’s degree (on a base of 3 percent attainment) and 8 percentage points for a bachelor’s degree (on a base of 1 percent attainment).

## Review of Relevant Research and Motivation

Attaining a high school diploma is a key milestone for accessing higher education and an important signal for employers. Increasing federal accountability for high schools with low graduation rates, combined with such interventions as credit recovery programs to help students meet graduation requirements, has contributed to a recent increase in high school graduation (Dynarski 2018). The adjusted cohort graduation rate, a measure of on-time completion, has risen from 79 percent in 2010–11 (the first year of measurement) to 85 percent in 2016–17 (McFarland et al. 2020). Despite this growth, many students still leave high school without a diploma or equivalent credential, reducing their abilities to obtain a good job or pursue further education.

# Overview of the Simulation

For this exercise, we simulate exposure to four years of the SSC intervention, which was implemented and assessed in New York City. The SSC intervention was not only the creation of small high schools but the development of innovative ideas for a new school with structures that improved teacher-student relationships and provided support for leadership development, hiring, and implementation (Bloom, Thompson, and Unterman 2010). SSCs are mission driven and formed around three core principles of building academic rigor, personalized relationships, and relevance to the working world.<sup>14</sup>

## By How Much Are We Changing It?

An evaluation of the SSC intervention, using school lottery randomization, found that four-year enrollment in SSC high schools resulted in a 6.8 percentage-point increase in high school graduation rates.<sup>15</sup>

To implement our intervention, we allow the impact to vary on the basis of actual diploma attainment for each race, ethnicity, or sex using an odds-ratio approach. This approach leads to larger percentage-point increases for groups with lower levels of high school completion at baseline. This approach is preferable to merely applying the measured rate increase of 6.8 percentage points to all groups because it accounts for the underlying probability of attaining a high school diploma within each group before the intervention. Table 12 shows the simulated changes in high school completion. Overall, the intervention yields a 5 percentage-point increase in high school diploma attainment.

**TABLE 12**  
**Increase in High School Diploma Attainment**

	Increase (percentage points)
White or other men	4.9
White or other women	4.1
Black men	6.6
Black women	5.0
Hispanic men	6.1
Hispanic women	5.4

Source: Social Genome Model.

## What Are the Costs of the Intervention?

An analysis of the SSC intervention's costs found that direct services expenditures per student in SSC schools were not substantially different from expenditures in non-SSC schools (Bloom and Unterman

2014). The development of the schools, however, was fueled by philanthropic donations (both funding and support). The authors estimate this contribution at about \$625 per student in the 2004–05 school year (i.e., \$2,500 for four years; Bloom and Unterman 2014).

## Results

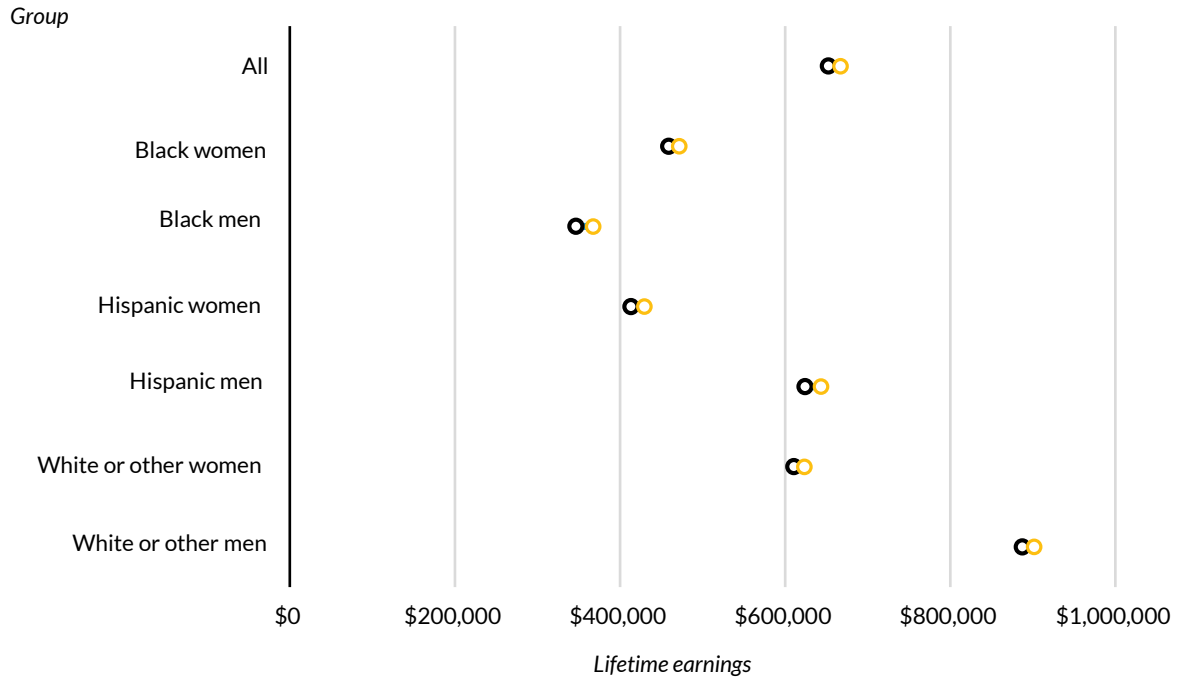
### Results for the Overall Population

Broadly, an aggregate 5 percent increase in high school diploma attainment spurs relatively small increases in postgraduate attainment (about a 0.4 percentage-point increase in associate’s degree attainment and a 0.4 percentage-point increase in bachelor’s degree attainment). On average, annual earnings at age 30 for the overall cohort increase by about \$350, with larger effects for Black and Hispanic men. The aggregate mean increase in present-value lifetime earnings is about \$14,600, however, which far outweighs the \$625 per student cost of such an intervention. Further, if the intervention targets only high schools with low graduation rates, the program costs, relative to the gains in lifetime earnings, may be even lower as the aggregate per student cost is reduced.

FIGURE 10

High School Diploma Attainment: Change in Lifetime Earnings, by Race or Ethnicity and Sex

● Before the intervention    ● After the intervention



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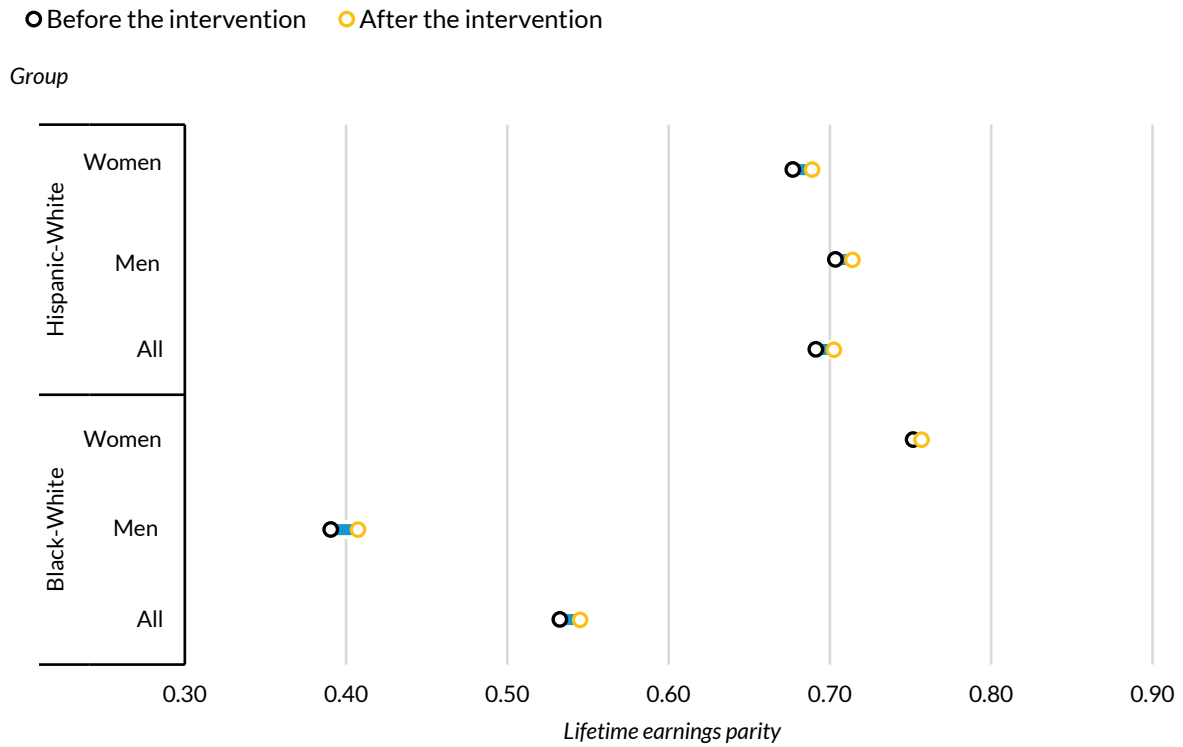
Source: Social Genome Model.

Notes:  $N = 400,040$ . Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

The effects on earnings parity are small; on average, this intervention improves earnings parity between Black and White subgroups and between Hispanic and White subgroups by about 1 cent on the dollar. We observe slightly larger increases in earnings parity among those earning at the 25th percentile within their subgroup. This is expected, as the intervention moves those without high school diplomas (who may, on average, earn less) to having high school diplomas, and Black and Hispanic people are more likely than others to benefit from the intervention.

FIGURE 11

High School Diploma Attainment: Change in Mean Lifetime Earnings Parity, by Race or Ethnicity and Sex



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Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

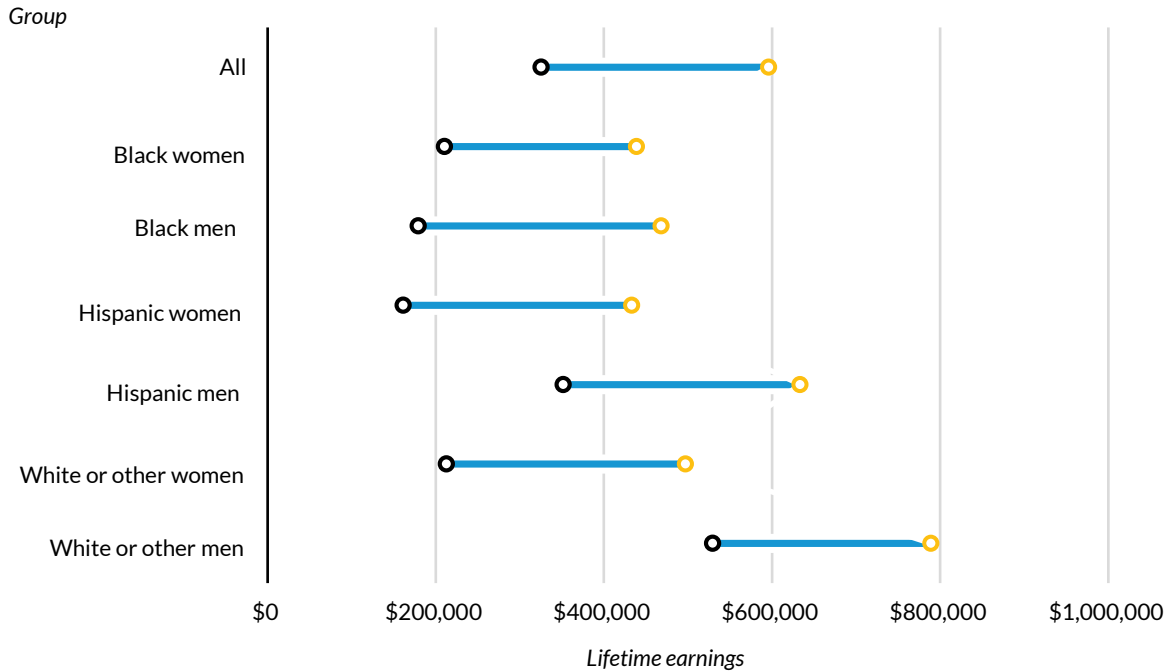
Results for the People Who Actually Benefit

The results for those who earned a high school diploma *because* of the intervention are, as expected, much stronger. On average, we estimate about a \$270,000 increase in lifetime earnings for those who would not otherwise have earned a diploma. The size of the effect of a high school diploma on lifetime earnings is relatively consistent across our six groups based on race or ethnicity and sex. Predicted increases in earnings tend to be larger for Hispanic and Black men than for Hispanic and Black women. The relationship is reversed for our White subgroups. White men who earn a diploma because of this intervention are projected to see smaller increases in earnings relative to White women who benefit from the intervention.

FIGURE 12

High School Diploma Attainment: Change in Lifetime Earnings among People Who Earn Diplomas, by Race or Ethnicity and Sex

○ Before the intervention    ○ After the intervention



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Source: Social Genome Model.

Notes: N = 21,611. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

## Discussion and Policy Implications

A high school diploma is a key credential that can unlock other career and educational opportunities. The SSC intervention has yielded impressive graduation rate increases for those who are exposed to four years of the intervention. If translated to a broader population, we would expect this intervention would yield, on average, a \$14,615 increase in lifetime earnings across the cohort. For those who graduate because of the intervention, the benefits are large. For most demographic subgroups, we predict lifetime earnings more than double with the receipt of a high school diploma.



TABLE 13A

**Adult Outcomes for Educational Attainment***Overall population*

	High School Diploma, Transition to Adulthood			Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change	Pre	Post	Change
All	75.1%	80.1%	5.0 p.p.	10.7%	11.1%	0.4 p.p.	26.6%	27.1%	0.4 p.p.
Black	67.5%	73.3%	5.8 p.p.	8.1%	8.4%	0.3 p.p.	13.9%	14.4%	0.5 p.p.
Hispanic	69.8%	75.6%	5.7 p.p.	10.7%	10.9%	0.2 p.p.	16.3%	16.7%	0.4 p.p.
White or other	78.7%	83.2%	4.5 p.p.	11.4%	11.8%	0.4 p.p.	32.9%	33.3%	0.4 p.p.
Women	78.7%	83.3%	4.5 p.p.	12.6%	13.0%	0.4 p.p.	30.6%	31.1%	0.5 p.p.
Men	71.8%	77.2%	5.4 p.p.	8.9%	9.3%	0.4 p.p.	22.9%	23.3%	0.4 p.p.
Black women	75.7%	80.7%	5.0 p.p.	11.3%	11.7%	0.4 p.p.	17.0%	17.3%	0.3 p.p.
Black men	59.5%	66.1%	6.6 p.p.	5.0%	5.2%	0.2 p.p.	10.9%	11.5%	0.6 p.p.
Hispanic women	73.7%	79.0%	5.4 p.p.	14.3%	14.4%	0.1 p.p.	20.1%	20.8%	0.7 p.p.
Hispanic men	66.2%	72.4%	6.1 p.p.	7.4%	7.6%	0.2 p.p.	12.7%	12.8%	0.2 p.p.
White or other women	81.1%	85.2%	4.1 p.p.	12.5%	12.9%	0.4 p.p.	37.3%	37.7%	0.5 p.p.
White or other men	76.4%	81.3%	4.9 p.p.	10.4%	10.8%	0.4 p.p.	28.9%	29.3%	0.4 p.p.

Source: Social Genome Model.

Notes: N = 400,040. p.p. = percentage points.

TABLE 13B

Adult Outcomes for Earnings

Overall population

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$33,491	\$33,843	\$352	\$652,696	\$667,311	\$14,615
Black	\$19,136	\$19,586	\$450	\$401,986	\$418,780	\$16,794
Hispanic	\$30,559	\$31,060	\$501	\$521,945	\$539,433	\$17,489
White or other	\$37,998	\$38,282	\$284	\$754,881	\$768,096	\$13,214
Women	\$27,250	\$27,575	\$325	\$547,710	\$560,900	\$13,190
Men	\$39,320	\$39,698	\$378	\$750,767	\$766,712	\$15,945
Black women	\$18,559	\$18,764	\$205	\$459,094	\$471,693	\$12,598
Black men	\$19,695	\$20,383	\$688	\$346,594	\$367,458	\$20,865
Hispanic women	\$23,875	\$24,222	\$347	\$413,593	\$429,500	\$15,906
Hispanic men	\$36,878	\$37,525	\$647	\$624,395	\$643,379	\$18,985
White or other women	\$30,523	\$30,872	\$349	\$610,858	\$623,391	\$12,533
White or other men	\$44,891	\$45,114	\$223	\$887,662	\$901,504	\$13,842

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 14A

**Adult Outcomes for Educational Attainment**

*People who actually benefit*

	Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change
All	3%	10%	7 p.p.	1%	9%	8 p.p.
Black	2%	6%	6 p.p.	0%	8%	7 p.p.
Hispanic	4%	7%	3 p.p.	1%	8%	7 p.p.
White or other	3%	12%	9 p.p.	2%	10%	9 p.p.
Women	5%	12%	7 p.p.	2%	12%	10 p.p.
Men	2%	8%	6 p.p.	1%	7%	6 p.p.
Black women	2%	10%	7 p.p.	1%	7%	6 p.p.
Black men	1%	4%	3 p.p.	0%	8%	8 p.p.
Hispanic women	7%	9%	2 p.p.	2%	14%	12 p.p.
Hispanic men	1%	5%	3 p.p.	1%	3%	3 p.p.
White or other women	5%	14%	9 p.p.	2%	12%	10 p.p.
White or other men	2%	10%	8 p.p.	1%	9%	9 p.p.

Source: Social Genome Model.

Notes: N = 21,611. p.p. = percentage points.

TABLE 14B

**Adult Outcomes for Earnings**

People who actually benefit

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$19,917	\$26,438	\$6,521	\$325,562	\$596,111	\$270,549
Black	\$8,748	\$15,803	\$7,055	\$192,584	\$455,782	\$263,198
Hispanic	\$20,142	\$28,088	\$7,946	\$265,798	\$543,150	\$277,352
White or other	\$23,532	\$29,335	\$5,803	\$392,349	\$662,747	\$270,398
Women	\$12,005	\$18,670	\$6,665	\$200,515	\$471,434	\$270,919
Men	\$26,017	\$32,427	\$6,410	\$421,964	\$692,227	\$270,264
Black women	\$7,895	\$11,610	\$3,715	\$210,389	\$439,011	\$228,622
Black men	\$9,378	\$18,906	\$9,527	\$179,408	\$468,194	\$288,785
Hispanic women	\$14,679	\$20,598	\$5,920	\$161,348	\$433,183	\$271,835
Hispanic men	\$24,631	\$34,242	\$9,611	\$351,617	\$633,502	\$281,885
White or other women	\$12,283	\$20,205	\$7,921	\$212,825	\$497,156	\$284,331
White or other men	\$32,111	\$36,298	\$4,187	\$529,261	\$789,032	\$259,771

Source: Social Genome Model.

Notes: N = 21,611. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 15

**Lifetime Earnings Parity in the Overall Population**

		Black-White				Hispanic-White			
		Mean	Median	25th percentile	75th percentile	Mean	Median	25th percentile	75th percentile
All	Pre	0.53	0.52	0.49	0.53	0.69	0.70	0.62	0.67
	Post	0.55	0.55	0.50	0.53	0.70	0.72	0.66	0.68
Men	Pre	0.39	0.37	0.32	0.37	0.70	0.70	0.64	0.70
	Post	0.41	0.36	0.34	0.41	0.71	0.70	0.66	0.71
Women	Pre	0.75	0.72	0.87	0.73	0.68	0.67	0.68	0.70
	Post	0.76	0.74	0.93	0.74	0.69	0.68	0.71	0.70

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

# 7. Associate's Degree Attainment

## Summary and Key Findings

Associate's degree attainment can help a young adult access a career or further higher education by transferring into a bachelor's degree program. But many students who enroll in associate's programs never earn a degree. We simulate the effects of providing the benefits of the Accelerated Study in Associate Programs (ASAP) to all students enrolled in associate's degree programs. We estimate that such an intervention would increase associate's degree attainment overall by 4.6 percentage points. At an aggregate level, this intervention would increase typical lifetime earnings by around \$8,600, with higher benefits for Black and Hispanic people than for White people. For the subpopulation that earns an associate's degree because of this intervention, the effects on lifetime earnings are much larger—an almost \$175,000 increase in present-value lifetime earnings.

## Review of Relevant Research and Motivation

Although returns on associate's degrees vary by program, attainment of an associate's degree likely increases later-life earnings (Carnevale, Rose, and Cheah 2011). Students from low-earnings families, Black and Hispanic students, and those who are coming to higher education after working are more likely to enroll in associate's programs than are those from higher-earnings families and who are White, making the attainment of the degree all the more important for improving broader social mobility (Carnevale et al. 2020).

## Overview of Simulation

In this intervention, we increase the share of people in our sample who attain associate's degrees. We consider an intervention similar to ASAP, which was rigorously evaluated as a randomized controlled trial in both New York City and Ohio community colleges (Miller and Weiss 2021). The program was aimed at students from families with low earnings who had relatively few college credits and were willing to enroll full time (a program requirement). Students were offered academic supports (e.g., advising and tutoring), financial supports (e.g., transportation, textbook, and tuition assistance), blocked and consolidated course schedules, and a first-year seminar. The intervention substantially increased

degree attainment, with all members of a diverse set of demographic subgroups approaching or exceeding a 50 percent graduation rate (Strumbos and Kolenovic 2016).

### **By How Much Are We Changing It?**

Unlike high school diploma attainment, where most people in our model are presumed to be exposed to high school, we cannot assume everyone in our model is enrolled in associate's degree programs. In our dataset, we observe whether a person is engaged in school or training, but we do not retain information on where the person is enrolled or for what type of degree.

To resolve this issue, we begin by using associate's degree attainment in the transition to adulthood (by age 24) to estimate the share of people likely to have been enrolled in an associate's program by race or ethnicity and sex. We use the 2012/17 Beginning Postsecondary Survey (BPS 2012/17) to derive a comparable graduation rate and generate a rough estimate of the share of our SGM population likely to have ever enrolled in an associate's program. For example, in BPS 2012/17, 20 percent of young Black men who were enrolled in associate's programs in 2011–12 attained a degree by 2017. In the SGM, 5 percent of Black men have an associate's degree by age 24. If only one in five eventually graduates during this period, we can estimate that 25 percent of the Black men in our sample may have been enrolled in an associate's program at some point by age 24. A full set of calculations for each race, ethnicity, and sex is presented in table 20.

The ASAP intervention pulls the associate's degree graduation rates of different student subgroups close to, or even beyond, 50 percent. Given that the intervention was evaluated on cohorts of low-earnings students, it seems feasible that this 50 percent graduation rate is an attainable rate to use in our simulation. We estimate that, at baseline, associate's degree attainment among enrollees ranges from 20 to 42 percent, depending on the demographic subgroup, which aligns with the implied graduation rates of the BPS 2012/17. Using our implied enrollment measure and a goal of 50 percent graduation, we increase associate's degree attainment by 2 to 12 percent overall, depending on subgroup (table 16). The intervention's effects yield an overall population increase in associate's degree attainment of 4.6 percentage points.

TABLE 16

**Increase in Associate's Degree Attainment**

	Increase (percentage points)
White or other men	4
White or other women	2
Black men	8
Black women	12
Hispanic men	5
Hispanic women	8

Source: Social Genome Model.

## What Are the Costs of the Intervention?

ASAP is a wraparound program with multiple types of supports. Researchers estimate the program's cost, relative to business as usual, in the City University of New York system to be \$13,838 per program member. The system spent an additional \$9,162 per degree earned for students offered ASAP (Azurdia and Galkin 2020). On average, ASAP participants also received 7 percent more in Pell grant aid (roughly \$615 more) and 14 percent more in New York state tuition assistance (about \$514 more), as they were more likely to enroll full time.

## Results

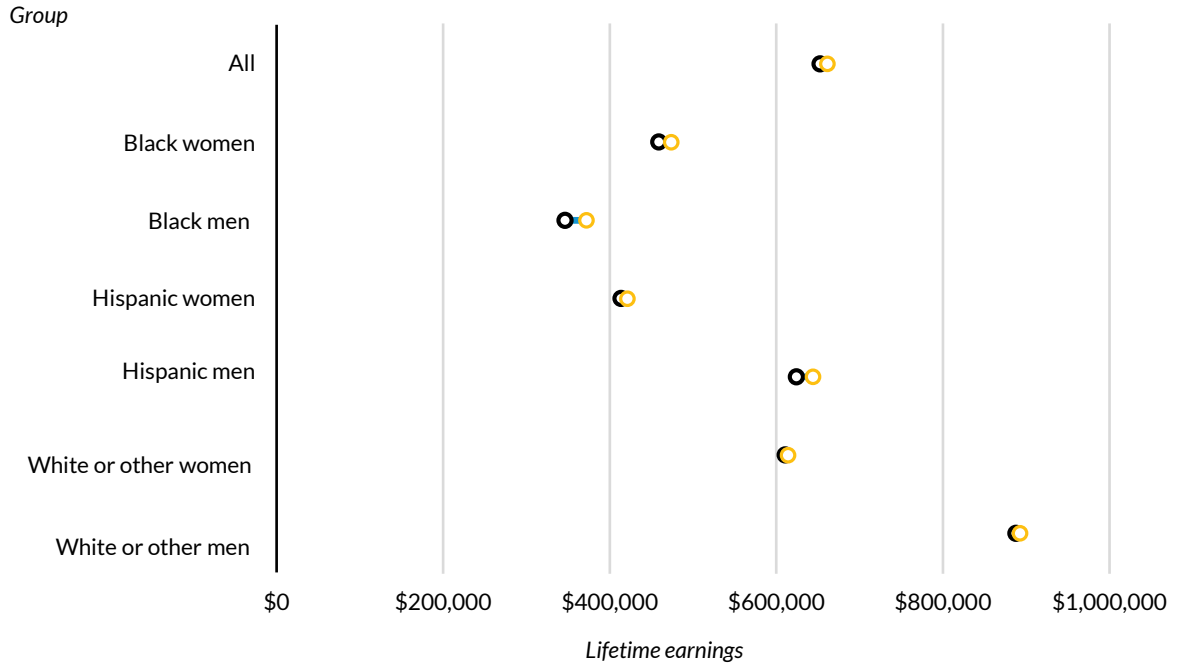
### Results for the Overall Population

Implementing the ASAP intervention—increasing associate's degree attainment rates by 4.6 percentage points—would yield downstream effects on higher education attainment and earnings for the overall population. The intervention's effects yield a small effect on bachelor's degree attainment (0.3 percentage points). Bachelor's degree attainment is slightly higher for Black and Hispanic women than for other demographic subgroups. The overall average adult earnings increase is small (around \$260), but the effect is larger than that average for Black women (\$420) and Black men (\$1,190). The present value of lifetime earnings benefits across the population is an average of \$8,600, with higher average benefits for Black and Hispanic people. In line with this result, we see larger improvements in lifetime earnings parity between Black and White people relative to the parity between Hispanic and White people.

FIGURE 13

Associate's Degree Attainment: Change in Lifetime Earnings, by Race or Ethnicity and Sex

● Before the intervention    ● After the intervention



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Source: Social Genome Model.

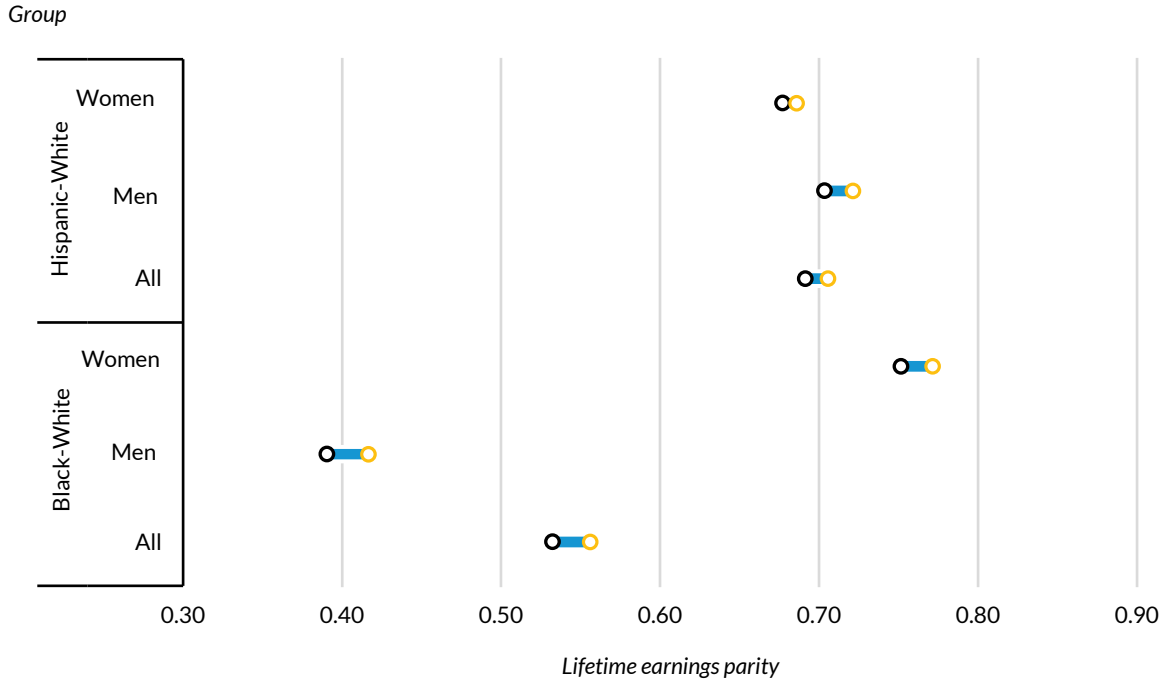
Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.



FIGURE 14

**Associate’s Degree Attainment: Change in Mean Lifetime Earnings Parity, by Race or Ethnicity and Sex**

○ Before the intervention    ○ After the intervention



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Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

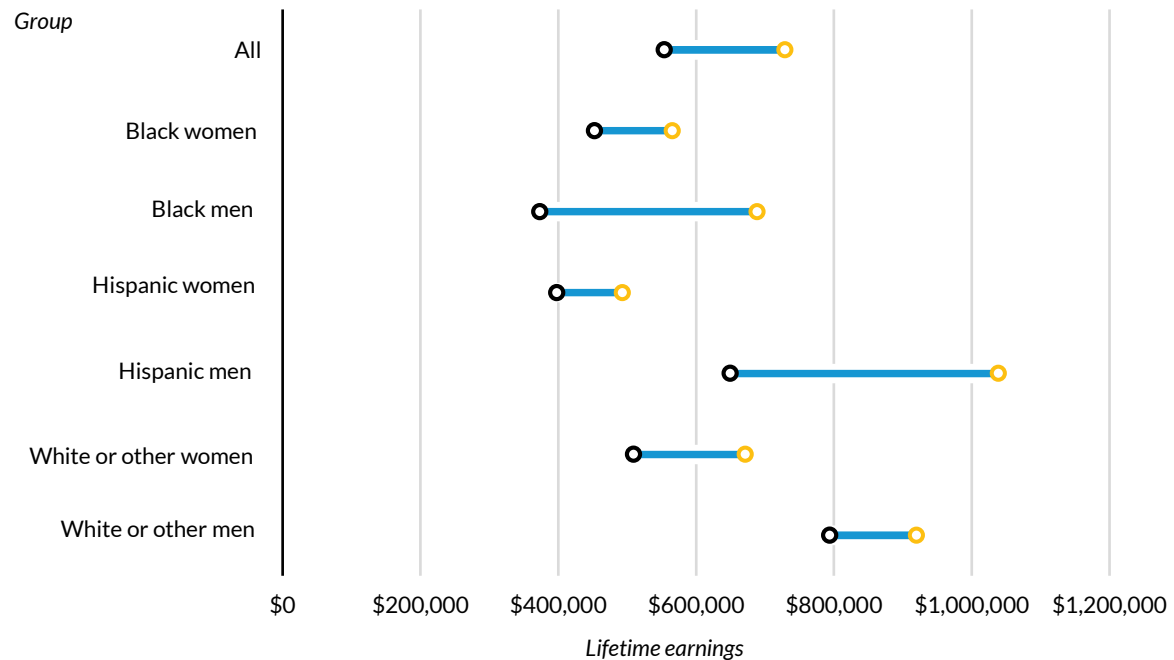
**Results for People Who Actually Benefit**

Among those who benefited from the intervention (obtained an associate’s degree as a result of the treatment), our intervention generated a 7 percentage-point increase in bachelor’s degree attainment by age 30 and a \$175,000 increase in lifetime earnings. Bachelor’s degree attainment increases substantially for Black and Hispanic women, but the model predicts no increase in bachelor’s degree attainment for White people. We note larger increases in lifetime earnings for Black and Hispanic men relative to Black and Hispanic women, while the magnitude of the increase is roughly similar for White men and women.

FIGURE 15

Associate’s Degree Attainment: Change in Lifetime Earnings among People Who Earn Degrees, by Race or Ethnicity and Sex

● Before the intervention ● After the intervention



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Source: Social Genome Model.

Notes: N = 19,643. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

## Discussion and Policy Implications

The ASAP intervention has produced remarkably strong, replicable persistence and attainment outcomes for those enrolled in associate’s degree programs. Though the cost is relatively high—\$9,000 to \$14,000 per student—the present-value lifetime earnings returns for those who benefit from the program are more than 10 times the costs. By providing financial, advising, and institutional support for full-time enrollment, interventions such as ASAP substantially increase associate’s degree attainment. Our results indicate this intervention has a large payoff for those who attain an associate’s degree when they otherwise would not have completed one.

TABLE 17A

Adult Outcomes for Educational Attainment

Overall population

	Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change
All	10.7%	15.3%	4.6 p.p.	26.6%	27.0%	0.3 p.p.
Black	8.1%	17.8%	9.7 p.p.	13.9%	14.2%	0.3 p.p.
Hispanic	10.7%	16.8%	6.0 p.p.	16.3%	17.5%	1.2 p.p.
White or other	11.4%	14.2%	2.9 p.p.	32.9%	33.0%	0.1 p.p.
Women	12.6%	17.2%	4.6 p.p.	30.6%	30.9%	0.4 p.p.
Men	8.9%	13.5%	4.6 p.p.	22.9%	23.2%	0.3 p.p.
Black women	11.3%	23.0%	11.7 p.p.	17.0%	17.5%	0.5 p.p.
Black men	5.0%	12.8%	7.8 p.p.	10.9%	10.9%	0.0 p.p.
Hispanic women	14.3%	21.7%	7.5 p.p.	20.1%	21.3%	1.1 p.p.
Hispanic men	7.4%	12.1%	4.7 p.p.	12.7%	14.0%	1.3 p.p.
White or other women	12.5%	14.3%	1.8 p.p.	37.3%	37.3%	0.1 p.p.
White or other men	10.4%	14.1%	3.8 p.p.	28.9%	29.0%	0.1 p.p.

Source: Social Genome Model.

Notes: N = 400,040. p.p. = percentage points.

TABLE 17B

Adult Outcomes for Earnings

Overall population

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$33,491	\$33,749	\$259	\$652,696	\$661,300	\$8,604
Black	\$19,136	\$19,949	\$814	\$401,986	\$422,045	\$20,059
Hispanic	\$30,559	\$31,001	\$442	\$521,945	\$535,657	\$13,712
White or other	\$37,998	\$38,062	\$64	\$754,881	\$759,071	\$4,190
Women	\$27,250	\$27,406	\$156	\$547,710	\$553,716	\$6,006
Men	\$39,320	\$39,675	\$355	\$750,767	\$761,797	\$11,030
Black women	\$18,559	\$18,980	\$421	\$459,094	\$473,781	\$14,687
Black men	\$19,695	\$20,890	\$1,194	\$346,594	\$371,863	\$25,269
Hispanic women	\$23,875	\$23,875	\$0	\$413,593	\$421,220	\$7,627
Hispanic men	\$36,878	\$37,738	\$860	\$624,395	\$643,860	\$19,466
White or other women	\$30,523	\$30,656	\$133	\$610,858	\$614,118	\$3,261
White or other men	\$44,891	\$44,891	\$0	\$887,662	\$892,709	\$5,047

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 18A

**Adult Outcomes for Educational Attainment**

*People who actually benefit*

	Bachelor's Degree, Adulthood		
	Pre	Post	Change
All	0%	7%	7 p.p.
Black	1%	3%	2 p.p.
Hispanic	0%	19%	19 p.p.
White or other	0%	3%	3 p.p.
Women	0%	7%	7 p.p.
Men	1%	7%	7 p.p.
Black women	0%	4%	4 p.p.
Black men	1%	1%	0 p.p.
Hispanic women	0%	14%	14 p.p.
Hispanic men	0%	27%	27 p.p.
White or other women	0%	4%	4 p.p.
White or other men	0%	3%	3 p.p.

Source: Social Genome Model.

Notes: N = 19,643. p.p. = percentage points.

**TABLE 18B**

**Adult Outcomes for Earnings**

*People who actually benefit*

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$29,125	\$34,394	\$5,269	\$553,989	\$728,984	\$174,995
Black	\$19,925	\$27,698	\$7,774	\$421,956	\$613,525	\$191,569
Hispanic	\$28,978	\$35,821	\$6,843	\$498,143	\$710,303	\$212,160
White or other	\$37,250	\$39,347	\$2,098	\$704,232	\$841,492	\$137,260
Women	\$21,166	\$24,286	\$3,120	\$450,556	\$570,631	\$120,076
Men	\$36,797	\$44,139	\$7,341	\$653,710	\$881,653	\$227,943
Black women	\$17,558	\$20,797	\$3,239	\$452,790	\$565,676	\$112,886
Black men	\$23,652	\$38,569	\$14,917	\$373,385	\$688,898	\$315,513
Hispanic women	\$22,571	\$22,571	\$0	\$397,967	\$493,250	\$95,282
Hispanic men	\$38,670	\$55,864	\$17,194	\$649,685	\$1,038,653	\$388,968
White or other women	\$25,592	\$32,235	\$6,643	\$509,534	\$671,358	\$161,824
White or other men	\$42,630	\$42,630	\$0	\$794,086	\$920,010	\$125,924

Source: Social Genome Model.

Notes: N = 19,643. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

**TABLE 19**

**Lifetime Earnings Parity in the Overall Population**

		Black-White				Hispanic-White			
		Mean	Median	25th percentile	75th percentile	Mean	Median	25th percentile	75th percentile
All	Pre	0.53	0.52	0.49	0.53	0.69	0.70	0.62	0.67
	Post	0.56	0.54	0.50	0.57	0.71	0.71	0.64	0.69
Men	Pre	0.39	0.37	0.32	0.37	0.70	0.70	0.64	0.70
	Post	0.42	0.36	0.34	0.43	0.72	0.69	0.64	0.75
Women	Pre	0.75	0.72	0.87	0.73	0.68	0.67	0.68	0.70
	Post	0.77	0.77	0.89	0.75	0.69	0.69	0.68	0.70

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

TABLE 20

Associate’s Degree Increase Calculation

	White or other men	White or other women	Black men	Black women	Hispanic men	Hispanic women
BPS 2012/17: Share of those ages 22 or younger enrolled in associate’s program in 2011-12 graduating by 2017	37%	42%	20%	23%	29%	32%
Social Genome Model: Share with associate’s degree by transition to adulthood (age 24)	10%	12%	5%	11%	7%	14%
Social Genome Model: Estimated share enrolled in associate’s degree program	27%	28%	25%	47%	24%	43%
Social Genome Model: Estimated share with associate’s degree if ASAP intervention leads to 50 percent graduation rate among those enrolled	14%	14%	13%	24%	12%	22%
Increase in associate’s degree attainment implemented in Social Genome Model	4 p.p.	2 p.p.	8 p.p.	13 p.p.	5 p.p.	8 p.p.

Source: Social Genome Model.

Note: ASAP = Accelerate Study in Associate Programs; BPS = Beginning Postsecondary Survey; p.p. = percentage points.

# 8. Bachelor's Degree Attainment

## Summary and Key Findings

Attaining a bachelor's degree is a strong investment in one's future earnings and lifetime trajectory. We simulate the effects of an intervention that increases bachelor's degree attainment by correcting undermatching for low-earnings students by providing information about college choice and sufficient financial aid. "Undermatching" is when a student enrolls in a school that is less selective than their academic profile. Because less-selective schools tend to have fewer resources and student supports, students who undermatch may be less likely to complete a bachelor's degree.

We estimate the effects of increasing the bachelor's degree attainment rate for students with strong high school academic records from households earning up to 200 percent of the federal poverty level with that of their peers from households earning above 200 percent of the federal poverty level. This intervention affects a small share of the overall population, but it makes a substantial difference for those who newly receive bachelor's degrees. We project they would earn more than \$420,000 in additional lifetime earnings. The magnitude of the effect on lifetime earnings is particularly large for Black and Hispanic men.

## Review of Relevant Research and Motivation

Relative to a person with a high school diploma, a person with a bachelor's degree earns, on average, about \$30,000 more per year, and even after accounting for the rising cost of college, a bachelor's degree still pays off in most cases.<sup>16</sup>

Students in the top quintile of earnings are 34 percent more likely to attend selective institutions than peers with the same test scores who are in the lowest quintile of earnings (Chetty et al. 2020). Because selective institutions tend to have high graduation rates, students who attend less-selective institutions, even when they are likely eligible for more-selective schools, may be less likely to attain a degree, a phenomenon sometimes called undermatching.

Literature indicates that access to financial grant aid increases higher education enrollment and persistence. An additional \$1,000 in aid is associated with a 3 to 5 percent increase in college enrollment (Dynarski and Scott-Clayton 2013) and a 1.5 to 2 percent increase in persistence and



attainment (Nguyen, Kramer, and Evans 2019). But studies that aim to explicitly measure attainment of a bachelor's degree seem to indicate a more muted, or even null, effect (Carlson et al. 2019).

## Overview of Simulation

In this intervention, we increase the share of people with bachelor's degrees. To model higher shares of bachelor's degree attainment, we consider an intervention that combines improved information on college outcomes for high-achieving low-earnings students (similar to Hoxby and Avery [2013]) with a guarantee of aid upon acceptance and enrollment (similar to the High Achieving Involved Leader scholarship implemented by Dynarski and coauthors [2018]). In essence, we are trying to ameliorate the attainment consequences of undermatching among high-achieving low-earnings students.

We limit the intervention to high-achieving students because previous studies have indicated that informational interventions do not have an effect on college choices when a wider pool of students (those scoring in the top 50 percent) is exposed (Gurantz et al. 2021).

### By How Much Are We Changing It?

To understand the potential effects of undermatching and underenrollment in our data, we build two tiers of high-achieving students. First, we look at students who reported earning “mostly As” in school or who scored 1.5 standard deviations above the mean on the Armed Services Vocational Aptitude Battery test. This constitutes about 10 percent of observations in our data. The second tier of students are those who reported earning “half As and half Bs” in school or who scored between 1 and 1.5 standard deviations above the mean on the ASVAB—roughly 18 percent of our sample, excluding those who qualified in the previous tier.

Within these tiers, we look at the bachelor's degree attainment, by sex, of those whose families earn up to 200 percent of the federal poverty level and those whose families earn more than 200 percent. We posit that a resolution of undermatching, combined with sufficient financial assistance, will allow high-achieving low-earnings students to both enroll in bachelor's degree programs and attain degrees at the same rate as their middle- and high-earnings peers. Table 21 shows the intervention for both tiers for men and for women. Overall, this intervention awards bachelor's degrees to a relatively small share of the population. The intervention increases bachelor's degree attainment by 1.3 percent (on a base attainment rate of 26.6 percent).

TABLE 21

**Increase in Bachelor's Degree Attainment**

	<b>Bachelor's Degree Attainment Rate Increase</b>	
	<b>People earning up to 200% of FPL</b>	<b>People earning more than 200% of FPL</b>
<b>Tier 1</b>		
Women	39.7%	63.8%
Men	41.2%	65.3%
<b>Tier 2</b>		
Women	34.1%	49.7%
Men	27.5%	43.2%

Source: Social Genome Model.

Note: FPL = federal poverty level.

## What Are the Costs of the Intervention?

Informational interventions alone, which provide students data on the costs and outcomes of colleges they may be eligible for, cost little. But it is increasingly evident that these interventions must be paired with unconditional support or financial assistance to effectively change student choices. In many cases, students from households earning up to 200 percent of the federal poverty level are already eligible for substantial financial aid from selective four-year institutions. If institutions begin accepting more low-earnings students as a result of outreach and aid guarantee interventions, higher education institutions or state programs may incur additional expenses to provide sufficient grant aid.

For Michigan's High Achieving Involved Leader Scholarship, students were already eligible for a full-tuition scholarship, and the intervention was to provide early certainty of receipt for four years, conditional on admission. Students receiving this scholarship did not cost the University of Michigan more to admit than nontreated low-earnings students, and the information packets cost \$10.

## Results

### Results for the Overall Population

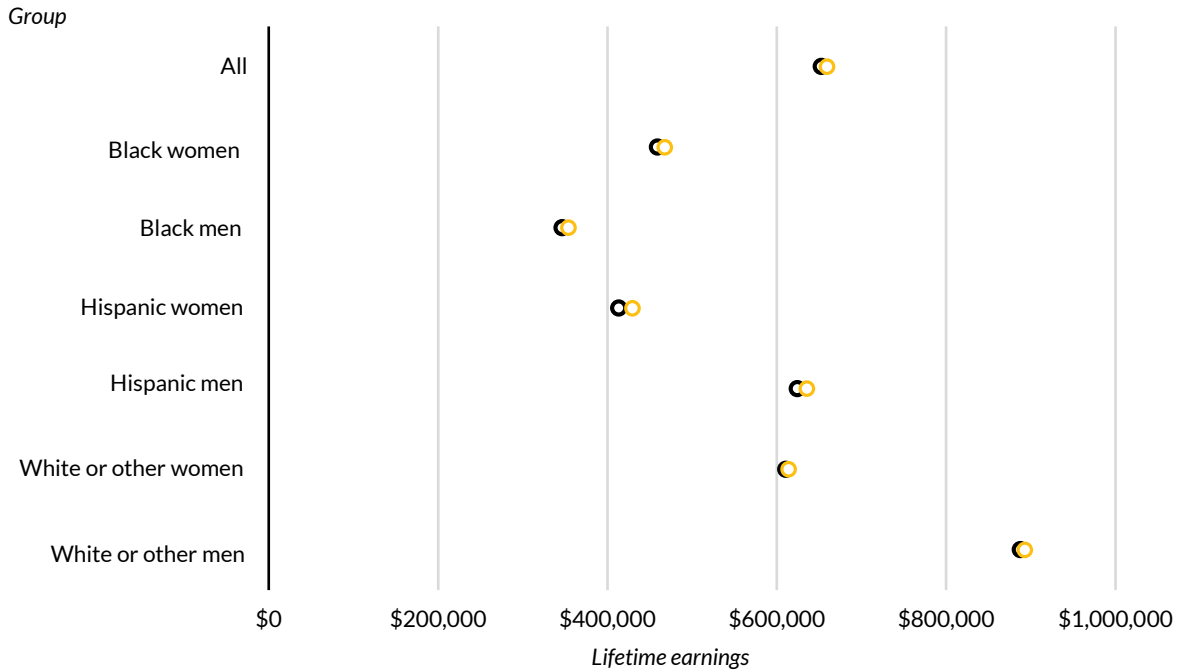
Remediating undermatching among high-achieving low-earnings students across the population yields an overall 1.3 percentage-point increase in bachelor's degree attainment, with larger-than-average increases in attainment for Black women (2.4 percentage points) and Hispanic women (4.0 percentage points). Averaged across the whole population, earnings increases at age 30 are relatively small (around

\$200). Across the population, we see an increase in average lifetime earnings of \$6,598, with larger-than-average increases for Hispanic people (figure 16).

**FIGURE 16**

**Bachelor’s Degree Attainment: Change in Lifetime Earnings, by Race or Ethnicity and Sex**

● Before the intervention    ● After the intervention



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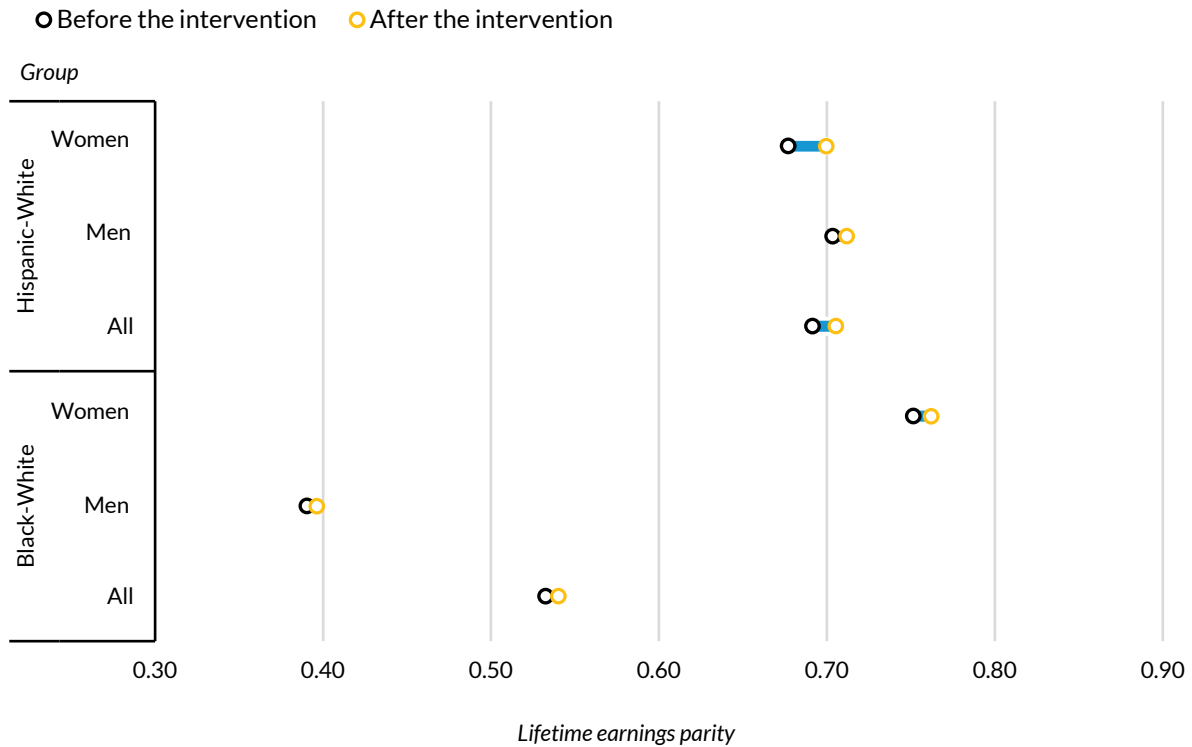
Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

Because the intervention affects a small subset of the population, we do not observe substantial shifts in lifetime earnings parity relative to White people. At most, we note an improvement of 1 to 2 cents on the dollar, with slightly larger improvements for Hispanic people relative to Black people (figure 17).

FIGURE 17

**Bachelor's Degree Attainment: Change in Mean Lifetime Earnings Parity, by Race or Ethnicity and Sex**



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Source: Social Genome Model.

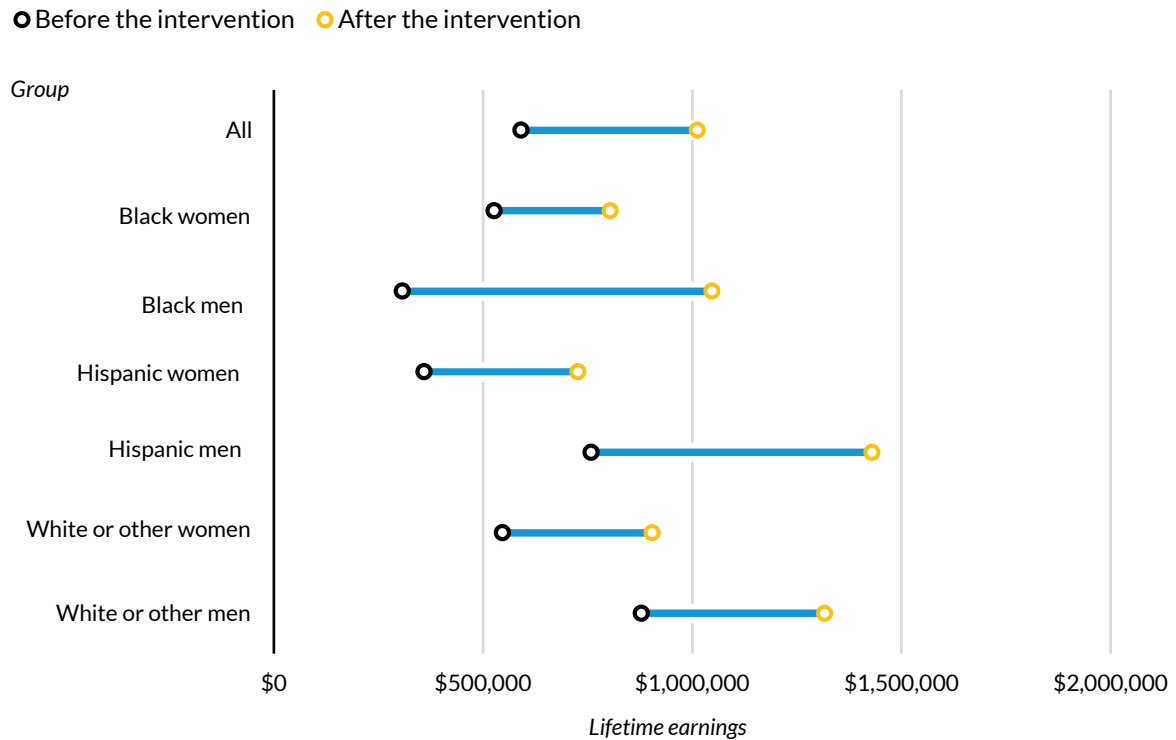
Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

### Results for the People Who Actually Benefit

When we narrow our focus to look only at the effects on students who earned bachelor's degrees as a result of our intervention, we find that those students are projected to see a roughly \$420,000 increase in lifetime earnings—a 71 percent increase on a projected base lifetime earnings of around \$590,000 (figure 18). The bachelor's degree boost to lifetime earnings is particularly substantial for Black men (\$671,690) and Hispanic men (\$740,270).

FIGURE 18

**Bachelor's Degree Attainment: Change in Lifetime Earnings among People Who Earn Degrees, by Race or Ethnicity and Sex**



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Source: Social Genome Model.

Notes: N = 6,128. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

## Discussion and Policy Implications

Our estimates of the strong lifetime earnings effects of bachelor's degree attainment align with previous estimates of the value of a bachelor's degree. Importantly, our intervention simulates degree attainment among students who are academically prepared to enroll in a four-year school and attain a degree but who may face financial and informational hurdles. By leveling the path to a degree, we simulate life-changing effects for high-achieving low-earnings students at a relatively low cost.

These results suggest combined informational and financial interventions such as the High Achieving Involved Leader Scholarship are valuable investments that could foster large changes for a small group of students. But because these interventions are predicated on K-12 academic

achievement, this strategy likely could not produce large changes in overall population outcomes unless it is paired with substantial early academic interventions to increase the pool of students eligible for highly selective colleges. And importantly, our intervention assumes that student aid comes primarily in the form of grant aid, such that students can complete their degrees without assuming a substantial student loan burden, which could hamper wealth accumulation, particularly for Black students (Houle and Addo 2019).

**TABLE 22A**

**Adult Outcomes for Educational Attainment**

*Overall population*

	<b>Bachelor's Degree, Adulthood</b>		
	<b>Pre</b>	<b>Post</b>	<b>Change</b>
All	26.6%	27.9%	1.3 p.p.
Black	13.9%	15.5%	1.6 p.p.
Hispanic	16.3%	19.0%	2.7 p.p.
White or other	32.9%	33.7%	0.8 p.p.
Women	30.6%	32.2%	1.6 p.p.
Men	22.9%	24.0%	1.0 p.p.
Black women	17.0%	19.3%	2.4 p.p.
Black men	10.9%	11.9%	0.9 p.p.
Hispanic women	20.1%	24.2%	4.0 p.p.
Hispanic men	12.7%	14.1%	1.5 p.p.
White or other women	37.3%	38.0%	0.7 p.p.
White or other men	28.9%	29.8%	0.9 p.p.

**Source:** Social Genome Model.

**Notes:** N = 400,040. p.p. = percentage points.

TABLE 22B

Adult Outcomes for Earnings

Overall population

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$33,491	\$33,710	\$220	\$652,696	\$659,294	\$6,598
Black	\$19,136	\$19,386	\$250	\$401,986	\$409,972	\$7,986
Hispanic	\$30,559	\$31,043	\$485	\$521,945	\$535,400	\$13,456
White or other	\$37,998	\$38,133	\$134	\$754,881	\$759,105	\$4,224
Women	\$27,250	\$27,465	\$215	\$547,710	\$554,120	\$6,410
Men	\$39,320	\$39,544	\$224	\$750,767	\$757,540	\$6,773
Black women	\$18,559	\$18,815	\$256	\$459,094	\$467,777	\$8,682
Black men	\$19,695	\$19,940	\$245	\$346,594	\$353,903	\$7,310
Hispanic women	\$23,875	\$24,412	\$536	\$413,593	\$429,425	\$15,831
Hispanic men	\$36,878	\$37,314	\$436	\$624,395	\$635,604	\$11,209
White or other women	\$30,523	\$30,631	\$109	\$610,858	\$613,862	\$3,005
White or other men	\$44,891	\$45,048	\$157	\$887,662	\$893,011	\$5,348

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 23

Adult Outcomes

People who actually benefit

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$29,538	\$43,889	\$14,351	\$590,672	\$1,012,571	\$421,900
Black	\$20,041	\$32,544	\$12,503	\$471,954	\$864,932	\$392,978
Hispanic	\$26,511	\$42,999	\$16,488	\$474,269	\$929,955	\$455,686
White or other	\$37,005	\$50,442	\$13,437	\$752,249	\$1,159,543	\$407,293
Women	\$21,709	\$33,396	\$11,687	\$457,072	\$797,073	\$340,001
Men	\$40,376	\$58,416	\$18,040	\$775,632	\$1,310,915	\$535,283
Black women	\$21,191	\$29,575	\$8,384	\$526,604	\$804,406	\$277,802
Black men	\$16,574	\$41,496	\$24,922	\$307,168	\$1,047,437	\$740,270
Hispanic women	\$18,640	\$31,116	\$12,476	\$358,746	\$726,592	\$367,846
Hispanic men	\$45,868	\$72,220	\$26,352	\$758,345	\$1,430,035	\$671,690
White or other women	\$27,209	\$40,935	\$13,726	\$546,651	\$904,010	\$357,359
White or other men	\$43,026	\$56,286	\$13,260	\$878,622	\$1,316,609	\$437,986

Source: Social Genome Model.

Notes: N = 6,128. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 24

Lifetime Earnings Parity in the Overall Population

		Black-White				Hispanic-White			
		Mean	Median	25th percentile	75th percentile	Mean	Median	25th percentile	75th percentile
All	Pre	0.53	0.52	0.49	0.53	0.69	0.70	0.62	0.67
	Post	0.54	0.52	0.49	0.54	0.71	0.73	0.63	0.68
Men	Pre	0.39	0.37	0.32	0.37	0.70	0.70	0.64	0.70
	Post	0.40	0.36	0.31	0.38	0.71	0.69	0.64	0.72
Women	Pre	0.75	0.72	0.87	0.73	0.68	0.67	0.68	0.70
	Post	0.76	0.72	0.89	0.75	0.70	0.69	0.68	0.72

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.



# 9. Job Training in Young Adulthood

## Summary and Key Findings

In this simulation, we model the potential effects of job training for young adults with no more than a high school diploma. We draw on six rigorously evaluated job training programs and average the percentage earnings effects of participating in those programs to apply a 17 percent increase in earnings at age 24. We find modest effects on educational attainment, earnings, and lifetime earnings, though the changes seen in the simulation are consistent with much of the literature on individual training programs for young adults.

## Review of Relevant Research and Motivation

High school graduation and the transition to adulthood have long been viewed as a pivotal period during which young people decide whether to continue their studies by attending college, join the workforce, or pursue some other path. High school gives most students the academic foundation needed to pursue higher education, but many young people leave high school without the technical skills or training needed to obtain meaningful employment (Goger 2020). The economic recession that has followed the COVID-19 pandemic has not only disrupted service industries that historically employed workers with less education but also magnified the need for high-quality programs that will help young adults acquire the skills, training, or postsecondary credentials they need to transition to and thrive in the workplace (Goger 2020; Rosen 2020).<sup>17</sup>

Job training programs match young people with employment in their local job markets and equip young people with the skills (hard or soft) they need to succeed in the workforce and obtain high-quality jobs.

“Job training” is a general term for a wide array of interventions that use different approaches to increase employment outcomes, including teaching hard and soft skills relevant to the workplace, on-the-job training, internships and other paid work experience, academic instruction, and supportive services. Job training programs are often designed to support the unique challenges that a specific group experiences, such as young people who are not in school and not working (disconnected or opportunity youth), people who did not complete high school, young people transitioning out of foster care, young parents, and young people in the juvenile justice system. Programs also aim to affect a range

of employment-related outcomes, such as job attainment, job retention, earnings, and job quality (Treskon 2016).

Though job training programs can be operationalized at any life stage, we are particularly interested in job training programs designed for young adults without postsecondary credentials that would typically have been completed by age 24. There are many approaches to job training in early adulthood, and several models have been rigorously evaluated and found to have effects on employment outcomes. For this simulation, we identified six experimental and quasi-experimental evaluations of programs for participants ages 16 to 25 (we provide additional details on the programs below) that have a job training component and found significant positive effects on earnings (Fein and Hamadyk 2018; Millenky et al. 2011; Miller et al. 2018; Price et al. 2011; Schochet, McConnell, and Burghardt 2003; Smith, Christensen, and Cumpton 2015).

## Overview of the Simulation

In this simulation, we project the potential effects of participation in a job training program for people who have no more than a high school diploma (i.e., who did not complete high school or who completed high school but do not have a postsecondary degree) at age 24. To assess the potential effects of job training on outcomes and lifetime earnings at age 30, we increase earnings at age 24 for young people with no more than a high school degree by an amount consistent with earnings gains associated with rigorously evaluated training programs. We then use the model to project how those earnings increases influence outcomes and lifetime earnings at age 30. Although the job training programs on which we based the simulation also affected other employment and nonemployment outcomes, we use earnings because they are the program outcome best measured in the SGM. We assume all people who receive the job training program experience an increase in earnings as a result. There are also job training programs, including some of the six that informed this simulation, that have educational components that increase educational attainment. However, in this simulation, we increase only earnings and not degree attainment at age 24. We allow for degree attainment to rise to the extent that higher earnings at age 24 are associated with degree attainment at age 30.

## By How Much Are We Changing It?

To determine how much a job training program participant's earnings might change as a result of being in the program, we took the average earnings increase found in six rigorously evaluated programs that include a job training component:

- Year Up
- YouthBuild USA
- Casa Verde Builders
- National Guard Youth ChalleNGe
- Youth Corps
- Job Corps

Each program has its own specific approach and enrollment criteria. Year Up provides a six-month full-time training program followed by a six-month internship in information technology and finance for 18-to-24-year-olds who have a high school diploma or equivalent. The National Guard Youth ChalleNGe is for 16-to-18-year-olds who have not completed, or are at risk of not completing, high school and includes a roughly five-month military-style residential program focused on life and job skills, followed by a year of mentorship. Both the National Guard Youth ChalleNGe and YouthBuild USA are multisite programs, with substantial variation in program implementation and, most likely, in outcomes across sites. For this simulation, we did not aim to simulate any one particular program. No program stands out as the most proven or the most feasible to implement, and each program has strengths and weaknesses that might make it appropriate for some communities and groups but not others. Instead, we simulated an average effect, assuming that in a real-world application, some participants would see greater benefits, and some would see less. The annual earnings effects at 12 to 24 months after the end of the programs ranged from \$164 (a 2 percent earnings increase) found in the YouthBuild USA evaluation (Miller et al. 2018) to \$8,035 (a 53 percent earnings increase) found in the Year Up evaluation (Fein and Hamadyk 2018). The average earnings effect across the six studies of the programs is a 17 percent earnings increase. We use a percentage increase rather than an absolute dollar increase because the SGM population earnings might be different than the populations studied in the six rigorously evaluated programs. Thus, smaller changes in absolute dollars in the simulation will be the result of lower baseline earnings.

## What Are the Associated Costs to the Change?

Among the six programs, four have calculated costs per participant, which range from \$11,600 (National Guard Youth ChalleNGe) to \$28,290 (Year Up), averaging \$19,600.

## Results

### Results for the People Who Actually Benefit

A large proportion of the overall population in the SGM (73 percent) and of each race or ethnicity and sex subpopulation was eligible for, and benefited from, the job training program because they had not earned more than a high school diploma (although many had completed high school) by age 24. The share of the Black women, Black men, and Hispanic men who were simulated to receive the job training intervention was particularly high—over 80 percent—and all who received training in the simulation exercise benefited from that training in terms of higher earnings at age 24.

Among those who benefited from the job training program, the gains in earnings at age 30 are modest (5 to 8 percent), given that earnings at age 24 (the previous life stage in the model) increased by 17 percent. Lifetime earnings increases are also modest (2 to 5 percent; figure 19). Men, regardless of race or ethnicity, had larger increases in adult and lifetime earnings than women. Black women see the smallest increases in both adult earnings (5 percent) and lifetime earnings (2 percent). White men have the highest increases in both adult earnings (8 percent) and lifetime earnings (5 percent). Only White men and Hispanic men experience lifetime earnings increases that exceed the average program cost per participant.

These differences in earnings gains between sexes and between racial and ethnic groups are largely because of differences between groups in both starting levels of earnings at age 24 and the relationship between earnings at age 24 and at age 30. White men, and men overall, had higher starting levels of earnings at age 24, so a 17 percent increase in earnings gives them a larger boost. The positive association between earnings at age 24 and at age 30 is also strongest for White men, followed by Hispanic men and White women. For example, each additional dollar of earnings at age 24 is associated with an additional 63 cents in earnings at age 30 for White men, compared with an additional 34 cents for Black women.

There were also small increases in educational attainment at age 30, as would be expected from a simulation of a job training program that affected earnings but not education at age 24.

FIGURE 19

**Job Training in Young Adulthood: Change in Lifetime Earnings, by Race or Ethnicity and Sex**

*People who actually benefit*

● Before the intervention    ● After the intervention



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Source: Social Genome Model.

Notes: N = 294,004. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

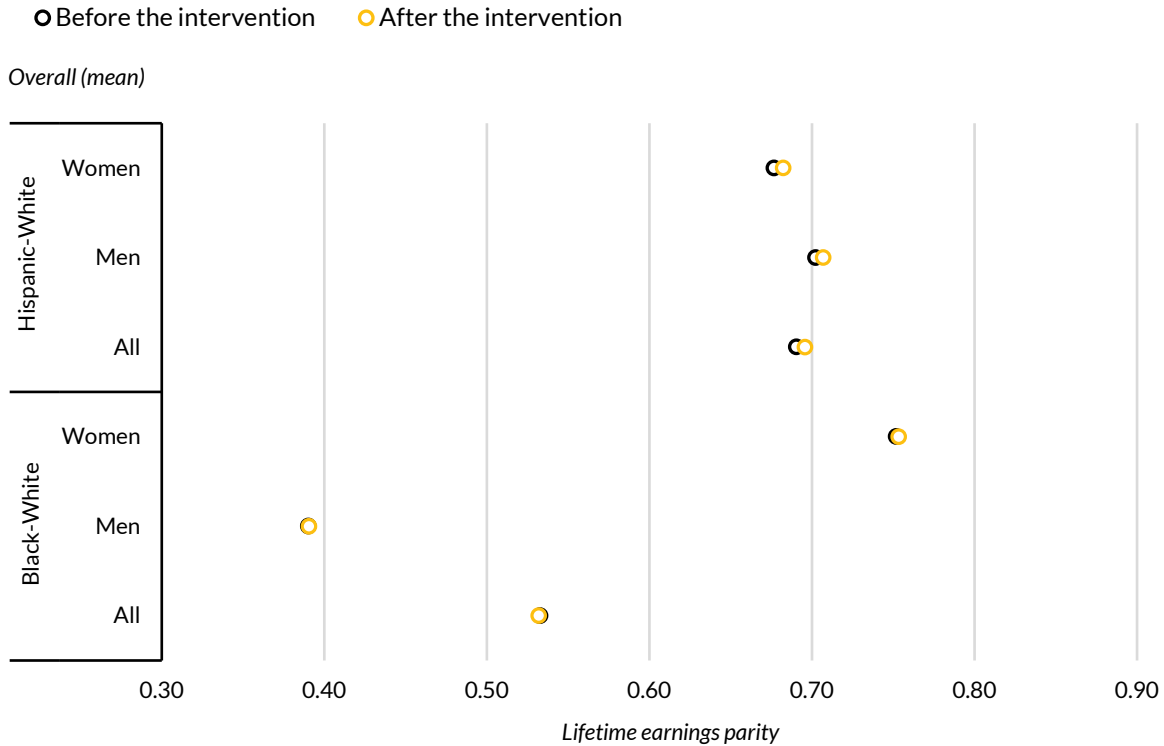
**Results for the Overall Population**

In the overall population, the increase in lifetime earnings is about \$15,400, on average, with large differences in gains between men and women and between Black workers and White or Hispanic workers (table 25B). For example, lifetime earnings increase by about \$8,000, on average, for women in all racial and ethnic groups, while the average increase for men in all racial and ethnic groups exceeds \$22,000. White and Black women see the smallest increases in both adult earnings (3 percent) and lifetime earnings (1 percent). White and Hispanic men, on the other hand, see relatively larger increases in both adult earnings (5 percent) and lifetime earnings (3 percent and 4 percent, respectively).

Despite the changes in lifetime earnings, lifetime earnings parity stays largely the same (figure 20). Although a larger proportion of the Black and Hispanic populations received and benefited from the job

training program, White participants benefited more from the 17 percent earnings increase, given their starting earnings and the relatively larger benefit they get from each additional dollar of earnings at age 24.

**FIGURE 20**  
**Job Training in Young Adulthood: Change in Mean Lifetime Earnings Parity,**  
**by Race or Ethnicity and Sex**



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Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

## Discussion and Policy Implications

The adult and lifetime earnings results we find for both the overall population and those who were eligible for and benefited from the job training program (i.e., had not earned more than a high school diploma by age 24) are modest, particularly when weighed against the average cost per job training program participant. However, the magnitude of the adult earnings improvements is consistent with those found in evaluations of any given job training program.

Our approach to modeling the effects of job training in young adulthood on outcomes at age 30 and lifetime earnings has limitations. First, we modeled only the earnings effects from job training programs, assuming that participating in the program results in the young person getting a higher-paying job after receiving training. But job training programs have been found to affect other outcomes as well, including job attainment, job retention, and job quality (Treskon 2016) that we did not investigate. For example, although the six programs we selected serve similarly young adults (ages 18 to 25), the programs differ in the technical and professional skills and other services (e.g., mentorship, college credits, job matching) they provide to program participants. These other benefits from the programs, which are not captured in our model, could have effects that boost earnings later in life, such as equipping people with skills they can leverage in the workforce to negotiate better pay or to move to a better-paying field throughout their career, not just at age 24.

Second, we modeled an average effect across fields and types of jobs, but people enrolled in job-specific training programs that have historically had better trajectories and pay, such as plumbing and electrician work,<sup>18</sup> may see larger effects on their earnings at age 30 or lifetime earnings than our simulation results.

As noted, programs vary in approach to job training, but a few key shared characteristics have emerged from evaluations of job training programs. Successful programs align training and job placement with labor market needs and in-demand skills, offer sector-based workplace training and ongoing professional development, provide participants with guidance and supportive services, and use positive youth development approaches to encourage and develop close relationships between participants and mentors or other caring adults (Fein and Hamadyk 2018; Hendra et al. 2016; Maguire 2016; Maguire et al. 2010; Nightingale and Eyster 2018; OECD 2010; Ross and Holmes 2019; Ross et al. 2021; US Department of Labor et al. 2014). Increasingly, job training programs are providing additional wraparound supports, such as child care<sup>19</sup> or educational supports (Grobe, Martin, and Steinberg 2015), to encourage greater completion of programs and success from enrollment in such programs.

Although job training programs are a promising intervention, participating in one in young adulthood is unlikely to be the only intervention needed to set all young people on a path to success. In particular, job training programs alone—even those that include the most evidence-informed practices—may not be able to close earnings gaps between White workers and workers of color, which could reflect other structural barriers that keep workers of color from accessing the full benefits of having greater skills and training (Royster 2003).

TABLE 25A

**Adult Outcomes for Educational Attainment***Overall population*

	Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change
All	10.7%	10.8%	0.1 p.p.	26.6%	26.7%	0.1 p.p.
Black	8.1%	8.1%	0.0 p.p.	13.9%	14.0%	0.1 p.p.
Hispanic	10.7%	10.7%	0.0 p.p.	16.3%	16.3%	0.0 p.p.
White or other	11.4%	11.5%	0.1 p.p.	32.9%	33.0%	0.1 p.p.
Women	12.6%	12.6%	0.0 p.p.	30.6%	30.8%	0.2 p.p.
Men	8.9%	9.1%	0.1 p.p.	22.9%	22.9%	0.0 p.p.
Black women	11.3%	11.4%	0.1 p.p.	17.0%	17.2%	0.3 p.p.
Black men	5.0%	5.0%	0.0 p.p.	10.9%	10.9%	0.0 p.p.
Hispanic women	14.3%	14.3%	0.0 p.p.	20.1%	20.1%	0.0 p.p.
Hispanic men	7.4%	7.4%	0.0 p.p.	12.7%	12.7%	0.0 p.p.
White or other women	12.5%	12.5%	0.0 p.p.	37.3%	37.5%	0.3 p.p.
White or other men	10.4%	10.6%	0.2 p.p.	28.9%	28.9%	0.0 p.p.

Source: Social Genome Model.

Notes: N = 400,040. p.p. = percentage points.



TABLE 25B

Adult Outcomes for Earnings

Overall population

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$33,491	\$34,855	\$1,365	\$652,696	\$668,070	\$15,374
Black	\$19,136	\$19,882	\$746	\$401,986	\$410,389	\$8,403
Hispanic	\$30,559	\$32,003	\$1,445	\$521,945	\$537,620	\$15,675
White or other	\$37,998	\$39,497	\$1,498	\$754,881	\$771,935	\$17,054
Women	\$27,250	\$28,085	\$834	\$547,710	\$555,841	\$8,132
Men	\$39,320	\$41,180	\$1,860	\$750,767	\$772,906	\$22,139
Black women	\$18,559	\$19,208	\$649	\$459,094	\$465,924	\$6,829
Black men	\$19,695	\$20,535	\$840	\$346,594	\$356,524	\$9,930
Hispanic women	\$23,875	\$24,813	\$937	\$413,593	\$422,022	\$8,428
Hispanic men	\$36,878	\$38,803	\$1,924	\$624,395	\$646,923	\$22,528
White or other women	\$30,523	\$31,375	\$852	\$610,858	\$619,240	\$8,382
White or other men	\$44,891	\$46,985	\$2,094	\$887,662	\$912,711	\$25,049

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 26A

**Adult Outcomes for Educational Attainment**

*People who actually benefit*

	Associate's Degree, Adulthood			Bachelor's Degree, Adulthood		
	Pre	Post	Change	Pre	Post	Change
All	5.1%	5.2%	0.1 p.p.	6.1%	6.2%	0.1 p.p.
Black	4.3%	4.4%	0.0 p.p.	5.4%	5.5%	0.1 p.p.
Hispanic	4.5%	4.5%	0.0 p.p.	4.9%	4.9%	0.0 p.p.
White or other	5.6%	5.8%	0.2 p.p.	6.7%	6.9%	0.2 p.p.
Women	6.8%	6.8%	0.0 p.p.	6.6%	6.9%	0.3 p.p.
Men	3.7%	3.9%	0.2 p.p.	5.7%	5.7%	0.0 p.p.
Black women	7.0%	7.1%	0.1 p.p.	5.4%	5.7%	0.3 p.p.
Black men	1.9%	1.9%	0.0 p.p.	5.3%	5.3%	0.0 p.p.
Hispanic women	4.9%	4.9%	0.0 p.p.	6.7%	6.7%	0.0 p.p.
Hispanic men	4.1%	4.1%	0.0 p.p.	3.4%	3.4%	0.0 p.p.
White or other women	7.4%	7.4%	0.0 p.p.	6.9%	7.3%	0.5 p.p.
White or other men	4.2%	4.4%	0.3 p.p.	6.6%	6.6%	0.0 p.p.

Source: Social Genome Model.

Notes: N = 294,004. p.p. = percentage points.

TABLE 26B

**Adult Outcomes for Earnings**

*People who actually benefit*

	Earnings, Adulthood			Lifetime Earnings		
	Pre	Post	Change	Pre	Post	Change
All	\$27,207	\$29,064	\$1,857	\$506,195	\$527,113	\$20,917
Black	\$16,090	\$16,939	\$849	\$339,456	\$349,022	\$9,566
Hispanic	\$27,340	\$29,070	\$1,730	\$442,759	\$461,527	\$18,768
White or other	\$30,863	\$33,103	\$2,240	\$585,109	\$610,601	\$25,492
Women	\$19,718	\$20,925	\$1,207	\$394,730	\$406,494	\$11,764
Men	\$33,441	\$35,838	\$2,398	\$598,968	\$627,504	\$28,536
Black women	\$15,122	\$15,895	\$773	\$392,029	\$400,168	\$8,139
Black men	\$16,949	\$17,866	\$916	\$292,778	\$303,611	\$10,833
Hispanic women	\$20,564	\$21,757	\$1,194	\$328,797	\$339,529	\$10,732
Hispanic men	\$33,045	\$35,227	\$2,182	\$538,707	\$564,240	\$25,533
White or other women	\$21,008	\$22,373	\$1,364	\$420,437	\$433,857	\$13,421
White or other men	\$38,856	\$41,806	\$2,950	\$718,668	\$753,950	\$35,282

Source: Social Genome Model.

Notes: N = 294,004. Lifetime earnings are discounted present values in 2018 dollars; undiscounted lifetime earnings would be about twice as much.

TABLE 27

**Lifetime Earnings Parity in the Overall Population**

		Black-White				Hispanic-White			
		Mean	Median	25th percentile	75th percentile	Mean	Median	25th percentile	75th percentile
All	Pre	0.53	0.52	0.49	0.53	0.69	0.70	0.62	0.67
	Post	0.53	0.52	0.49	0.53	0.70	0.70	0.63	0.69
Men	Pre	0.39	0.37	0.32	0.37	0.70	0.70	0.64	0.70
	Post	0.39	0.35	0.31	0.39	0.71	0.70	0.62	0.71
Women	Pre	0.75	0.72	0.87	0.73	0.68	0.67	0.68	0.70
	Post	0.75	0.71	0.86	0.74	0.68	0.68	0.66	0.71

Source: Social Genome Model.

Notes: N = 400,040. Lifetime earnings are discounted present values in 2018 dollars.

# 10. Conclusion

Improving long-term outcomes for adolescents and young adults and reducing racial and ethnic disparities are important goals for our society. In the preceding eight simulation exercises, we used the Social Genome Model to examine how structural factors, in conjunction with social and demographic background factors, affect the directions people take at key crossroads moments. The simulations assess how actions and options at these crossroads moments can influence material and social well-being in early adulthood and earnings throughout adulthood.

Three of our simulation exercises capture aspirations for making our society more just; we asked, what if society treated people of color like it treats White people, what if the criminal justice system treated young Black men like it treats young White men, and what if we could improve the quality of low-wage jobs? We have no clear tools or paths to achieving those aspirations, but they serve as a benchmark for what a more equitable society could look like.

Our other five simulations consider the potential effects of expanding approaches found to improve the educational and employment outcomes of adolescents and young adults. Rooted in research and evaluations, these simulations provide a sense of the scale, scope, and effects of the interventions we considered, and we can assess the associated costs with the potential changes in lifetime earnings.

Our results indicate that the costs of structural racism are high. If young Black and Hispanic people were rewarded for their achievements and penalized for their missteps to the same degree as young White people, the discounted present value of lifetime earnings would rise by more than \$250,000 for Black people and by almost \$130,000 for Hispanic people in 2018 dollars. (If we apply no discounting factor to lifetime earnings, these figures would be approximately twice as large.) That represents an increase in lifetime earnings of more than 60 percent for Black people and more than 20 percent for Hispanic people. Further, the gaps in lifetime earnings between Black and White people and between Hispanic and White people would narrow by 34 and 17 percentage points, respectively. The impacts are particularly large for Black men.

In some sense, these findings on the costs of structural racism highlight the strong headwinds that any policy, program, or practice must overcome to improve the outcomes for Black and Hispanic people and to reduce racial and ethnic disparities. Our two other aspirational simulations, which are broadly aimed at improving outcomes for subgroups of the population, also illustrate these headwinds. Changes to the criminal justice system could lead to an increase in the present value of lifetime earnings of about \$25,000 for Black men overall and an increase of more than \$86,000 for Black men whose criminal

convictions we erased in our simulations. Improvements in job quality for those with low earnings would increase lifetime earnings by about \$52,000 overall, and the biggest beneficiaries would be White and Hispanic men.

We can view the findings from our expansion simulations against the backdrop of findings from our aspirational simulations. The average overall increases in lifetime earnings and the reductions in racial and ethnic disparities are generally smaller for our expansion simulations than for our aspirational interventions.

Although it is tempting to try to compare the five expansion simulations with one another, they differ considerably in scale and scope. Some apply treatments to all people, while others have narrower eligibility criteria at specific crossroads moments (e.g., people who have enrolled in associate's degree programs but have not earned that degree). Similarly, some of the programs we consider in expansion simulations require providing services or treatments to a large group of people, but only a fraction of those people will directly realize the benefit. For example, research may indicate that an intervention to help associate's degree enrollees complete their programs doubles degree attainment. That means that many, but not all, enrollees will benefit from the intervention in a way our model can capture by receiving a degree. Thus, the average benefits for people receiving the intervention will be lower than the benefits enjoyed by those for whom the intervention "worked."

Our first expansion simulation involved simulating a comprehensive integrated student support model during early adolescence for young people whose families have low earnings (no more than 200 percent of the federal poverty level). We estimate that providing integrated student supports within community schools would cost an estimated \$5,410 per child over six years and raise the discounted lifetime earnings of these children by \$37,250. Black and Hispanic children represent a disproportionately large share of children from families with low earnings relative to White children. Nevertheless, children from all racial and ethnic backgrounds benefit from this intervention, and the gap in mean lifetime earnings between White people and Black people narrows by 3 percentage points while the gap between White people and Hispanic people narrows by 1 percentage point.

Next, we consider the Small Schools of Choice intervention, which research finds increases high school graduation rates. The program costs approximately \$2,500 per student and increases high school graduation rates by about 5 percentage points. We project that this simulated rise in high school graduation rates would increase discounted lifetime earnings by more than \$14,600 and reduce the earnings gaps for Black and Hispanic people relative to White people by 1 to 2 percentage point. Here, all children are exposed to the intervention, even those who would graduate from high school without it.

Further, some children will still not complete high school. For children who benefited from the intervention (i.e., those who would not have graduated from high school without it), we project discounted lifetime earnings to rise by more than \$270,000.

Moving to the next level of educational attainment, the Accelerated Study in Associate Programs demonstrably increases the chances that someone enrolled in an associate's degree program will earn a degree or certificate. Drawing on evaluations of ASAP, we estimate that associate's degree attainment among our SGM population will increase by 4.6 percentage points, at a cost of about \$14,000 per enrollee. For those who attained an associate's degree as a result of the program, lifetime earnings would increase about \$175,000. Because the intervention reaches only those enrolled in associate's programs, the overall impact on racial and ethnic disparities is modest, reducing the gap in lifetime earnings between Black people and White people by 3 percentage points and the gap between Hispanic people and White people by 2 percentage points.

Next, we consider ways to increase bachelor's degree attainment. We focused on a low-cost intervention that encourages high-performing high school students from families with low earnings to apply to highly selective colleges. Talented students who enroll in selective colleges are more likely to complete their bachelor's degree than similar students who enroll in less-selective schools or fail to attend a four-year college. The intervention involves mailing information to students encouraging them to apply to a selective college and noting that, if they are admitted, they will qualify for a scholarship. The cost of the mailing is about \$10 per student; as these students would qualify for scholarships or financial aid regardless of the intervention, there is no additional cost. Again, the intervention focuses on a limited number of students, and not all students will in fact enroll in a selective college. Nonetheless, our simulations suggest that the intervention would increase average discounted lifetime earnings by about \$6,600 but only narrow that gap between White people and Black people by 1 percentage point and the gap between White people and Hispanic people by 2 percentage points. But if we focus on only those students who earn a bachelor's degree as a result of the intervention, the benefits are staggeringly large: a high-performing high school student who otherwise would not have completed a bachelor's degree would see their discounted lifetime earnings increase by more than \$420,000 as a result of earning the degree.

Finally, we consider enrolling all young people with no more than a high school diploma in a high-quality training program. Although we did not select a particular program for this simulation, we considered a range of programs that rigorous evaluations demonstrate have positive impacts on employment and earnings in the short term. On average, these programs cost about \$19,600 per enrollee. Our simulations suggest that average lifetime earnings would increase by about \$15,400

overall and by about \$21,000 for those who receive the training. We find negligible impacts on the gap in lifetime earnings between Black people and White people and that the gap between Hispanic people and White people narrows by 1 percentage point.

## Discussion

It can be tempting to try to compare the costs and the benefits of these interventions, but we caution against making strict comparisons. The interventions we consider here differ in scale and scope, and the costs we use are not precise but rather are illustrative of what similar styles of interventions have cost. Further, the immediate impacts we apply in our simulations are based on research on specific populations. We assume the effects documented in the literature are transferable and scalable, but that is not necessarily the case.

Rather than informing specific decisions about interventions, programs, and practices, our simulations are best used to frame discussions about the life stages and aspects of people's lives that likely provide significant leverage for improving long-term outcomes, reducing disparities, and setting expectations for the potential impacts for different interventions. Our aspirational interventions show the high costs of structural racism, particularly for Black people. Those are the headwinds any intervention, or set of interventions, must overcome.

Interventions that touch on multiple aspects of young people's lives and that begin earlier in their lives show great potential to generate broad-based improvements in lifetime earnings. Even though integrated student supports in community schools are expected to make only modest improvements in young adolescents' cognitive development, socioemotional well-being, and health, the combined effects of all those small improvements generates substantial long-term earnings gains for a broad set of young people who live in families with low earnings. Similarly, comprehensive school reforms such as Small Schools of Choice can increase high school completion; and although the program may not target the young people most at risk for dropping out of high school, the benefits to those who would otherwise not have earned a high school diploma are so profound that the intervention increases average lifetime earnings notably. Finally, our simulations for increasing bachelor's degree attainment indicate that a low-cost intervention can have a significant effect on adolescents who are otherwise primed to succeed but need help and encouragement to enroll in a selective college where they can thrive.

Overall, there is no single crossroads moment that can consistently place adolescents and young adults on a path to substantially better lifetime outcomes. Each crossroad is influenced by prior

crossroads, and the decisions available to adolescents and young adults are circumscribed by their past experiences and the social structures that encumber or facilitate their choices. Nevertheless, research and our simulations show that progress is possible. Some people can improve their life trajectories significantly if they can be encouraged and supported to take the next step in a positive direction. And average lifetime earnings across the population could also increase significantly if we provide opportunities and resources that make even modest improvements in young people's short-term outcomes, as those modest benefits accrete and grow as people age into adulthood. Moreover, if several approaches are combined, the prospects for substantial and life-changing effects would likely increase.

Also, although we report lifetime earnings as a concrete and meaningful outcome, there are many other associated benefits, such as better physical and mental health, the individual and social benefits of greater education, and the value to the next generation of growing up in a family and community that enjoy economic and social well-being. For example, we estimate the effects of reducing racism in people's lives for those people, but we do not quantify the implications of less inequity for national productivity, taxes, social integration, or the quality of life in the nation as a whole.

The Social Genome Model provides a framework and tool for assessing the long-term effects of social interventions. Most evaluation studies follow participants for only a few years at best. However, as these simulations suggest, effective interventions can stimulate changes that have long-term positive implications for individuals.



# Notes

- <sup>1</sup> The Social Genome Model is a collaborative effort of the Urban Institute, Child Trends, and the Brookings Institution to provide actionable information for policymakers, public administrators, and philanthropists on strategies to best promote children’s long-term success. See Werner et al. (2021).
- <sup>2</sup> Mathematically,  
$$Outcome = \beta_0 + \beta_1 CAB + \beta_2 Previous\ Stage\ Outcomes + \varepsilon$$
where  $\beta_1$  and  $\beta_2$  are vectors of coefficients, CAB is the set of *Circumstances at Birth* variables, *Previous Stage Outcomes* is the set of outcomes from prior stages, and  $\varepsilon$  is a random error term.
- <sup>3</sup> “Structural Racism in America,” Urban Institute, accessed October 18, 2021, <https://www.urban.org/features/structural-racism-america>.
- <sup>4</sup> See also Jessie Laurore, Yuko Yadatsu Ekyalongo, Salomon Villatoro, Deana Around Him, and Kristin Anderson Moore, “To Protect Children of Color, Leaders Must Understand and Address Environmental Racism,” Child Trends blog, February 9, 2021, <https://www.childtrends.org/blog/to-protect-children-of-color-leaders-must-understand-and-address-environmental-racism>.
- <sup>5</sup> Vanessa Sacks and David Murphey, “The Prevalence of Adverse Childhood Experiences, Nationally, by State, and by Race or Ethnicity,” Child Trends, February 12, 2018, <https://www.childtrends.org/publications/prevalence-adverse-childhood-experiences-nationally-state-race-ethnicity>.
- <sup>6</sup> “Structural Racism in America,” Urban Institute.
- <sup>7</sup> Because the factors affecting outcomes differ across racial and ethnic groups, these simulations required an additional step that included reassigning stochastic variation in some variables. As a result, the lifetime income projections shown for this simulation are slightly different than other models.
- <sup>7</sup> Lara Hamdan, “\$10 Billion Proposal from Rep. Bush Would Move Crisis Response to New Agency Staffed by Social Workers,” NPR, June 28, 2021, <https://www.npr.org/templates/story/story.php?storyId=1011074045&ft=nprml&f=1011074045>.
- <sup>8</sup> The group includes those who do not have a bachelor’s degree and those with missing data on bachelor’s degree attainment who, based on their characteristics, are unlikely to have one.
- <sup>9</sup> US Bureau of Labor Statistics, “Employer Costs for Employee Compensation Summary, March 2021,” news release, accessed August 11, 2021. To view this news release, which has been updated since our access date to include June 2021 data, see <https://www.bls.gov/news.release/ecec.nr0.htm>.
- <sup>10</sup> By staggering the wage and fringe benefits increase process, a worker who was earning less than another worker preintervention may earn more after the simulation.
- <sup>11</sup> Martha Ross, Alicia Sasser Modestino, Sarah Soroui, and Rachad Cope, “To ‘Build Back Better,’ We Must Connect Young People to Jobs and Education,” *The Avenue* (blog), Brookings Institution, May 20, 2021, <https://www.brookings.edu/blog/the-avenue/2021/05/20/to-build-back-better-we-must-connect-young-people-to-jobs-and-education/>.
- <sup>12</sup> Michael Q. McShane, “Supporting Students outside the Classroom,” *Education Next*, Summer 2019, <https://www.educationnext.org/supporting-students-outside-classroom-can-wraparound-services-improve-academic-performance/>.

- <sup>13</sup> “Fast Facts: Dropout Rates,” US Department of Education, Institute of Education Sciences, National Center for Education Statistics, accessed November 12, 2021, <https://nces.ed.gov/fastfacts/display.asp?id=16>.
- <sup>14</sup> “Small Schools of Choice (SSC) Model Summary,” MDRC, accessed December 15, 2021, <https://www2.ed.gov/programs/sif/sigevidencebased/smallschlofchoicenarrative.pdf>.
- <sup>15</sup> “Small Schools of Choice,” MDRC.
- <sup>16</sup> Jaison R. Abel and Richard Deitz, “Despite Rising Costs, College Is Still a Good Investment,” *Liberty Street Economics* (blog), Federal Reserve Bank of New York, June 5, 2019, <https://libtystreeteconomics.newyorkfed.org/2019/06/despite-rising-costs-college-is-still-a-good-investment/>.
- <sup>17</sup> Ross, Modestino, Soroui, and Cope, “To ‘Build Back Better.’”
- <sup>18</sup> Data are from the US Bureau of Labor Statistics Occupational Outlooks Handbook, available at <https://www.bls.gov/ooh/>.
- <sup>19</sup> Gina Adams and Shayne Spaulding, “Child Care Support Is Critical for Advancing Job Training and Workforce Development,” *Urban Wire* (blog), Urban Institute, August 16, 2018, <https://www.urban.org/urban-wire/child-care-support-critical-advancing-job-training-and-workforce-development>.

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**Steven Martin** is a senior research associate in the Center on Labor, Human Services, and Population at the Urban Institute, having joined in 2013. He works on various topics in social demography; his particular area of interest has been modeling demographic events across the life course. His recent work has covered a range of demographic topics across the life course, such as nonmarital childbearing, fertility timing, childlessness, union formation and dissolution, and age at entry into sexual activity as well as topics in time use, well-being, the "digital divide" (the unequal diffusion of Internet and computer use in the United States), and the quality of data from event-history surveys. Martin has a PhD in sociology from the University of Wisconsin-Madison. His undergraduate training was in biology at the University of California, Berkeley, with an emphasis on evolutionary biology; he also earned teaching credentials for middle and high school science and mathematics.



**Alison McClay** is a senior research analyst within the youth development research area of Child Trends. She works as a mixed methods analyst to examine the impact of educational, health, and program interventions on later youth and young adult outcomes. Her current work includes continuous quality improvement and evaluation of El Camino, a sexual health promotion program Child Trends developed for Latino adolescents that focuses on the attainment of participants' personal goals; using the Social Genome Model to identify paths to upward social mobility; and a mixed-method study to assess the role of MIECHV-funded local program implementation to advance health equity in response to COVID-19. Before Child Trends, McClay worked with children, adolescents, and young adults in various capacities, including working as an out-of-school time practitioner, college resident assistant, volunteer community health and sexual violence prevention educator, and eighth grade math teacher. She attributes her interest in positive youth development, sexual and reproductive health, and racial and health equity to these experiences. McClay holds a BS in mathematics from Appalachian State University and an MPH in maternal and child health from the University of North Carolina at Chapel Hill.

**Kristin Anderson Moore** is an internationally recognized social psychologist with more than 40 years of experience monitoring, studying, and evaluating child and family well-being. Moore has published several books, including *What Do Children Need to Flourish? Conceptualizing and Measuring Indicators of Positive Development* (2005) and *Well-Being: Positive Development across the Life Course* (2003). She has also contributed prolifically to academic journals for decades. She has received awards from Healthy Teen Network (Researcher of the Year, 2010), the National Council on Family Relations (Fellow, 2013) and the American Sociological Association (William Foote Whyte Award, 2009; Distinguished Career Achievement Award for the Practice of Sociology, 2018), among other citations. She has also testified before varied congressional committees on issues pertaining to children, youth, and families. Moore is trained as a survey researcher and has worked on numerous federal surveys and surveys designed for evaluation studies. Her current work includes an evaluation of youthCONNECT in Prince George's County in Maryland, development of the Social Genome Model, a study of positive youth development in five Generation Work communities and among young adults transitioning out of juvenile justice and child welfare systems, as well as development of a Healthy and Ready to Learn measure for children ages 3 through 5 for the National Survey of Children's Health. She led two studies of integrated student supports and codirected development of El Camino, an intervention to reduce teen pregnancy while enhancing educational engagement. Moore combines her expertise in youth development, evaluation, and survey design to work with programs that seek to become evidence based. She is passionate about positive youth development; the effects of climate change on children and families; indicators of child

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**Gabriel Piña** is a research scientist in the youth development research area at Child Trends. He works on quantitative analyses to research youth development and early childhood education issues. Piña is one of the primary analysts on the Social Genome Model, a microsimulation model that draws on available research and evaluation studies to forecast how early childhood interventions can affect critical adolescent and adult outcomes like level of education, income, unemployment, and poverty. Before joining Child Trends, his research focused on examining the impact of homeless prevention programs on child and youth residential instability and conducting benefit-cost analyses of early childhood education programs in Minnesota. Piña has extensive experience in quantitative analysis, particularly econometrics; quasi-experimental methods; and impact evaluation. He is passionate about effectively communicating research with data and used his expertise to create and teach a class about data visualization for several years. He earned his PhD in public affairs from Indiana University.

**Vanessa Sacks** works in the youth development research area at Child Trends. Sacks's work spans a wide range of quantitative analyses and youth development issues. She has conducted numerous studies, from quasi-experimental evaluations of youth program outcomes, to analyses of state policy using large national datasets, to performance management projects. Her primary research interests are around the social and health barriers that low-income youth face in their path to economic self-sufficiency and evaluations of intervention programs aimed at this population. Sacks holds an MPP from Georgetown University.

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