

Hope Chicago: Social Return on Investment*[†]

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Summary Findings

Ensuring all students have the opportunity to go to college is critical for a growing economy and an equitable society. In Chicago, that opportunity is open to too few students.

Hope Chicago offers Chicago students in target high schools the chance to enroll in college without worrying about affordability and debt; the program also offers advising and support both before and during the students' time in college; similar services are offered to the students' parents. *Hope Chicago* works through three mechanisms that have been found to boost college enrollment and completion.

This Report calculates the economic value of *Hope Chicago* in terms of the economic benefits that flow from having more college-educated persons. The Report also considers the social value of the program in promoting a more equitable higher education system.

Economic Value of Hope Chicago

Relative to the expected student in the Chicago Public School system, a *Hope Chicago* student is more likely to attend college and to enroll in a BA degree program at a more competitively ranked four-year institution. Of the 2022-23 cohort of *Hope Chicago* participants, 84% enrolled at a four-year college and 28% attended a college ranked highly competitive.

This increase in "college human capital" from *Hope Chicago* generates benefits in terms of higher earnings, improved health status, lower involvement in the criminal justice system and other economic externalities; against these benefits are set the costs of attending college. These benefits and costs can be calculated using a life-course model.

The benefits of *Hope Chicago* depend on how effective the program is. (The first cohort of the program began in 2022). Three model scenarios are considered:

- Baseline – where only gains from college enrollment are considered
- Aid-support – where financial aid impacts are also counted
- Integrated – where the full set of supports and financial aid are counted

The impact of *Hope Chicago* can be measured from multiple perspectives. For the student, the program offers debt-free college with advising supports. Given the economic returns to college, the program is extremely valuable from the student perspective. The other important perspectives are: overall (social), which includes all resources; and fiscal, which considers the impacts on Chicago taxpayers. The economic value from these perspectives is given in the Table below.

Lifetime Gains relative to Comparison Schools

	Model Scenarios for <i>Hope Chicago</i> impact		
	Baseline	Aid Support	Integrated
Social perspective	\$214,720	\$296,810	\$364,340
Fiscal perspective:			
Federal	\$44,200	\$60,340	\$73,910
State/City	\$23,350	\$31,580	\$38,700
Total	\$67,560	\$91,930	\$112,620

Notes: Present value at age 18 (rounded). 2023 dollars.

Compared to the typical student in comparable schools in Chicago, each participant in the *Hope Chicago* program generates: overall economic gains valued at between +\$214,720–\$364,340; state/City fiscal gains valued at +\$23,350–\$38,700; and total fiscal gains (federal, Illinois and City of Chicago) valued at: +\$67,560–\$112,620. These are lump sum amounts at age 18 (equivalent to a Certificate of Deposit).

The economic value of *Hope Chicago* is also modeled relative to other comparison groups: Chicago Public School college-bound students; and students at high schools comparable to those attended by *Hope Chicago* students. For each comparison, there are substantial economic and fiscal gains from the program.

The Return on Investment (ROI) for *Hope Chicago* is very high for students at >25%. Looking directly at the City Budget, there are significant budgetary gains of (conservatively) \$1,120 per year after a student completes the *Hope Chicago* program. Looking at the Illinois state Budget, there are budgetary gains of \$2,710 per participant. Thus, each Treasury (Department of Finance) should consider *Hope Chicago* as revenue-enhancing.

To calculate the Social Return on Investment (SROI) it is necessary to estimate the cost to deliver the *Hope Chicago* services to the students. (The costs to pay for the students' college tuition/fees are already included in the model scenarios). The cost of these additional resources is not yet available. Assuming an operating cost of \$20,000 per student, the SROI is conservatively estimated at 13% with a benefit-cost ratio of +4. This rate compares favorably to other social investments (and to the rate of return on private capital). It is also conservative in that a full social appraisal would include the equity-enhancing features of *Hope Chicago*.

A summary of how *Hope Chicago* generates economic value is given in the Box below.

Economic Evaluation of *Hope Chicago*

◆ **Student: Gain of +\$167,160**

Gross earnings plus health/social advantages minus tuition/fees and lost income

◆ **Social perspective City of Chicago: Gain of \geq \$214,720**

Gross earnings plus economic savings minus public spending on college

◆ **Taxpayer perspective City of Chicago: Gain of \geq \$67,560**

Extra tax revenue plus expenditure savings minus public spending on college

◆ **Social Return on Investment:**

Net Present Value of \geq \$193,120; Benefits \geq Costs by 4.2×

All economic gains minus all resources to implement the program

Social Value of *Hope Chicago*

College systems in Chicago and across the U.S. do not offer all students an equal chance at success. Access to college is stratified by race and economic disadvantage, with enrollment at top-tier college disproportionately from high-income families. Correspondingly, outcomes from college can perpetuate gaps across groups: for example, African American students are less likely to graduate but have higher levels of student debt; they also have lower post-college earnings. By offering college access and financial support to disadvantaged students, *Hope Chicago* serves as a way to promote a fairer college system and so enhance societal equity.

Hope Chicago greatly reduces accumulated student loan debt. African American and Hispanic students would be expected to borrow \$31,490 for a college education offered by *Hope Chicago*. This is significantly above the amount white students would borrow for the same education. Eliminating this debt would significantly reduce the borrowing gaps by race.

Debt freedom generates economic value as college-leavers are not constrained in their job search or investment loans. From calculations of expected debt and the impact of debt relief, the value of being debt-free is conservatively estimated at \$3,380 per *Hope Chicago* participant. For this group of students, being debt-free is worth an amount that is 34 percentage points for African Americans and 27 percentage points for Hispanic graduates who are starting out in their careers.

Multi-generational college enrollment is both efficient and equitable. Adult learners – many of whom are within economically disadvantaged families – can directly benefit from going to college. However, the more significant benefit is the spill-over effect on the younger generations: parental education is a very strong predictor of whether a student will enroll at college.

There is considerable scope to expand participation in *Hope Chicago* across schools within the Chicago Public Schools. Conservatively, 4,640 additional students would be eligible for the program. Based on available evidence, increased participation would likely yield similar returns to those calculated above: • average cost per participant would be stable; and • average benefits would also be stable. In addition, expanding the program would further reduce in-college and post-college gaps by race and economic disadvantage.

Overall, looking from a range of different perspectives and groups, and accounting for the many consequences of the program, there are consistently large economic and social gains from expanding college access and enhancing college completion via *Hope Chicago*.

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1 Introduction

The *Hope Chicago* program is a significant investment in the future opportunities for students in the Chicago Public School system. The program provides eligible Chicago Public School high school graduates – and their parents – with equitable access to debt-free higher education, as well as offering advising supports and stipends. These investments are motivated by the compelling evidence that increased human capital and social capital can have high returns for the students, for the taxpayer, and for the wider economy.¹

Hope Chicago is designed to help disadvantaged students become college graduates. It addresses multiple uncertainties and barriers that disadvantaged students face as they transition from high school to college. These uncertainties include: whether to attend college (or look for work); what to study at college; and which college to attend. The barriers are even more significant: many students are unable to afford college fees; and for those who do enroll, the financial pressures may force them to drop out after the first semester or year.² By providing substantial support over multiple years, *Hope Chicago* helps disadvantaged students confidently enroll and succeed in college.

In addition, *Hope Chicago* promotes a more equitable higher education system. The gaps in college attendance and completion by student disadvantage are vast. For example, only 12% of students from homes with a non-college-educated single parent complete college; if the student comes from a home with two parents of whom at least one is college-educated, the completion rate is 66%.³ Closing college education gaps is an important way to promote social equity.

As a new program with the potential to bring about significant social change, *Hope Chicago* can be evaluated using a Social Return on Investment (SROI) model. A full SROI appraisal includes:

- Economic evaluation of the gains in human and social capital from college
- Analysis of social impact in terms of equity, indebtedness and family cohesion

Applying a comprehensive SROI model demonstrates the value of the program; the results also allow its value to be compared to other similar programs. The overall objective is to identify the social efficiency of the *Hope Chicago* program.

This report provides a complete Social Return on Investment appraisal of *Hope Chicago*. Section 2 describes the program, as well as the mechanisms through which it generates social change

¹For a sample of the literature, see Belfield and Bailey (2018); Heckman et al. (2018); Hulten and Ramey (2019); Vining and Weimer (2019).

²For analytical treatments of these issues, see Athreya and Eberly (2021); Dynarski et al. (2021).

³Gaps in attendance are equally large. See (Blandin and Herrington, 2022, Figure 3).

and the expected outcomes of the program. Section 3 describes the SROI appraisal framework. Section 4 performs a comprehensive economic evaluation to derive the net present value of the program from the perspective of the student, the taxpayer, and the city of Chicago. Section 5 considers the social value of *Hope Chicago* in promoting debt-free college and intra-family support. Section 6 considers the opportunities for expanding the program to a wider group of students and schools. Finally, Section 7 provides analytical and comparative conclusions regarding the full program and its components.

2 Hope Chicago in Context

2.1 Postsecondary Education for CPS Graduates

Across Chicago’s high school cohorts, opportunities for postsecondary education – both in absolute and relative terms – are not sufficient.⁴ Each year, the city is not building enough “human capital”: the knowledge and skills that young adults need in order to be productive at work and to succeed in their daily lives.

The Chicago Public Schools (CPS) high school graduation rate is stable at 80-84% of the freshman cohort. For the graduating class of 2022, this means that approximately 22,550 students have the option to attend a postsecondary institution. However, many of these graduates will not enroll at college and (subsequently) many will not complete their program. As for prior cohorts, these new high school graduates are likely to have human capital in adulthood that does not maximize their potential.

The college pipeline is shown in Table 1 (a detailed version is in Appendix Table A1). Across the CPS system, 59% of students enroll in college. Yet, because fewer than half (46%) complete their program, the end result is that only one-quarter of all CPS high school graduates (27%) obtain a college credential.⁵ For some schools within CPS, the rate of postsecondary progress is even lower. For the schools where *Hope Chicago* is active, the school-level college enrollment rate is 51%; with a

⁴Two important causes of this lack of opportunity are the recent shocks of the Great Recession (2008-09) and the COVID-19 pandemic (2020–). The Great Recession reduced education funding over multiple years (Feldman and Romano, 2019; Ma et al., 2019). The pandemic exacerbated the long-run skills deficit by impairing the academic skills of K-12 students (Fuchs-Schündeln et al., 2020; Goldhaber et al., 2022). Some students will catch up in college; for others the pandemic was a permanent human capital shock.

⁵The overall human capital deficit is even larger when college status is accounted for. Disproportionately, many of the CPS graduates who do attend college enroll in shorter certificate programs or associate degree programs at community colleges. These deficits are accounted for in the SROI model below.

Table 1: **Postsecondary Pipeline: Chicago**

	High school graduates	Postsecondary status		
		Enroll	Complete	Complete (if enroll)
Chicago Public Schools	22,550	59%	27%	46%
<i>Hope Chicago</i> schools ^a	730	51%	20%	39%
Comparison schools ^b	2,830	54%	24%	44%

Source: <https://toandthrough.uchicago.edu>. *Notes:* High school freshman cohort 2015. See Appendix Table A1. ^a *Hope Chicago* high schools are: Al Raby; Faragut; Juarez; Morgan Park; Noble-Johnson. ^b Comparison schools are 3 × 5 high schools matched based on demographics, performance and enrollment size (comparison schools from matching algorithm at <https://toandthrough.uchicago.edu>). Enrollment is measured within one year of high school graduation.

college completion rate of 39%, only 20% of the high school graduate cohort will complete college.⁶ Pipeline rates for comparison schools (with similar demographics, performance and school size) are equivalent to the *Hope Chicago* schools. Overall, Table 1 shows that both college enrollment rates and college completion rates are lower at *Hope Chicago* schools than the average for Chicago Public Schools.

The long-term result – spanning over many cohorts – is a Chicago labor force with levels of human capital that are not at their full potential.

2.2 The *Hope Chicago* Program

Hope Chicago offers an opportunity to substantially improve the college pipeline. Initiated for the graduating class of 2022, the program is offered at five participating schools within the Chicago Public School system. *Hope Chicago* provides these high school graduates and their parents with equitable access to debt-free higher education, as well as offering advising supports and stipends before and during college attendance. Specifically, the program has three integrated components:

- In-school supports: academic and college advising
- In-college supports: financial aid via direct payment of tuition/fees; stipends; access to community networks; enhanced career/college advising; internships/mentoring
- Within-family supports: direct payment of tuition/fees; advising supports

⁶These rates match almost exactly the rates for students who grew up in single-parent homes where the parent does not have a college degree (as reported above from Blandin and Herrington (2022)).

These components align with three mechanisms that – as a theory of change – explain why post-secondary attainment is sub-optimal. Research has identified several mechanisms, including:

- *Uncertainty*: Many high school students are uncertain about applications and admissions to college as well as about the likely benefits of college. In-school supports can reduce that uncertainty by increasing students’ confidence about their college-readiness.
- *Financing*: Most high school students from low-income households face financial constraints to pay tuition and fees (especially when they are forgoing opportunities to earn). Also, decisions about programs and courses are overly complex. In-college supports – both financial and related to advising – help offset these challenges.
- *Home circumstances*: Personal and home pressures make college enrollment and year-to-year persistence difficult. Within-family supports alleviate these home pressures.

Hence, *Hope Chicago* is expected to be effective: the three sets of supports align with the research on the theory of change for college attainment.⁷

Direct evidence on outcomes also justifies the program components. First, there is evidence from evaluations of programs similar to (but not the same as) *Hope Chicago*. These evaluations are of programs in New York, Kalamazoo, Pittsburgh, and Oregon. Overall, these evaluations have found strongly positive effects and economic gains that justify the cost of the program.⁸ Second, there is research on specific mechanisms and how these affect college outcomes. There is evidence on: help on college application processes for high school seniors; scholarship awards; and SAT-taking supports. This evidence too shows how targeted and well-resourced interventions can yield beneficial outcomes, particularly for disadvantaged students.⁹

2.3 Participation in *Hope Chicago*

As of Fall 2022, *Hope Chicago* identified 911 potentially eligible students. Of these, 670 (74%) are currently attending college; these are the program participants receiving resources and support

⁷Uncertainty about college is identified by Bettinger et al. (2012); Dynarski et al. (2021). Evidence on the importance of the financial constraints and other challenges is extensive (Cappelli, 2015; Bailey et al., 2015; Carruthers and Fox, 2016; Goldrick-Rab, 2016; Chen et al., 2020). Evidence on family and household pressures is described by Ginder and Mann (2018). Academic preparation students receive in elementary and secondary schooling is clearly a factor influencing college attainment (Athreya and Eberly, 2021). However, improving this preparation is outside the scope of non-profit agencies and foundations.

⁸See Levin and Garcia (2017); Weiss et al. (2019); Bartik et al. (2021); Page et al. (2019); Gurantz (2020).

⁹See respectively Bettinger et al. (2012); Oreopoulos and Ford (2019); Cohodes and Goodman (2014); Hurwitz et al. (2017).

from *Hope Chicago*. The characteristics of the full sample and the college-enrolled are shown in Table 2. The average age is 18, with approximately equal split by gender and by Hispanic and African American race/ethnicity. Household income in the local area is low (at just over \$40,000). The students high school GPAs were at B-grade levels (GPAs of ≈ 3), with SAT scores on average of 841-854 (compared to a national average of 1050).

Table 2: Participants in *Hope Chicago*

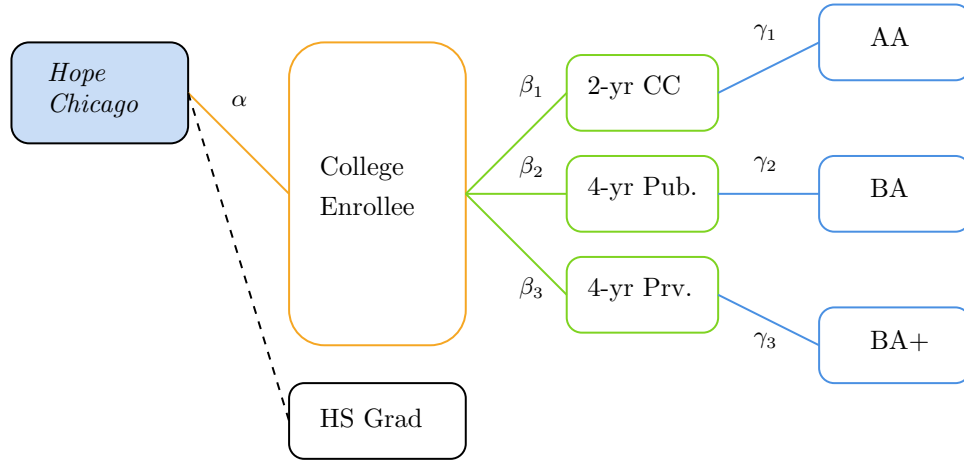
	Full sample		College-enrolled	
	Mean	(SD)	Mean	(SD)
<i>Individual characteristics:</i>				
Age	18.24	(0.52)	18.19	(0.43)
Female	0.52	(0.50)	0.56	(0.50)
Race: Hispanic	0.54	(0.50)	0.54	(0.50)
Race: African American	0.44	(0.50)	0.43	(0.50)
Household income in zipcode (\$000s) ^a	41.93	(13.89)	41.33	(13.31)
GPA in high school	2.85	(0.71)	3.02	(0.62)
SAT test score	841	(109)	854	(112)
<i>College enrollment:</i>				
Four-year private	0.16	(0.37)	0.22	(0.42)
Four-year public	0.46	(0.50)	0.62	(0.49)
Two-year public	0.20	(0.40)	0.15	(0.52)
Highly competitive rank	0.20	(0.40)	0.28	(0.45)
Degree program: Associate	0.11	(0.31)	0.15	(0.36)
Degree program: Bachelor's	0.62	(0.49)	0.84	(0.37)
In-network college	0.61	(0.49)	0.81	(0.39)
<i>Observations</i>	911		670	

Sources: *Hope Chicago* participant records, October 2022. Students at in-network colleges receive enhanced supports and full payment of tuition/fees and room/board; students at out-of-network colleges receive fixed stipends. ^aIRS income tax filings 2019 matched to participant zipcodes (www.irs.gov/statistics/soi-tax-stats). ^bChicago Public Schools 2021 four-year cohort rates matched to five participating schools (www.cps.edu/about/district-data/).

Of the participants in *Hope Chicago*, the majority attend high quality colleges: two-thirds (62%) are enrolled at four-year public colleges; one-fifth (22%) are at four-year private colleges; and the remainder (15%) are at two-year public colleges. Almost one-third (28%) attend a college ranked as “highly competitive” and a strong majority are enrolled in Bachelor’s degree programs (84%). Finally, 80% of participants are enrolled in the “in-network” option: this provides them with full last-dollar tuition/fees, as well as funding for room and board.

Based on Table 2, the *Hope Chicago* program is a substantial commitment to postsecondary

Figure 1: *Hope Chicago* College Trajectory



human capital with respect to college enrollment, college type/quality and award program. For example, only 51% of students at *Hope Chicago* schools typically attend college (Table 1); with the program, the rate is 72%. But this gain is an understatement: *Hope Chicago* students are enrolling in more competitive four-year colleges (instead of community college). In addition, the program is expected to increase human capital in other dimensions: students may be more likely to complete their program, enroll in award programs and fields with higher expected earnings, and complete their program more rapidly (entering the labor market earlier).

A schema of college trajectories is shown in Figure 1. After participating in *Hope Chicago*, students are predicted to be: more likely to enroll in college (α), to progress to four-year public and private colleges (β), and to complete an award (γ). The expected result is that *Hope Chicago* students have accumulated more college capital.

2.4 Educational Impact of *Hope Chicago*

Identification of the net program impacts depends on the counterfactual or comparison group. Synthetic control groups of students are created for comparison. These control groups are students who are equivalent to the *Hope Chicago* students but who were not eligible to participate for plausibly exogenous reasons. Two control groups are created from pools of students: • all CPS students; • all students at 15 comparison schools.¹⁰ For each of these control groups, a synthetic

¹⁰A third control group was analysed. This group was all students at the five participating schools from the graduating class of 2018 (i.e., before *Hope Chicago* was available). This control group was very similar in composition to the group from the 15 comparison schools. Model results were broadly equivalent. Therefore, this analysis is not reported.

match of students is created. Effectively, the synthetic match weights the comparison pool to have the same characteristics as the *Hope Chicago* participants.¹¹

The *Hope Chicago* students and the counterfactual groups are compared using a range of measures of college performance. However, at present, the full human capital impact of *Hope Chicago* cannot be observed: as of Spring 2023, participants are in the first year of college. As shown in Table 2, only enrollment data (college type/quality and award program) are available. Distal outcomes – such as progression and completion by field/award and labor market outcomes post-college – are not realized. Therefore, expected outcomes are modeled under three scenarios: ► baseline-entry; ► aid-support; and ► integrated. Outcomes are predicted based on the expected outcomes for students who attended a given college type/quality. For example, *Hope Chicago* Hispanic female students who attend the University of Illinois Chicago (UIC) are expected to have outcomes equivalent to those of all Hispanic female students who attend UIC.

The “baseline-entry” model assumes that this student–college matching is sufficient to identify the impact of *Hope Chicago*. In effect, this model assumes that the only impacts of *Hope Chicago* are that the students were more likely to go to college and or more likely to go to a more competitive college. At present, these are the impacts that can be verified (as per Table 2).

The baseline-entry model omits key features of the *Hope Chicago* program that increase the likelihood of college completion. Specifically, even after matching, the counterfactual college student will be paying significantly more in tuition/fees and will not have access to the advising supports available via *Hope Chicago*. The program’s theory of change (supported by evidence) is that these features matter. Therefore, two alternative models are applied: an “aid-support” model and an “integrated” model. These two alternative models assume that *Hope Chicago* has the baseline-entry effects and additional impacts in that it helps students do better at college. Extant evidence is used to predict these additional impacts. For the aid-support model, outcomes are derived from evidence on the specific mechanisms (i.e., as discussed above, application supports, financial aid, and SAT preparedness). For the integrated model, evidence is drawn from direct evaluations of the Promise programs that make significant commitments for students to progress through college.

This evidence base on mechanisms and programs is not a perfect match to what is provided by *Hope Chicago*. However, *Hope Chicago* offers significantly more resource support than is assumed in the aid-support model; and it offers more (or at least as much) resource support than the Promise programs. Therefore, it is reasonable to expect *Hope Chicago* will have at least as large (or probably larger) impacts on college success.

¹¹The student characteristics are prior schooling (high school GPA), race/ethnicity, and gender, as well as the 3×5 school match for the second control group.

3 Economic Model

3.1 Model Structure

The initial and expected gains in human capital from *Hope Chicago* will have economic and social consequences for the students, for taxpayers and for the city of Chicago. This economic value derives from the enhanced college trajectories (as per Figure 1). Based on the substantial and compelling evidence on the economic and social gains from more “college capital”, it is possible to predict the likely outcomes for *Hope Chicago* participants.¹²

A life-course model is applied to calculate the expected gains from the program. The model accounts for all the resource flows attributable to each educational status over an individual’s working life. As *Hope Chicago* enhances human capital, each participant “moves up” in educational status and so generates economic gains commensurate with that new status.¹³

The model structure is a series of equations linking *Hope Chicago* participation to augmented human capital and then to more advantageous academic outcomes (to identify the changes in α, β, γ). Full specification of these equations is shown in Appendix Table B1. In this baseline model, the impact of *Hope Chicago* per participant i at time t is mediated through changes in: college enrollment; higher education institution attended; and award achieved.¹⁴ These mediated changes are measured as changes in aggregate human capital (Ω_{it}), controlling for student socio-economic status. In turn, human capital affects earnings each year (y_{it}), controlling for experience and socio-economic status. Human capital also affects a vector of other outcomes over time ($\bar{\mathbf{x}}_{it}$) both directly and indirectly via increases in earnings. The life-course outcomes ($\bar{\mathbf{x}}_{it}$) include health status, criminal activity, and welfare reliance, as well as derivative outcomes (such as tax burdens and productivity spillovers). The determinants of y_{it} and $\bar{\mathbf{x}}_{it}$ are identified separately by gender and by race group.¹⁵

¹²For a full benefit-cost analysis, it is also necessary to have calculated the costs of implementing *Hope Chicago* (Levin et al., 2018). However, these costs are not available: they depend on how much financial and advising support is needed as each student progresses through college.

¹³Similar economic models have been widely applied using national data and for states and population subgroups. See for example Belfield and Levin (2007); Trostel (2010); Heckman and Mosso (2014); Vining and Weimer (2019).

¹⁴Data on subject studied is not available. The pace of award completion is discussed in the sensitivity analysis.

¹⁵The model includes two time-varying COVID-19 pandemic adjustment factors. Earnings are adjusted for differential life-course trajectories from Autor and Mitchell (2022), with race/gender and education-specific factors from Albanesi and Kim (2021). Health status is adjusted based on Alon et al. (2020) and Poteet and Craig (2021). Reflecting the impact of college education on resilience, these adjustments widen the life-course gaps.

The variables and parameters for the model are described in Appendix Table B3. These are grouped into money consequences for each agency perspective. The relevant agency perspectives are: the students; the taxpayer; and society (everyone).¹⁶ Derivation of each of these variables/parameters is discussed below.

Key economic metrics are derived from the model. These are summarized in Box 1 (with a formal specification in Appendix Table B4). These metrics reflect the different perspectives for economic evaluation of *Hope Chicago*: ♦ private (student); ♦ social (Chicago citizen); and ♦ fiscal (City of Chicago and Illinois taxpayer). In addition, the ♦ Social Return on Investment perspective of the *Hope Chicago* agency is derived. This last perspective looks at all the resources required for *Hope Chicago* (regardless of who funds the program) and then compares those to the full set of benefits (regardless of whom those benefits accrue to). This last metric answers the question: what is the overall economic value that investment in *Hope Chicago* generates?

Box 1

Metrics for Economic Evaluation of *Hope Chicago*

♦ Student

Value from participation: gross earnings plus private gains (health and social outcomes) minus tuition/fees and lost income in college

♦ Social perspective: City of Chicago

Value to Chicago economy: gross earnings plus economic savings (health, criminal justice, and other social domains) minus spending on college

♦ Taxpayer perspective: City of Chicago

Fiscal balance effect: extra taxes paid plus net expenditure savings (to health, criminal justice, and other social budgets) minus public subsidies for college

♦ Social Return on Investment

Aggregate net benefit from the program: all economic gains minus all resources required to implement the program (net of transfers)

Importantly, the economic model for *Hope Chicago* is based on the “treatment-on-the-treated” group of students, i.e. those who responded to the program by enrolling in college. The one-quarter of students who did not enroll in college (see column 1 of Table 2) are not included. This exclusion is motivated by the program features and the resources required to implement the program: if students do not enroll in college they do not receive the second two components of

¹⁶The resource cost parameters for *Hope Chicago* are also tabulated for completeness.

support. As these are the largest and mostly components, the modeling the TT effect (rather than the “intent-to-treat” effect) is valid.

This analysis is for a single age cohort of high school graduates participating in the *Hope Chicago* program (the “class of 2022”). Each year there is a new cohort, so the amounts reported here are lump sums recurring for each cohort. Throughout, all money amounts are expressed in present values at age 18 using a 3.5% discount rate. Prices are adjusted to account for the cost-of-living in Chicago; all money amounts are reported in 2023 dollars.

3.2 Evidence on College Trajectories

Students’ trajectories through college are derived from IPEDS data.¹⁷ The IPEDS dataset has information on college graduation rates, as well as data on student financing. Educational data is collated for each college attended by *Hope Chicago* participants (as per the summary in Table 2) and for the main colleges attended by the two comparison groups. Descriptive statistics for the most popular colleges attended by Chicago-area students are given in Appendix Tables C1-C3.

Specimen trajectories are shown for *Hope Chicago* (baseline model) in Appendix Figure A1 and for the Chicago Public School cohort in Appendix Figure A2. (The actual trajectory values are probabilistic at the level of the individual student based on the matching characteristics and adjusted for college quality). The trajectories are illustrative to see the multi-dimensional impact of *Hope Chicago*:

- With a TT baseline model for *Hope Chicago*: all participants attend college ($\alpha = 1$); the split is two-thirds at a four-year public college, with the remainder approximately divided into community college and four-year private college ($\beta_1 = 0.16$; $\beta_2 = 0.62$; $\beta_3 = 0.22$); with college completion rates of 50-70% ($\gamma_1 = 0.08$; $\gamma_2 = 0.36$; $\gamma_3 = 0.14$).
- For the graduating class of Chicago Public Schools: three-in-five attend college ($\alpha = 0.59$); the split is similarly two-thirds at a four-year public college, with the remainder clustered more proportionately into community college rather than four-year private college ($\beta_1 = 0.15$; $\beta_2 = 0.32$; $\beta_3 = 0.08$); with college completion rates of 30-60% ($\gamma_1 = 0.05$; $\gamma_2 = 0.15$; $\gamma_3 = 0.05$).

The full set of trajectories analysed in this Report are given in Appendix Table B5.

¹⁷Data are from the 2021 release (nces.ed.gov/ipeds/use-the-data). Data for the 2016 cohort from the National Student Clearinghouse show modestly higher completion rates for Illinois (nscresearchcenter.org/completing-college/). Transfer rates are not modelled (Nagaoka, 2021).

4 Economic Analysis

4.1 Earnings and Taxes

College education generates substantial and persistent gains in labor market participation, earnings (including benefits), and job security, as well as better working conditions and enhanced occupational status. The relationship is almost certainly causal. Many distinct empirical techniques have been applied; the sizes of the effects are very large; and the results are robust to alternative estimation methods.¹⁸

Lifetime earnings profiles are calculated using gross earnings data on Chicago workers taken directly from the Current Population Survey 2009-2021.¹⁹ Present value lifetime earnings by race/gender and education are given in Appendix Table D1. (The Table Notes provide full further details on how gross earnings are calculated).

College capital is associated with significantly higher earnings. For example, a graduate from a four-year college is expected to earn \$1.3-1.9 million over the lifetime; this amount is 2-3 times more than that of a high school graduate. Thus, as *Hope Chicago* increases college attainment, it should significantly increase lifetime earnings.

Directly as a result of their higher earnings, college-educated persons contribute more in taxes at each fiscal level. As well as state/local taxes, federal tax contributions are important for Chicago: these tax dollars are spent in the state.²⁰

These tax payments are calculated as the average across three methods. First, tax payments are reported directly along with earnings in the Current Population Survey (as per Table D1). Federal and state/local taxes over the life-course can be derived using the same method as for earnings (above). Second, taxes per average earnings by education level can be derived from TAXSIM35, the

¹⁸This literature is extremely large. A recent overview is by Deming (2022). Studies within the last five years include: Heckman et al. (2018); Ashworth et al. (2021); Altonji and Vidangos (2022); Guvenen et al. (2022). Different levels of college progression are analysed by Belfield and Bailey (2018); Carruthers and Sanford (2018); Xu et al. (2020). For gender/race gaps, see Cheng et al. (2019); Sloane et al. (2021); Antman et al. (2022); Levine and Ritter (2022).

¹⁹The data cover the Chicago-Naperville-Elgin, IL-IN-WI Metropolitan Statistical Area. Gross earnings, i.e. including tax payments and employer contributions, are grouped by education level and age (separately by race/gender). For each age band up to age 64, average gross earnings are derived and these are then used to create a smoothed, annualized lifetime earnings profile per education level.

²⁰In fact, federal spending in the state exceeds contributions by state businesses and residents: Chicago's "balance of payments" to the federal government is negative (rockinst.org/issue-areas/fiscal-analysis/balance-of-payments-portal).

National Bureau of Economic Research tax calculator.²¹ Finally, as a short-cut, the rates in Saez and Zucman (2019) are applied. Accounting for all federal, state, and local taxes paid by citizens, Saez and Zucman (2019) calculate that the U.S. effectively has a flat tax code with an average tax rate of 20-30%.²²

Differences in life-time tax payments per education level are substantial (as per Table D2). For example, extra federal tax contributions for four-year degree completers over persons with some college are \$0.125 million. Extra state/local taxes are an additional \$0.075 million.

4.2 Health

Individuals with more college education are significantly healthier. Education leads to the adoption of healthier behaviors (e.g. exercise, nutrition) and more efficient health management. The relationship is confounded because of links with education, income and health status. But research studies control for this and identify strong independent effects of college education on health status over the life-course. Also, these effects appear to be growing over time.²³

With more college-educated persons in Chicago, health expenditures (for a given health status) should be lower. Health expenditures and sources for education–health gradients are reported in Appendix Table D3. Better health – via college education – should reduce pressure on health care systems. Also, there are social gains from improved health. These gains are distinct from spending on health care but reflect “quality of life”.²⁴ The health gains are reported relative to a high school graduation.

²¹TAXSIM is a state-specific tax calculator for both federal and state/local tax paid. Version 35 of TAXSIM incorporates state income tax laws and federal law through 2022 including TCJA (CARES credits are excluded from analysis). Single-person household rates are applied.

²²Thus, marginal tax payments are estimated as 20% of gross earnings, divided according to the federal/state split in government revenues in Chicago/Illinois. As of January 2021, Chicago/Illinois total income tax rates are 8.81%, with very low exemptions/deductions (taxadmin.org/--/Rates/ind_inc.pdf; taxfoundation.org).

²³Evidence for an education–health gradient includes: Cutler and Lleras-Muney (2010); Buckles et al. (2016); Lawrence (2017); Montez et al. (2018); Zajacova and Lawrence (2018); Krueger et al. (2019); Hong et al. (2020); Montez et al. (2019); Chiu et al. (2019); Rao et al. (2021). For gradients by subgroups, see Yearby (2018); Savelyev and Tan (2019). On the steepening of the gradient see Hayward et al. (2015); Schellekens and Ziv (2020). For a more conservative estimate, see Kaestner et al. (2020). The models adjust for income–health gradients based on health care spending. These amounts exclude the direct effect of the COVID-19 pandemic on treatments and mitigation.

²⁴Health gains are measured in Quality-Adjusted-Life-Years (QALYs). Conservatively, college education yields 0.04 annual QALYs over high school completion. Pre-pandemic estimates are from Schoeni et al. (2011); Savelyev and Tan (2019); Novosad et al. (2022). The pandemic adjustment factor is described above. To be conservative, a value of \$75,000 per QALY is applied and QALY gains are discounted (higher estimates are identified by Vanness et al. (2021); Kouakou and Poder (2022); Ye et al. (2022)).

The social and fiscal gains from improved health are significant. For example, a college graduate yields over \$0.125 million in QALYs over a high school graduate. Fiscal spending on health care is substantially lower as education levels increase.

4.3 Crime

Educational attainment (up to and including college completion) is strongly associated with criminal activity and with involvement in the criminal justice system. College-educated persons are less likely to engage in delinquent behaviors and criminal acts (fewer than 5% of the U.S. prison population has ever enrolled in college). Researchers have identified a direct behavioral link and an “opportunity cost” link (as higher incomes reduce the incentive to commit crime). The effect of education on crime is significant and almost certainly causal.²⁵

Increased college education will reduce the crime rate and offset spending on the criminal justice system and corrections. This will have social and fiscal impacts for Chicago. The education–crime economic consequences are given in Table D4 (with sources in the Table Notes).

The social burden of crime includes government spending on crime and the losses to crime victims and the expenditures and avoidance practices of the general population. In fact, these social burdens are far greater than direct spending on the criminal justice system. The fiscal crime burden from low post-secondary attainment is based on patterns of offending (adjusted for arrests) in relation to federal and state spending on the criminal justice system.²⁶ These criminal justice system burdens are modest for increased college attainment but significant as students progress from high school to college.

4.4 Externalities, Welfare, and Deadweight Loss

For a full accounting over the life-course, additional economic consequences of college education are included. These consequences have social and fiscal impacts for Chicago.

²⁵Effects persist over time: probation, prison sentences, and parole may cause social scarring or recidivism. For evidence on the education–crime gradient, see Gilpin and Pennig (2015); Cook and Kang (2016); Amin et al. (2016); Cano-Urbina and Lochner (2019); Cruz and Lopez (2019); Koegl and Farrington (2021). The causal effect has been identified using differences in sentencing rates, compulsory schooling laws, and age cut-offs. The gradient is steepest from high school dropout to high school graduate and at younger ages and for males. Nevertheless, there are non-trivial gains from increased post-secondary education. On the education levels of the incarcerated, see Rampey et al. (2016). Results are pooled by gender but the most significant effects are for young males.

²⁶Studies have calculated the lifetime economic consequences of being a general/chronic offender (DeLisi et al., 2010; McCollister et al., 2012). Using budgetary evidence for Chicago, these national estimates are matched to the crime rate state-wide. See also divestinvestdata.org/report. For a program to reduce crime in Chicago with a high benefit–cost ratio, see Bhatt et al. (2023).

Welfare receipt is lower for college-educated persons; this effect is direct as most welfare programs are income-contingent. Thus, increasing the number of college-educated persons should reduce welfare spending.²⁷ Overall, few high school graduates and very few college-educated persons receive welfare. As shown in Appendix Table D5, these life-course amounts are therefore small.

Also, a more highly-educated workforce generates positive economic spillovers for Chicago. Firms are more likely to invest if they have access to a larger pool of skilled workers; and innovation is faster as firms trade skills and knowledge locally. Within firms, skilled workers boost co-worker productivity. Therefore, as the proportion of college-educated workers grows, the Chicago economy is expected to grow faster.²⁸ The economic consequences are shown in Appendix Table D5.

Finally, education has multiple impacts on the available tax base and economic activity. These impacts are collectively referred to as the Marginal Excess Tax Burden (METB), i.e. the distortion imposed by having to collect taxes to pay for government expenditures.²⁹ This METB is a fraction of the government spending on health, crime, welfare, and education (see below).³⁰ The METB economic consequences are significant and are shown in the bottom panel of Appendix Table D5).

4.5 Educational Burdens

The resources to provide college education are included as a ‘negative benefit’ (cost). These resources include: tuition/fees; federal subsidies; and state/local subsidies. From the social perspective, all of these resources are included. (The economic consequences for students and for the *Hope Chicago* program are considered separately).

Tuition/fees are taken from IPEDS data, weighted according to enrollment at Chicago’s two-year and four-year colleges as per Table C1.³¹ In addition, public subsidies are split according to

²⁷Education–welfare gradients are strong but vary across programs and welfare funding is split across federal and state/local agencies. See (Ganong and Liebman, 2018). Direct welfare payments are transfers between willing taxpayers and recipients, so they are not part of the social burden. The administrative cost of welfare receipt is a social burden. See Table Notes for Appendix Table D5 for sources.

²⁸Studies estimating these economic spillovers include: Abel et al. (2012); Monaco and Yamarik (2015); Liu and Yang (2021). Conservatively, the spillovers are calculated as 5% of individual earnings, with larger effects as worker skill level increases.

²⁹For example, income taxes impose a burden because they reduce labor effort; workers would like to supply labor but do not because the marginal tax rate is a disincentive. If tax revenues increase or government spending decreases, the METB is reduced.

³⁰Rates for METB vary by government agency level. A conservative rate is applied of 5-7% for this model (Allgood and Snow, 1998; Ghavari, 2006; Hendren and Sprung-Keyser, 2020).

³¹Persons with some college average 1 year at a two-year college or 2 years at a four-year institution. Completion times for degrees are: AA degree, 3; BA degree, 5; and advanced degree, 7. See ides.illinois.gov/resources/labor-market-information/educational-attainment.html.

state/local and federal responsibilities for Chicago's public universities.

The amounts per college education level are shown in Appendix Table D6. These educational costs are significant, rising to over \$100,000 for four-year degrees and for advanced degrees from the social perspective. Fiscal spending per student has been decreasing over time but there are still significant public investments in higher education, with almost \$50,000 as a present value subsidy per college student.

5 Economic Model Results

5.1 Economic Value of *Hope Chicago*

There are many ways to express the economic value of *Hope Chicago*. The economic value depends on the assumed impacts and the comparison students. For impacts, there are three models (baseline, aid-support, and integrated). For comparison students, the main alternative pathway is to assume *Hope Chicago* students would follow the average post-secondary pathways of students at the comparison schools; an alternative pathway assumes they follow the average of students in the Chicago Public School system. As well, the economic value also depends on which perspective is adopted, i.e. whose benefits and costs are counted (as discussed in Box 1 above).

Overall results are shown in Table 3 for three models and two comparison groups from the social and fiscal perspectives. These are lump sum present value amounts at age 18; this is equivalent to being given a Certificate of Deposit. Summary results are shown in Box 2. (Full results for each domain are shown in Appendix Tables E1-E4).

The primary perspective is social. That is, all the dollar economic consequences of student participation in *Hope Chicago* (relative to the alternative pathways) are counted, regardless of who gets the benefits or pays the costs. Using this social perspective, *Hope Chicago* yields significant economic gains. Taking the conservative baseline model, per *Hope Chicago* participant, the lifetime gains are valued at +\$214,720 [+\$135,670]. Gains are higher for the aid-support model at +\$296,810 [+\$217,760]; and they are significantly higher for the integrated model at +\$364,340 [+\$285,290].³² Much of the social gain is from increased earnings, productivity externalities, and health gains; the crime consequences are significant also.

³²Most of the trajectory impacts for the aid-support model are subsumed into the baseline model in which enrollment in higher quality colleges is established. The bigger effects for the integrated model arise from higher college completion rates, conditional on enrollment.

Table 3: **Economic Gains per *Hope Chicago* Student**

<i>Gains relative to</i>	Model		
	Baseline	Aid Support	Integrated
<i>Comparison Schools:</i>			
Social perspective	\$214,720	\$296,810	\$364,340
Fiscal perspective:			
Federal	\$44,200	\$60,340	\$73,910
State/City	\$23,350	\$31,580	\$38,700
Total	\$67,560	\$91,930	\$112,620
<i>Chicago Public Schools:</i>			
Social perspective	\$135,670	\$217,760	\$285,290
Fiscal perspective:			
Federal	\$28,390	\$44,530	\$58,100
State/City	\$14,800	\$23,030	\$30,150
Total	\$43,200	\$67,570	\$88,260

Sources: Author calculations from Appendix Tables. *Notes:* Life-course trajectory gains. Present values at age 18, $\delta = 3.5\%$. 2023 dollars.

This social perspective answers the question: **Is *Hope Chicago* an efficient investment for the City of Chicago?**³³ With benefits of at least +\$214,720 [+\$135,670], there is a strong presumption that the program is highly efficient for the City.³⁴ These benefits are the total amount of resource generated for the City of Chicago – and by extension Illinois – by switching a student into being a *Hope Chicago* participant.³⁵

A second perspective is that of the student: **What is it worth to students to participate in *Hope Chicago*?** As a result of their enhanced human capital, students receive significant earnings and health benefits, as well as money transfers for living expenses in college (for eligible students); and their only costs are lost earnings during college and some tuition and fees (when enrolled at out-of-network colleges). Applying the baseline model, these benefits minus costs are valued at \$167,160. In other words, each student in *Hope Chicago* receives resources equivalent to 4+ years of wages or more than half the median home price in Chicago.

The third perspective is fiscal: **What does *Hope Chicago* mean for tax revenues and government expenditures?** There are significant taxpayer gains from *Hope Chicago*; the net gains are shown in the bottom panels of Table 3. Both federal and Illinois/Chicago tax consequences are tabulated, with an overall fiscal gain of +\$67,560 [+\$43,200] from the baseline model; this

³³To clarify, the City of Chicago is a broader construct than the government of Chicago.

³⁴This amount assumes that all federal and Illinois spending is proportionately allocated across Illinois citizens and that net migration is zero. As discussed above, these are plausible assumptions.

³⁵There are no direct program costs to the city or state: the program is funded by *Hope Chicago*.

amount rises to +\$112,620 [+\$88,260] for the integrated model. These amounts are actual dollars that would accrue to the relevant fiscal agencies for each new *Hope Chicago* participant. The specific amounts that accrue to the Treasury departments of the state of Illinois and the City of Chicago will depend on how tax dollars are transferred across levels of government. Accounting for government transfers, the full returns to the City of Chicago and the state of Illinois are discussed below.

Finally, the Social Return on Investment (SROI) or Net Present Value (NPV) of *Hope Chicago* is derived as the social benefits minus the costs of delivering the program. The SROI/NPV responds to the question: **Given all the competing claims on funding, is it worth investing money in *Hope Chicago*?**

The costs of *Hope Chicago* include payments to cover college expenses: for each student, these payments are either last-dollar scholarships (based on the actual tuition and fees payable by the student) or fixed stipends (for students attending out-of-network colleges).³⁶ These college payments are already included in the calculations reported in Table 3. But there are also operational costs, including: governance and management; student advising; program monitoring and evaluation; and outreach/communications. At present, the full extent of these operational costs for each cohort is unknown. However, based on comparable (but not equivalent) programs, an operational cost of \$20,000 per participant is plausible.³⁷

Box 2

Economic Evaluation of *Hope Chicago*

◆ **Student: Gain of +\$167,160**

Gross earnings plus health/social advantages minus tuition/fees and lost income

◆ **Social perspective City of Chicago: Gain of ≥\$214,720**

Gross earnings plus economic savings minus public spending on college

◆ **Taxpayer perspective City of Chicago: Gain of ≥\$67,560**

Extra tax revenue plus expenditure savings minus public spending on college

◆ **Social Return on Investment:**

Net Present Value of ≥\$193,120; Benefits ≥ Costs by 4.2×

All economic gains minus all resources to implement the program

³⁶Some students also receive payments to cover room and board. From a social perspective these payments are counted as transfers: everyone must pay room and board. However, these payments will make the program more impactful and they are valuable from the student perspective.

³⁷For similar estimates, see Levin and Garcia (2017); Bartik et al. (2021).

Using the social value estimates from Table 3, the social benefit–cost ratio for *Hope Chicago* is estimated at 4.2.³⁸ That is, for every \$1 spent on the program, society recoups \$4.2. Expressed as a Net Present Value, *Hope Chicago* generates \$193,120 in additional resources. These results indicate that the program is highly efficient from a social perspective.

5.2 Return on Investment to *Hope Chicago*

A useful way to express the efficiency gains of *Hope Chicago* is via a Return on Investment (ROI). The ROI value is the “interest rate” that the program yields with respect to the amount invested and the stream of benefits over time. The ROI is an alternative way of expressing the dollar amounts discussed above. Again, as the dollar flows are different per agency, then the ROI value is also different for each agency.

From the student perspective, the ROI is extremely high. With *Hope Chicago* support, the cost of attending college is close to zero. The only cost is the lost earnings from going to college and these are already factored into the results in Table 3. Extracting the lost earnings and assigning them as the costs of participation, the student ROI exceeds 25%.

From the fiscal perspective, the ROI is also extremely high. The City of Chicago and Illinois governments are committing some public subsidies for college for *Hope Chicago* participants. These public subsidies are factored in as investment costs to calculate the ROI. When measured against the gains in Table 3, the fiscal ROI exceeds 15%.

A key metric is the Social Return on Investment (SROI). This SROI is the interest rate with which social investments should be evaluated and compared to other social programs. It includes all resources (costs and benefits) regardless of who incurs them. To calculate the SROI it is necessary to estimate the cost to deliver the *Hope Chicago* services to the students.³⁹ With an operational cost of \$20,000 per student, the SROI is conservatively estimated at 13% (12-15% across three scenarios). This rate compares very favorably to other social investments (and the rate of return on private capital).

³⁸This calculation uses the benefits from Appendix Tables E1-E4. The college costs paid by *Hope Chicago* are removed from the benefits column and added to the operational costs column. The respective benefit-cost ratios for the three models are 3.7, 4.3, and 4.6.

³⁹As noted above, the costs to pay for the students’ college tuition/fees are already included in the model scenarios.

5.3 Returns to the City of Chicago and Illinois

Hope Chicago can be analyzed from the City's perspective and how much resource it would be efficient for the City to commit in the program. The City has a limited fiscal budget but this budget is spent on services that are affected by *Hope Chicago* participation. The precise fiscal benefit to the City depends on the City's spending obligations and its revenues net of transfers from the state Treasury and any federal funds received directly. These are highly complex to model. Nevertheless, a fiscal benefit-cost analysis is useful. Similarly, *Hope Chicago* can be analyzed from an Illinois perspective. Again, the social perspective is relevant and, with limited state budgets, a fiscal analysis is also useful for Illinois.⁴⁰ However, given available data on intergovernmental transfers, these estimates are less precise.

For the City of Chicago, the economic consequences of *Hope Chicago* are bulleted below. The program affects tax revenues, spending on public services and inflows from the federal and state government.

- City tax flows are based on the City tax rate of 4%. This rate may be applied to earnings and productivity gains and would net the City an additional \$300 per participant (annuitized).⁴¹
- There are impacts on key components of spending: Public Safety; Community Services; City Development; and Regulatory Department. In aggregate, these components are \$5.76 billion (one-third of the total City budget). Even with a 5% reduction in spending per participant, this would save the City \$400 per year.⁴²
- Federal inflows of funds can be approximated from the funding transfers across levels of government. With a federal fiscal benefit of \$60,340 per participant (Table 3) and a 2% pass-through from the federal government to the City of Chicago, this amounts to \$170 per annum.

⁴⁰Analytically, the overall fiscal perspective, the Illinois perspective, and the City of Chicago perspective are not separable. There are significant flows between each jurisdiction.

⁴¹This 4% figure is from: Cook County sales tax of 1.75%; Chicago tax of 1.25%; and special tax of 1%. Looking only at the City's Corporate Fund of \$5.4 billion, 35% comes from tax levies (Municipal Public Utility, state income, transportation, recreation and business). This amounts to \$2.12 billion in revenue, with an additional \$0.52 billion from intergovernmental revenue. This accounting is conservative: it does not include the resources needed for the Office of Equity and Racial Justice and for other resources across Departments that are needed to promote equity.

⁴²Spending is modeled from the City of Chicago Budget of \$16.4 billion planned for 2023. As these expenditures are reduced, there will also be indirect effects on the spending components of: Finance and Administration; and General Financing Requirements. These two spending items are \$8.78 billion annually (see www.chicago.gov/city/--/provdrs/budget.html). The City does support the higher education system: local funding of the City Colleges of Chicago was \$135 million in 2022. This higher education funding is subtracted from the fiscal benefits the City receives.

- Illinois inflows of funds to the City can be approximated based on the fiscal returns (Table 3) and the relative taxation at the state and City levels. Even with an effective state tax rate that is 2.5× the City rate, the City would obtain an additional transfer of \$250 (annuitized).

In total, the City of Chicago would obtain \$1,120 per year from *Hope Chicago*. These are approximate numbers but they are likely to be conservative. Moreover, given city spending of approximately \$7,000 per resident per year, they represent a substantial gain from the program. Also, looking more broadly, investments in college match with the priorities as identified in the City Budget Review for 2023: preventing violence; revitalizing communities; ending poverty; and supporting wellness.

For the Illinois Treasury, *Hope Chicago* affects four flows: tax revenues; spending on public services; inflows from the federal government; and outflows to the City of Chicago government.⁴³ Applying an equivalent model to that for the City:

- State tax flows are based on the state tax rate of 11.3%. Applied to earnings and productivity gain, the net gain would be \$750 per participant.
- State spending on public safety, health and community services is estimated at \$13 billion per annum. With an assumed reduction in spending of 5% per participant, this would save the state \$1,200 per participant.
- Federal inflows of funds can be approximated from the funding transfers across levels of government. At the state level, federal transfers are very large, at 50% of state General fund spending. With a federal fiscal benefit of \$60,340 per participant (Table 3) and a 50% pass-through from the federal government to the City of Chicago, this amounts to approximately \$460 per annum.
- Illinois outflows of funds to the City of Chicago are estimated at 15% of the City budget. Conservatively, this equates to \$300 (annuitized).

In total, the Illinois Treasury would gain approximately \$2,710 per *Hope Chicago* participant per year. Again, these calculations are approximated based on expected impacts and transfers. However, they illustrate that there is a substantial case for the state to support programs that increase college enrollment and college completion.

⁴³These estimates are based on Illinois Treasury General Fund spending of \$36 billion annually (nasbo.org/reports-data/state-expenditure-report).

5.4 Robustness Tests

The model estimates are based on the best available evidence on post-secondary trajectories and economic returns to education. A range of outcomes is possible, depending on the model and comparison group.

Table 4 shows the economic gains for plausible lower and upper bound counterfactual trajectories (see Appendix Table B5). A lower bound estimate contrasts college-bound CPS students with all *Hope Chicago* students. An upper bound estimate compares all comparison school students with college-bound *Hope Chicago* students. For the lower bound, the returns are modestly lower than in Table 3 but they still exceed \$95,000 from the social perspective and \$31,000 from the fiscal perspective. For a plausible upper bound, the social value of *Hope Chicago* is almost \$400,000 and the fiscal gains are over \$120,000.

Table 4: **Economic Gains from *Hope Chicago*: Range**

<i>Gains:</i>	Model		
	Baseline	Aid Support	Integrated
<i>Lower Bound:</i>			
Social	\$95,750	\$177,840	\$245,370
Fiscal perspective	\$31,000	\$55,370	\$76,060
<i>Upper Bound:</i>			
Social perspective	\$239,770	\$321,860	\$389,390
Fiscal perspective	\$75,310	\$99,680	\$120,370

Sources: Author calculations from Appendix Tables. *Notes:* Fiscal perspective includes federal, state/local and city economic consequences. Life-course trajectories. Lower bound: intent-to-treat *Hope Chicago* students and college-bound CPS students. Upper bound: treated *Hope Chicago* students and all comparison school students. Present values at age 18, $\delta = 3.5\%$. 2023 dollars.

These model estimates are almost certainly conservative. First, they do not include the full “certainty value” of being able to afford college. Second, they do not include social benefits of college education for family members within the household (but see below) or important social factors such as civic engagement, or public health gains, or the social consequences of the carceral system within the City. Third, the model assumes that students: do not progress to take a higher degree; do not complete their program more quickly; and do not choose a higher-paying major. Each of these assumptions means the returns to *Hope Chicago* are under-estimated.

In addition, the social returns to education are trending upward. College education has become an increasingly strong determinant of labor market success and other life behaviors (especially

in relation to health).⁴⁴ Therefore extrapolations for future cohorts of Chicago high school graduates are likely to underestimate the economic consequences of *Hope Chicago*.⁴⁵ Finally, the model results discussed in the text are from the baseline analysis: as discussed above, this model assumes that *Hope Chicago* has no impact beyond placing more students into higher quality programs or four-year institutions. The two alternative scenarios are equally (if not more) valid.⁴⁶

Some *Hope Chicago* students might leave Chicago or Illinois after college graduation. Such migration would reduce the economic returns. However, adjustments for migration are likely to be very modest. First, not many persons migrate. Second, net migration is even fewer. Third, net migration would have to differ by level of college education: leavers would have to be mostly college-educated and entrants mostly not college-educated. Finally, migration would have to be permanent. In fact, urban areas – especially large urban areas like Chicago – are magnets for college-educated persons. Chicago would not need to attract as many out-of-state graduates if there was a greater pool of local college-educated workers.⁴⁷ Thus, migration is unlikely to materially affect the model results for Chicago and even less so for Illinois.

Overall, each model and comparison group yields significant benefits from *Hope Chicago*. For students especially, the economic value is very substantial.

5.5 Higher Education Policy Options

The economic value of *Hope Chicago* can be compared to the economic value of other college-level interventions. These comparisons are not exact: each intervention is targeted at a specific group of students, has somewhat different objectives (and measured benefits), and has different implications for equity. However, this comparison is illustrative of where *Hope Chicago* fits.

⁴⁴More recent estimates of the returns to college highlight the growing disparities between high school graduates and college graduates. Long-term labor market trends – skills upgrading, occupational changes, and automation – are causing life trajectories to diverge. Whereas high-skilled workers are prospering, the opportunities for low-skilled workers appear stagnant. The COVID-19 pandemic has almost certainly exacerbated this divergence.

⁴⁵Fiscal impacts may change over future decades, depending on alterations to the tax code and the funding allocated for government services. However, there is no strong trend toward a more regressive tax code (for income); and the Affordable Care Act and the pandemic has established a larger government role in the health sector.

⁴⁶Following convention, conservativeness is emphasized in the model.

⁴⁷From Census data, in 2012 (2019), 2.2% (2.5%) of IL residents moved out and 1.6% (1.5%) moved in. In 2018, 2.6% moved out of Chicago MSA and 1.7% moved in (all education levels). Net migration is less than 1% of population but closer to 0.7% (net of Illinois retirees). After job search, the top two reasons for migration are college and retirement - these are not relevant for the model. Lastly, as noted above, more skilled workforces attract inward investment.

A general source for benefit-cost analysis of college programs is the database from the Washington State Institute for Public Policy. The database yields 18 relevant benefit-cost analyses on interventions such as text messaging and student success courses. These are itemized in Appendix Table F1. The WSIPP database shows that most of college-level interventions show social benefits exceeding costs (although a sizeable minority do not). The range of benefit-cost ratios is extremely wide. However, there are several cautions in comparing *Hope Chicago* to these other interventions. First, most interventions are much less resource-intensive than *Hope Chicago*.⁴⁸ Second, the cost estimates for these interventions are very low and do not include the induced costs of enrolling in college for longer. Third, most interventions are not motivated to improve social outcomes in the way *Hope Chicago* is. Finally, none are meaningful substitutes for the intensive supports that disadvantaged students from low-performing schools need. In addition to WSIPP evidence, two intensive college support programs have benefit-cost results. For Kalamazoo Promise, the benefit-cost ratio is 4.66; and for CUNY ASAP, the benefit-cost ratio is 3.5.⁴⁹

Figure 2: **Benefit-Cost Ratios: College Interventions**

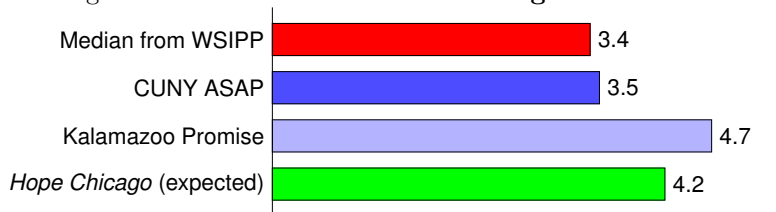


Figure 2 summarizes the available evidence on the benefits and costs of college-level interventions. Given estimated costs and benefits, the benefit-cost ratio for *Hope Chicago* can be expected at 4.2. This value is in line with other college-level interventions, even as the program includes other equity-enhancing features.

Finally, it is worth emphasizing that any benefit-cost ratio that is significantly above one is *de facto* socially efficient. Thus, even if there are some dramatically high benefit-cost ratios (over 100), this does not preclude investment in programs that have benefit-cost ratios valued greater than one.

⁴⁸Even if they have high benefit-cost ratios, they are unlikely to generate significant benefits (and therefore enhance equity in the college system).

⁴⁹See Bartik et al. (2021) and Levin and Garcia (2017), respectively. Again, these programs have different features to *Hope Chicago*.

6 Social Analysis of *Hope Chicago*

6.1 Inequity and the College System

Going to college can significantly increase economic well-being and so make for a more prosperous society. However, if there are barriers to access to college, then higher education can inadvertently entrench inequities, either by race, income or socio-economic advantage. In fact, numerous studies have found these inequities in access to college and outcomes from college, especially at the most selective colleges. Particularly at enrollment, the college system can perpetuate social inequality.⁵⁰ Therefore, a program such as *Hope Chicago* can help reduce these inequities and provide social value.

Within the Chicago Public Schools, levels of economic disadvantage and race are very closely correlated. Almost three-quarters (73%) of students are economically disadvantaged and 83% of the students are either African American or Hispanic (36% and 47%, respectively).⁵¹ Thus, there is a big overlap between the two groups within Chicago. For this analysis, the focus is on racial inequities but the consequences and conclusions also apply for economically disadvantaged students.

The social analysis of *Hope Chicago* looks at two important components of the program. The first is the impact of being debt-free. The second is the impact of multi-generational college. For both components, as well as efficiency gains, there are important and varied social gains. Finally, the potential for *Hope Chicago* to reach more students – and therefore reduce inequities more broadly – is investigated.

6.2 Equity Impacts of Debt-free College

Many students – particularly disadvantaged students – end college with significant amounts of debt.⁵² Reducing these debts – as per the *Hope Chicago* commitment – can be an important way to create a more equitable society; it can also be economically efficient.

Preemptively, the expense of college causes some students to drop out: they cannot afford to take on large loans. Thus, the prospect of being debt-free will directly increase the college completion rate. This increase is included in the economic analysis above and is one of the reasons *Hope Chicago* is economically efficient.

⁵⁰Extensive data inquiry into these inequities – and particularly the representation of high-income families at elite universities – is at [opportunityinsights.org](https://www.opportunityinsights.org).

⁵¹Data from www.cps.edu/--/stats-facts/.

⁵²Literature on student loans is very extensive (Sylvain and Yannelis, 2021). Many of the damages identified here are explained in full by Di Maggio et al. (2019).

By the end of college, there are many ways in which accumulated student loan debt is economically damaging. Graduating debt-free can increase earnings via its effect on job search and career opportunities. On graduation, most students take the first job available to them so that they can pay back their student loans and obtain household income. Being debt-free allows for optimal job search or enrollment in career training programs. In addition, college debt compromises students' ability to secure personal loans, e.g. for cars or mortgage down-payments. Many students also pay debt service costs, especially if they become delinquent or default.⁵³

For this analysis, only the labor market consequences of being debt-free are analyzed. The impact of being debt-free is calculated as follows. First, predicted debt is estimated. This prediction is based on the students' characteristics and the college attended. This predicted debt is then assumed to be reduced to zero for *Hope Chicago* participants and the effect on future earnings is modeled. Table 5 illustrates the calculation of the economic value of graduating from college debt-free. (Evidence for the calculations are given in the Table Sources).

Per *Hope Chicago* student the expected debt would be \$31,490 immediately after leaving college. This expected amount is per student (not per borrower) and includes federal loans and Direct PLUS loans. It adjusts for household income, race/gender, and institution attended (public/private four-year, two-year); loans are also adjusted for the probability of completion (and network status). Overall, this amount is higher than the average student loan amount (which is often reported per borrower): *Hope Chicago* students have higher attainment and attend relatively high quality (expensive) colleges against which is offset their lower family incomes (and so greater aid eligibility). By participating in *Hope Chicago* a student's actual debt would be effectively zero (assuming perfect targeting and eligibility for in-network participants).⁵⁴

Based on four studies, the economic impact of being debt-free is bounded at between 1-3% of annual earnings post-graduation. However, this impact is almost certainly an understatement of the economic value of being debt-free. First, studies look only at post-college earnings within the first few years; they do not account for longer-term career effects. Second, these estimates are based on average student loan levels; *Hope Chicago* students would – absent the program – have higher-than-average student debt. Plus, of course, it omits all the other economic benefits of being

⁵³Additional burdens have been reported, such as stress, deferral of marriage and childrearing, and reduced entrepreneurial activity (educationdata.org/student-loan-debt-statistics; nces.ed.gov/pubs2018/2018401.pdf; and rooseveltinstitute.org/--/RI_StudentDebtForgiveness_WorkingPaper_202008.pdf). These are also not included in this analysis.

⁵⁴Out-of-network students receive fixed stipends that may not reduce their college debt to zero. However, given these students have chosen colleges that are out-of-network, it is likely their borrowing capacity (or parental support) is greater. Potentially, student debt relief may be even greater if colleges provide more aid to *Hope Chicago* students. This aid is partially factored into the returns to college in Table 3.

debt-free (as discussed above).

Table 5: **Economic Value of Being Debt-Free**

Student debt expected ^a	Debt-free impact on post-college earnings ^b	Earnings post-college ^c	Economic value of being debt-free on completion ^d
\$31,490	1-3%	\$36,210	\$4,610

Sources: ^a Expected debt of the median borrower from enrollment/completion rates (Table 2), Appendix Table C2, and Figure 1; [nces.ed.gov/--/dt21_331.95.asp](https://nces.ed.gov/ipeds/data/21_331.95.asp); adjusted for network status. ^b Debt-free impact per average amount borrowed from synthesis of: Di Maggio et al. (2019); Briones et al. (2022); scholar.princeton.edu/--/Weidner_JMP.pdf; and bostonfed.org/--/2014/student-loan-debt-and-economic-outcomes.aspx. ^c Earnings for aged 24-29 from bls.gov/--/median-weekly-earnings-2021.htm. *Notes:* Student loan debt is for undergraduate loans only. ^d Economic value of being debt-free expressed as present value at age 18 after 7 years in labor force, $\delta = 3.5\%$. 2023 dollars.

Given this relationship and average earnings post-college in the Chicago labor market, the economic value of being debt-free as a result of Hope Chicago is estimated at \$4,610 (with a range of \pm \$2,010 approximately). This amount is a present value at age 18 and should be added to the economic gains reported above from participation in *Hope Chicago*.

Debt-free graduation is also equity-enhancing. Excepting graduate degree programs, African American and Hispanic students are more likely to borrow for college and African American students accumulate more debt than white students. These gaps are especially stark given that they attend lower-tier schools (including community colleges) and may be eligible for more income-contingent loans. This extra debt is compounded by their lower graduation rates and hence their greater likelihood of delinquency or default.⁵⁵

Eliminating debt would therefore promote equity in several ways. By removing the affordability concern, it would increase the representation of African American and Hispanic students (as well as disadvantaged students) at four-year colleges. Debt freedom would compress the income distribution after college: there would be a greater proportion of African American and Hispanic college graduates with higher earnings. More directly, debt freedom would compress the income distribution because these students would no longer struggle with relatively high debt loads.

There are many ways to evaluate the equity implications of debt-free college. One simple measure is to look at the expected debt of the median borrower to see how that would fall under

⁵⁵Data from: educationdata.org/student-loan-debt-by-race; and nces.ed.gov/datalab/table/library/list/2022241. Detailed analysis of student loan forgiveness and its equity consequences is in Sylvain and Yannelis (2021).

Hope Chicago. A second metric is to calculate how much debt freedom increases earnings gap after college (via job search and other mechanisms discussed above). These two metrics show the extent to which *Hope Chicago* can address the racial disparities in the student loan market can be reduced.

Debt freedom from *Hope Chicago* will mean fewer African American and Hispanic students leaving college with any loans. As of 2021, 86% of African American students and 68% of Hispanic students take out student loans; the respective rate for white students is 66%. Moreover, of those who do borrow, the average amounts borrowed are \$38,500 and \$28,200 respectively.⁵⁶ Thus, the average amount borrowed across these students is \$25,730 compared to \$20,330 by white students, i.e. a difference of \$5,400. Thus, given expected debt of \$31,490 for *Hope Chicago* levels of college (see 5), there are significant equity implications. *Hope Chicago* eliminates debt for participants and brings median borrowing amounts by race into much closer alignment.

Being debt-free reduces earnings gaps after college. Median annual earnings for college graduates in Chicago in 2022 are \$51,320. The gap between African Americans and white college graduates is 7.1%; the respective gap for Hispanic students is 9.2%. These equate to \$3,640 and \$4,720 respectively per year.⁵⁷ Based on Table 5 above, the annual economic value of being debt-free is \$1,270 per year.⁵⁸ Therefore, being debt-free would close earnings gaps by 34 percentage points for African Americans and 27 percentage points for Hispanic graduates who are starting out in their careers.

Overall, even on a conservative calculations, finishing college debt-free would significantly reduce racial and socioeconomic inequities.

6.3 Multi-generational College

There are efficiency and equity gains from offering college supports to parents and so providing multi-generational college opportunities. These gains are linked: there are positive financial returns to college for parents and – because most of these parents are within economically disadvantaged families – the college system becomes less stratified.

One clear efficiency gain is that parents will be college-educated and so reap returns in the same domains as recent high school graduates.⁵⁹ However, the returns to adult learners may not

⁵⁶National data from nces.ed.gov/fastfacts/display.asp?id=900 and federalreserve.gov--/2022-economic-well-being-of-us-households-in-2021-student-loans.htm.

⁵⁷Evidence from Bayer and Charles (2016); Thompson (2021); Antman et al. (2022). These gaps may be caused by a range of factors, including discrimination and labor market conditions.

⁵⁸This values represents the undiscounted annual amount calculated from column 4 of Table 5.

⁵⁹Adult learners or non-traditional students are defined as those aged over 24 on entry to college.

directly correspond – either in scale or dimension – to those of younger cohorts: these adult learners have shorter remaining careers and face different environmental and circumstantial pressures.

Available evidence does show that non-traditional students do benefit from college. A recent study of post-secondary technical colleges finds significant earnings gains for adult learners, with annual earnings gains for diplomas in excess of \$4,000.⁶⁰ In surveys, 74% of adult learners say that the benefits of college were at least as high as the costs; and 55% state that they wished they had completed more college.⁶¹ Even if the returns to college for adult learners are one-quarter of the size of those for traditional-aged students, then the benefits would still exceed \$0.1 million.

An additional efficiency gain of multigenerational college is the positive feedback effect on the younger generations who are more likely to go to college and to progress further in college. The association between college-educated parents and college-educated children is very high: children whose parents are college graduates are three times as likely to attend college themselves (compared to children without a college-educated parent).⁶² In effect, if Hope Chicago supports an adult learner, that increases the probability that their children will attend college by almost 50 percentage points (conditional on equivalent income, household size, and baseline earnings). Thus, one metric for assessing the efficiency of multi-generational college is the number of additional college enrollees in the younger generation. However, given available data, this metric cannot be accurately identified at present.⁶³

Added together, these direct and intra-family benefits strongly suggest that investments in adult learners and multigenerational college are economically efficient and will reduce inequities. Increasing their enrollment – particularly at higher quality programs – would compress the income distribution further (although this is hard to estimate because of the small numbers of parents involved).

6.4 Widening Participation in *Hope Chicago*

As Hope Chicago cohorts increase, there are efficiency questions in relation to scale-up. Basically, it is important to establish that – when the program expands – costs will not rise and or benefits

⁶⁰Non-completers also earned more than non-enrollees (Carruthers and Sanford, 2018).

⁶¹This evidence is based on current attendance patterns of non-traditional students. Yet, these students typically attend lower-ranked colleges (including for-profit colleges) than those attended by Hope Chicago students. Also, two-thirds of adult learners who thought the costs outweighed the benefits attributed this to their failure to complete college. Data from [federalreserve.gov/2017-economic-well-being-of-us-households-in-2016-higher-education-capital.htm](https://www.federalreserve.gov/2017-economic-well-being-of-us-households-in-2016-higher-education-capital.htm).

⁶²With respective college-going rates of 58% and 21%. Data from opportunityinsights.org/education/. See also nces.ed.gov/pubs2022/2022057.pdf.

⁶³The calculation is also complicated by the synchronous nature of multi-generational enrollment.

fall such that the return on investment falls below a threshold value. There is no analytical model that can establish the changes in benefits and costs of *Hope Chicago*. However, there is evidence on the plausible consequences of widening program participation.

There is scope within CPS for expanded participation in *Hope Chicago*. Table 6 shows the possible scale of program expansion. Two expansion paths of *Hope Chicago* are considered: one is to cover the 3×5 comparison schools; the other is to cover all high schools within the Chicago Public Schools.⁶⁴ The expansion paths show the potential number of *additional students* enrolling at college by sector, accounting for existing college enrollments and high school graduation rates. Across the 15 comparison schools, where college enrollment rates are low, *Hope Chicago* could reach 860 students. Across the CPS school system, potential expansion is 4,640 students.⁶⁵ This would be a five-fold expansion of *Hope Chicago*, raising the college enrollment rate of CPS to over 70% (or similar to the national average).⁶⁶

Table 6: **Expansion of *Hope Chicago***

	<i>Hope Chicago</i> enrollment	Enrollment increase to match <i>Hope Chicago</i>	
		Comparison schools	All high schools CPS
4-year private	16%	190	1,070
4-year public	46%	460	2,560
2-year college	20%	210	1,010
Student numbers	670	860	4,640

Sources: Tables 1 and 2; and <https://toandthrough.uchicago.edu>. *Notes:* Comparison schools are 3×5 high schools matched based on demographics, performance and enrollment size. Expansion net of existing college enrollments.

Full investigation of the costs of the *Hope Chicago* program (at any scale) is beyond the scope of this investigation. However, the key issue is whether the average cost per student will increase or decrease as participation expands. Formally, average cost will decrease if: fixed costs are proportionately high; and variable costs are negatively associated with participation (and vice

⁶⁴The 15 comparison schools are: Philips; Dunbar; Harlan; Steinmetz; Bogan; Clemente; Curie; Hubbard; North Grand; Simeon; Goode; Carver; Michele; Woodlawn; and Perspectives.

⁶⁵Notably, the expansion would significantly increase the numbers of students at four-year colleges: community colleges would gain new students (new post-secondary enrollees) but would lose some students (who move up from two-year to four-year colleges).

⁶⁶Data from bls.gov/---/2022/recent-high-school-graduates-enrolled-in-college.htm. In the aggregate, these new enrollments would change total college enrollment in Illinois by <1%.

versa). For several reasons, it is likely that the *Hope Chicago* cost per student will not decrease but will remain stable:

- Fixed costs are not proportionately high: there is no large capital/machinery investment needed to provide *Hope Chicago*.
- Variable costs are a very high proportion of total costs: each individual student requires advising and aid-supports over multiple years.
- Some variable costs may decrease as the program expands: advisors may be able to increase their case-loads; agreements with schools may be standardized; and managerial costs per student may decline.
- Average financial support per student may increase or decrease, depending on the colleges students enroll at.⁶⁷

Overall, the most likely projection is that average cost per *Hope Chicago* student will remain stable as the program expands.

On the benefit side, the gains experienced by expanding the pool of *Hope Chicago* participants may change. However, it is likely that the benefits will remain stable:

- Expanding the pool of college graduates in Chicago is likely to increase rather than decrease the returns to college.⁶⁸
- Even with a five-fold expansion of *Hope Chicago*, the new flow into the Chicago labor market will be very small.⁶⁹
- Given the size of the college sector in Chicago and state-wide, there are many college options for high school graduates.⁷⁰
- Benefits from *Hope Chicago* may decrease if marginal enrollees are not as college-ready as the current cohorts. Research indicates that there are many students who are college-ready but do not enroll.⁷¹

⁶⁷Potentially, colleges may reduce their per student aid packages if enrollments increase. However, even with a significant expansion, the *Hope Chicago* students will remain a small percentage of each college's enrollment. College cost functions are reviewed by Feldman and Romano (2019); Hemelt et al. (2018); Bound et al. (2019).

⁶⁸There is substantial evidence of productivity spillovers and agglomeration externalities, as described above. Also, the returns to college education have grown over recent decades, even as the number of college graduates has increased.

⁶⁹Students enter the labor market across multiple years as they decide when to leave college. Thus, there will be no "cohort-crowding" effects.

⁷⁰Many colleges have been operating below capacity since the pandemic (and the Great Recession).

⁷¹See Zimmerman (2014); Gelbach (2016).

Therefore, the most likely projection is that average benefit per *Hope Chicago* student will remain stable as the program expands.

There is considerable scope for widening participation in *Hope Chicago* across schools within the CPS. Based on available evidence on costs and benefits, it is likely that increased participation would yield similar returns to those calculated above. And it would significantly reduce gaps in enrollment, college quality and completion by race and economic disadvantage.

7 Conclusion

With expanded access to post-secondary education in Chicago, more students would be college-educated, economic growth across the City would be significantly faster, and tax revenues would be increased. As incremental levels of college education yield extra benefits (net of the costs of college), there is a strong incentive to increase access for all students to attend.

The advising and financial supports of the *Hope Chicago* program boost college enrollment and attendance at more competitive colleges. This generates significant economic benefits to the students themselves as well as to the City of Chicago. By targetting students most in need and on the marginal of college enrollment, the program yields a high Social Return on Investment. In addition, *Hope Chicago* can reduce inequities in access to college and contribute toward a system that is accessible for students from all backgrounds and educational environments.

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Appendices

Table A1: Education Pipeline across Chicago Public Schools

	Cohort	HS Graduates		College Enrollees		College Completion		
	N	N	(%)	N	(%)	N	(%)	(%)
						of enroll)	of HSG)	
<i>Hope Chicago Schools:</i>								
Juarez	402	310	0.76	310	0.45	57	0.41	0.18
Morgan Park	285	217	0.76	217	0.58	55	0.44	0.26
Farragut	166	106	0.64	106	0.54	17	0.29	0.16
Noble Johnson	81	61	0.75	61	0.58	12	0.35	0.20
Raby	56	38	0.67	38	0.42	3	0.20	0.08
<i>Hope Chicago</i>	990	731	0.74	731	0.51	145	0.39	0.20
CPS	27470	22525	0.82	22525	0.59	6113	0.46	0.27
<i>Comparison Schools:</i>								
Philips	175	120	0.67	120	0.45	12	0.22	0.10
Dunbar	149	100	0.64	100	0.56	17	0.30	0.17
Harlan	87	50	0.59	50	0.33	5	0.28	0.09
Steinmetz	280	220	0.77	220	0.50	46	0.42	0.21
Bogan	193	140	0.72	140	0.44	20	0.32	0.14
Clemente	182	130	0.74	130	0.50	5	0.07	0.04
Curie	772	560	0.72	560	0.66	188	0.51	0.34
Hubbard	485	390	0.80	390	0.56	116	0.53	0.30
North Grand	253	200	0.79	200	0.47	35	0.37	0.17
Simeon	380	310	0.81	310	0.49	79	0.52	0.25
Goode	255	230	0.90	230	0.59	75	0.55	0.32
Carver	102	90	0.87	90	0.55	27	0.55	0.30
Michele	143	120	0.86	120	0.35	7	0.16	0.06
Woodlawn	116	110	0.95	110	0.68	30	0.40	0.27
Perspectives	74	60	0.82	60	0.31	8	0.42	0.13
Comparison Schools	3646	2830	0.78	2830	0.54	668	0.44	0.24

Source: <https://toandthrough.uchicago.edu>.

Figure A1
Hope Chicago Specimen College Trajectory

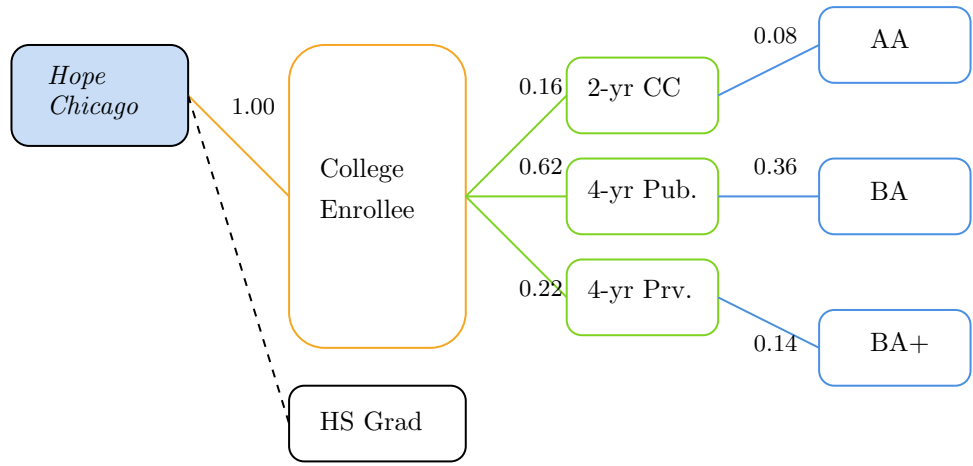


Figure A2
 Chicago Public Schools Specimen College Trajectory

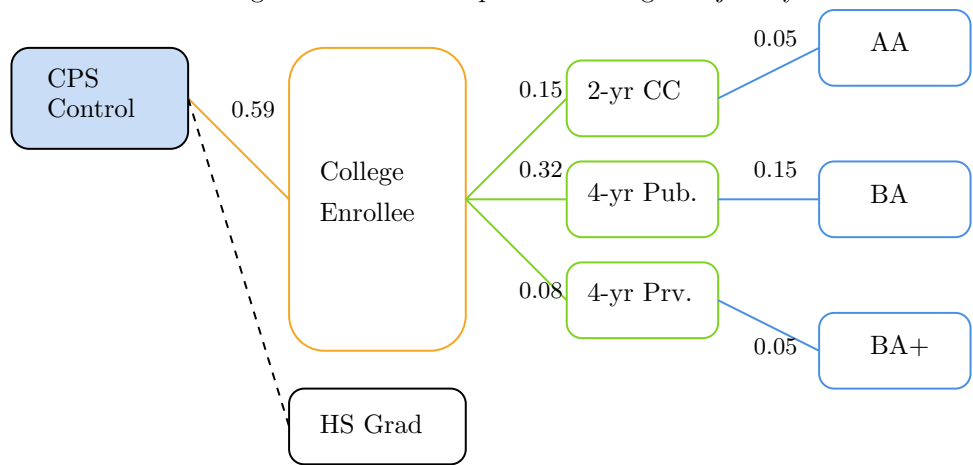


Table B1: Model Structure

Variable	Specification
<i>Hope Chicago</i> impact	$HOPE_{it} = h_1(ENROLL_{it}, HEI_{it}, AWARD_{it}, PACE_{it})$
Human capital	$\Omega_{it} = f_1(HOPE_{it}, SES, SCH)$
Gross earnings	$y_{it} = f_2(\Omega_{it}, EXP_{it}, EXP_{it}^2, SES \gamma, \lambda)$
Health status	$s_{it} = f_3(\Omega_{it}, y_{it}, SES \gamma, \lambda)$
Criminal activity	$d_{it} = f_4(\Omega_{it}, y_{it}, SES \gamma, \lambda)$
Welfare reliance	$l_{it} = f_5(\Omega_{it}, y_{it}, SES \gamma, \lambda)$
	s_{it}, d_{it}, l_{it} in \bar{x}_{it}

Source: Author derivation. *Notes:* *HOPE*: Participation in *Hope Chicago* program. *AWARD*: Post-secondary award status (non-enrollment, no award, certificate, associate degree, bachelor's degree, ma+ degree). *HEI*: Quality of higher education institution (two-year, four-year public, four-year private; highly competitive). *PACE*: Speed of award completion (on-time, 150% on-time). *SES*: Socio-economic status identified by household income per zipcode. *SCH*: school quality proxied by ability and high school quality. *ABL*: Ability identified by high school GPA; SAT score. *SQ*: High school quality identified by mean high school graduation and college enrollment rate. γ : male/female; λ : race (Hispanic, African American).

Table B2: Model Parameters: Impacts

Variable	Parameter
<i>Private student value:</i>	
Tuition/fees (postsecondary)	c_{it}
Value of health status	h_{it}
<i>Fiscal federal value:</i>	
Public subsidies (postsecondary)	g_{it}
Public healthcare spending	v_{it}
Public criminal justice system spending	q_{it}
Welfare spending	m_{it}
<i>Fiscal state/local value:</i>	
Public subsidies (postsecondary)	b_{it}
Public healthcare spending	j_{it}
Public criminal justice system spending	p_{it}
Welfare spending	r_{it}
<i>Social value:</i>	
Crime externality	u_{it}

Notes: † time-varying exogenous variable. * time-invariant exogenous variable.

Table B3: Model Parameters per Student: Money Values

Variable	Parameter
<i>Private student value:</i>	
Gross earnings	y_{it}
Tuition/fees (postsecondary) [†]	c_{it}
Value of health status	h_{it}
Net private value W_{it}	$y_{it} + h_{it} - c_{it}$
<i>Fiscal federal value:</i>	
Tax rate on income*	τ_f
Public subsidies (postsecondary) [†]	g_{it}
Public healthcare spending	v_{it}
Public criminal justice system spending	q_{it}
Welfare spending	m_{it}
Marginal excess tax burden rate*	ϵ_f
Productivity spillovers [†]	η_t
Net fiscal federal value F_{it}	$(1 + \epsilon_f)[\tau_f(1 + \eta_t)y_{it} - g_{it} + v_{it} + q_{it} + m_{it}]$
<i>Fiscal state/local value:</i>	
Tax rate (Illinois/Chicago)*	τ_s
Public subsidies (postsecondary) [†]	b_{it}
Public healthcare spending	j_{it}
Public criminal justice system spending	p_{it}
Welfare spending [†]	r_{it}
Marginal excess tax burden rate*	ϵ_s
Net fiscal state/local value L_{it}	$(1 + \epsilon_s)[\tau_s(1 + \eta_t)y_{it} - b_{it} + j_{it} + p_{it} + r_{it}]$
<i>Social value:</i>	
Private college scholarships	θ_{it}
Administrative burden of welfare [†]	β_t
Crime externality [†]	u_{it}
Private-fiscal transfers Z_{it}	$(\tau_s \tau_f)(1 + \eta_t)y_{it} - (1 - \beta_t)[(1 + \epsilon_f)m_{it} + (1 + \epsilon_s)r_{it}]$
Net social value S_{it}	$W_{it} + F_{it} + L_{it} - Z_{it} + \eta_t y_{it} + u_{it} - \theta_{it}$
<i>Implementation costs:</i>	
Financial transfer per student	a_{it}
Hope Chicago agency	n_{it}
Total implementation costs X_{it}	$a_{it} + n_{it}$

Notes: [†] time-varying exogenous variable. * time-invariant exogenous variable.

Table B4: Economic Metrics per *Hope Chicago* Participant

Perspective	Δ <i>Hope Chicago</i> – Counterfactual Expected Present Value
Participating student	$\sum_{t \in \alpha} (W_{it} + a_{it})(1 + \delta)^{-\alpha}$
Illinois/Chicago government	$\sum_{t \in \alpha} [F_{it} + L_{it}](1 + \delta)^{-\alpha}$
Social value for City of Chicago	$\sum_{t \in \alpha} S_{it}(1 + \delta)^{-\alpha}$
Social Return on Investment (ρ): <i>Hope Chicago</i> agency	$\sum_{t \in \alpha} (S_{it} - X_{it})(1 + \rho)^{-\alpha} = 0$

Source: Author derivation; see also Table 2 and Appendix Tables B2 and B3. *Notes:* Calculated as present values at age of entry into *Hope Chicago* program. α : working life (ages 18-65 transformed by -18). δ : social discount rate.

Table B5: College Trajectories

	College Trajectory Parameters						
	α	β_1	β_2	β_3	γ_1	γ_2	γ_3
<i>Hope Chicago:</i>							
Treatment-on-Treated	1.00	0.16	0.62	0.22	0.08	0.36	0.14
Intent-to-Treat	0.74	0.16	0.46	0.20	0.09	0.26	0.09
Chicago Public Schools:							
Full cohort	0.59	0.16	0.34	0.08	0.05	0.15	0.05
College-bound	1.00	0.27	0.55	0.17	0.14	0.31	0.11
Companion Schools:							
Full cohort	0.21	0.11	0.08	0.02	0.04	0.06	0.02
College-bound	1.00	0.05	0.04	0.01	0.02	0.03	0.01

Sources: IPEDS, 2021 data from nces.ed.gov/ipeds/use-the-data/ipedsdatacenter/; and toandthrough.uchicago.edu. Trajectory labels from Figure 1. Numbers rounded to nearest percentage point.

Table C1: Postsecondary Outcomes: Chicago Colleges

<i>Top destination colleges</i>	Completion Rate		FTEs
	BA Degree	AA Degree	
Univ. of Illinois Urbana-Champaign	85		36,100
DePaul University	74		16,050
Loyola University Chicago	74		13,570
Dominican University	64		2,320
University of Illinois Chicago	61		23,550
Saint Xavier University	56		3,320
Eastern Illinois University	53		8,000
Western Illinois University	51		6,780
Columbia College Chicago	50		7,260
Northern Illinois University	49		13,370
Southern Illinois Univ.–Edwardsville	49		11,620
Southern Illinois Univ.–Carbondale	48		9,470
National Louis University	22		4,490
Northeastern Illinois University	21		6,560
CCC-Harry S Truman College		28	9,420
CCC-Kennedy-King College		28	3,330
CCC-Malcolm X College		23	10,390
CCC-Richard J Daley College		32	9,350
Governors State University		n.a.	3,750
Southwestern Illinois College		28	14,170

Sources: IPEDS, 2021 data from nces.ed.gov/ipeds/use-the-data/ipedsdatacenter; and toandthrough.uchicago.edu. Notes: CCC: City Colleges of Chicago. Colleges ordered by completion rate. FTE average 2020-21 (rounded to 10). 6-year Graduation rate - bachelor's degree within 150% of normal time (*bagr150*); Graduation rate - degree/certificate within 150% of 150% of normal time (*l4gr150*)

Table C2: **Financing: Chicago Colleges**

<i>Top destination colleges</i>	Financing per FTE		
	Tuition/fees	State Revenue	Local Revenue
Univ. of Illinois Urbana-Champaign	\$14,450	\$4,790	–
DePaul University	\$41,360	–	–
Loyola University Chicago	\$46,410	–	–
Dominican University	\$34,950	–	–
University of Illinois Chicago	\$12,250	\$7,080	–
Saint Xavier University	\$33,960 –	–	–
Eastern Illinois University	\$9,210	\$6,930	–
Western Illinois University	\$8,890	\$6,870	–
Columbia College Chicago	\$26,610	–	–
Northern Illinois University	\$9,610	\$5,920	–
Southern Illinois Univ.–Edwardsville	\$8,580	\$4,890	–
Southern Illinois Univ.–Carbondale	\$9,640	\$12,040	–
National Louis University	\$13,420	–	–
Northeastern Illinois University	\$10,090	\$6,290	–
CCC-Harry S Truman College	\$4,380	\$1,220	\$680
CCC-Kennedy-King College	\$4,380	\$1,370	\$13,330
CCC-Malcolm X College	\$4,380	\$1,250	\$6,920
CCC-Richard J Daley College	\$4,380	\$1,210	\$1,320
Governors State University	\$7,510	\$6,380	–
Southwestern Illinois College	\$3,390	\$2,230	\$5,140

Sources: IPEDS, 2021 data from nces.ed.gov/ipeds/use-the-data/ipedsdatacenter/; and toandthrough.uchicago.edu. Notes: CCC: City Colleges of Chicago. Colleges ordered by completion rate. Tuition/fees sticker price per full-time student (not tuition revenue per student); In-district average tuition for full-time undergraduates (*tuition1*).

Table C3: Leveraged Funding: Chicago Colleges

<i>Top destination colleges</i>	Financing per FTE		
	Grant Aid Public	Federal Loans	Scholarship Grant Aid
Univ. of Illinois Urbana-Champaign	\$11,210	\$5,560	\$16,830
DePaul University	\$25,280	\$6,680	–
Loyola University Chicago	\$25,850	\$6,760	–
Dominican University	\$24,720	\$6,730	–
University of Illinois Chicago	\$13,420	\$6,280	\$13,260
Saint Xavier University	\$27,600	\$6,110	–
Eastern Illinois University	\$10,760	\$6,400	\$10,760
Western Illinois University	\$13,940	\$6,970	\$13,940
Columbia College Chicago	\$20,990	\$7,430	–
Northern Illinois University	\$13,010	\$6,760	\$12,980
Southern Illinois Univ.–Edwardsville	\$8,670	\$6,290	\$8,670
Southern Illinois Univ.–Carbondale	\$13,300	\$6,790	\$13,160
National Louis University	\$8,930	\$7,920	–
Northeastern Illinois University	\$10,530	\$7,020	\$10,310
CCC-Harry S Truman College	\$5,830	\$5,870	\$5,830
CCC-Kennedy-King College	\$6,560	\$5,330	\$6,560
CCC-Malcolm X College	\$5,800	\$5,890	\$5,790
CCC-Richard J Daley College	\$5,510	\$3,040	\$5,510
Governors State University	\$10,790	\$7,480	\$10,890
Southwestern Illinois College	\$4,820	\$3,350	\$4,510

Sources: IPEDS, 2021 data from nces.ed.gov/ipeds/use-the-data/ipedsdatacenter; and toandthrough.uchicago.edu. Notes: CCC: City Colleges of Chicago. Colleges ordered by completion rate. For missing values, average per sector used in models. Average amount of federal student loans awarded to undergraduate students (*ufloana*); Average amount of federal, state, local or institutional grant aid awarded (*agrnta*); Average amount of grant and scholarship aid awarded, 2020-21 (*gista2*).

Table D1: Earnings by Education Level

	HS Graduate	Some College	AA Degree	BA Degree	Adv. Degree
Female:					
Hispanic/Latino	\$399,180	\$949,870	\$977,900	\$1,319,360	\$1,260,210
Black/African Amer.	\$480,510	\$710,400	\$793,230	\$1,439,820	\$1,544,960
Male:					
Hispanic/Latino	\$762,170	\$1,016,090	\$1,072,650	\$1,856,730	\$2,196,200
Black/African Amer.	\$683,790	\$961,350	\$985,570	\$1,629,470	\$2,037,080

Source: Current Population Survey (CPS), 2009-2021; Chicago-Naperville-Elgin, IL-IN-WI MSA sample all persons aged 18-64 (employed or not). *Notes:* Gross earnings before tax. No adjustments are made for labor market participation (annual and lifetime), GED receipt, or incarceration rates. Labor market activity begins at age 18 (conditional on not being in college) and lasts until age 65. Model includes health and pension benefits incidence as per CPS average at www.bls.gov/~/employmentcostindex_chicago.htm; alpha factor of 10%; productivity growth rate 1.5%; pandemic adjustment factor Albanesi and Kim (2021). Present values at age 18; discount rate 3.5%. 2023 dollars.

Table D2: Tax Contributions by Education Level

	HS Graduate	Some College	AA Degree	BA Degree	Adv. Degree
Federal tax	\$71,820	\$123,830	\$139,250	\$257,180	\$279,460
State/local tax	\$36,790	\$65,630	\$81,780	\$141,610	\$153,880

Source: CPS, 2009-2021; Chicago-Naperville-Elgin, IL-IN-WI MSA sub-sample aged 18-64; State/local tax from: taxfoundation.org/state/illinois/; City tax from chicago.gov/city/en/depts/obm.html. *Notes:* Earnings profiles as per Appendix Table D1. Average from: (1) reported tax payments from CPS; (2) predicted taxes from TAXSIM at <http://users.nber.org/~taxsim/taxsim35/>; (3) rate of 15% of earnings (Saez and Zucman, 2019). State/local tax includes city tax payments. Present values at age 18; discount rate 3.5%. 2023 dollars.

Table D3: Health Burdens by Education Level

	HS Graduate	Some College	AA Degree	BA Degree	Adv. Degree
Social gains	\$-	\$46,230	\$84,050	\$126,070	\$156,209
Federal burden	\$22,610	\$16,950	\$8,480	\$2,830	\$2,280
State/local burden	\$35,360	\$26,520	\$13,260	\$4,420	\$3,570

Sources: State/federal spending: www.kff.org/statedata/. ACA: www.kff.org/state-category/affordable-care-act/. MEPS, Muennig et al. (2010); Schoeni et al. (2011); Krueger et al. (2015). Medicaid spending: www.macpac.gov/publication/march-2022-report-to-congress-on-medicaid-and-chip/. QALY valuation at \$75,000 Neumann et al. (2016). *Notes:* Medicaid spending over-65 and CHIP spending excluded. ACA enrollment assumed fixed as per 2022. State/local burden includes City of Chicago burden AT chicago.gov/--/obm/supp_info/2022Budget/2022overviewFINAL.pdf. Federal matching rate at 65% from illinois.gov/hfs/MedicalClients/Pages/medicalprograms.aspx. Present values at age 18; discount rate 3.5%. 2023 dollars.

Table D4: Crime Burdens by Education Level

	HS Graduate	Some College	AA Degree	BA Degree	Adv. Degree
Social burdens	\$54,730	\$31,930	\$13,680	\$6,840	\$5,520
Criminal Justice System:					
Federal burden	\$13,400	\$7,820	\$3,350	\$1,680	\$1,360
State/local burden	\$13,960	\$8,140	\$3,490	\$1,750	\$1,410

Sources: Anderson (2011); Ewert et al. (2014); Krueger et al. (2015); Cano-Urbina and Lochner (2019); Cruz and Lopez (2019); Koegl and Farrington (2021); Miller et al. (2021). Federal spending: bjs.ojp.gov/--/jeeus17.pdf. State spending: www.civicfed.org/--/criminal-justice-system-fy2022-spending-chicago-and-illinois. Incarceration population: nicic.gov/state-statistics/2020/illinois-2020x. *Notes:* Present values at age 18; discount rate 3.5%. 2023 dollars. Advanced degree rate projected from earnings gradient.

Table D5: Other Economic Benefits by Education Level

	HS Graduate	Some College	AA Degree	BA Degree	Adv. Degree
Welfare system payments:					
Social	\$2,060	\$1,030	\$410	\$210	\$169
Federal	\$3,300	\$1,650	\$660	\$330	\$266
State/local	\$10,440	\$5,220	\$2,090	\$1,040	\$839
Economic spillovers	\$8,160	\$17,340	\$27,040	\$90,980	\$112,730
Marginal excess tax burden:					
Social	\$11,950	\$19,890	\$19,210	\$32,280	\$39,997
Federal	\$5,430	\$9,040	\$8,730	\$14,670	\$18,177
State/local	\$6,520	\$10,850	\$10,480	\$17,610	\$21,820

Sources: Productivity: Monaco and Yamarik (2015); Liu et al. (2020). METB: Ghavari (2006). Welfare receipt and expenditures: www.census.gov/data/tables/2019/demo/public-assistance/sipp-receipts508.html; www.illinoispolicy.org/--/modeling-potential-income-and-welfare-assistance-benefits-in-illinois/; www.urban.org/--state-fiscal-briefs/illinois. *Notes:* Present values at age 18; discount rate 3.5%. 2023 dollars. Advanced degree rate derived from earnings gradient. Social welfare derived from administrative cost and error rate of welfare programs at 18% (https://www.brookings.edu/--/2016/06/03_food_stamp_isaacs.pdf).

Table D6: Education Costs and Financing by Education Level

	HS Graduate	Some College	AA Degree	BA Degree	Adv. Degree
Education expenditures:					
Social	\$-	\$8,650	\$46,400	\$112,910	\$140,892
Federal	\$-	\$1,160	\$3,800	\$6,620	\$8,261
State/local	\$-	\$5,800	\$26,610	\$41,360	\$51,610

Sources: Higher education costs: nces.ed.gov/ipeds/; Appendix Tables C1-C3. *Notes:* Hope Chicago students assumed to pay full tuition/fees for post-BA college attendance. Social expenditure includes public subsidy plus expected tuition/fees (expected). Matched scholarship funding at 10% of average scholarship grant aid from Table C3 (two years for some college group). Present values at age 18; discount rate 3.5%. 2023 dollars.

Table E1: *Hope Chicago*: Social Perspective

	Model Scenarios		
	Baseline	Aid Support	Integrated
Earnings	\$1,197,450	\$1,269,210	\$1,327,120
Health gains (over HSG)	\$106,790	\$115,760	\$124,390
Crime	\$15,780	\$13,680	\$11,310
Welfare burden	\$510	\$440	\$360
Productivity	\$58,930	\$66,590	\$72,730
METB	\$25,100	\$26,430	\$27,470
Education resources	\$74,160	\$83,970	\$92,620
Social Value (lifetime)	\$1,297,820	\$1,379,910	\$1,447,440

Sources: Author calculations from Appendix Tables. *Notes:* Life-course trajectories. Present values at age 18, $\delta = 3.5\%$. 2023 dollars.

Table E2: *Hope Chicago*: Fiscal Federal Perspective

	Model Scenarios		
	Baseline	Aid Support	Integrated
Tax	\$194,930	\$209,130	\$220,760
Health spending (over HSG)	\$7,780	\$6,590	\$5,370
Crime/Justice spending	\$3,860	\$3,350	\$2,770
Welfare spending	\$820	\$700	\$570
METB	\$11,410	\$12,010	\$12,490
Education spending	\$4,660	\$5,140	\$5,600
Federal Value (lifetime)	\$189,220	\$205,360	\$218,930

Sources: Author calculations from Appendix Tables. *Notes:* Life-course trajectories. Present values at age 18, $\delta = 3.5\%$. 2023 dollars.

Table E3: *Hope Chicago*: Fiscal State/City Perspective

	Model Scenarios		
	Baseline	Aid Support	Integrated
Tax	\$107,440	\$115,080	\$121,600
Health spending (over HSG)	\$12,170	\$10,310	\$8,410
Crime/Justice spending	\$4,030	\$3,490	\$2,880
Welfare spending	\$2,590	\$2,220	\$1,800
METB	\$13,690	\$14,410	\$14,980
Education spending	\$29,230	\$32,130	\$35,030
State/City Value (lifetime)	\$73,110	\$81,340	\$88,460

Sources: Author calculations from Appendix Tables. *Notes:* Life-course trajectories including City of Chicago taxation. Present values at age 18, $\delta = 3.5\%$. 2023 dollars.

Table E4: *Hope Chicago*: Fiscal Total Perspective

	Model Scenarios		
	Baseline	Aid Support	Integrated
Tax	\$302,370	\$324,210	\$342,350
Health spending	\$19,950	\$16,900	\$13,780
Crime/Justice spending	\$7,890	\$6,840	\$5,650
Welfare spending	\$3,400	\$2,920	\$2,370
METB	\$25,100	\$26,430	\$27,470
Education spending	\$33,890	\$37,270	\$40,630
Fiscal Value (lifetime)	\$262,340	\$286,700	\$307,390

Sources: Author calculations from Appendix Tables. *Notes:* Life-course trajectories including federal, state/local and City of Chicago taxation. Present values at age 18, $\delta = 3.5\%$. 2023 dollars.

Table F1: **Benefit-Cost Analysis Results: College Interventions**

	Benefits Total	Benefits Fiscal	Costs	B-C	B/C Ratio
Text message reminders (HSG)	\$3,352	\$637	(\$10)	\$3,342	336.4
Summer outreach counseling (HSG)	\$15,628	\$3,206	(\$101)	\$15,526	154.3
Text message reminders (2-year)	\$3,697	\$477	(\$37)	\$3,660	100.3
College in the high school	\$24,726	\$5,113	(\$284)	\$24,442	87.0
College advising (counselors)	\$24,404	\$5,043	(\$822)	\$23,582	29.7
Early college high school	\$72,471	\$13,568	(\$4,175)	\$68,296	17.4
Dual enrollment	\$22,396	\$5,418	(\$1,589)	\$20,807	14.1
Student success courses	\$3,508	\$705	(\$620)	\$2,888	5.7
Performance-based scholarships	\$5,335	\$962	(\$1,583)	\$3,752	3.4
College advising (peer mentor)	\$1,939	\$484	(\$825)	\$1,113	2.4
Student success courses	\$620	\$48	(\$290)	\$329	2.1
Learning communities (success courses)	\$183	\$51	(\$401)	(\$218)	0.5
Learning communities (college courses)	\$265	\$98	(\$914)	(\$649)	0.3
Performance-based scholarships (4-year)	(\$198)	\$154	(\$2,959)	(\$3,157)	-0.1
Performance-based scholarships (2-year)	(\$1,104)	\$10	(\$2,771)	(\$3,876)	-0.4
Brief information interventions	(\$155)	(\$22)	(\$76)	(\$230)	-2.0
Intensive advising	(\$3,670)	(\$224)	(\$854)	(\$4,525)	-4.3
Text message reminders (4-year)	(\$1,037)	(\$134)	(\$37)	(\$1,074)	-28.1

Source: Washington State Institute for Public Policy, wsipp.wa.gov. *Notes:* Calculated as present values. Negative numbers in parentheses.