

AN ASSESSMENT OF THE VALUE OF THE STARBUCKS COLLEGE ACHIEVEMENT PLAN

A Report from the Office of the University Economist

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SUMMARY

The Starbucks College Achievement Plan (SCAP) provides benefits to the company, to the individuals who participate in the program, and to society.

Lifetime Individual Benefit

The lifetime individual benefit to a Starbucks employee participating in the SCAP varies with a number of factors:

- Whether the individual would have graduated without the availability of the SCAP.
- The age of the individual when entering the program.
- Whether the participant works part time or full time while attending classes.
- The length of time taken to earn a degree, which depends on many factors, including full-time/part-time work status, the number of hours of prior college credits transferred into the program, and the major selected.

For an individual who would have attained a bachelor's degree without the availability of the program, the benefit is limited to cost savings related to the payment of tuition and fees by Starbucks and from the avoidance of student loans. Based on the national average for tuition and fees at public universities, and on interest rates for student loans, the present value of the cost savings is estimated at \$46,138 for someone who takes four years to complete their bachelor's degree, \$34,614 for someone who takes three years, and \$23,092 for someone who takes two years.

In contrast, if the SCAP participant would not have completed college without the availability of the program, the value of the program to the individual is much greater, including not only the cost savings but also the substantially higher earnings received on average by those who complete a bachelor's degree relative to those who do not. The value of the program to these individuals varies with the length of time required to complete a bachelor's degree, the number of hours per week worked while attending classes, and the age of the participant. It is assumed that graduates will work through age 65.

In this paper, the calculation of the individual benefit is based on the assumption that the participants are full-time students and part-time employees of Starbucks (to be eligible for the program, individuals must work an average of at least 20 hours per week). For these individuals, forgone earnings — the difference between working full time and part time — are considered to be a cost that lowers the net present value of earning a bachelor's degree. It also is possible to assume that the participants work full time for Starbucks and attend class part time. In this case, forgone earnings are not present, but the student will take longer to graduate, which lowers the net lifetime benefit of earning a bachelor's degree.

For an individual with few or no previously earned college credits who takes four years to complete a bachelor's degree, the earnings benefit is calculated from average earnings of those with a bachelor's degree relative to the average of those with a high school diploma. The net lifetime benefit in cost savings and enhanced earnings is highest for those who enter the program at age 18, at approximately \$500,500 in present value terms. The net lifetime benefit of the program declines with the age of the participant. An older graduate will not have as many working years to accumulate the earnings benefit from a bachelor's degree and the earnings

premium between a new university graduate and one without a degree is not as great for an older person.

For an individual with a greater number of previously earned college credits who takes fewer years to complete a bachelor's degree, the earnings benefit is calculated from average earnings of those with a bachelor's degree relative to the average of those with some college (which is somewhat higher than the average of those with no education beyond a high school diploma). For those who complete a degree in three years, the net lifetime benefit in present value terms is highest at approximately \$425,300 for those who enter the program at age 19; again, the net lifetime benefit declines with age. For those who complete a degree in two years, the net lifetime benefit in present value terms is higher, peaking at approximately \$455,200 for those who enter the program at age 20.

Thus, the net lifetime benefit to an individual from earning a bachelor's degree varies widely, from negative for older individuals to as high as about \$500,000 in present value terms. Based on the age and transfer credits/years to complete the program of the students who have been admitted to the SCAP, the weighted net present value of graduates of the SCAP program is calculated to be \$361,145. If the same individuals had to pay tuition and interest on student loans, the weighted net present value would be \$324,114 — a difference of \$37,031.

Aggregate Lifetime Individual Benefits

In order to aggregate the lifetime benefit to individuals of the assumed number of 25,000 graduates by the year 2025, the weighted net present value figures are used. For SCAP participants, multiplying 25,000 by \$361,145 results in an aggregate net present value of \$9.029 billion. For nonparticipants, multiplying 25,000 by \$324,114 results in an aggregate net present value of \$8.103 billion. The difference between SCAP participants and nonparticipants is \$926 million.

If all of the 25,000 SCAP graduates would have earned a bachelor's degree without the existence of the program, the aggregate lifetime benefit to individuals would be \$926 million — the aggregate cost savings. If none of the SCAP participants would have earned a bachelor's degree without the existence of the program, the aggregate lifetime benefit to individuals would be \$9.029 billion. If one-third of the SCAP graduates would have earned a degree without the program, the aggregate lifetime individual benefit is \$6.328 billion. The various aggregate benefits of the SCAP are summarized in the table on page 3.

Societal Benefits

In addition to individual benefits, societal benefits accrue to communities where SCAP graduates ultimately reside. There are three categories of societal benefits, two of which are quantifiable:

- Tax Payments. College graduates earn higher wages and thus pay higher taxes.
- Higher wages for all workers. An increase in the share of workers in a local labor market who are university graduates results in an increase in earnings for all other workers in the labor market, due to productivity gains tied to the additional university graduates. This increase in earnings across the workforce often is referred to as the “spillover” effect.
- Nonmonetary social benefits accrue to communities with greater numbers of university graduates. Examples include reduced crime rates and greater civic participation.

On average, SCAP graduates are estimated to pay \$87,360 more in taxes over their lifetime in present value terms. The discounted value of additional tax payments over the working-life of 25,000 graduates is estimated to be \$2.184 billion. Depending on the number of the projected program graduates who would have earned a bachelor’s degree without the existence of the program, the aggregate lifetime tax benefit of the program ranges from \$0 to \$2.184 billion. The figure is \$1.456 billion if one-third of the SCAP graduates would have earned a degree without the program.

Higher wages for all workers are realized when the educational attainment of the workforce is increased. The annual spillover benefit of the SCAP will gradually rise until the assumed number of graduates reaches 25,000 in 2025. The calculations assume an increase in real average earnings of 1 percent per year through 2025. As long as all 25,000 graduates remain active in the workforce, the annual benefit will rise at the pace of real average earnings. As individuals leave the workforce, the annual spillover benefit will decline.

The aggregate spillover effect cannot be directly compared to the aggregate individual benefit, which is expressed over a lifetime. In any given year, the aggregate spillover effect is several times as large as the aggregate individual benefit.

Nationally, an increase of 25,000 workers with a bachelor’s degree represents only a 0.032 percent rise in the number of workforce participants with at least a bachelor’s degree, yet the increase in earnings is estimated to be \$2.718 billion in 2025 among workers who did not enhance their educational attainment. Depending on the number of the projected program graduates who would have earned a bachelor’s degree without the existence of the SCAP, the aggregate spillover effect of the program ranges from \$0 to \$2.718 billion in 2025. If one-third of the SCAP graduates would have earned a degree without the program, the aggregate spillover benefit in 2025 is \$1.812 billion.

AGGREGATE ESTIMATED BENEFIT OF THE STARBUCKS COLLEGE ACHIEVEMENT PLAN WITH 25,000 GRADUATES IN 2025*

	Would Have Earned a Degree Without the SCAP	Would Not Have Earned a Degree Without the SCAP	Assuming That One-Third Would Have Earned a Degree Without the SCAP**
Aggregate Lifetime Individual Benefit	\$926 million	\$9.029 billion	\$6.328 billion
Societal Benefits			
Aggregate Lifetime Tax Benefit	\$0	\$2.184 billion	\$1.456 billion
Annual Spillover Benefit in 2025***	\$0	\$2.718 billion	\$1.812 billion

* The calculations of the estimates are based on numerous assumptions.

** The actual proportion of the participants who would have earned a degree without the SCAP is unknowable. The one-third assumption is based on the actual degree completion figure in the general population of approximately one-third, and is supported by SCAP participant survey data.

*** The annual spillover benefit will gradually rise until the number of graduates reaches 25,000 in 2025. The figures shown assume an annual increase in real average earnings of 1 percent through 2025. As long as all 25,000 graduates remain active in the workforce, the annual benefit will rise at the pace of real average earnings. As individuals leave the workforce, the spillover benefit will decline.

INTRODUCTION

Starbucks College Achievement Plan

The first Starbucks College Achievement Plan (SCAP) students began taking courses in October 2014. All U.S. employees of Starbucks who are benefits eligible and have not earned a bachelor's degree may participate in this program. Benefits eligibility begins one month after an employee works at least 240 hours over a three-month period. The program provides 100 percent tuition coverage for those seeking a first-time bachelor's degree. Participants select among more than 90 degree programs offered by Arizona State University through its ASU Online degree program. Classes begin six times per year.

Employees begin by applying to ASU.¹ Those not eligible for admission have an alternative — ASU's Pathway to Admission program. Starbucks offers 100 percent tuition coverage for up to 10 freshman-level courses that enable employees to bolster their credentials for admission to the ASU Online degree program.

Along with applying to ASU, employees interested in the SCAP complete a FAFSA: Free Application for Federal Student Aid. In addition to possible student aid, all participating Starbucks employees receive a 42 percent scholarship each semester. Students must initially pay the remaining tuition costs after scholarships and financial aid, but they receive a 100 percent reimbursement through their paycheck following the end of the academic term. Class fees, textbooks, and certain instructional materials are not reimbursed. The first \$5,250 per year paid by Starbucks to reimburse program participants is tax exempt. Reimbursement beyond that amount is taxable income to the employee. Thus, SCAP participants still incur some costs that are not reimbursed.

The Starbucks website indicates that the company offers the SCAP because only one-half of those who start college complete a four-year degree. Financial and work/life barriers are cited as the primary reasons for dropping out.

The SCAP provides a competitive advantage to the company, helping Starbucks attract high-quality employees. Employee turnover is reduced while the employee is active in the program, which saves training costs. Starbucks estimates this retention savings at over \$2,700 per year per SCAP partner.

Positive public relations is another benefit that the SCAP provides to the company, sending a signal that the company is "people first" not "corporate first." This likely attracts socially conscious consumers of Starbucks' products and services.

Based on recent annual reports that appear prominently on the Starbucks website, the SCAP aligns with two of the four Starbucks Global Social Impact Performance Goals:

- "Creates Opportunities:" The SCAP is one of several ways that the company helps provide education and employment opportunities, benefiting individuals.

¹ For employees who are veterans, a family member may participate in the program instead.

- “Strengthen Communities:” Starbucks encourages community service through volunteer work, benefiting society. Community service is positively related to educational attainment.

The individual and societal benefits are explored in later sections of this report.

Net Present Value and Related Concepts

Graduates of the SCAP will receive benefits that extend over their working life. Societal benefits also accrue over this period. In order to estimate the size of these benefits over time, the time value of money must be considered. The following discussion comes from Investopedia (<https://www.investopedia.com/terms/p/presentvalue.asp> and <https://www.investopedia.com/terms/n/npv.asp>).

Money in the present is worth more than the same amount in the future due to inflation and to earnings from alternative investments that could be made during the intervening time. In other words, a dollar earned in the future will not be worth as much as one earned in the present.

Present value (PV) is the current value of a future sum of money or stream of cash flows given a specified rate of return. Future cash flows are discounted at the discount rate, which is the investment rate of return that is applied to the present value calculation. In other words, the discount rate would be the forgone rate of return if an investor chose to accept an amount in the future versus the same amount today. The discount rate that is chosen for the present value calculation is highly subjective because it is the expected rate of return one would receive if today's dollars were invested for a period of time. The higher the discount rate, the lower the present value of the future cash flows. Determining the appropriate discount rate is the key to properly valuing future cash flows, whether they be earnings or obligations.

Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used to analyze the profitability of a projected investment or project. Another way to think of NPV is that it is today's value of the expected cash flows minus today's value of invested cash.

An example of a NPV analysis is the case of a young person considering whether to attend college. Assuming the individual will need to pay tuition, college attendance incurs considerable near-term costs (in addition to tuition, forgone earnings while attending college) and the potential for significant earnings benefits in the longer term (the result of workers with a bachelor's degree earning substantially more on average than those with less education). The most common NPV analysis of attending college assumes that a student will earn a bachelor's degree by attending college for four years from ages 18 through 21, then will work from ages 22 through approximately 65. This analysis is modified for SCAP participants in the following section on individual benefits.

INDIVIDUAL BENEFITS OF ENHANCED EDUCATIONAL ATTAINMENT

Following principles of standard financial analysis, all individual benefits and costs related to the pursuit of higher education are expressed in present value terms.

Methodology

The benefits of obtaining a bachelor's degree can be represented by the increment in earnings received by a bachelor's degree holder relative to those with less education, calculated over the entire working life of the individual after the completion of a bachelor's degree and expressed in present value terms. The costs of a university education are the tuition and fees paid by a student, the forgone earnings associated with a decline in working hours while pursuing a bachelor's degree, and interest payments as any student loans are repaid, all once again expressed in present value terms. Expenses related to room and board are not considered to be a cost of attending college, since housing and food expenses would arise regardless of whether an individual pursues higher education.

If the discount rate used in calculating present values is the same as the interest rate on student debt, the value of college is the same whether the student uses existing assets to pay for tuition and fees or borrows money to meet these expenses. That is, student debt per se does not figure into the analysis or affect the bottom line in this situation. However, if the interest rate on borrowing is higher than the discount rate, then there is an additional cost associated with debt that reduces the net value of higher education. The analysis presented in this section assumes that the student loan interest rate exceeds the discount rate and therefore represents an additional cost of pursuing a bachelor's degree.

If a participant in the Starbucks program would have earned a bachelor's degree even if the SCAP did not exist, the value of the program to the participant is simply the tuition and fee payments made by the company plus the avoided costs of student loan debt. If the student, for whatever reason, would not have earned a degree without the program, then the value of the program to the participant would be the sum of the avoided tuition, fees and debt costs plus the much larger value of what a bachelor's degree is worth to an average student in the form of the lifetime earnings differential.

Data and Assumptions

In the standard analysis of the value of a bachelor's degree, the assessment is based on the following hypothetical scenario. The potential college student is assumed to have completed high school and is deciding whether to spend the next four years pursuing and completing a four-year bachelor's program. If the individual does not choose to go to college, it is assumed that the individual will work full time from age 18 to 65. If the individual attends college, the assumption is that the individual will work 15 hours a week while school is in session and full time during the summer. This is an annual average of 22.5 hours per week. Upon graduation, the individual will work full time from age 22 to 65.

Estimates of average earnings by age and level of educational attainment in the United States are available from the U.S. Census Bureau's Current Population Survey (CPS, <https://www.census.gov/data/tables/time-series/demo/income-poverty/cps-pinc.html>, Table PINC-04). The latest annual data are for 2017. A five-year average is used, with the earnings

figure for each year from 2013 through 2017 adjusted for inflation to 2018 dollars. The five-year average is used because of the significant sampling error present in the CPS when dividing the national sample into multiple age-educational attainment subsets, such as those 25-to-29 years of age with a bachelor's degree as their maximum educational attainment. To further reduce sampling error, 10-year (e.g. ages 25 through 34) rather than five-year age groups are used and the earnings of males and females are combined. The mean earnings of full-time, year-round workers are used. In the standard analysis, individuals who completed a bachelor's degree but had no graduate-level education are compared to those who received a high school diploma but did not attend college. The earnings figures from the CPS are displayed in Table 1.

For university graduates, earnings in a particular age group vary with the number of years of work experience after earning a bachelor's degree. For example, someone earning a bachelor's degree at age 29 will not on average earn as much as a 29-year-old who graduated at age 22 and has seven years of professional work experience. No data are available to indicate the earnings differential between such individuals. In this analysis, the assumption is made that average earnings upon graduation with a bachelor's degree is the same regardless of an individual's age, as are increases in earnings with years of professional work experience.

Tuition and required fees are assumed to be \$9,037 per year, the average across all public universities in academic year 2017-18, as reported by the National Center for Education Statistics in their Digest of Education Statistics (https://nces.ed.gov/programs/digest/current_tables.asp, Table 330.10). In the standard analysis, an individual who chooses to attend college is assumed to borrow \$9,037 for each of four years to cover these costs.

The terms of the student loan are based on information provided by Discover on their website for student loans, https://www.discover.com/student-loans/undergraduate.html?acmpgn=G_STU_DFRD_BM_X_LTRE2. Their student loans have a 15-year repayment period. Fixed interest rates currently range from 5.99-to-13.49 percent, with

TABLE 1
AVERAGE EARNINGS IN THE UNITED STATES BY AGE AND EDUCATIONAL ATTAINMENT, 2013-17 AVERAGE EXPRESSED IN 2018 DOLLARS

Age Group	Average Earnings			Earnings Differential		
	Bachelor's Degree	Some College	High School	Bachelor's Degree Versus Some College	Some College Versus High School	Bachelor's Degree Versus High School
18-24	\$46,939	\$31,306	\$30,007	50%	4%	56%
25-34	64,981	43,867	40,417	48	9	61
35-44	85,385	54,581	48,515	56	13	76
45-54	93,800	60,385	49,492	55	22	90
55-64	87,873	59,752	50,621	47	18	74

Sources: U.S. Department of Commerce, Census Bureau, Current Population Survey (earnings) and U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index Research Series (inflation).

the rate dependent on the borrower's/cosigner's credit worthiness. The midpoint of the range is 9.74 percent. Since the analysis of the value of a bachelor's degree is made on an inflation-adjusted (real) basis, a real interest rate of 7.75 percent is assumed, with a 15-year payback period (180 equal payments) starting upon graduation.

The real discount rate used to calculate present values is assumed to be 4 percent. In the standard analysis, the cost of having to borrow to pay tuition and fees is the difference between the present value of the loan payments made from ages 22 through 36 and the present value of the \$9,037 in tuition payments made each year while attending college.

The standard analysis is modified to reflect the varying situations of participants in the Starbucks program. Modifications to the standard analysis for Starbucks participants include the age at which participants enter the program, the number of years needed to complete a bachelor's degree, and recognition that some participants had previously earned college credits. For simplicity, the latter two conditions are linked and the assumed time needed to complete a bachelor's degree is rounded to whole years.

The standard analysis assumes a traditional school year of two semesters, while SCAP participants can attend class in any or all of six terms per year. SCAP participants are required to work at least 20 hours per week. Since the actual number of hours worked by participants is unknown, the assumption in the standard analysis of an average of 22.5 hours per week over the course of a year has not been changed for SCAP participants.

The analysis of SCAP participants is based on the assumption that the participants are full-time students and part-time employees of Starbucks. For these individuals, forgone earnings — the difference between working full time and part time — are considered to be a cost that lowers the net present value of earning a bachelor's degree. It also is possible to assume that the participants work full time for Starbucks and attend class part time. In this case, forgone earnings are not present, but the student will take longer to graduate, which lowers the net lifetime benefit of earning a bachelor's degree.

The required number of hours to graduate is 120 for most majors. It is assumed that the typical student in the SCAP program will complete 30 hours per year. While many of those admitted to the program had earned a significant number of college credits before being admitted, not all of those hours will count to the required 120. This will depend on the major selected and the number of previous credits that satisfy the requirements of the major.

Those SCAP participants with less than 30 college credits when admitted to the program are assumed to need four years to complete their bachelor's degree. For these students, the earnings comparison upon graduation is assumed to be between those with a bachelor's degree and those with a high school diploma. For participants with a larger number of prior college credits, the earnings comparison upon graduation is between those with a bachelor's degree and those with some college, which somewhat lowers the net value of obtaining a bachelor's degree. Graduation in three years is assumed for those with between 30 and 59 transfer credits. Those with more credits are assumed to finish in two years.

Selected Scenarios

In order to demonstrate how the net present value varies based on student characteristics of age, previous college credits earned, and years to graduate, two versions — without and with the SCAP — of each of four scenarios are shown in Table 2. The differences between the two versions are that those not in the SCAP pay tuition and fees and take out a student loan to pay these costs, while SCAP participants do not incur these expenses.

The first scenario examined is that of the standard analysis — a student who begins college at age 18 and graduates in four years. The figures used to calculate the financial value of a bachelor's degree for this individual are shown in the leftmost column of Table 2. The second scenario is consistent with the first scenario except for age; age 25 was selected since that is the average of SCAP participants when entering the program. The benefit from earning a bachelor's degree declines with age due to the fewer number of years in the workforce following graduation.

The third scenario is a variant of the second scenario, assuming that the individual had previously earned sufficient college credits to be able to graduate in three years. Since individuals who have attended college on average earn more than those with no education beyond a high school diploma (as shown in Table 1), the earnings premium from receiving a bachelor's degree is not as high as in the second scenario. The fourth scenario is another variant of the second scenario, for those with enough transfer credits to graduate in two years. Relative to the third scenario, costs are lower due to fewer years in college, and earnings are higher due to an additional year of work after graduating.

There are three components to the cost of getting a college education: tuition and fees, forgone earnings, and the cost of student debt. For a student taking four years to graduate from the program, the total tuition and fee cost is \$36,148 (\$9,037 times four years); the present value of this figure is \$34,115. These costs are the same in the first two scenarios; they do not vary with student age. Tuition and fees are lower in the third and fourth scenarios due to the student completing a bachelor's degree in fewer years.

Earnings forgone while attending college is the difference between what could have been earned working full time with a high school diploma and what can be earned working part time while in college. In the first scenario, this totals \$49,297 over four years; the present value is \$46,426. The value of forgone earnings increases with age (scenario 2) since earnings rise with years of work experience. The individuals in the third and fourth scenarios have more forgone earnings *per year* than the individual in the second scenario since an individual with college credits on average earns more than someone with no education beyond high school. However, total forgone earnings is less in the third and fourth scenarios due to the individual attending college for fewer years.

The cost of student debt is the interest paid on the student loans, incurred after graduation. For four years of student loans, the present value totals \$12,022 and does not vary with age. The debt cost is lower in scenarios three and four due to having to borrow for fewer years of tuition and fees.

TABLE 2
VALUE OF A BACHELOR'S DEGREE IN THE UNITED STATES
BASED ON MEAN EARNINGS OF FULL-TIME, YEAR-ROUND WORKERS BETWEEN 2013 AND 2017
EXPRESSED IN 2018 DOLLARS, SELECTED SCENARIOS

	Without Starbucks Program				With Starbucks College Achievement Plan			
	18/4 Years*	25/4 Years*	25/3 Years*	25/2 Years*	18/4 Years*	25/4 Years*	25/3 Years*	25/2 Years*
Unadjusted Costs								
Tuition and Fees	\$36,148	\$36,148	\$27,111	\$18,074	\$0	\$0	\$0	\$0
Forgone Earnings	49,297	64,300	50,787	33,211	49,297	64,300	50,787	33,211
Costs Discounted at 4 Percent								
Tuition and Fees	34,115	34,115	26,082	17,726	0	0	0	0
Forgone Earnings	46,426	60,586	48,810	32,560	46,426	60,586	48,810	32,560
Interest on Student Loans	12,022	12,022	8,532	5,366	0	0	0	0
Total	92,564	106,723	83,424	55,652	46,426	60,586	48,810	32,560
Benefits								
Earnings With a Bachelor's Degree	3,503,715	2,898,976	2,987,146	3,074,722	3,503,715	2,898,976	2,987,146	3,074,722
Earnings Without a Bachelor's Degree	2,025,164	1,780,823	2,109,906	2,150,079	2,025,164	1,780,823	2,109,906	2,150,079
Earnings Differential	1,478,552	1,118,154	877,240	924,644	1,478,552	1,118,154	877,240	924,644
Earnings Differential, Discounted at 4%	546,923	432,314	344,882	377,920	546,923	432,314	344,882	377,920
Net Present Value	454,358	325,590	261,458	322,268	500,496	371,728	296,072	345,360

* Age entering Starbucks program/number of years to graduate. Those taking four years to graduate are assumed to have fewer than 30 transfer credits; those taking three years to graduate are assumed to have between 30 and 59 transfer credits, and those taking two years have at least 60 transfer credits.

Source: Calculated by authors using earnings data from the U.S. Department of Commerce, Census Bureau, Current Population Survey, and tuition data from the U.S. Department of Education, National center for Education Statistics, Digest of Education Statistics.

The total cost of attaining a bachelor's degree expressed as a present value is \$92,564 in the first scenario and increases with age (scenario 2). The total is less in scenarios 3 and 4 due to the fewer years of college attendance.

In the first scenario, the benefit of earning a bachelor's degree is the difference in average earnings from ages 22 through 65 of an individual with a bachelor's degree versus an individual with no education beyond a high school diploma. The difference is nearly \$1.5 million; the present value is \$546,923. The amount of the lifetime benefit lowers with age due to the fewer number of years worked after graduation (scenario 2). In scenarios 3 and 4, lifetime earnings with a bachelor's degree is higher than in scenario 2 due to additional years of work after completing the degree. However, without pursuing a bachelor's degree, the individuals in scenarios 3 and 4 would have earned more over a lifetime than the individual in scenario 2, due to the higher average earnings of those with some college relative to those with only a high school diploma. Thus, the lifetime earnings benefit is less in scenarios 3 and 4 than scenario 2.

The net present value in the first scenario is \$454,358, the difference between the present value of the lifetime benefits of \$546,923 and the present value of the costs of \$92,564. This value declines with age (scenario 2). Despite lower costs, the net present value in scenarios 3 and 4 is less than that of scenario 2.

The same four scenarios are repeated in Table 2 assuming the student is a participant in the Starbucks program. For a student who graduates in four years, the present value of the cost savings from the SCAP is \$46,138, due to avoiding \$34,115 in tuition and fees and \$12,022 in loan interest. The cost savings is the same regardless of student age. Since the benefits are the same regardless of participation in the SCAP, the net present value of a bachelor's degree earned by SCAP participants is \$46,138 higher than for nonparticipants for those graduating in four years (scenarios 1 and 2). The net present value for a student who graduates in three years is \$34,614 higher for a SCAP participant than a nonparticipant (scenario 3); for those graduating in two years (scenario 4), the differential is \$23,092.

For someone who would have completed a bachelor's degree without the SCAP, the value to the participant of the Starbucks program is the avoided costs of tuition plus the avoided costs of student debt. For someone graduating in four years, this is \$46,138 in present value terms. If the participant would not have attended college without the program, the net present value of the program is much greater, as much as \$500,496 for an 18-year-old who earns a bachelor's degree in four years.

In addition to the variations in the age at which college is begun or resumed and the number of years taken to complete a degree, the actual net benefit of a degree to an individual depends on a number of factors, including the actual amount of tuition at the university attended, the actual interest rate on a student loan (assuming that a student loan is used), the student's major, the number of years worked after graduation, etc.

Individual Benefits to SCAP Participants

Based on information provided by ASU and Starbucks, nearly 22,000 individuals have been admitted to ASU Online through the SCAP. Their average age at admission is 25, with a median

age of 23. The age distribution is shown in Chart 1. In order to calculate the aggregate net present value of the program, an interpolation of the five-year age groups to single year of age was made.

Of the students who have been admitted to the program, the median number of transfer credits is 40; excluding those with no credits, the median is 50 credits transferred. The distribution of the number of transfer credits is shown in Chart 2. Of those admitted, one in five had no prior college experience and an additional 21 percent had fewer than 30 credits. Twenty-nine percent of the students had between 30 and 59 hours of transfer credits. The remaining 30 percent had at least 60 credit hours.

More than 3,000 students have already graduated from the program. By spring 2019, more than 40 percent of those entering the program in Spring 2015 had graduated and nearly 25 percent of those entering the program in Spring 2016 had graduated. Starbucks has set a goal of 25,000 graduates by the year 2025.

Individual Benefit

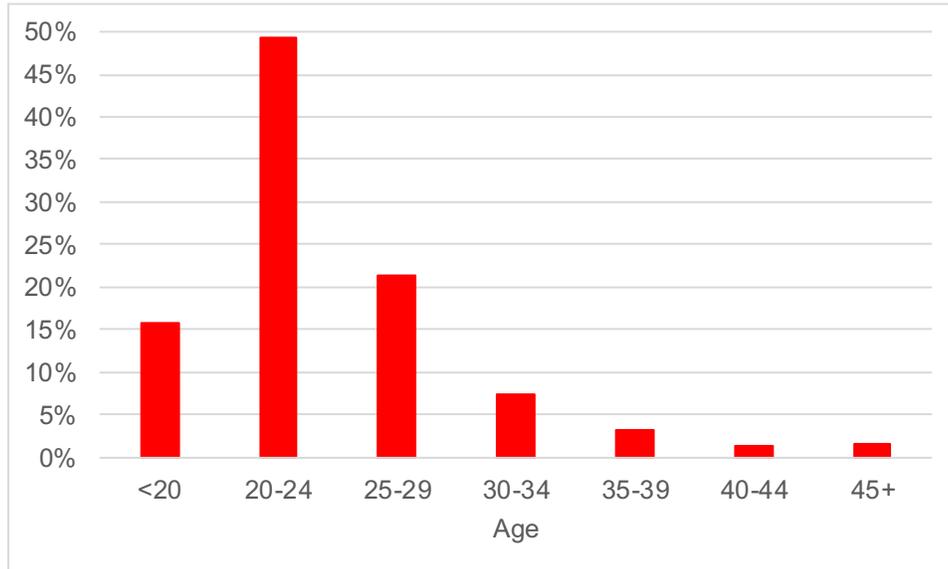
For an individual with few or no previously earned college credits who takes four years to complete a bachelor's degree, the earnings benefit is calculated from average earnings by age of those with a bachelor's degree relative to the average of those with a high school diploma. The net lifetime benefit in cost savings and enhanced earnings in present value terms ranges from approximately \$500,500 for those who enter the program at age 18 to negative for those older than 46 (see Chart 3).

The net lifetime benefit of the program declines with the age of the participant. An older graduate will not have as many working years to accumulate the earnings benefit from a bachelor's degree and the earnings premium between a new university graduate and one without a degree is not as great as people age. Many older individuals may not be able to earn as much in an entry-level position requiring a bachelor's degree as they were earning previously, leading to a net negative value from earning a bachelor's degree.

Based on the assumptions used in this analysis, the net lifetime benefit to an individual who enters the program at age 50 with enough previously earned college credits to graduate in three years — attending school full time while working part time — will be negative on the order of \$100,000. The net earnings benefit is positive, but not enough to offset the forgone earnings (in present value terms). In the alternative assumption that the individual will attend school part time while working full time, forgone earnings are not an issue, but the longer time needed to earn a bachelor's degree lowers the net earnings benefit to around zero.

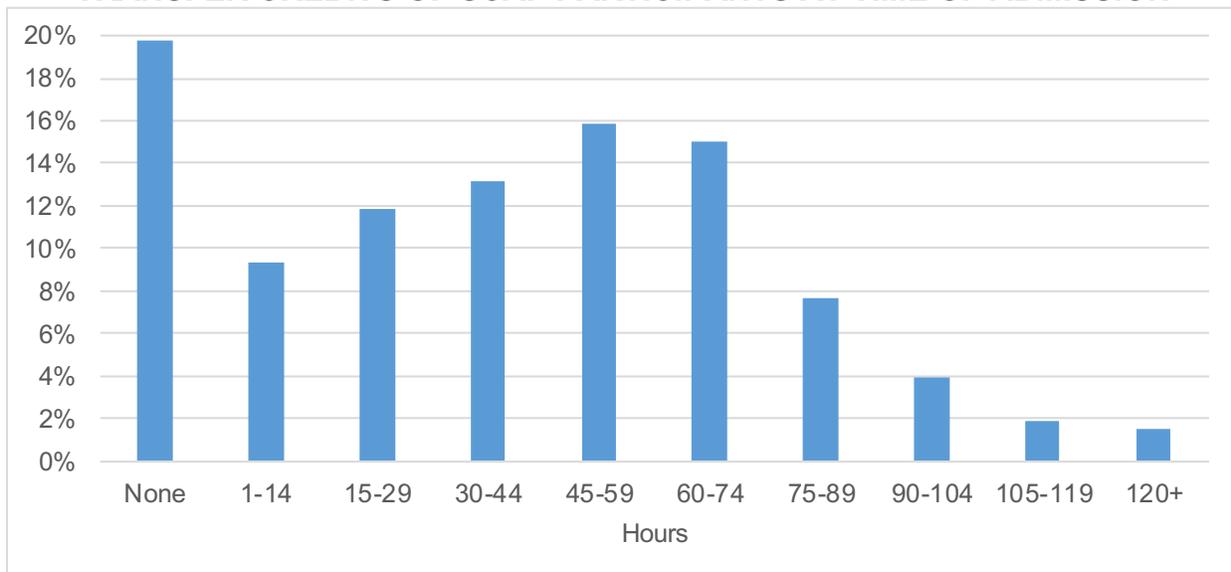
For an individual with a greater number of previously earned college credits who takes fewer years to complete a bachelor's degree, the earnings benefit is calculated from average earnings by age of those with a bachelor's degree relative to the average of those with some college (which is somewhat higher than the average of those with no education beyond a high school diploma). For those who complete a degree in three years, the net lifetime benefit in present value terms ranges from approximately \$425,300 for those who enter the program at age 19 to negative for those older than 41. For those who complete a degree in two years, the net lifetime

**CHART 1
AGE OF SCAP PARTICIPANTS AT TIME OF ADMISSION**



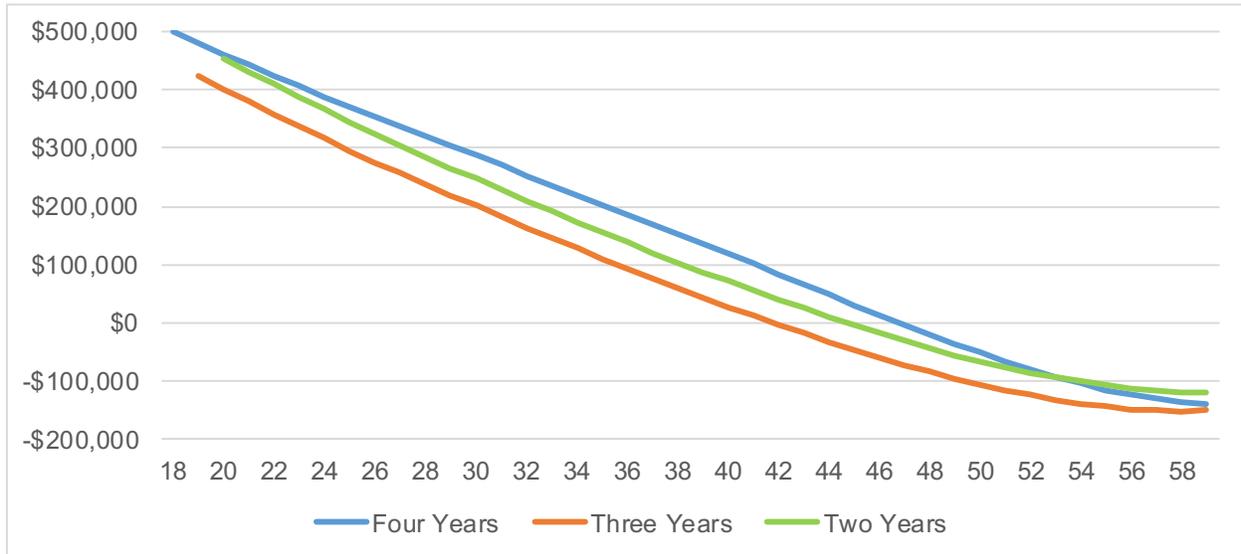
Source: Arizona State University and Starbucks.

**CHART 2
TRANSFER CREDITS OF SCAP PARTICIPANTS AT TIME OF ADMISSION**



Source: Arizona State University and Starbucks.

CHART 3
NET PRESENT VALUE TO SCAP PARTICIPANTS BY AGE AT TIME OF
ADMISSION AND NUMBER OF YEARS TO COMPLETE BACHELOR'S DEGREE



Source: Calculated by authors. See text for assumptions.

benefit in present value terms ranges from approximately \$455,200 for those who enter the program at age 20 to negative for those older than 44.

Aggregate Individual Benefit of SCAP

The four scenarios displayed in Table 2 represent a small minority of the situations of participants in the Starbucks program — the age of participants, the number of college credits previously earned, and the time taken to complete the ASU Online program varies. Thus, in order to estimate the aggregate individual benefit of the assumed number of 25,000 graduates by the year 2025, a weighted average of the net present value across the numerous individual situations of participants must be calculated. The weights are based on the age of students at the time of admission to the ASU Online program and the number of years taken to graduate, determined by the number of credits previously earned.

The weighted NPV of participants in the SCAP program is \$361,145. If the same individuals had to pay tuition and interest on student loans, the weighted NPV would be \$324,114 — a difference of \$37,031. Multiplying these weighted averages by 25,000 graduates results in an aggregate NPV of \$9.029 billion for SCAP participants and \$8.103 billion for nonparticipants, a difference of \$926 million.

If all of the assumed 25,000 SCAP graduates would have earned a bachelor’s degree without the existence of the program, the aggregate lifetime benefit to individuals would be \$926 million — the aggregate cost savings. If none of the SCAP participants would have earned a bachelor’s degree without the existence of the program, the aggregate lifetime benefit to individuals would be \$9.029 billion. Since the number of program graduates who would have earned a bachelor’s

degree without the existence of the program is unknown, the aggregate lifetime benefit to the 25,000 graduates ranges from \$926 million to \$9.029 billion.

SOCIETAL BENEFITS OF ENHANCED EDUCATIONAL ATTAINMENT

Significant societal benefits (also known as “social returns”) result from investments in human capital. Acquiring a university degree is a form of human capital investment.

Social returns accrue from “spillovers” — the benefits that extend to third parties other than students and institutions of higher education. The benefits to society from investments in higher education can be separated into two types: monetary and nonmonetary. Monetary social returns result from the addition of more educated workers to the labor force, specifically by increasing the labor force share of college graduates. The value of monetary benefits can be estimated. Nonmonetary societal benefits are extensive but not easily quantified.

Monetary Benefits

The greater labor productivity that educated workers bring to the labor force is the source of the monetary spillovers. The rationale for monetary social returns follows:

- **Technological Spillovers:** Social interaction is a catalyst for learning and overall knowledge creation. The more contact that takes place among educated people, the more the stock of knowledge expands. Learning and networking are important determinants of knowledge creation.
- **Human and Physical Capital Complementarities:** Physical and human capital can be complementary. Increased education, knowledge, and skills create an increase in the quality of the existing physical capital stock — increasing the productivity of capital that translates into higher labor productivity for all workers. For example, more educated workers use more sophisticated equipment that results in improved productivity.
- **Increasing Returns:** There are increasing benefits to investments in human capital. As the knowledge economy increases in importance, the role of human capital may outstrip physical capital and labor in determining aggregate growth rates across countries. Using this argument, the acquisition of knowledge capital creates “endogenous” growth — growth that feeds on itself — and economic returns that accelerate.

A portion of the societal benefits generated in this fashion are attributable to spillovers that provide a basis for public investment in endeavors that increase the number of college graduates in the workforce.

Monetary benefits of two types have been estimated as a result of the Starbucks initiative: (1) additional tax payments made by those graduating from the Starbucks program, and (2) an increase in wages for all workers, not just those participating in the Starbucks program.

Tax Payments

The higher wages earned by university graduates result in higher tax payments to federal, state, and local governments. Based on the earnings data described in the individual returns section, an estimate of the increase in tax dollars was made, based on the primary taxes paid by individuals: federal income tax, state and local income taxes, property tax, and general sales tax. Since this is not a comprehensive list of taxes paid, the estimates likely understate the true amount of the incremental taxes paid by graduates of the Starbucks program. The estimates are based on national averages.

The taxes paid by an individual with a bachelor’s degree were compared to either those with only a high school diploma or those with some college (depending on the number of college credits earned previously by SCAP participants) by year throughout an individual’s working life. For the federal income tax, state and local income taxes, and property taxes, tax payments by income decile as reported by the U.S. Department of Labor’s Bureau of Labor Statistics in their 2017 Consumer Expenditure Survey (CES, <https://www.bls.gov/cex/>) were used. Since sales taxes are not reported in the CES, general sales tax payments by income bracket reported by the Institute on Taxation and Economic Policy in their 2015 report “Who Pays: A Distributional Analysis of the Tax Systems in All Fifty States” (<https://itep.org/who-pays-5th-edition/>) were used.

The tax payment by type in each year was estimated from interpolated tax rates and worker earnings from the same dataset used to estimate the individual benefit of a bachelor’s degree. The differential in the amount of taxes paid over a lifetime between those with a bachelor’s degree and those with either some college or no education beyond a high school diploma was calculated for each of the numerous situations of participants in the Starbucks program.

In order to aggregate the differential across the assumed 25,000 program graduates by 2025, each of the situations was weighted as in the calculation of the aggregate individual benefit and expressed in present value terms. On average, SCAP graduates are projected to pay \$87,360 more in taxes over their lifetime in present value terms. The discounted value of additional tax payments over the working-life of 25,000 graduates is estimated to be \$2.184 billion. Depending on the number of the projected program graduates who would have earned a bachelor’s degree without the existence of the program, the aggregate lifetime tax benefit of the program ranges from \$0 to \$2.184 billion.

Workforce Earnings

Enrico Moretti (“Estimating the Social Return to Higher Education: Evidence From Longitudinal and Repeated Cross-Sectional Data,” *Journal of Econometrics*, 2004, <https://eml.berkeley.edu/~moretti/socret.pdf>) was the first to quantify that the social return to education (benefits beyond those accruing to individuals who enhance their educational attainment) exceeds the private return (to those increasing their educational attainment).

Moretti estimated the effect on the earnings of all workers from increasing the proportion of the workforce with a university degree. According to Moretti, a 1-percentage-point increase in the share of college graduates in the workforce raises wages throughout the workforce, by:

- 1.9 percent among those with less than a high school diploma
- 1.6 percent among high school graduates
- 1.2 percent among those with some college
- 0.4 percent among college graduates

This positive effect on wages, often referred to as the “spillover” effect, is permanent, under the assumption that when a worker with a university degree leaves the workforce, that worker is replaced by another with a university degree. The increase in wages for workers other than those who enhance their educational attainment stems from increases in productivity spurred by the additional highly educated workers.

The spillover effect is measured as of 2025 when 25,000 SCAP participants are assumed to have graduated from the program. These individuals will account for only a small portion of 1 percent of the nation's workers with a bachelor's degree. Thus, the increase in wages for other workers specified by Moretti, which are for a 1 percentage-point increase, must be scaled down to represent the share of the workforce accounted for by SCAP graduates. In order to calculate this percentage, a forecast must be made of the nation's employment by educational attainment in 2025. Similarly, real average earnings in 2025 by educational attainment must be projected.

To begin the analysis, the latest data on employment and earnings from the CPS are used, as shown in Table 3. Since these figures are not cross-tabulated by age, the CPS data for one year rather than a combination of five years are used. A time series of CPS data going back to 1995 was used to estimate annual increases in employment and real earnings by educational attainment.

To bring the 2017 CPS data forward to 2025, real average earnings are projected to increase approximately 1 percent per year, reflecting gains in productivity. The projected increase varies by educational attainment, with the greatest gains among those with little education. Total employment is projected to rise approximately 1.5 percent per year. Again the projected change varies by educational attainment, with declines in the number with less than a high school diploma and the largest increases among those with graduate degrees.

The calculation of the aggregate spillover effect resulting from an increase in wages due to an increased share of university graduates in the workforce is shown in Table 4. The annual spillover benefit will gradually rise with the number of graduates. In 2025, the assumed number of SCAP graduates is 25,000, representing an increase of 0.032 percent in the number of workforce participants with at least a bachelor's degree. Assuming that 19.8 percent of the SCAP graduates would shift from the high school diploma category (those with no transfer credits) and the balance would shift from the some college category, the increase in aggregate earnings is \$2.718 billion in 2025. As long as all 25,000 graduates remain active in the workforce, the

**TABLE 3
EMPLOYMENT AND EARNINGS IN THE UNITED STATES
BY EDUCATIONAL ATTAINMENT, 2017**

Educational Attainment	Employment	Average Earnings	Aggregate Earnings in Millions
Less Than 9th Grade	3,932,000	\$27,597	\$108,511
9th-12th Grade, No Diploma	8,309,000	26,469	219,931
High School Diploma or GED	42,817,000	38,145	1,633,254
Some College, No Degree	30,048,000	38,695	1,162,707
Associate's Degree	17,335,000	46,381	804,015
Bachelor's Degree	39,154,000	67,763	2,653,193
Master's Degree	16,211,000	87,674	1,421,283
Professional Degree	2,506,000	138,378	346,775
Doctoral Degree	3,560,000	118,903	423,295
TOTAL	163,872,000	53,535	8,772,964

Source: U.S. Department of Commerce, Census Bureau, Current Population Survey.

TABLE 4
PROJECTED EMPLOYMENT AND EARNINGS IN THE UNITED STATES
BY EDUCATIONAL ATTAINMENT, 2025

Educational Attainment	Employment	Average Earnings in 2017 Dollars	Aggregate Earnings in Millions of 2017 Dollars	Increase in Wages*	Addition to Aggregate Earnings in Millions of 2017 Dollars
Less Than High School Diploma	11,069,136	\$29,054	\$321,608		
High School Diploma or GED	43,333,510	40,495	1,754,777		
Some College / Associate's Degree	50,301,738	43,197	2,172,861		
Bachelor's Degree	49,024,199	69,130	3,389,052		
Graduate Degree	29,906,222	100,353	3,001,182		
TOTAL	183,634,804	57,938	10,639,479		
With Increase of 25,000 With Bachelor's Degree**					
Less Than High School Diploma	11,069,136	29,054	321,608	1.9%	\$194
High School Diploma or GED	43,328,560	40,495	1,754,577	1.6	889
Some College / Associate's Degree	50,281,688	43,197	2,171,995	1.2	826
Bachelor's Degree	49,049,199	69,130	3,390,780	0.4	430
Graduate Degree	29,906,222	100,353	3,001,182	0.4	380
TOTAL	183,634,804	57,942	10,640,141		2,718

* Per 1 percentage-point increase in the workforce number with at least a bachelor's degree. This figure was multiplied by 0.0317 to reflect the addition of the 25,000 SCAP graduates.

** 19.8 percent of the 25,000 came from the high school diploma category with the balance from the some college category.

Source: Calculated by authors using data from the U.S. Department of Commerce, Census Bureau, Current Population Survey.

annual spillover benefit will rise at the pace of real average earnings. As individuals leave the workforce, the spillover benefit will decline.

This aggregate spillover effect cannot be directly compared to the aggregate individual benefit, which is expressed over a lifetime. In any given year, the aggregate spillover effect is several times as large as the aggregate individual benefit.

Nonmonetary Benefits

In addition to monetary benefits, a long list of nonmonetary societal benefits from enhanced educational attainment has been documented:

- **Reduced crime rates:** Crime statistics suggest that higher educational attainment is associated with a lower incidence of crime. Greater educational attainment results in substantial monetary benefits to an individual, which increases the cost of incarceration in terms of forgone earnings. To the noneconomist, this argument is based on the notion that individuals with low educational attainment and skills risk little financially by resorting to crime.
- **Civic participation:** Social and behavioral statistics suggest that higher educational attainment is associated with greater civic participation, including volunteer work with local civic groups and charitable giving. As a result, social cohesion is higher among the more highly educated, as reflected in greater voter participation. Milton Friedman, a conservative economist, believed that public support for the laissez-faire approach to economic market mechanisms could be achieved by increasing knowledge: more educated individuals are less influenced by populist rhetoric and make more rational, informed decisions in voting behavior.
- **Other socioeconomic benefits:** Additional years of educational attainment are associated with a number of other benefits:
 - Nonwage labor market remuneration, such as fringe benefits, and the quality of working conditions are positively affected by educational attainment levels.
 - Consumer choices are more rational and efficient.
 - Job searches are more extensive among the more highly educated, resulting in a better match between the individual and the company, which enhances efficiency.
 - Savings rates are higher among the more highly educated.
 - Research and development activities are more common and numerous in regions with higher educational attainment.
 - Less dependence on transfer payments and the social safety net occur among the more highly educated.
 - The educational attainment and cognitive development of children are positively affected by the educational attainment of parents (first-generation effects).
 - The health of the individual, their spouse, and their children are positively related to educational attainment.
 - Desired family size is more commonly attained among those with higher educational attainment.