Insight:

Research Briefs from the Selig Center for Economic Growth

# Money Maker

## College Degrees Boost Your Earnings and Georgia's GDP

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A college education pays off! That's true for Georgians who earn college degrees as well as for Georgia's economy as a whole. The strong link between postsecondary educational attainment and individual work-life earnings transcend many demographic, personal, and geographic characteristics. In addition to the financial benefits accrued by college degree holders, there are less well-known, but equally important benefits that a college education brings to Georgia's overall economy. For example, on average, moving from a high school diploma to a bachelor's degree increases a person's work-life earnings and simultaneously contributes more to Georgia's GDP.

Accounting for the benefits of higher education is important because it shows to what extent higher education pays off for individuals and the economy. We expect these estimates will both motivate Georgians to obtain college degrees and encourage policymakers to support higher education by funding a need-based financial aid program. Georgia is one of only two states in the nation without one. The upshot is that recognizing the benefits of college degrees should help ensure that Georgia does not lose too much potential GDP because it failed to reach college attainment benchmarks.

### Estimating Work-Life Earnings

The Selig Center's synthetic work-life earnings estimates are based on median personal earned income (earnings) data from the U.S. Census Bureau's most recent American Community Survey (2014-2018 five-year estimates). The estimates are based on earnings data gathered over a single period (2014-2018) because it increases statistical reliability. The dollar amounts are in 2018 dollars; and the typical work-life is defined as the 40-year period between age 25 and 64. The Selig Center's work-life earnings estimates are for people who work full-time (35 or more hours per week), year-round (50-52 weeks per year). People who do not do so, or who do not work, will earn considerably less over the course of their working lives.

We calculate work-life earnings using the method described by the Census Bureau's Economic and Statistics Administration: *Work-Life Earnings by Field of Degree and Occupation for People with a Bachelor's Degree: 2011 (ACSBR-11-04)*. Specifically, we calculate synthetic work-life earnings for Georgia and for the U.S. by estimating the median earnings for people employed full-time, year-round by age group: 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, and 60-64. These estimates are multiplied by 5 to represent the expected amount of money earned in that stage of life, and then the 5-year earnings estimates are added together to represent 40 years of earnings.

The totals represent what individuals within each age group with the same education level could expect to earn, on average, in 2018 dollars, during a hypothetical 40-year working life. The estimates are illustrative and do not predict any individual's actual future earnings.

The incremental/additional impacts on work-life earnings are calculated for each step in educational attainment. Incremental work-life earnings for people with an associate degree are the difference in synthetic work-

life earnings between people with a high school diploma and those with an associate degree. For bachelor's degree holders, the difference in earnings is between having a high school diploma and a bachelor's degree; for a master's degree, it is between having a bachelor's degree and a master's degree. Incremental work-life earnings for PhDs is the difference between a master's and a PhD. For people with a professional degree, it is the difference between a bachelor's degree and a professional degree.

Estimates for Georgians show that earnings over a working lifetime increase dramatically with education level. Based on data for 2018, the work-life earnings of individuals with an associate degree will be $1.8 million, or $415,570 more than the work-life earnings of someone with only a high school diploma. The work-life earnings of those with a bachelor's degree will be $2.6 million, or $1.2 million more than for those with only a high school diploma, which exceeds incremental benefit estimated for the U.S. as a whole. The larger premium for Georgians with bachelor's degrees suggests that it is relatively difficult for employers to find enough sufficiently trained workers to fill vacant positions. Indeed, high school graduates who earn a bachelor's degree will boost their work-life earnings in Georgia by 87 percent, which exceeds the 79 percent increase estimated for the nation as a whole.

In Georgia, the estimated payoff in terms of work-life earnings for people who obtain graduate degrees is positive, but smaller than estimated for the U.S. For example, work-life earnings in Georgia for those who earn a master's degree will be $2.8 million—a boost in their work-life earnings of $211,570, or 8 percent more than for those with a bachelor's degree, but pales when compared to the $443,170 (16 percent) increase in work-life earnings estimated for the U.S. as a whole. In Georgia, the work-life earnings for professional degree holders is $3.6 million, or $1 million (39 percent) more than for those with a bachelor's degree. For the nation as a whole, the payoff between a bachelor's degree and a professional degree is nearly twice as large, $1.9 million. In Georgia, the increase in work-life earnings for those who earn a PhD compared to a master's degree is $643,385; for the U.S. as a whole, the estimated payoff is $754,955.

Obviously, individuals' earnings in each specific education level can vary substantially due to field of study, occupational choice, work experience, and location. But having an advanced degree assures the ability to make more money. For example, work-life earnings for a Georgian with a bachelor's degree is 87 percent higher ($2.6 million compared to $1.4 million) than if the person only had a high school diploma. According to the College Board, the estimated cost of attending a public in-state university for four years is $103,560. Thus, in Georgia, over a 40-year work-life, the payback ratio for completing a bachelor's degree is 12 to 1: $1,211,615 to $103,560.

## Estimating Gains in Potential GDP

In addition to the payoff realized by degree holders, Georgia's overall economy benefits from increased levels of postsecondary educational attainment. Based on data for 2018, the Selig Center estimated the potential increase in state GDP should Georgia raise its bachelor's degree (or higher) attainment and reach various postsecondary education benchmarks. In 2018, 33.4 percent of Georgia's population aged 25-64 held a bachelor's degree or higher, which is slightly below the 34 percent attainment rate for the U.S. as a whole. Hence, the first benchmark is to raise Georgia's attainment rate to the U.S. average. This requires only 33,429 additional bachelor's degree holders. The second benchmark is to raise Georgia's bachelor's degree attainment rate to 40 percent, which requires 366,045 additional bachelor's degree holders; and the third benchmark is to raise the rate to 50 percent, which requires 918,545 additional college graduates.

The methodology is simple and provides reasonable estimates. We assume that the additional bachelor's degree holders work full-time for their entire 40-year careers. The estimates therefore should be interpreted as an estimate of the potential increase in GDP rather than a predicted, or actual, increase in GDP. In addition, the methodology only considers the step up from a high school diploma to a bachelor's degree, and does not account for the economic benefits of obtaining graduate degrees.

Several steps are involved in estimating the potential benefits to state GDP. First, the additional work-life earnings associated with stepping from a high school diploma to a bachelor's degree are divided by 40 years, yielding the additional work-life earnings per bachelor degree holder per year. For Georgia, this amount is $30,290 ($1,211,615 divided by 40 years). Second, the annual increase in Georgia's GDP associated with an individual advancing from a high school diploma to a bachelor's degree was estimated. Based on U.S.-level data, the adjustment factor that converts the addition to work-life earnings to GDP is 1.644. We estimated the adjustment factor by dividing 2018 U.S. GDP ($20,580.2 billion) by total of compensation of employees ($7,878.9 billion) plus proprietors' income ($994 billion). The annual increase in Georgia's GDP per bachelor's degree holder therefore equals $30,290 multiplied by 1.664, or $49,802. That amounts to $1,992,065 over a work-life of 40 years. Third, the number of persons aged 25-64 that would have to earn a bachelor's degree to reach each postsecondary educational attainment benchmark was estimated. Finally, for each benchmark, the number of individuals that would have to step up was multiplied by $49,802. The result is the additional potential state GDP that would have been generated in 2018 if the benchmark were reached.

As noted above, the methodology needs further refinement. One issue is that there are many differences between

the U.S. Census Bureau definition of income and earnings in the Current Population Survey (the basis for the Selig Center's estimates of work-life earnings) and income as defined by the U.S. Bureau of Economic Analysis, so the data are not directly comparable. Definitions, reporting errors, and coverage vary considerably. Nonetheless, the Census Bureau estimates that the income surveys they conducted over the years have obtained about 89 percent of the comparable total money income aggregates and about 99 percent of the comparable money wage and salary aggregates derived from the personal income series prepared by the BEA.

Despite these problems, we assumed that the sum of compensation of employees and proprietors' income as reported by the U.S. Bureau of Economic Analysis for the U.S. can serve as a proxy for earnings as defined in the U.S. Census Bureau's Current Population Survey. As described above, in 2018, the ratio of GDP to compensation of employees plus proprietors' income was 1.644.

## Findings

The analysis shows that falling short of Georgia's higher education goals leaves a considerable amount of potential state GDP on the table. Simply put: Georgia's economy would be larger and its economic prosperity would be greater if postsecondary educational attainment were higher. The estimates show that a 1 percent increase in the share of Georgians aged 25 to 64 with a bachelor's degree will increase the state's GDP about 0.5 percent per year. That potential economic payoff is significant when aggregated across the entire population and extrapolated over many years. About 61 percent of the benefit in terms of incremental GDP goes to the bachelor's degree holder and approximately 39 percent goes to their employers and others living in Georgia (including many people who do not have college degrees). This finding refutes the argument that funding need-based financial aid at the state level only benefits those who go to college.

Increasing postsecondary education attainment to various benchmarks could boost Georgia's GDP substantially. In 2018, 33.4 percent of Georgians aged 25-64 held a bachelors' degree or higher, which is slightly below the 34 percent attainment rate for the U.S. as a whole. The additional potential state GDP from raising the proportion of the population with a bachelor's degree or more to the U.S. average would be $1.7 billion, or 0.3 percent of Georgia's actual GDP in 2018. The additional potential state GDP from raising this proportion to 40 percent would be $18 billion, or 3.1 percent of Georgia's actual GDP in 2018; and increasing the proportion to 50 percent would increase Georgia's potential GDP by $46 billion, or 7.7 percent of actual GDP.

Although Georgia closely tracks the nation's level of postsecondary educational attainment, it would gain substantially from increasing it. College degree holders will see higher work-life earnings, their employers will have a more productive workforce, profits should increase, and tax revenues should rise. In many ways, postsecondary educational attainment is a panacea that brings prosperity to all, so Georgia should strive to maximize its economic potential by increasing college graduation rates.

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**Table 1**
**Educational Attainment and Synthetic Work-Life Earnings in the United States and Georgia**
**(2018 Dollars)**

| Educational Attainment | Synthetic Work-Life Earnings in the US | Synthetic Work-Life Earnings in Georgia | By Step in Attainment | Additional Work-Life Earnings in the US | Additional Work-Life Earnings in Georgia |
|---|---|---|---|---|---|
| Professional | 4,615,170 | 3,627,800 | Bachelor's to Professional | 1,905,550 | 1,017,155 |
| Doctoral | 3,907,745 | 3,465,335 | Master's to Doctoral | 754,955 | 643,385 |
| Master's | 3,152,790 | 2,821,950 | Bachelor's to Master | 443,170 | 211,305 |
| Bachelor's | 2,709,620 | 2,610,645 | High School to Bachelor's | 1,195,015 | 1,211,615 |
| Associate | 1,934,710 | 1,814,600 | High School to Associate | 420,105 | 415,570 |
| Certificate | 1,700,082 | 1,582,505 | High School to Certificate | 185,477 | 183,475 |
| High School Graduate | 1,514,605 | 1,399,030 | 9th-12th to High School | 278,270 | 217,310 |
| 9th-12th Grade | 1,236,335 | 1,181,720 | | | |

Note: Estimates for Certificates were made by the authors based on data obtained from the *Current Population Reports*, P70-129, February 2012.

Source: Selig Center for Economic Growth, University of Georgia, based on U.S. Census Bureau, American Community Survey, 2014-2018 Five-Year Public Use Microdata Sample; IPUMS USA, University of Minnesota.

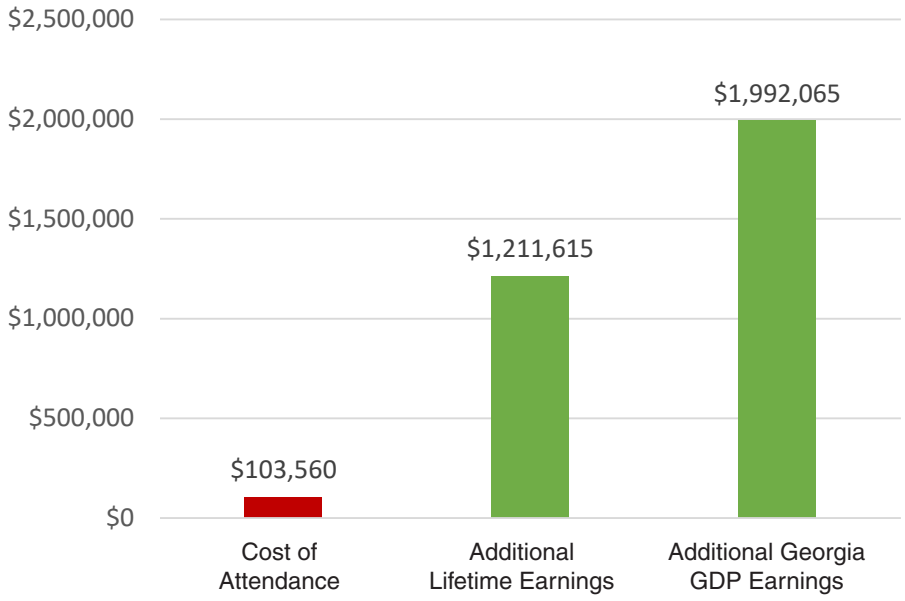
**Table 2**
**Increases in Georgia's GDP When People Move From High School Diploma to Bachelor's Degree**
**(2018 Estimates)**

| Characteristic | Estimate |
|---|---|
| Additional 40-year work-life earnings per graduate | $1,211,615 |
| Additional annual earnings per graduate | $30,290 |
| Additional annual GDP per graduate | $49,802 |
| Georgia population, aged 25-64 | 5,525,004 |
| Number with bachelor's degree or higher | 1,843,957 |
| Percent with bachelor's degree or higher | 33.4 |
| Percent of US population aged 25-64 with bachelor's degree or higher | 34.0 |
| Increased number with bachelor's degree or higher to equal US percent | 33,429 |
| Additional potential GDP | $1,664,815,914 |
| Percent of Georgia GDP | 0.3 |
| Increased number with bachelor's degree or higher to equal 40 percent | 366,045 |
| Additional potential GDP | $18,229,618,679 |
| Percent of Georgia GDP | 3.1 |
| Increased number with bachelor's degree or higher to equal 50 percent | 918,545 |
| Additional potential GDP | $45,745,040,604 |
| Percent of Georgia GDP | 7.7 |

Notes:
US and Georgia Population by Education Level, Aged 25-64, were estimated by the Selig Center based on: U.S. Census Bureau, *American Community Survey, 2018*, 1-Year Public Use Microdata Sample. Synthetic Work-Life Earnings for Georgia with Additional Work-Life Earnings by Steps in Educational Attainment (All Demographics) were estimated by the Selig Center based on: U.S. Census Bureau, *American Community Survey, 2014-2015* 5-Year Public Use Microdata Sample; IPUMS USA, University of Minnesota.
US GDP ($20,580.2 billion), Compensation of Employees ($10,928.5 billion), and Proprietors' Income ($1,588.8 billion) for 2018 were obtained from the U.S. Bureau of Economic Analysis, as revised on June 25, 2020.
2018 Georgia GDP ($592,153,400,000) was obtained from the U.S. Bureau of Economic Analysis, as updated on April 7, 2020.

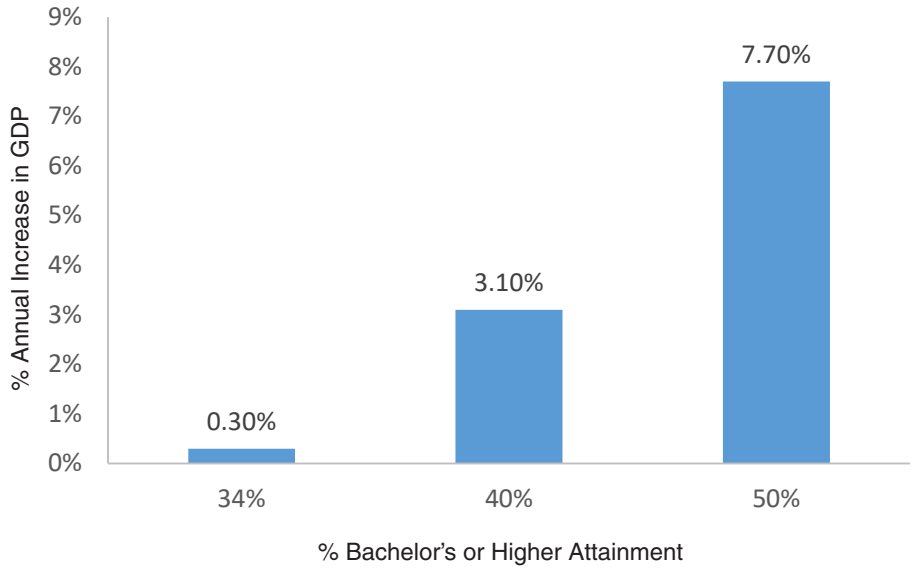
Source: Selig Center for Economic Growth, Terry College of Business, University of Georgia, July 14, 2020.

**Figure 1**
**Four-Year Cost vs. Forty-Year Payoff of Attaining a Bachelor's Degree**




Source: Selig Center for Economic Growth, University of Georgia, based on U.S. Census Bureau, American Community Survey, 2014-2018 Five-Year Public Use Microdata Sample; IPUMS USA, University of Minnesota.

**Figure 2**
**Projected Increase in Georgia's Annual GDP**
**Due to Increase in Educational Attainment**




Source: Selig Center for Economic Growth, University of Georgia, based on U.S. Census Bureau, American Community Survey, 2014-2018 Five-Year Public Use Microdata Sample; IPUMS USA, University of Minnesota.