# MTAG+ Program Analysis

**Summary**: With relative confidence, the program could increase the overall cohort graduation in Mississippi by about 1167 for the first cohort of grantees, which would bring **at least** $63M back to the state in lifetime state benefit for the cost of ~$31M.

**1170** = (38,000 Students) * (Graduation Rate By Grant Amount) / 4
*Note: Grant Projections estimated that 38,000 currently enrolled students - using 2022 enrollment data) would become eligible for the new MTAG grant program.*

## Estimated Return to the State:

**$63,063,000** = (1,167) * ($550,000 * .098)
Lifetime Added Income Tax = (Base 1$^{st}$ Cohort of Additional Grads) * (Increased Lifetime Wage of Bachelors Degree by Social Security * MS State & Local Estimated Tax Rate)

This ~2:1 return is below the estimated return for a similar set of data for California which projected a 3:1 return. (Evaluation completed by Postsecondary Analytics, which followed similar methodology.)

Pulling on Ithaka Research:

**$36,738,000** = (468*44,000)+(702*23,000)
Lifetime State Benefit = (Est Bachelor Grads*44,000) + (Est Assoc/Cred Grads * 23,000)
Ithaka/G2C Research

## Assumptions:

- **Grant Recipients:** The projection of 38,000 has a conservative estimate of a 2% increase in new and/or returning <u>enrollments</u> the first year, and increasing by ~2% each year until it levels off in year 6 of the grant program. There is not sufficient research on how grant programs drive enrollment in credential/certificate programs.
- **Graduation Rate w/o Grant:** Assuming the graduation rate for the 38,000 "new" grant recipients would be 49% (state average from 2017 cohort NSC data) without any aid interventions.
- **Impact of Grant on Graduation Rate:**
  - Research: For every additional $1,000 of aid given to students that goes toward their unmet need, graduation rates increase by approximately 2.5 percentage points. (Nguyen et al. 2019 paper)
  - Research: MTAG recipients have a graduation rate of 69.48% compared to comparison group of 58.22%.
  - Since current MTAG students are predominantly in the higher income category and are full time, the ~4,500 students in the 100%+ Median income and full time have a projected graduation rate of 69.48%. All others received 2.5% per 1,000 of aid they are projected to receive.
- **Projected State Income from Grantees:**
  - **Social Security Research - Increased Income From Degrees:** ~550,000 increase in lifetime earnings, based on social security data (controlling for demographic characteristics.)
  - **Ithaka / Get2College Research: Considering state taxes, social service decreases, etc. ([Strengthening Mississippi's Economic Future Through Postsecondary Investment - Ithaka S+R](#))**
    - Bachelors ~80K Lifetime (+40K)

- Associates: ~60K Lifetime  (+20K)
- HS Diploma: ~40K Lifetime
- NOTE:  MIHL estimates ~15,000 degrees (bachelors, associates, credentials) and Miss Community College Board Estimates ~20,000 degree

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*Detailed steps of analysis:*

We estimate that for every $1,000 of additional aid given to students to help with unmet need, the graduation rate will increase by approximately 2.5 percentage points. Among the new 38,000 students that we expect to reach with the MTAG+ program, we can estimate the following breakdown by income level and the maximum amount they could receive over four years:

Table 1. Number of students and aid level at each median income level.

| Income Level | Number of Students | Aid over 4 years (full time) | Aid over 4 years (part-time) |
|---|---|---|---|
| 0-50% of Median Income | 19,291 | $6,000  (15% pt. Increase) | $3,000 (7.5% pt Increase) |
| 50-100% of Median Income | 7,969 | $4,500  (11.25% pt Increase) | $2,250 (5.63% pt. Increase) |
| 100%+ of Median Income | 10,673 | $3,000 (20% pt. Increase) | $1,500 (3.75% pt. Increase) |

Source: Student Number estimates based on *MS National Student Clearinghouse and IPEDS*

We also can look towards the MTAG report from 2018 - Lifetracks_Student_Financial_Aid_Study_2018.pdf (msfinancialaid.org) in which they found that 69% of MTAG grantees graduated, compared to 58%.  Since the population of current MTAG recipients is in the upper income category, we applied the 69% grad rate to ONLY those students in the upper income bracket and enrolled full time.

The estimates above have assumed a 2% increase in enrollment based on the new grant program. Based on this information, we can estimate the expected number of graduates and the increase in new credentials that will be obtained among this group due to the additional aid.

Table 2. Change in awarded credentials from current projected level due to increased aid.

| | Currently Enrolled | Projected Enrollment (with a 2% Increase) |
|---|---|---|
| Total NEW Eligible MTAG+ Students | 37,189 | 37,933 |
| Projected # Grads (Base 49%, +2.5% for each 1K of grant aid; | 18,223 | 22,905 (Increase of 4,682) |

*Source:*
*Currently Enrolled: Table 1 Enrollment, multiplied by 49% Graduation Rate (the NSC 6 Year Graduation Rate for College Enrollees from MS Class of 2017)*
*New Estimate: Table 1 Enrollment (calculated using income level grants as well as part-time and full-time students, and allocated 2.5% increase based on grant amount)*

Before the aid, we assume a graduation rate of 49% for the entire population, and we estimate that 18,223 credentials would be obtained among this group. However, once we account for the aid they will receive and the students that will be induced to enroll due to the aid, we estimate that the group will now obtain 22,905 credentials, an increase of 4,682 credentials.

For **this group** of new MTAG+ Grantees we expect to see an increase in graduation rate of almost 10 percentage points after the program is fully implemented (from 49% to 63%).

In order to estimate the impact on a specific population cohort of students, we will divide the 4,682 new degrees across 4 cohorts of HS graduates.  Below we compare the actual results of the Class of 2017 MDE Cohort, and then estimate how MTAG+ would impact the cohort graduation rate.  (NOTE, 49% was the graduation rate of those who enrolled in college, 37% is the graduation rate of the total cohort.)

|  | Actual MS Class of 2017 High School Graduate Cohort Outcomes | Projected IF the MTAG+ Program Was Fully Implemented |
|---|---|---|
| Total Cohort | 29,992 | 29,992 |
| # With Cred/Degree | 11,176 | 12,346 |
| % With Cred/Degree | 37% | 41% |

**Attempt at calculating what the initial investment will bring back to MS:**

In the first cohort of students who accessed the program for their entire enrollment, we estimated it will lead to 1,170 additional graduates.  Using the Social Security Estimates these graduates would earn approximately $550,000 more in median lifetime earnings than high school graduates.

Assuming a 9.8% State & Local Tax (State and Local Tax Burdens by State | Tax Foundation), this would be $53,900 per person in added tax revenue.  This first class would bring in returns at a 2:1 ratio: $63,063,000.

> NOTE RESEARCH FROM SOCIAL SECURITY:
> **There are substantial differences in lifetime earnings by educational attainment**
> Men with bachelor's degrees earn approximately $900,000 more in median lifetime earnings than high school graduates. Women with bachelor's degrees earn $630,000 more. Men with graduate degrees earn $1.5 million more in median lifetime earnings than high school graduates. Women with graduate degrees earn $1.1 million more.
> **After controlling for key socio-demographic variables that influence earnings and the probability of college completion, the differences in lifetime earnings by educational attainment are reduced, but still substantial**
> Regression estimates show that men with bachelor's degrees would earn $655,000 more in median lifetime earnings than high school graduates. Women with a bachelor's degrees would earn $450,000 more in median lifetime earnings than high school graduates.

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Notes:
- This doesn't consider the year the students are in when they receive the aid. The graduation rate increase will be achieved over time, as some students might currently be enrolled and wouldn't receive the full amount of aid.

- There is also no indication for what would happen if students took more than four years to complete a degree. A complete halt of the funds would likely hurt the students' chances of graduating.

Assumptions made in above analysis:
- Graduation rate among this group of 38,000 students would be 48% (state average) without any aid interventions.
- Breakdown of first-time students and currently enrolled students follows the Denning et al. (2019) paper.
- Breakdown of student income levels follows what is presented above (calculated from projections spreadsheet).
- Results from academic journals (mainly Nguyen et al. 2019 paper) say that for every additional $1,000 of aid given to students that goes toward their unmet need, graduation rates increase by approximately 2.5 percentage points.

- MIHL estimates ~15,000 degrees (bachelors, associates, credentials) and Miss Community College Board Estimates ~20,000 degree