

Return on Investment: Near-Peer and Industry Mentoring

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Introduction

The Washington State Opportunity Scholarship (WSOS) helps low- and middle-income Washington State residents earn their bachelor's degrees in the high-demand fields of science, technology, engineering, math and health care. Ultimately, WSOS seeks to fill local employment gaps, preparing youth to compete for desirable jobs that are in high-demand by local employers.

Through a public-private partnership between Washington State government, Boeing and Microsoft, WSOS scholars receive up to \$22,500 over a maximum of five years to help mitigate the financial burden of postsecondary education. Scholars also receive a variety of career readiness supports.

To strengthen the program's impact, WSOS has scaled up program supports by investing in near-peer and industry mentoring. To help determine the extent to which the anticipated benefits will outweigh the additional costs, WSOS contracted an independent evaluator to lead a return on investment analysis for these two additional program components.

This document summarizes the independent evaluator's findings related to two main bodies of work: (1) literature review addressing the anticipated impact of near-peer mentoring and industry mentoring on college retention and (2) return on investment (ROI) analysis comparing the increased cost per student for the proposed model relative to its estimated, relative benefits.

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Definitions and Limitations

For this analysis, return on investment (ROI) is defined as the following:

$$ROI = (\textit{Benefit} - \textit{Cost}) / \textit{Cost}$$

This study is not intended to provide a comprehensive analysis of student-level costs and benefits for students, colleges, WSOS and society at large. Instead, it is primarily focused on estimating the value-add of near-peer and industry mentoring *relative* to existing program costs. Costs are limited to WSOS-incurred costs (e.g., scholarship dollars and staffing costs) and do not include the costs that college campuses invest in retention, graduation or job placement (Delta Cost Project, 2009).

Benefits (i.e., the value-add of new program components in terms of increasing college persistence and graduation) are estimated by triangulating findings from available research studies. Only the most rigorous studies available that quantify mentoring's impact on college persistence are used to estimate program impact. Existing, research-based ROI calculations are used to quantify the impact of increased persistence and graduation rates in the form of net college revenue, estimated lifetime earnings of graduates and estimated tax revenues per graduate. Net benefits are calculated by subtracting the costs from benefits.

Since near-peer and industry mentoring are currently in beginning implementation stages, this study represents a "what-if analysis," in which actual program costs, persistence rates and four-year graduation rates provided by WSOS (Appendix A) are compared to the additional costs of near-peer and industry mentoring (Appendix B) and the estimated, additional benefits of mentoring on college persistence and graduation rates.

Literature Review

The following literature review is broken into two main sections: Near-Peer Mentoring and Industry Mentoring. Each section includes a discussion of research findings, limitations and estimates of program impact based on these findings. Each section also includes a "what-if analysis," using actual program students served and outcomes to date. We conclude with an estimate of the combined impact of near-peer and industry mentoring may have had on actual WSOS numbers to date.

Near-Peer Mentoring

Recent reviews of research spanning nearly 40 years on undergraduate mentoring programs (Jacobi, 1991; Crisp & Cruz, 2009; Gershenfeld, 2014) lament the absence of a widely accepted operational definition of mentoring. According to Jacobi, the lowest common denominator definition of mentoring includes the following five components (Jacobi, 1991, p. 513):

1. Mentoring relationships are helping relationships usually focused on achievement. The primary dynamic of the mentoring relationship is the assistance and support provided to the protégé by the mentor. This support can take many forms but is always intended to help the protégé succeed in school or work.
2. [M]entoring includes any or all of three broad components: (a) emotional and psychological support, (b) direct assistance with career and professional development and (c) role modeling.

3. Mentoring relationships are reciprocal relationships. The mentor as well as the protégé derives benefits from the relationship, and these benefits may be either emotional or tangible in nature.
4. Mentoring relationships are personal...[M]entorship requires direct interaction between the mentor and the protégé.
5. Relative to their protégés, mentors show greater experience, influence, and achievement within a particular organization or environment.

More specifically, undergraduate mentoring programs typically aim to provide psychological or emotional support in the form of a role model to set and achieve college- and career-related goals (Nora & Crisp, 2007). Peer mentors have also been shown to benefit from developing professional and leadership skills, increased confidence and increased self-efficacy in seeing themselves as leaders (Zevallos & Washburn, 2014).

Overall, there are many research studies that suggest a positive relationship between undergraduate mentoring programs and mentee outcomes; however, while studies have improved over time to incorporate theoretical frameworks and investigate the impact of mentoring on diverse groups of students, the methodological rigor of most studies continues to raise concern (Jacobi, 1991; Crisp & Cruz, 2009; Gershenfeld, 2014). Of the twenty studies reviewed most recently, 0% met the top two standards of methodological rigor (i.e., experimental designs with or without a longitudinal analysis); 25% met the middle standard (i.e., quasi-experimental design); 20% met the second lowest standard (i.e., single group pre/post test without a comparison group); and the remaining 55% fell into the lowest category of rigor (i.e., research design lacks validity and/or findings suggest no change or negative change) (Gershenfeld, 2014, p. 368).

Given the methodological limitations of existing research, variation in mentoring program design and implementation, and the limited number of studies that measure impact in terms of persistence and graduation rates, estimating the impact of a new undergraduate mentoring program on student persistence and graduation rates is relatively tenuous. To generate the strongest estimate possible, more recent studies with stronger methodological rigor are weighed more heavily. Studies that provide persistence rate comparisons, relate to undergraduate mentoring programs in STEM and/or supporting historically underrepresented students are also discussed here.

With respect to undergraduate STEM majors, several studies have demonstrated a positive impact of peer mentoring on academic performance and persistence in a STEM major. Using a quasi-experimental design, Fox et al (2010) found that first-year students who participated in a peer-mentoring program demonstrated better academic performance as compared to a similar group of nonparticipants. Additional non-experimental studies have also found that STEM majors indicate that mentoring was the largest contributing factor to their academic success (Kendricks, Nedunuri, & Arment, 2013). Peer mentoring among STEM majors has also demonstrated a positive impact on mentees' involvement in, satisfaction with and commitment to their major (Holland, Major, & Orvis, 2012).

With respect to college persistence among undergraduate students, several experimental studies with randomized treatment and control groups have demonstrated a strong, positive impact of peer mentoring on college persistence. For example, Rodger and Tremblay (2003) found that first-year

college students who met with their peer mentor at least once per month returned to campus at a statistically higher rate than the applicant control group (86.1% vs. 81.4%) (Rodger & Tremblay, 2003, p. 12). This suggests that peer mentoring could potentially increase first to second year retention by 4.7%. Similarly, Bettinger and Baker (2011) found that a one-year private coaching model had a comparable impact on college persistence. Students in the treatment group were assigned coaches who contacted students regularly to define and track goals and develop time management, self-advocacy and study skills. Seventeen independent experiments that were conducted over two years across public and private colleges consistently demonstrated an immediately and lasting increase in persistence: +5.3% at twelve months, +4.3% at eighteen months and 3.4% at twenty-four months. Differences in proportions were statistically significant at the 99 percent confidence level.

Estimated Impact of Near-Peer Mentoring and Assumptions

According to the most relevant and rigorous data available, near-peer mentoring in the first year of college has a significant, positive impact on first to second year college persistence, ranging from 4.7% to 5.3% or 5.0% on average. This would increase WSOS's current 84% Year 1 to Year 2 persistence rate to 89%.

Given that first-year, near-peer mentoring has also been shown to have a lasting impact of 3.4% two years later, we would assume that continuing near-peer mentoring through a student's second year would have an even stronger impact on second to third year persistence; however, since we do not know exactly what this impact might be, we conservatively estimate 3.0%. This would increase WSOS's current 72% Year 1 to Year 3 persistence rate to 75% (Table 1).

Assuming the same attrition rates between years¹ and the same persistence and graduation rates beyond the third year, if near-peer mentoring had been implemented from the program's inception, we estimate that it would have yielded 85 or 9.91% additional four-year graduates² (Table 1).

Table 1. Estimated Impact of Near-Peer Mentoring

| OUTCOMES | ACTUAL | | | ESTIMATED | | |
|------------------------------|---------|--------------------------|--------|-----------|--------------------------|--------|
| | Total # | Persisted or Graduated # | Rate % | Total # | Persisted or Graduated # | Rate % |
| Year 1 to Year 2 Persistence | 3,549 | 2,993 | 84% | 3,549 | 3,159 | 89% |
| Year 1 to Year 3 Persistence | 2,447 | 1,759 | 72% | 2,584 | 1,938 | 75% |
| Year 1 to Year 4 Persistence | 1,712 | 1,143 | 67% | 1,886 | 1,264 | 67% |

¹ To date, WSOS attrition is estimated at 18.2% between Years 2 and 3 and 2.7% between Years 3 and 4.

² It should be noted that the WSOS five-year graduation rate is 71% and the six-year graduation rate is 74%. This study truncates the graduation rate at four years due to the limited range of existing research studies, upon which this analysis estimates near-peer and industry mentoring impact.

| | | | | | | |
|----------------------|-------|------------|-----|-------|------------|------------|
| 4-Year Graduation | 1,712 | 858 | 50% | 1,886 | 943 | 50% |
| Additional Graduates | | | | | 85 | 10% |

Clearly, program design and fidelity will mediate the relationship between near-peer mentoring and its impact on student persistence. To help ensure a positive impact on student persistence, it will be important to incorporate best practices in mentor recruitment, screening, training, matching, initiating, monitoring, supporting and closing, which have been rigorously researched and documented for adult-youth mentoring programs (MENTOR, 2015). Specific to undergraduate mentoring programs, Putsche et al (2008) find that program success depends on appropriate staffing, matching and continuous communication regarding mentee needs. Moreover, setting mentor and mentee expectations about the purpose of the relationship; the scope of topics to be discussed; and the frequency and duration of contact are particularly important for undergraduate mentoring programs given the many factors that influence college persistence (Egege & Kutieleh, 2015).

Industry Mentoring

For the purposes of this analysis and building off Jacobi’s (1991) framework, industry mentoring is defined as a personal, reciprocal relationship in which a career professional mentor, who has greater experience, influence and achievement within a particular industry, provides direct assistance with career and professional development and serves as a role model to an undergraduate mentee, who is interested in pursuing a career similar to their industry mentor.

Available research on career-specific mentoring for undergraduates focuses on mentoring relationships between students and faculty or staff on campus. While this is not the exact model proposed by WSOS, it does suggest a strong, positive relationship between career-specific mentoring relationships, self-efficacy, academic performance and college persistence.

With respect to self-efficacy, an evaluation of an undergraduate STEM research program at four selective universities demonstrates that students attribute mentoring to increased confidence in their professional skills and abilities related to conducting research (Thiry, Laursen, & Hunter, 2011). Believing in one’s own ability to succeed has been demonstrated to be critically important to college success. After controlling for gender, ethnicity, first-generation status, and high school grade GPA, research suggests that increased levels of college self-efficacy are associated with greater odds of persisting into the spring semester and of being academically successful (Wright, Jenkins-Guarnieri, & Murdock, 2012).

Further supporting the connection between self-efficacy and academic success, Tovar (2014) finds that after controlling for pre-college factors, transition factors, and academic and social factors, time with faculty and counselors discussing career issues was positively related to Latinx community college students’ cumulative GPA. These findings coincide with other bodies of research that demonstrate the importance of emphasizing career goals throughout college to increase a student’s sense of purpose and motivation to perform academically and persist in college. For example, first-

year college students reporting job-related goals are more likely to make positive persistence decisions than students reporting unknown goals (Hull-Blanks, et al., 2005).

Reinforcing the relationship between career-focus and college persistence, Barnett (2011) finds that students' intent to persist in college is associated with those who have had at least one or more faculty that they have considered a mentor. While intent to persist is not synonymous with persisting, previous studies have found that intent to persist strongly predicts actual persistence (Braxton, Milem, & Sullivan, 2000). Moreover, Hu and Ma (2010) find that having an assigned college mentor was positively related to the probability of persisting through a student's second year in college. While the number of mentor meetings did not have a statistically significant impact, the odds of persisting increased 1.6 times for every unit increase in turning to their mentor for support and 1.7 times for every unit increase in the perceived importance of mentoring. To help explain why this relationship exists, Schreiner, Noel, Anderson and Cantwell (2011) interviewed at-risk students across nine institutions and found that mentoring roles were perceived as most important in terms of encouragement, motivation, taking time, expressing interest in students' successes, relating to students on their level, and balancing rigorous standards with support to succeed.

Overall, multiple strands of research find evidence of positive, reinforcing relationships among career-specific mentoring, self-efficacy, sense of purpose, academic performance and college persistence. However, research on career-specific mentoring for undergraduate students typically focuses on mentoring from college faculty and staff—not career professionals outside of academia that WSOS will be recruiting. Given the greater college-specific expertise that college faculty and staff likely hold in comparison to external career professionals, we might expect career professional mentors to have a lesser *direct* impact on academic performance and college success behaviors; however, given the current, applied, career-specific expertise that career professionals likely hold relative to full-time college faculty, we might expect industry mentoring to yield a greater impact on self-efficacy and sense of purpose, which, in turn, influence academic performance and college persistence *indirectly*.

Estimated Impact of Industry Mentoring and Assumptions

If we assume that industry mentoring has the potential to yield a similar impact on persistence outcomes through different causal pathways and that the quality of mentoring will be such that scholars will turn to their mentor for support, then we can estimate that the odds of persisting will increase by at least 1.6 compared to those without mentors, based on the available quantifiable data from Hu and Ma (2010).

While there is no quantifiable data on the impact of industry mentoring on college persistence aside from college faculty mentoring among first-year students, conservatively, we estimate the same increase in odds for industry mentoring among upperclassmen. Given WSOS's current first to fourth year persistence rate of 67% without an industry mentor, the estimated persistence rate with an industry mentor would be 76%. If WSOS had implemented industry mentoring from the program's inception, we estimated that this would have added 158 students to the four-year graduation

pipeline. Assuming a constant 50% four-year graduation rate, this would yield 77 or 8.97% additional graduates (Table 2).³

Table 2. Estimated Impact of Industry Mentoring

| OUTCOMES | ACTUAL | | | ESTIMATED | | |
|------------------------------|---------|--------------------------|--------|-----------|--------------------------|--------|
| | Total # | Persisted or Graduated # | Rate % | Total # | Persisted or Graduated # | Rate % |
| Year 1 to Year 4 Persistence | 1,712 | 1,143 | 67% | 1,712 | 1,301 | 76% |
| 4-Year Graduation | 1,712 | 858 | 50% | 1,870 | 935 | 50% |
| Additional Graduates | | | | | 77 | 9% |

Combining Near-Peer and Industry Mentoring

Combining near-peer mentoring in the first two years with industry mentoring in the third and fourth years would exponentially magnify the impact on graduation outcomes by increasing the number of students throughout the pipeline. In total, if the two programs had been implemented together from the beginning of the program, it is estimated to have yielded 230 or 26.81% additional four-year graduates (Table 3).

Table 3. Estimated Impact of Near-Peer and Industry Mentoring Combined

| OUTCOMES | ACTUAL | | | ESTIMATED | | |
|------------------------------|---------|--------------------------|--------|-----------|--------------------------|--------|
| | Total # | Persisted or Graduated # | Rate % | Total # | Persisted or Graduated # | Rate % |
| Year 1 to Year 2 Persistence | 3,549 | 2,993 | 84% | 3,549 | 3,159 | 89% |
| Year 1 to Year 3 Persistence | 2,447 | 1,759 | 72% | 2,584 | 1,938 | 75% |
| Year 1 to Year 4 Persistence | 1,712 | 1,143 | 67% | 1,886 | 1,433 | 76% |
| 4-Year Graduation | 1,712 | 858 | 50% | 2,176 | 1,088 | 50% |
| Additional Graduates | | | | | 230 | 27% |

³ Odds ratio = mentor(persisted/dropped)/no mentor(persisted/dropped); $1.6 = [x/(100-x)]/(67/33)$; $x = 76.46$

Return on Investment

To estimate the return on investment of near-peer mentoring and industry mentoring, we use existing benefit calculations of college persistence and graduation with respect to net college revenue, individual earnings and societal benefits in the form of tax revenue. To estimate the cost of investment, we rely on budget data provided by WSOS to determine the cost per student. Finally, the net return on investment is calculated by subtracting the current return on investment by the estimated return on investment.

Benefits

Net College Revenue: According to the College Board, average institutional revenue per FTE student enrolled at public four-year institutions is \$24,140 in annual net college tuition and state/local appropriations revenue, based on the most recent data available from 2014-15 (College Board, 2015). Comparable data was not readily available for independent, private colleges and universities. Thus, we use the public institution revenue per FTE to estimate the value-add of program components. The benefits of near-peer and industry mentoring to colleges and universities include increased persistence, more FTE students enrolled, and higher net revenue gained through college tuition and state/local appropriations.

Individual Earnings: According to the Hamilton Project sponsored by the Brookings Institution (2018), the median bachelor's degree graduate (any major) who is working full-time will earn \$490,000 more in lifetime earnings than the median full-time worker with some college, no degree⁴. Many bachelor's degree graduates in STEM and health care fields earn even more. For example, median bachelor's degree graduates working full-time in Computer Science earn \$950,000 more than the median full-time worker with some college, no degree over their lifetime; Mathematics and Statistics \$720,000 more; Engineering Technologies \$750,000 more; Nursing \$640,000 more; and Microbiology, Physiology, Genetics and Neuroscience \$520,000 more. To be conservative, we use the median increase in lifetime earnings for any bachelor's degree graduate compared to full-time employees with "some college": \$490,000. Since we estimate a combined federal and state tax rate of 32% and include this revenue as "Societal Benefits" (see below), we subtract this additional lifetime tax revenue (\$156,800) from the additional income (\$490,000) to arrive at an estimated \$333,200 in additional net income.

Societal Benefits: Many research studies have demonstrated the positive, wide-reaching impact of higher education beyond college revenue and individual earnings. Additional market benefits to society include increased tax revenues, faster economic growth, greater innovation and labor market flexibility, increased productivity of co-workers and reduced burden on public finances due to lower unemployment, healthier lifestyles, more preventative care, better educational parenting and lower crime rates (United Kingdom Department for Business, Innovation & Skills, 2013). Unlike net college revenue and individual earnings, social return on investment calculators are not yet available

⁴ We use the comparison group "some college, no degree" because near-peer mentoring and industry mentoring will impact college persistence and graduation for students who are already enrolled in college. Thus, at minimum, students impacted by these program components would have "some college."

publicly. As a result, we focus on one easily quantifiable societal benefit: increased tax revenues. For the purposes of this study, tax revenue is estimated at 32%. This includes estimates of the federal income tax (22%, based on median salaries for STEM and health care bachelor's degree holders and 2018 income tax brackets) and average Washington state and local sales tax (10%). Overall, 32% of the additional lifetime income of \$490,000 would be \$156,800 per additional graduate.

Overall, the estimated benefit per four-year graduate in terms of net college revenue, individual earnings and societal benefits is \$586,560 more than students with some college, no degree (Table 4).

Table 4. Relative Benefit/Student: Bachelor's Degree vs. Some College, No Degree

| BENEFITS | DIFFERENCE: BACHELOR'S DEGREE MINUS SOME COLLEGE, NO DEGREE |
|-------------------------------------------------------|----------------------------------------------------------------------------|
| Net College Revenue (\$24,140 x 2 years) ⁵ | \$48,280 |
| Added After-Tax Lifetime Earnings | \$333,200 |
| Added Lifetime Federal, State & Local Tax Payments | \$156,800 |
| TOTAL ADDED BENEFIT | \$538,280 |

If near-peer mentoring had been implemented with first- and second-year WSOS scholars from the beginning of the program, it is estimated to have yielded 166 additional, enrolled students in year two; 179 in year three; 121 in year four; and 85 additional four-year graduates (Table 1). If industry mentoring had been implemented with third-year WSOS scholars from the beginning of the program, it is estimated to have yielded 158 additional, enrolled students and 77 additional four-year graduates (Table 2). If both had been implemented together from the beginning, it is estimated to have yielded 166 additional, enrolled students in year two; 179 in year three; 290 in year four; and 230 additional four-year graduates (Table 3).

Costs

According to WSOS-provided budget data (Appendix B), scholarship dollars represent 89% of the 2018-19 budget, followed by staffing costs (7%) and all other costs (4%). For this analysis of estimated four-year graduation rates, the scholarship cost per student is \$2,500 for first-year scholars, \$2,500 for second-year scholars; \$5,000 for third-year scholars; and \$7,500 for fourth-year scholars or \$17,500 total over four years⁶. Based on WSOS-provided budget data for 2018-19, the additional staffing cost for the near-peer mentoring program is estimated to be \$200 per year per participant and the industry mentoring program to be \$172 per year per participant. At this time, WSOS estimates that all other costs will remain constant. Thus, we estimate the cost of additional

⁵ To estimate the difference in net college revenue among students who earn a bachelor's degree within four years compared to those with "some college," we estimate a mean of two years given that stopping out occurs most frequently among first and second year college students.

⁶ WSOS scholarship amounts are based on current award levels:
<https://www.waopportunityscholarship.org/scholarship-supports/scholarship/current-recipients/requesting-an-increase/> (accessed 9/25/2018)

scholarship dollars and staff costs over four years. While this likely does not include all costs, we can safely assume that this represents approximately 96% of all costs based on WSOS budget data.

Overall, the estimated cost per student over four years is summarized below for each program configuration (Table 5).

Table 5. Estimated Cost/Student x 4 Years

| COST/STUDENT x 4 YEARS | EXISTING | NEAR-PEER MENTORING | INDUSTRY MENTORING | NEAR-PEER + INDUSTRY MENTORING |
|------------------------------------|-----------------|----------------------------|---------------------------|---------------------------------------|
| WSOS scholarship | \$17,500 | \$17,500 | \$17,500 | \$17,500 |
| WSOS existing program ⁷ | \$2,136 | \$2,136 | \$2,136 | \$2,136 |
| WSOS near-peer mentoring | | \$400 | | \$400 |
| WSOS industry mentoring | | | \$344 | \$344 |
| TOTAL ADDED COST | \$19,636 | \$20,036 | \$19,980 | \$20,380 |

Return on Investment

To estimate the return on investment of near-peer and industry mentoring, we divide the estimated net benefit (benefit minus cost) by the estimated cost. Based on our analysis of estimated benefits and costs, we estimate how many students out of every hundred are expected to graduate within four years. We estimate the following returns on investment relative to the existing program design:

Near-peer mentoring in a student's first and second year is anticipated to yield \$1.06 for every dollar spent (6% return); industry mentoring in a student's third year is anticipated to yield \$1.11 for every dollar spent (11% return); and combining near-peer and industry mentoring is anticipated to yield \$2.93 for every dollar spent (193% return) (Table 6).

Table 6. Return on Investment: 100 Students x 4 Years

| For every 100 students... | EXISTING | NEAR-PEER MENTORING | INDUSTRY MENTORING | NEAR-PEER + INDUSTRY MENTORING |
|----------------------------------------|-----------------|----------------------------|---------------------------|---------------------------------------|
| Graduates within 4 Years ⁸ | 50 | 55 | 55 | 63 |
| Cost | \$1,963,600 | \$2,003,600 | \$1,998,000 | \$2,038,000 |
| Benefit | \$26,914,000 | \$29,605,400 | \$29,605,400 | \$33,911,640 |
| ROI (Benefit-Cost)/Cost | \$12.71 | \$13.77 | \$13.82 | \$15.64 |
| RELATIVE ROI (New-Existing ROI) | | \$1.06 | \$1.11 | \$2.93 |

Again, it is important to note that overall ROI estimates for each intervention are not intended to be used in isolation. This ROI analysis is not comprehensive and does not reflect all costs and benefits.

⁷ WSOS existing program costs include line items Scholar Awards Staff, All Other Staff and All Other Program Costs (\$65, \$203 and \$265 per student, per year, respectively) multiplied by four years.

⁸ The estimated number of graduates is rounded up to the nearest whole number to reflect actual students.

Instead, this analysis is intended to highlight the estimated, *relative* ROI of the new program interventions.

Conclusion

To estimate WSOS's return on investment for its near-peer and industry mentoring components, this report relied on a thorough review of the literature on the impact of near-peer and industry mentoring on college student retention. Based on these research-based estimates, a "what-if analysis" was conducted that replaced actual persistence rates with estimated persistence rates over the lifetime of the program. Based on this "what-if analysis," this study estimates that near-peer mentoring would yield 10% more graduates within four years, industry mentoring would yield 9% more, and combining near-peer and industry mentoring would yield 27% more. Of course, the strength of the impact of both mentoring components depends on fidelity of program implementation based on best practices in the mentoring field.

To monetize benefits and costs of the program components, net college revenue, individual earnings and societal benefits in the form of tax revenue were included from publicly available sources. Costs per student were estimated using 2018-19 budget data provided by WSOS. Overall ROI estimates for each intervention are not intended to be used in isolation. Instead, this analysis is intended to highlight the estimated, *relative* ROI of the new program interventions compared to the current program model. The relative ROI is calculated by subtracting the current ROI by the estimated ROI.

Near-peer mentoring in a student's first and second year is anticipated to yield \$1.06 for every dollar spent (6% return); industry mentoring in a student's third year is anticipated to yield \$1.11 for every dollar spent (11% return); and combining near-peer and industry mentoring is anticipated to yield \$2.93 for every dollar spent (193% return). In other words, either program component is expected to more than pay for itself. Combined, the impact on graduation outcomes are exponentially magnified by increasing the number of students throughout the pipeline. This analysis suggests that the greatest relative ROI would come from combining near-peer and industry mentoring.

Appendix A: WSOS Outcome Data

| Program Outcome | Denominator (# Students Enrolled for X Years) | Numerator (# Persisted or Graduated of Denominator) | Rate (Numerator/ Denominator) |
|------------------------------|------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------|
| Year 1 to Year 2 Persistence | 3,549 | 2,993 | 84% |
| Year 1 to Year 3 Persistence | 2,447 | 1,759 | 72% |
| Year 1 to Year 4 Persistence | 1,712 | 1,143 | 67% |
| 4-Year Graduation | 1,712 | 858 | 50% |

Provided by WSOS Deputy Director Kimber Connors (8/25/2018)

Appendix B: WSOS 2018-19 Budget Summary

| | Scholars Supported | Total Cost | Cost/ Student |
|-----------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------|--------------------------|
| 2018-19 Budget Costs | | | |
| Scholar Awards Staff (Disbursement Support) | 4,371 | \$285,960 | \$65 |
| Scholar Success Staff (Support Near-Peer Leader Program) | 1,516 | \$303,009 | \$200 |
| Scholar Placement Staff (Support Job Placement and Industry Mentoring Program) | 2,583 | \$444,156 | \$172 |
| All Other Staff Costs (includes all other staff costs of team members not in the direct student support groups) | 4,371 | \$889,141 | \$203 |
| All Other Program Costs (includes all costs except staff and scholarship funds) | 4,371 | \$1,159,375 | \$265 |

Provided by WSOS Deputy Director Kimber Connors (8/28/2018)

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