# ACTION RESEARCH BRIEF

WTCS Student Success Center

WISCONSIN TECHNICAL COLLEGE SYSTEM

## Understanding Measurable Skill Gains: Identifying Factors Associated with Student Success

***Ben Konruff – WTCS Education Director for Performance Analysis & Continuous Improvement***


## Abstract

With the enactment of the Workforce Innovation and Opportunity Act (WIOA) in 2014, Adult Education and Family Literacy Act (AEFLA) providers are accountable for success across a series of performance indicators related to employment, credential attainment, and literacy skill building. This action research brief reflects Wisconsin's performance during the 2018-19 program year, and presents an analysis conducted on one of the WIOA performance indicators: Measurable Skill Gains (MSG). Using logistic regression methods, this study explored the associations between MSG and student characteristics, faculty staffing, federal AEFLA dollars spent, and AEFLA programming. Results highlight the importance of increasing pre-/post-test rates and equitable participation in momentum building activities like Integrated Education and Training to advance AEFLA outcomes.

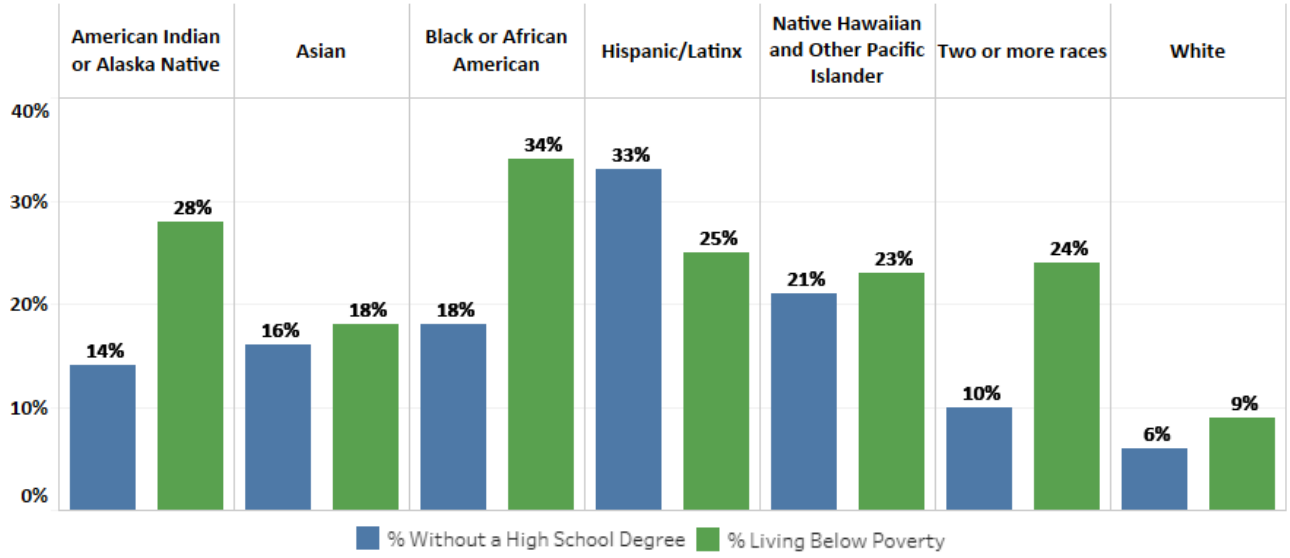

## Introduction

In a 2020 interview with The Chronicle of Higher Education, the Chief Economist of the Georgetown Center for Education and Workforce stated that by 2027, 70 percent of all U.S. jobs will require some education beyond a high school degree (Blumenstyk, 2020). Currently, 48 percent of all U.S. adults age 25-64 have a postsecondary credential (Lumina Foundation, 2020). Further, over 30 million adults in the U.S. do not have a high school degree (U.S. Census Bureau, 2018b) and more than 12 million U.S. adults do not speak English well or at all (U.S. Census Bureau, 2018a). In addition to providing employers with a sustainable talent pipeline to meet their workforce needs, building skills to high school attainment and beyond is an economic imperative to U.S. people and their families. Nationally, adults without a high school diploma are almost twice as likely to live in poverty than those with a high school diploma (U.S. Census Bureau, 2018b), and full-time workers with a high school diploma earn over $8,000 more per year than those without a high school diploma (U.S. Census Bureau, 2018b). Collectively, these figures highlight the importance of developing career pathways that enable adults with limited literacy to earn a high school equivalency diploma, transition to postsecondary education, and/or achieve self-sufficiency through gainful employment.

The Wisconsin numbers tell a similar story. Over 320,000 adults do not have a high school degree, of which 34 percent have less than a 9$^{th}$ grade level of education (U.S. Census Bureau, 2018b). Additionally, over 60,000 Wisconsin adults do not speak English well or at all (U.S. Census Bureau, 2018a). Even more pronounced than the national figures, Wisconsin adults without a high school diploma are more than twice as likely to live in poverty than those with a high school diploma, 24 percent and 11 percent respectively (U.S. Census Bureau, 2018b). The attainment of a high school credential is especially important in addressing racial economic inequities within Wisconsin. As illustrated in Figure 1, all populations other than the White population have

double-digit rates of poverty and double-digit proportions of the population without a high school degree (U.S. Census Bureau, 2018b & c).

Figure 1. Wisconsin High School Degree Attainment & Poverty by Race/Ethnicity




State and federal public programs have been enacted to address the economic hardships felt by individuals with low levels of literacy. Alone, these programs can serve as a short-term solution for those in financial need and may not diagnose and treat the systemic causes of poverty. Nonetheless, the Wisconsin Adult Education and Family Literacy Act (AEFLA) program simultaneously serves as a one-stop partner by connecting eligible individuals to programs that address immediate financial needs, and also delivers adult education and literacy services through a career pathways approach to build bridges out of poverty and towards economic self-sufficiency.

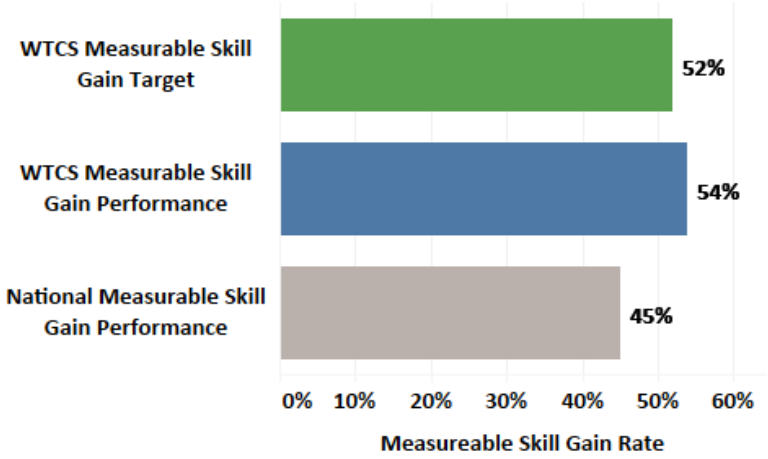
Wisconsin's AEFLA providers, which include each of the 16 Wisconsin Technical College System (WTCS) colleges and eight designated Community Based Organizations, offer a comprehensive set of services including instruction in adult education and literacy skill building, English language acquisition instruction, workforce preparation services, family literacy activities, and re-entry services for incarcerated populations. The comprehensive set of services provided by Wisconsin AEFLA has promoted high levels of inclusion among diverse populations. For example, nearly 9 percent of all households within Wisconsin have a householder who is a single parent (U.S. Census Bureau, 2018d) while 20 percent of individuals served in Wisconsin AEFLA identify as a single parent. Similarly, nearly 19 percent of Wisconsin adults identify as a person of color while more than 60 percent of individuals served in Wisconsin AEFLA identify as a person of color. This is noteworthy given the overwhelming need to address the racial economic disparities presented in Figure 1. Additionally, over 36 percent of participants served in Wisconsin AEFLA receive English language acquisition services while less than 5 percent of Wisconsin adults do not speak English well or at all (U.S. Census Bureau, 2018a). The diversity of those served in Wisconsin AEFLA highlight the programs' commitment to advancing the economic mobility of the most in-need in Wisconsin. Further, the AEFLA programs strong representation among some of Wisconsin's most vulnerable communities suggests Wisconsin AEFLA as a service provider of choice to advancing educational and economic outcomes among these groups.

Every two years, the WTCS Office engages in a negotiations process with the U.S. Department of Education (ED) to establish state-wide performance targets for the Wisconsin AEFLA program. Wisconsin AEFLA has a history of exceeding state-wide performance targets and using data to continuously improve AEFLA services. Annually each Wisconsin AEFLA provider is required to report AEFLA participant level data to the WTCS Office. Reported

data is used by the WTCS Office to monitor progress in achieving state-wide performance targets, inform technical assistance efforts, and is reported to ED to demonstrate performance accountability for individuals served in AEFLA.

In the 2018-19 program year, Wisconsin AEFLA exceeded its negotiated performance targets and also exceeded the national average across each of the federal AEFLA performance indicators. These indicators evaluate the AEFLA program's success in building literacy skills, high school equivalency diploma attainment, transitioning participants to postsecondary education, and participants obtaining employment. One of the federal indicators of performance is Measurable Skill Gains (MSG). Within Wisconsin, AEFLA participants can achieve MSG in three ways: (1) building literacy skills in the program year as measured by a pre-/post-test; (2) entering postsecondary courses in the program year after exiting the AEFLA program; or (3) attaining a secondary school diploma or equivalent in the program year. The federally negotiated level of performance for MSG was 52 percent in the 2018-19 program year. End of program year results demonstrate that the Wisconsin AEFLA program exceeded the negotiated level of performance with an actual MSG rate of 54.1 percent. For context, the national MSG rate for the 2018-19 year was 45 percent; see Figure 2.

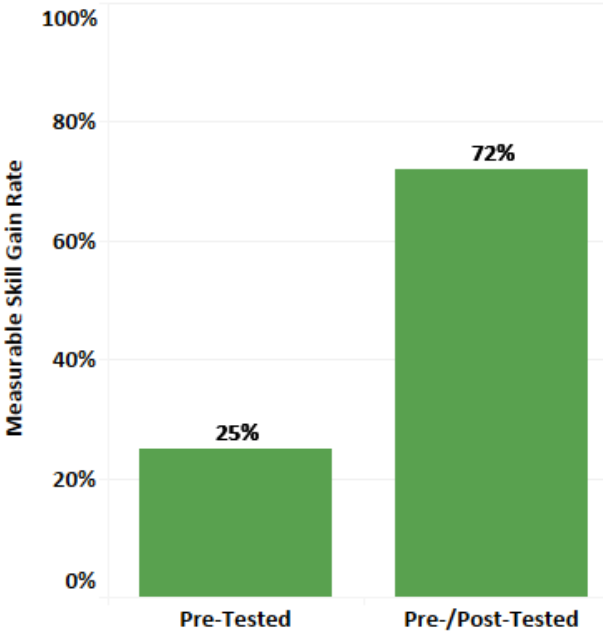
Figure 2. AEFLA 2018-19 Measurable Skill Gain Outcomes




Wisconsin AEFLA is committed to continuous improvement. During the 2018-19 program year, three-year trend data was analyzed to identify deviations in AEFLA performance success, and the results were used to inform WTCS Office improvement strategies. Results from this analysis revealed two key findings.

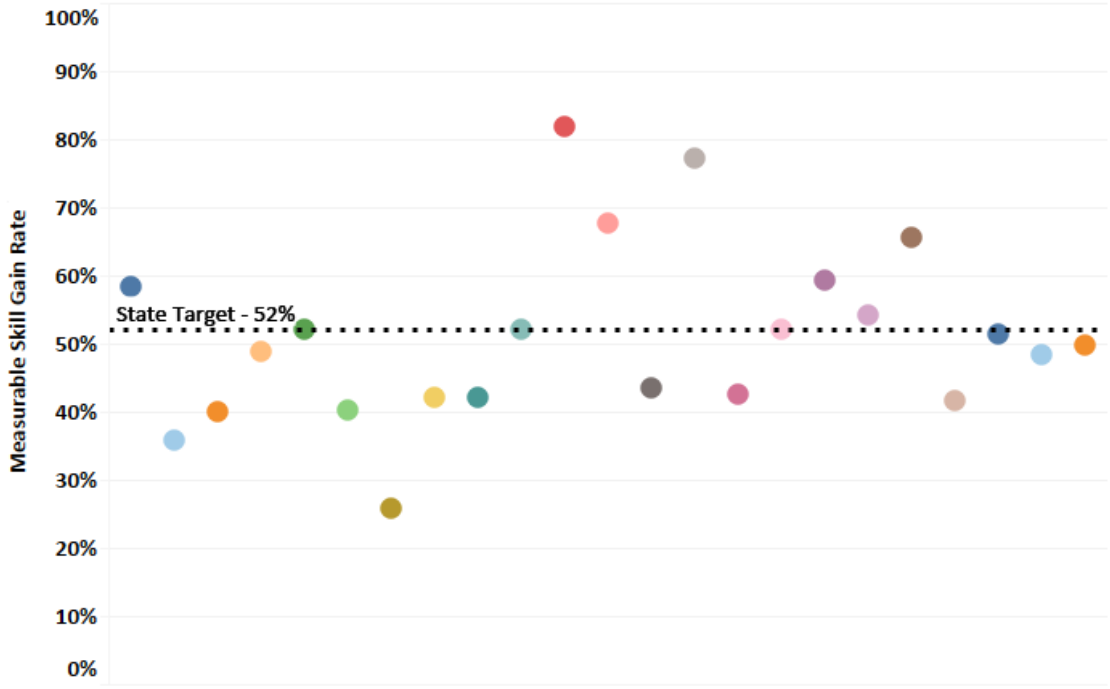
*First, the state-wide pre-/post-test rate in the Adult Education (AE) program significantly declined from 2017-18 to 2018-19*. Specifically, the pre-/post-test rate in AE declined by four percentage points, resulting in a rate of 53 percent and nearly 500 fewer AEFLA participants completing a post-test than the year prior. As previously noted, Wisconsin AEFLA participants can attain MSG in three ways. Achieving MSG through building literacy skills in the program year as measured by a pre-/post-test is the most prevalent among Wisconsin AEFLA participants (i.e., representing over 50 percent of all MSG). Further, post-testing significantly increases the likelihood of capturing achieved MSG. As demonstrated in Figure 3, 72 percent of pre-/post-tested participants achieved MSG while 25 percent of pre-tested participants who did not post-test achieved MSG. Together, this information suggests that increasing the state-wide pre-/post-test rate may increase state-wide MSG.

Figure 3. AEFLA 2018-19 Measurable Skill Gain Outcomes by Pre-/Post-Test Status



*The second key finding was that MSG achievement across Wisconsin AEFLA providers varies significantly*. Figure 4 illustrates a distribution of MSG results across AEFLA providers in the 2018-19 program year.

Figure 4. AEFLA 2018-19 Measurable Skill Gain Rate Provider Distribution
*Each colored dot within the chart represents an AEFLA provider and the placement of the dot along the y-axis relates to the providers MSG rate.*




In response to these two key findings, the WTCS Office coordinated monitoring calls and onsite visits across 12 Wisconsin AEFLA providers. Providers were selected based on longitudinal pre-/post-test rate and MSG increases or decreases across the 2016-17, 2017-18 and 2018-19 program years.

Among the providers experiencing a decrease in the program's pre-/post-test rate and MSG, exploratory questions were used to uncover potential contributing factors to the decline. Themes in conversations with provider leadership suggest that the recent transition to a newer version of an approved pre-/post-test instrument may have been impacting pre-/post-test rates and causing the decline in MSG. Sample qualitative data collected during provider monitoring discussions to support this finding include:

- "The reading and language components [of the newer version of the assessment] are lengthy and may be causing testing burnout"
- "Students are walking out during testing"
- "[the newer version of the assessment] questions are not concise and require a high level of reading comprehension"
- "[the newer version of the assessment] may be deterring students from post-testing after completing the pre-test"

In response to the monitoring discussion findings, the WTCS Office coordinated sessions highlighting strategies and best practices in administering pre-/post-test instruments at the fall 2019 WTCS Common Ground conference. Additionally, given the existing variance in MSG across Wisconsin AEFLA providers as demonstrated in Figure 4, a research study was conducted to identify factors positively and negatively associated with MSG achievement. The research study addressed the following research question.

***Research Question***: *What factors (student characteristics, faculty staffing, federal AEFLA dollars spent, and AEFLA programming) are associated with achieving MSG?*

## Data Sample

To better understand the factors associated with achieving MSG, data was drawn from WTCS reporting systems for statistical analysis. Additional data for the study's independent variables were drawn from the National Reporting System *Table 7 Adult Education Personnel by Function and Job Status* and federal AEFLA grant reimbursement tracking reports managed by the WTCS Office. The study sample consisted of 11,975 records of participants served in Wisconsin AEFLA during the 2018-19 program year. A list of the variables within the study are provided in Table 1.

Table 1. Variable Descriptions

| Variables | Description |
|---|---|
| ***Dependent Variable*** | |
| Measurable Skill Gain | Participant achieved a Measurable Skill Gain: (1) building literacy skills in the program year as measured by a pre-/post-test; (2) exit the AEFLA program and enter postsecondary courses in the program year; or (3) obtain a secondary school diploma or equivalent in the program year |
| ***Independent Variables*** | |
| AE VS ELL Program Participation | Participant was served in the Adult Education (AE) program rather than English Language Learning (ELL) program |
| Hours of Service in Instruction | Hours of service in instruction reported for each participant |
| Services for Institutionalized Individuals | Participant is receiving services for institutionalized individuals i.e. the participant is incarcerated |
| IET Participation | Participant is reported in Integrated Education and Training (IET) |
| Gender (Female) | Participant gender |
| Single Parent | Participant is unmarried or legally separated and has custody or joint custody of one or more minor children or is pregnant |
| Economically Disadvantaged | Participant household income is at or below the poverty level set by the Department of Health and Human Services or is receiving need-based financial assistance |
| Has a Secondary Credential or Higher | Participant has a secondary credential/equivalent or higher at enrollment |
| Age 25 or Older | Participant age is 25 or older at the beginning of the program year |
| Minority Race/Ethnicity | Participant identifies as Black or African American, Hispanic/Latinx, Asian, American Indian or Alaskan Native, Native Hawaiian or Pacific Islander, or More than one race |
| Part-Time AEFLA Faculty | Count of part-time faculty supporting AEFLA at the provider the participant is enrolled |
| Full-Time AEFLA Faculty | Count of full-time faculty supporting AEFLA at the provider the participant is enrolled |
| Federal AEFLA Dollars Spent is More than $475 Per Participant | The average AEFLA federal dollars spent per participant is higher than the state overall average of $475 per participant |

## Statistical Methods & Results

Logistic regression analysis was conducted to understand the associations between MSG and the independent variables within this study. Descriptive statistics of MSG outcomes across select variables with positive associations are presented in Figure 5 and negative associations are present in Figure 6.

### *Significant Positive Associations*

Model results suggest that participants who have a secondary credential or higher at enrollment are more than twice as likely to achieve MSG compared to participants without a secondary credential or higher. Individuals with a secondary credential may include participants served in English Language Learning (ELL) who received a high school diploma outside of the U.S. Additionally, students with a secondary credential may also include participants served in the AE program who have been separated from the education system for a prolonged period of time and are building their literacy skills to support success in transitioning to postsecondary education or the workforce.

Results also demonstrate that Integrated Education and Training (IET) participation is significantly and positively related to MSG achievement. One explanation for this finding may relate to the IET model's approach in delivering concurrent and occupationally contextualized instruction that builds momentum for postsecondary transition.

Findings from the regression model also suggest that participants engaged in AE are more likely to achieve MSG compared with participants engaged in ELL programming. In addition, the count of full-time faculty supporting AELFA is positively correlated with MSG achievement.

Model results also identify hours of service in instruction as positively related to achieving MSG (i.e., as hours of service increase, the likelihood of achieving MSG increases). The median hours of service for AE and ELL participants achieving MSG was 56 and 100, respectively, while the median hours of service for AE and ELL participants who did not achieve MSG was 32 and 53, respectively. This finding highlights the importance of monitoring participant readiness for post-test administration.

Figure 5. AEFLA 2018-19 Measurable Skill Gain Outcomes by Select Variables with a Positive Association

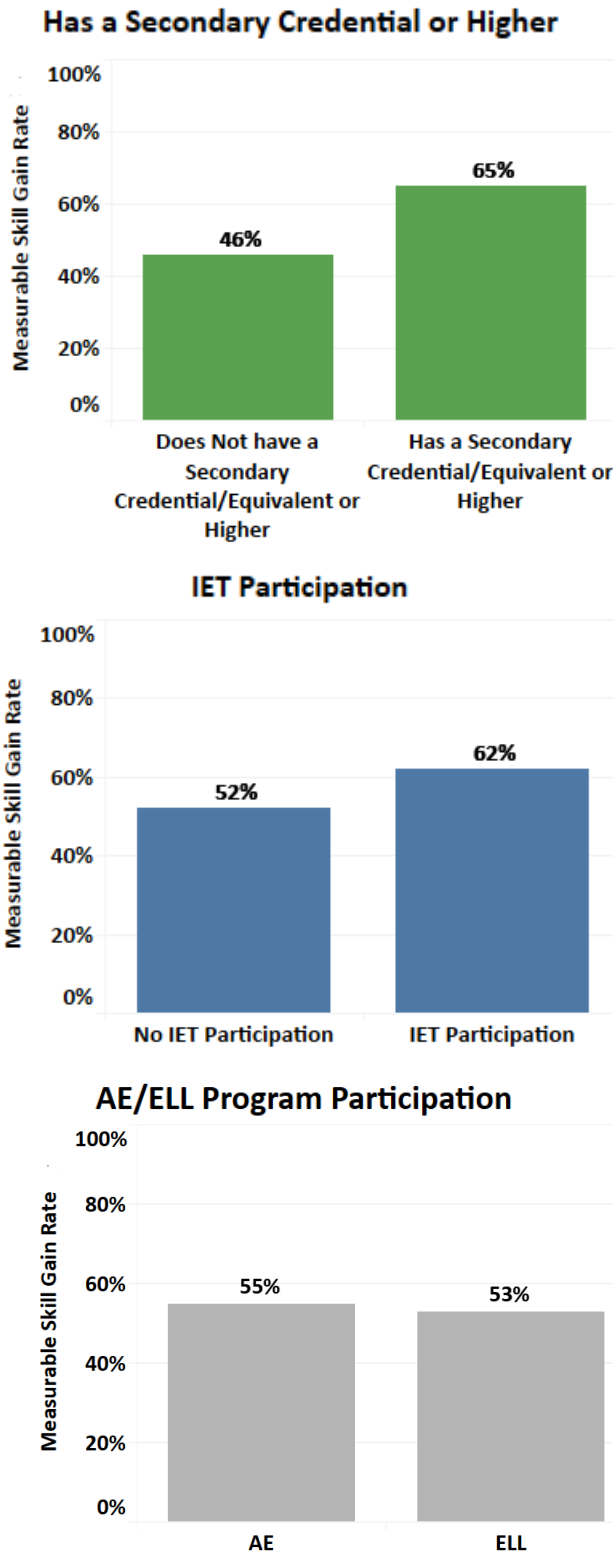
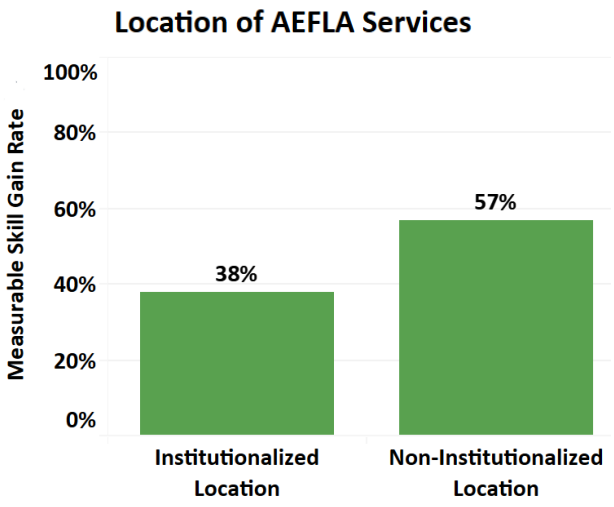
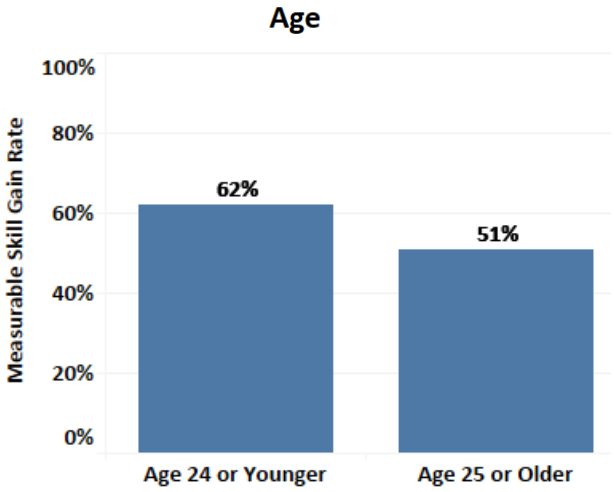
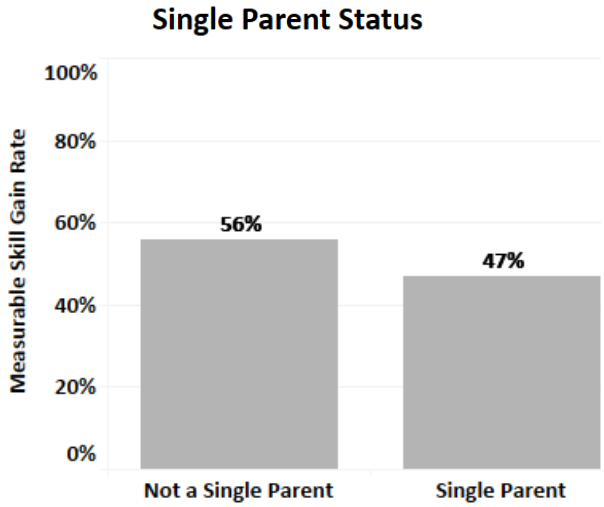


Figure 6. AEFLA 2018-19 Measurable Skill Gain Outcomes by Select Variables with a Negative Association



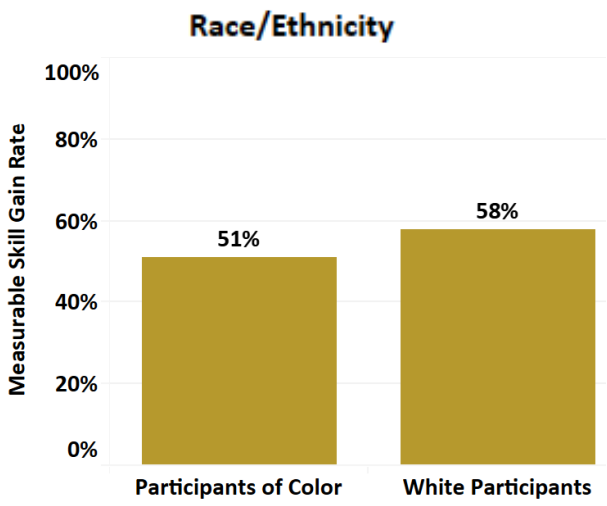

### *Significant Negative Associations*

Participants receiving institutionalized services (i.e., incarcerated populations served primarily in jails) are significantly less likely to achieve MSG compared to non-incarcerated individuals while controlling for the variables within this study. One explanation to this finding may relate to incarcerated populations having fewer opportunities to achieve MSG through transitions to postsecondary education while incarcerated or transfers to correctional facilities not offering AEFLA services.

Model results also suggest that participants who are age 25 or older are significantly less likely to achieve MSG compared to younger populations. This finding is noteworthy given roughly two-thirds of Wisconsin AEFLA participants identify as age 25 or older and the median age of AEFLA participants is 30.

Model results also identify single parent status as negatively associated with achieving MSG. This association is especially important given one-in-five participants identified as a single parent in the 2018-19 year. One explanation for this finding may relate to challenges in balancing academic, work, and family obligations (Archer Hatch & Toner, 2020). Strategies for addressing these challenges may include creating a process for identifying single parents at intake, connecting participants to community-based services and affordable childcare, and offering flexible instruction that accommodates busy schedules.

Findings from the regression model also reveal racial disparities in MSG achievment. Specifically, participants of color are significantly less likely to achieve MSG compared to participants who identify as White.



### *Insignificant Associations*

Results from the logistic regression model suggest a series of insignificant associations. Variables not associated with MSG achievement include a participant's economically disadvantaged status and gender, more than $475 of federal dollars spent per AEFLA participant, and the count of part-time faculty supporting AEFLA.

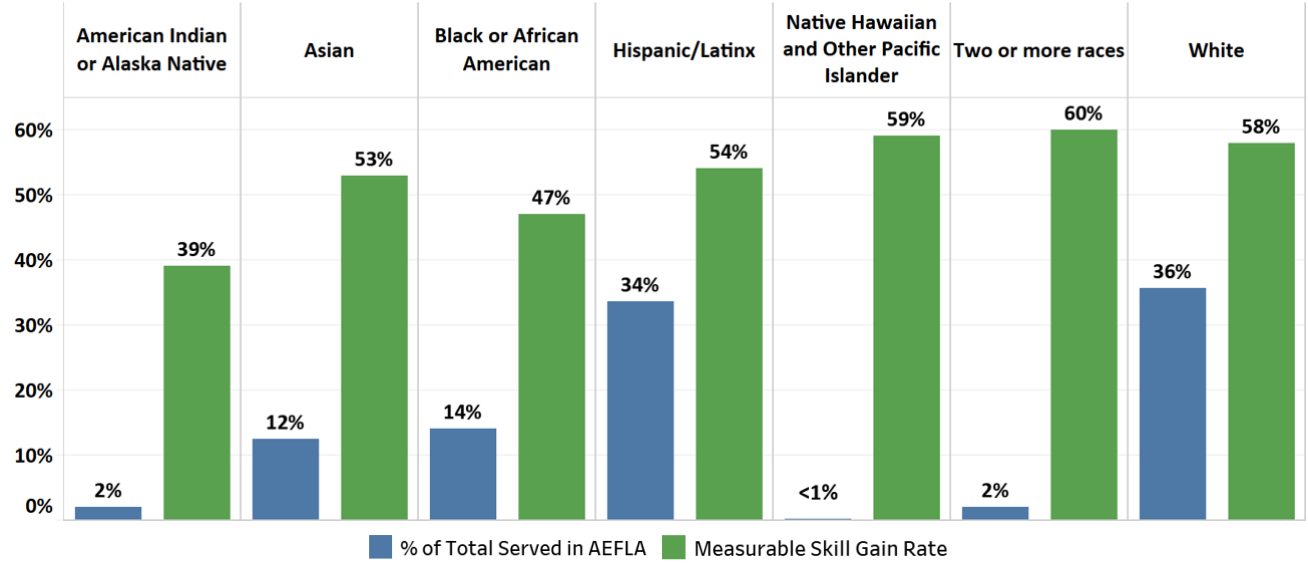
One explanation for a participant's economic status not being related to MSG achievement may be that the AEFLA program has effectively provided the supports and appropriate connections to resources to buffer the effects of poverty in relation to their participation in AEFLA. While gender is not a significant variable within this study, U.S. Census data reveals that females are more than twice as likely to be a single parent (U.S. Census Bureau, 2018d), a variable that was found to be negatively related to MSG achievement within this study, than males within Wisconsin.

One explanation for the average federal AEFLA dollars spent per participant not being related to MSG achievement may relate to limitations in data availability. For example, this study did not control for local monies spent to support AEFLA and instead focused solely on federal AEFLA monies spent per participant. Thus, the federal AEFLA dollars spent per participant may not provide a complete picture of the overall money spent to support the AEFLA program. This is important to consider because the regions and characteristics of AEFLA participants served across Wisconsin's providers varies, and this variation may require greater or fewer local monies spent to support AEFLA participant success.

## Discussion & Implications

The results from this study demonstrate inequities in MSG outcomes across some minoritized populations (e.g., incarcerated individuals, single parents, and participants of color). This is especially important given the diversity of participants served in the Wisconsin AEFLA program. For example, as demonstrated in Figure 7, participants of color represent the majority in the Wisconsin AEFLA program and some races have significantly lower MSG achievement while others are at the state overall rate of 54 percent or higher. Understanding these differences in MSG achievement and addressing them is imperative within the Wisconsin context to advance economic stability across minoritized communities. This is vital for the Black or African American community as 34 percent of the population is living in poverty (see Figure 1) and 47 percent of the AEFLA participants served achieve MSG. Similar trends also exist among the American Indian or Alaska Native population. By understanding and addressing the suggested inequities in MSG achievement, Wisconsin AEFLA providers can build bridges out of poverty that enhance economic returns for all Wisconsin populations.

Figure 7. Wisconsin % Served and MSG Achievement by Race/Ethnicity



This study also uncovered potential mechanisms to advance MSG achievement. Below are some suggested actions to improve MSG outcomes among Wisconsin AEFLA participants.

- ✓ **Scale Integrated Education and Training and Encourage Participation among Minoritized Populations**

Potential solutions to addressing inequities in MSG outcomes may reside in scaling the factors within this study that are positively associated with MSG achievement, such as IET participation. These integrated service delivery models provide adult education and literacy activities concurrently and contextually with workforce preparation activities and workforce training for a specific occupation or occupational cluster (34 CFR § 463.35). Through IET, AEFLA participants can build their adult education and literacy skills while also gaining exposure and skills in an occupational field.

Existing research exploring contextualized learning models, such as IET, have echoed similar positive effects for participating students. In a two-year college study investigating math course adult education contextualization within allied health programs, Shore and colleagues (2004) found that students randomly assigned to participate in contextualized learning had higher math scores and more favorable views of the usefulness of delivered instruction compared to students enrolled in non-contextualized math course adult education. One explanation for why contextualized learning models like IET lead to stronger outcomes may reside in how these programs build student aspirations and motivation. In a study within the WTCS, Wang and colleagues (2017) investigated math course adult education contextualization within manufacturing and engineering technology programs. Through analysis of student interviews, classroom observations, and student surveys, the researchers found that contextualized learning opportunities have the potential of elevating students' belief in their own efficacy, motivation, and confidence to be successful in the classroom.

With 20 percent of Wisconsin AEFLA participants engaged in IET during the 2018-19 year, Wisconsin providers should consider how AEFLA participants are made aware of IET opportunities, and also monitor and ensure that participants of color and single parents are equitably represented in IET. Wisconsin AEFLA providers offering services to incarcerated populations should also consider the scaling of IET within correctional facilities. As AEFLA providers develop processes that promote equitable participation in IET, they should also consider offering IET opportunities that lead to high demand occupational fields within their region. To support these efforts, the WTCS Office developed a new AEFLA grant category under the 2022-25 AEFLA grant cycle dedicated to expansion and innovation in IET. By ensuring equitable participation in momentum building opportunities like IET that lead to high demand fields, Wisconsin AEFLA providers can continue to contribute to the diminishment of educational and socioeconomic disparities within Wisconsin at an accelerated rate while addressing regional workforce needs.

- ✓ **Increase Pre-/Post-Test Rates to Capture MSG**

Longitudinal analysis of pre-/post-test rates in Wisconsin AEFLA reveal a significant decline from 2017-18 to 2018-19. Specifically, the pre-/post-test rate in AE programming declined by four percentage points, resulting in a rate of 53 percent and nearly 500 fewer AEFLA participants completing a post-test than the year prior. Discussions with AEFLA providers reveal that the transition to a new testing instrument may have caused testing burnout, lower levels of test-taking self-efficacy, and participant avoidance of post-testing.

As previously noted, Wisconsin AEFLA participants can attain MSG in three ways. Achieving MSG through building literacy skills in the program year as measured by a pre-/post-test is the most prevalent among Wisconsin AEFLA participants (i.e., representing over 50 percent of all MSG). Further, post-testing AEFLA participants significantly increases the likelihood of capturing achieved MSG. As demonstrated in Figure 3, 72 percent of pre-/post-tested participants achieved MSG while 25 percent of pre-tested participants who did not post-test achieved MSG. Together, this information suggests that increasing the state-wide pre-/post-test rate may increase state-wide MSG.

One solution to increasing pre-/post-test rates may reside in both briefing participants on the importance of post-testing as one method to measure learning progress and coaching AEFLA participants on strategies for test-taking. Examples of test-taking strategies may include relaxation techniques during testing and positive self-talk to build test-taking self-efficacy ("Tips for Taking TABE," 2020). Test-taking strategies can also be paired with encouraging a growth mindset and taking the time to celebrate and build upon AEFLA participant successes (PERTS Mindset Kit, 2020).

Another solution to increasing pre-/post-test rates may include building a process for holistically monitoring AEFLA participant readiness for post-testing. Through this approach, AEFLA providers could utilize local evidence of student readiness for post-testing such as end-of unit assessments or the achievement of other academic milestones rather than adhering to a fixed end-of-semester post-testing schedule. Further, this approach considers the external factors, such as work and family demands, effecting a participants' capacity to effectively engage in post-testing activities. In addition to monitoring individual AEFLA participant readiness for post-testing, AEFLA providers should also monitor their overall success in achieving pre-/post-test rate goals. This action will assist providers in realizing the benefits of holistic post-testing practices in relation to the overall success of the AEFLA program.

To support monitoring efforts among Wisconsin AEFLA providers, the WTCS Office has developed the *Monthly AEFLA Reporting and Performance Accountability Monitoring Report* which is delivered to each Wisconsin AEFLA provider the second Friday of the month. The report provides a point-in-time snapshot of the provider's overall performance across a series of key performance indicators that include AEFLA participation counts, pre-/post-test rates, MSG achievement rates, and IET participation. Further, the WTCS Office has developed operational reports that present disaggregated data by AEFLA participant and identify the number of hours of service in instruction completed, if the participant has been post-tested, and if the participant has achieved MSG. These resources deliver AEFLA providers with a high-level perspective of their program's overall performance and operational lists to monitor individual participant outcomes that can be used to ensure accurate data reporting and future participant engagement to improve AEFLA outcomes.

## Guiding Questions

- What is the proportion of AEFLA participants engaging in IET? How are AEFLA participants made aware of IET? Are participants of color, single parents, and institutionalized individuals equitably participating in IET programming?
- What is the process for monitoring readiness for post-testing? How do pre-/post-test rates vary across populations e.g., participants of color, single parents, and institutionalized individuals.

## Additional Resources

- CLASP Defining IET
- PERTS Growth Mindset Kit
- Tips for Taking TABE
- Wisconsin AEFLA Innovation in IET Grant Category
- Wisconsin AEFLA IET Planning Tool

## Acknowledgments

The WTCS Student Success Center would like to thank Ascendium Education Group for generous support to help make this WTCS Action Research project possible. We would also like to thank WTCS staff, including the WTCS Office Adult Education Team, for their input and feedback into the design of the study.

## Appendices

*Logistic Regression Model Output Table*

| | B | S.E. | Sig. | Exp(B) |
|---|---|---|---|---|
| **AE VS ELL Program Participation** | 0.13 | 0.05 | 0.01 | 1.13 |
| **Hours of Service in Instruction** | 0.01 | 0.00 | <0.01 | 1.01 |
| **Services for Institutionalized Individuals** | -0.77 | 0.06 | <0.01 | 0.46 |
| **IET Participation** | 0.51 | 0.05 | <0.01 | 1.66 |
| **Gender (Female)** | 0.02 | 0.04 | 0.62 | 1.02 |
| **Single Parent** | -0.29 | 0.05 | <0.01 | 0.75 |
| **Economically Disadvantaged** | 0.04 | 0.05 | 0.79 | 1.01 |
| **Has a Secondary Credential or Higher** | 0.78 | 0.04 | <0.01 | 2.18 |
| **Age 25 or Older** | -0.47 | 0.05 | <0.01 | 0.63 |
| **Minority Race/Ethnicity** | -0.26 | 0.05 | <0.01 | 0.77 |
| **Part-Time AEFLA Faculty** | 0.00 | 0.00 | 0.06 | 1.00 |
| **Full-Time AEFLA Faculty** | 0.02 | 0.01 | <0.01 | 1.02 |
| **Federal AEFLA Dollars Spent is More than $475 Per Participant** | -0.04 | 0.05 | 0.34 | 0.96 |
| **Constant** | -0.36 | 0.08 | <0.01 | 0.70 |

## References


29 U.S.C. 34 CFR § 463.35. Retrieved from https://www.law.cornell.edu/cfr/text/34/463.35

Anonymous. (2020). *Tips for Taking TABE*. Retrieved from https://tabetest.com/educators/tips-and-tricks-educators-community/

Archer Hatch, M. & Toner, M. (2020). *Increasing success for student mothers at community colleges.* Retrieved from https://www.achievingthedream.org/resource/17976/equity-in-design-for-hss-increasing-success-for-student-mothers-at-community-colleges

Blumenstyk, G. (2020). *By 2020, they said, 2 out of 3 jobs would need more than a high-school diploma – were they right?* The Chronicle of Higher Education. Retrieved from https://www.chronicle.com/article/By-2020-They-Said-2-Out-of-3/247884

Lumina Foundation. (2020). *A stronger nation national report 2019*. Retrieved from https://luminafoundation.org/stronger-nation/report/2020/#nation

PERTS Mindset Kit. (2020). Retrieved from https://www.mindsetkit.org/

Shore, M., Shore, J., & Boggs, S. (2004). Allied health applications integrated into developmental mathematics using problem-based learning. *Mathematics and Computer Education, 38*(2), 183–189.

U.S. Census Bureau. (2018a). *Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over B16004, 2013-17 American Community Survey 5-year estimates*. https://factfinder.census.gov.

U.S. Census Bureau. (2018b). *Education Attainment S1501, 2013-17 American Community Survey 5-year estimates*. https://factfinder.census.gov.

U.S. Census Bureau. (2018c). *Poverty Status in the Past 12 Months of Individuals by Sex by Educational Attainment S1701, 2013-17 American Community Survey 5-year estimates*. https://factfinder.census.gov.

U.S. Census Bureau. (2018d). *Selected Social Characteristics DP02, 2013-17 American Community Survey 5-year estimates*. https://factfinder.census.gov.

Wang, X., Sun, N., & Wickersham, K. (2017). Turning math remediation into "homeroom:" contextualization as a motivational environment for community college students in remedial math. Review of Higher Education, 40(3), 427-464.