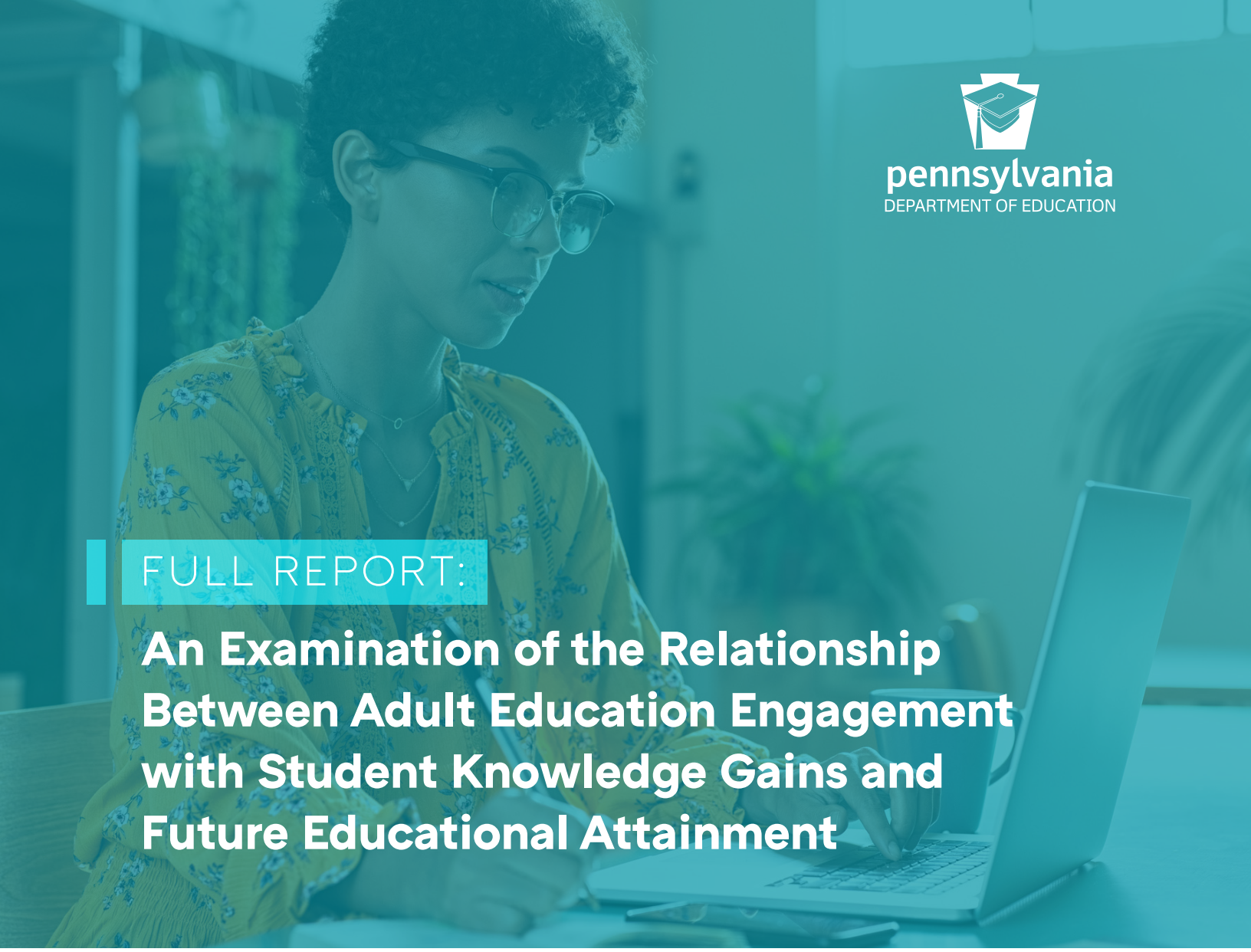

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FULL REPORT:

An Examination of the Relationship Between Adult Education Engagement with Student Knowledge Gains and Future Educational Attainment

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Data Quality Office, Office of Administration

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Research and Evaluation

SEPTEMBER 2020

Abstract

To help Commonwealth residents meet the needs of a changing economic landscape, Pennsylvania adult education programs provide students with a range of services to support the acquisition of skills necessary to obtain and sustain employment (Pennsylvania Department of Education, 2020). To provide evidence-based program and policy support, data from four cohorts of Pennsylvania adult education students enrolled in adult basic education (ABE), adult secondary education (ASE) and English as a Second Language (ESL) courses were analyzed to assess demographic characteristics, as well as the relationship between demographic characteristics with course completion, educational functioning level gains (EFL gains), high school equivalency attainment and postsecondary enrollment. Results from this study indicated that a significant percentage of students reported EFL gains, yet a much smaller percentage acquired a high school equivalency credential or enrolled in postsecondary after completing adult education programs. Analyses also indicated demographic differences in racial background and highest level of education were found among students who completed adult education courses and attained a high school equivalency credential. Students who entered the program with higher levels of education were also more likely to enroll in postsecondary. Generally, higher levels of program intensity, or receiving more instructional time, was also associated with EFL gains and attainment of a high school credential. Differences in course completion, EFL gains, high school equivalency attainment and postsecondary enrollment also existed by program type. Although the demographic composition of Pennsylvania adult education students is consistent with national trends, demographic differences in outcomes were found within and between programs.

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Research and Evaluation

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The Pennsylvania Department of Education (PDE) Evaluation and Research project is an effort that was established through a State Longitudinal Data System (SLDS) Grant from the Institute of Education Sciences (IES), National Center for Education Statistics (NCES), awarded in October 2015. The Research and Evaluation project is an initiative to make full use of the P-16+ system data and other data sources to answer priority questions from the PDE research agenda, to form collaborative research partnerships, and to increase PDE's capacity to conduct research. Our mission is to evaluate and analyze data to provide insight that can be used to positively impact policy, inform decision making and lead to improved student outcomes.

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Introduction

The U.S. Bureau of Labor Statistics suggests the American economy is in the midst of a significant shift. Current and future employment projections indicate occupations that typically require a high school diploma are projected to grow at a slower rate than occupations requiring a postsecondary degree or more (Watson, 2017). Between 2012 and 2022 the number of jobs requiring a postsecondary credential is expected to grow by fourteen percent (Carnevale et al., 2013; Richards & Terkanian, 2013). Conversely, of the thirty occupations projected to have the largest and fastest *decline*, more than half require a high school diploma or less (Richards & Terkanian, 2013). While this occupational shift is promising for the thirty-three percent of the population that holds a postsecondary credential (U.S. Census Bureau, 2017a), it is less encouraging for the twenty-three million Americans who lack even a high school diploma (U.S. Census Bureau, 2017b). Fundamentally, these individuals lack the credentials and training to compete in a twenty-first century economy. Research suggests adult education opens the doors for many to acquire the credentials that will provide more work opportunities, as well as encourage upward mobility (U.S. Department of Education, Office of Career, Technical, and Adult Education, 2014). Specifically, adult education is tasked with the responsibility of providing students with the skills in reading, writing and math necessary to attain family-sustaining employment. The U.S. Bureau of Labor Statistics (2015) reported that adults without a high school diploma earned an average of $20,730, while those with a high school diploma earned $35,540. While acquiring a high school equivalent can promote better outcomes for many, recent projections suggest postsecondary enrollment can also be beneficial. Notwithstanding the educational and personal benefits of postsecondary education, there are also economic benefits for students. Earning a bachelor's degree increased average earnings to $69,260 (2015).

Adult education programs in Pennsylvania provide students with a range of services to support the acquisition of skills necessary to obtain and sustain family-sustaining employment (Pennsylvania Department of Education, 2020). To fill the void in educational attainment, federal, state and private agencies also prepare Pennsylvania adults to obtain

Current and future employment projections indicate occupations that typically require a high school diploma are projected to grow at a slower rate than occupations requiring a postsecondary degree or more (Watson, 2017).

a high school equivalency credential, as well as participate fully in the education of their children (2020). Adult education programs include adult basic education (ABE), adult secondary education (ASE) and English as a Second Language (ESL) courses. ABE courses are designed for adults who lack competence in reading, writing, and math, and are looking to acquire basic literacy and numeracy skills. ASE courses provide instruction to individuals who have some literacy skills and can function in everyday life, but are not proficient in reading, writing, and math. ESL services are designed to help individuals achieve competence in reading, writing, speaking and comprehension of the English language. These programs focus on strengthening individuals' advanced language skills required for academic settings. In 2017–2018, data from the National Reporting System (NRS) indicated that 58% of Pennsylvania adult education students were enrolled in ABE courses, 29.7% were enrolled in ESL courses and 11.9% were enrolled in ASE courses (U.S. Department of Education, OCTAE, 2018).

To gain a better understanding of adult education in Pennsylvania, this report details demographic trends, time spent in adult education courses (intensity), completion and outcomes associated with adult education across multiple cohorts.

Current adult education efforts are rooted in the Workforce Innovation and Opportunity Act (WIOA), the landmark legislation designed to strengthen and improve the nation's public workforce system and help Americans gain high-quality jobs and careers (Employment & Training Administration, n.d.). While the legislation is available to all Americans 16-years of age and older, it is particularly focused on targeting special populations including individuals with disabilities, English learners, out-of-school youth, individuals with basic skills deficiencies and others (Employment & Training Administration, 2019). Despite [the] WIOA's focus on special populations, there have not been sufficient efforts to assess whether students in Pennsylvania adult education programs are achieving the desired outcomes. Between 2012 and 2017, enrollment in adult education courses decreased by more than three-thousand students in Pennsylvania (U.S. Department of Education, OCTAE, 2013; U.S. Department of Education, OCTAE, 2018). Though the reasons for decreased enrollment are unclear, it does raise questions regarding enrollment and outcomes associated with adult education. To gain a better understanding of adult education in Pennsylvania, this report details demographic trends, time spent in adult education courses (intensity), completion and outcomes associated with adult education across multiple cohorts. This work also explores the extent to which adult education engagement and outcomes vary across gender, race, economic status and a host of other demographic categories. To place this research in an appropriate context, this report provides an overview of the adult education literature, particularly demographic trends, factors associated with completion of adult education courses and outcomes associated with completion of adult education courses.

Demographic Trends in Adult Education

Gender

Between 2006 and 2016, enrollment among female students in postsecondary institutions outpaced male enrollment nationally, as fifty-six percent of students enrolled in postsecondary institutions were female (U.S. Department of Education, National Center for Education Statistics, 2019). This number is expected to rise by 2026 (Snyder et al., 2018). While there is much attention paid to the gender disparity in postsecondary enrollment and education, there is less discussion regarding gender in

adult education courses. In 2017–2018, 62% of Pennsylvania's adult education students were female, which follows a national trend where females outnumber male adult education students (Coley, 2008). Unfortunately, little else is known about the experiences of male and female adult education students in Pennsylvania. National studies of adult education reveal demographic differences between male and female adult education students, such that males were more likely to be between the ages of 16 – 24 and more likely to have repeated a grade than their female counterparts (2008). Despite demographic differences between males and females, the extent of substantive gender differences in performance and achievement is less clear (2008).

Students of Color

The high school graduation rate in Pennsylvania was 87% in 2016–2017, slightly above the national average graduate rate of 84.6% that same year (U.S. Department of Education, National Center for Educational Statistics, 2018). Despite having a slightly higher graduation rate than the national average, data from the Commonwealth suggests there are still areas of concern. Similar to national statistics, 4-year graduation rates among Hispanic, African American and American Indian/Alaskan Native high school students lag behind those of White and Asian/Pacific Islander students in Pennsylvania (2018). Indirectly, this data suggests that while there is a significant need for adult education overall, the need may be particularly pressing for students of color hoping to complete their high school degree and/or move on to postsecondary education in the Commonwealth. Consistent with this, a nationally representative study of adult education students by the Educational Testing Service found that proportionate to their population, Hispanic and African American students are overrepresented in adult education courses (2018). In 2015–2016, Hispanic and African American students made up 44% and 20%, respectively, of the national adult education population (U.S. Department of Education, OCTAE, 2018). This trend is also represented within the Commonwealth. Although Hispanics and African Americans make up 18% of the population in Pennsylvania (U.S. Census Bureau, 2019), they represented a combined 52% of students in adult education courses across the Commonwealth in 2017–2018 (U.S. Department of Education, OCTAE, 2018). Mixed race, Asian, American Indian/Alaskan Native and Native Hawaiian/Other Pacific Islander students represented another 11% of adult education students in Pennsylvania.

Indirectly, this data suggests that while there is a significant need for adult education overall, the need may be particularly pressing for students of color hoping to complete their high school degree and/or move on to postsecondary education in the Commonwealth.

In 2017–2018, a majority of adult education students in Pennsylvania, 71%, were between 19 – 44-years-old (U.S. Department of Education, OCTAE, 2018).

Age

In 2017–2018, a majority of adult education students in Pennsylvania, 71%, were between 19 – 44-years-old (U.S. Department of Education, OCTAE, 2018). Specifically, 25 – 44-year-old students represented 51% of the adult education population, while 19 – 24-year-olds represented 20% (2018). This data is consistent with national trends which indicate 70% of

In addition to gender, racial/ethnic background and age, there are a host of demographic factors that may also influence students' adult education participation and related outcomes.

ABE and 72% of ASE students were between 19 – 44-years-old (U.S. Department of Education, 2018). Beyond the ages of adult education students, other researchers have identified some unique age-related trends. First, 16 – 18-year-old adult education students tend to enroll in ABE courses more than ASE or ESL courses. Statistics suggest this group more than any other lacks the basic literacy and numeracy skills required to function optimally in society (U.S. Department of Education, OCTAE, 2015). However, a comprehensive study of 16 – 18-year-old adult education students found that they outperformed older students on all measures of literacy (ETS, 2008). As an example, 16 – 18-year-olds were *less* likely to score at the lowest levels on adult education literacy tests when compared to individuals 45-years of age and older (2008). Perhaps not surprisingly, the smallest group of students enrolled in ABE and ASE courses are 60 years of age or older (U.S. Department of Education, 2018). Additional analyses that focus exclusively on Pennsylvania would be helpful in assessing the extent of age-related performance and outcome differences.

Additional Demographic Trends in Adult Education

In addition to gender, racial/ethnic background and age, there are a host of demographic factors that may also influence students' adult education participation and related outcomes. Despite this, there have been relatively few empirical investigations exploring how socioeconomic status, neighborhood type/area, or prior education experiences influence adult education engagement and outcomes. Considering the WIOA specifically targets vulnerable populations (i.e. low-income individuals) who often face barriers to education and economic success, understanding the relationship between these demographic characteristics and adult education is warranted.

With regards to economic status, results from several empirical studies indicate participation in adult education courses enhances future earnings and income (U.S. Department of Education, OCTAE, 2014). There are clear economic benefits for students after they complete adult education courses, yet less is known about the economic status of Pennsylvania students *when they enroll* in adult education courses. Furthermore, it is unclear if economically disadvantaged students engage in, complete, and demonstrate similar outcomes as their peers who do not experience economic disadvantage. There may also

be differences in adult education enrollment, completion and related outcomes among students from rural and urban areas. A study of adult education students (and GED candidates) concluded that rural students were more likely to complete and pass the GED than urban students (Van Horn & Kassab, 2011). Interestingly, these differences were present despite rural and urban students being similar ages and having similar levels of educational attainment. It is worth exploring whether rural and urban students enroll, engage and perform in adult education courses at different rates.

In addition to gender, race/ethnicity, age and economic diversity within the adult education population, Pennsylvania students come to their programs with varied educational backgrounds and experiences. Data from the Program for the International Assessment of Adult Competencies (PIAAC) indicates individuals with higher levels of educational attainment participate in adult education at higher rates than individuals with less education (Desjardins, 2015). This difference was evident even after accounting for other demographic factors, including age, gender, parents' education, functional literacy and immigration status. In a separate study conducted by Greenberg and colleagues (2013), adult literacy students who entered their programs with previous adult education experience were more likely to persist in their current programs. Despite evidence suggesting a link between previous education experiences and enrollment, there is more to be learned about the association between past education experiences and adult education outcomes (e.g. high school equivalency credential, postsecondary enrollment). Furthermore, much of the research in this area focuses primarily on enrollment in U.S. schools. The relationship between previous education experiences and adult education is less clear among students who have attended international schools. While some ESL students enter their programs with little formal education, other ESL students begin their programs with advanced degrees from their native countries (Zafft, 2008). Additional research in this area is warranted, as immigrant students are a growing demographic within the adult education community (Hanover Research, 2014).

Adult Education and Performance Outcomes

A primary goal of the WIOA legislation is to help prepare individuals who lack adequate skills and credentials gain entry into high-quality careers and employment. As highlighted in the legislation, adult education agencies are central to preparing citizens of the Commonwealth for entry into high-quality careers. As part of the larger goals of the WIOA, Pennsylvania adult education agencies center high school equivalency, postsecondary enrollment and increased EFL gains as evidence of their efficacy in preparing Pennsylvanians for entry into high quality careers, particularly among ABE and ASE students. Unfortunately, there have not been widespread efforts to assess whether students are meeting these goals. According to the National Reporting System, an outcome-based reporting system for adult education programs, 88% of Pennsylvania adult education students who set a goal of completing a high school equivalency met this goal in 2015–2016 (U.S. Department of Education, 2018). This is promising for the Commonwealth, as only 76% of adult education students met this goal nationally (2018). Despite the importance of acquiring a high school credential for many adult education

As highlighted in the legislation, adult education agencies are central to preparing citizens of the Commonwealth for entry into high-quality careers.

Despite the importance of acquiring a high school credential for many adult education students, few efforts have been taken to empirically investigate factors that encourage realization of this goal.

students, few efforts have been taken to empirically investigate factors that encourage realization of this goal. Van Horn and Kassab (2011) conducted one of the few investigations regarding high school equivalency among adult education students in Pennsylvania and found that students who eventually obtained a high school credential were more likely to enter adult education programs with more advanced knowledge and skills. Among these students, there was also a positive association between obtaining a high school credential and entering adult education programs with higher levels of educational attainment. These findings are consistent with past research by Mellard and colleagues (2013) who found that adult education students in the Midwest with higher levels of reading and numeracy skills identified earning a high school credential as their primary goal more often than individuals who were less skilled in these areas. Taken together, it appears that adult education students who go on to obtain a high school credential enter their programs with more experience in traditional educational settings and have a more robust academic foundation to draw from.

Demographically, adult education students in Pennsylvania who obtain a high school credential are more likely to be female, younger, and reside in rural communities (Van Horn & Kassab, 2011).

Prior educational attainment and skill level upon entry are not the sole factors that inform attainment of a high school credential for adult education students. Demographically, adult education students in Pennsylvania who obtain a high school credential are more likely to be female, younger, and reside in rural communities (Van Horn & Kassab, 2011). Beyond demographic trends though, a closer examination reveals a complex set of factors that influence the likelihood of obtaining a high school credential in Pennsylvania. In addition to Van Horn and Kassab's finding that the likelihood of attaining a high school credential increased when students entered adult education programs with more advanced knowledge and skill levels (i.e. higher educational functioning levels), they also found that students who participated in *fewer* days of adult education instruction (lower levels of persistence) were also more likely to obtain the credential. Essentially, students who were less persistent were more likely to obtain a high school credential, whereas students who were more persistent were less likely to obtain the credential.

After conducting additional analyses to clarify their findings, the authors concluded that students who entered the program with more skills and knowledge did not require as many days in adult education courses to prepare for the high school credential exam. On the contrary, their counterparts who lacked a strong academic foundation required more intense instruction and spent more days engaged in adult education. Despite being more persistent, those students were still unable to make up for their lack of preparation and were less likely to obtain a high school credential. Consistent with this finding, the authors also found that students who resided in rural communities were more likely to obtain a high school credential when they spent fewer hours in adult education courses (lower levels of intensity). Van Horn and Kassab's study is noteworthy because it is one of the only peer-reviewed, empirical research studies to investigate adult education outcomes among students in Pennsylvania. Furthermore, the findings highlight the level of complexity that must be applied when investigating adult education processes and outcomes in Pennsylvania. However, empirical investigations in other states suggest a different trend. A longitudinal study in Portland, Oregon concluded that ABE participants who participated in ABE courses for more than 100 hours were much more likely to acquire a high school equivalency credential than counterparts who received fewer ABE instructional hours (U.S. Department of Education, OCTAE, 2014).

While the number of adult education students from the Commonwealth who attained a high school equivalent exceeded national rates, Pennsylvania students did not fare as well with regards to

postsecondary enrollment. Nationally, among students who set a goal of enrolling in postsecondary education or training after completing adult education courses, 29% of students met this goal. Within the Commonwealth, only 16% of adult education students achieved this goal (U.S. Department of Education, 2018). It is worth noting that these statistics only represent the segment of adult education students who set the goal of enrolling in postsecondary. Hence, the overall percentage of adult education students entering postsecondary is significantly smaller than what is typically reported (Rutschow & Crary-Ross, 2014). Nationally in 2010–2011, fifty-six percent of students who set a goal of enrolling in a postsecondary institution upon completion of their adult education program were successful. However, when all students, not just those who set the goal of enrolling in postsecondary, were included in the analysis, only 2% of the total adult education population for that year moved on to postsecondary (U.S. Department of Education, 2013). Considering entry into postsecondary education is a primary outcome of interest, both nationally and for the Commonwealth, it is disconcerting that more students are not moving on to postsecondary.

Adult education researchers suggest there are a host of challenges that contribute to the dearth of students entering postsecondary education. Foster and colleagues (2011) contend that adult education students do not enroll in postsecondary education because they are presented with a host of system-level challenges, including lack of funding and disconnections between adult education centers and higher education systems. In addition to system-wide factors, research also suggests students themselves face obstacles that hinder enrollment in postsecondary education. Specifically, adult education students may experience financial burdens over time, lack the social capital necessary to navigate postsecondary systems, and may feel their preparation in adult education has not sufficiently prepared them for entry into a postsecondary institution (2011). Taken together, system-level and individual factors impact adult education students' enrollment into postsecondary and persistence once enrolled (Petty & Thomas, 2014). While there is a growing interest in providing supports to help adult education students transition into postsecondary, it is worth noting that data collection around this area has been inconsistent (Hector-Mason et al., 2017). Specifically, adult education agencies and states often report inconsistent and incomplete data regarding their students' transition (or not) into postsecondary. Considering this, it is especially critical that the Commonwealth have accurate data regarding adult education students' postsecondary engagement.

Considering entry into postsecondary education is a primary outcome of interest, both nationally and for the Commonwealth, it is disconcerting that more students are not moving on to postsecondary.

While obtaining a high school credential and entering postsecondary are key outcomes of adult education, ABE, ASE, and ESL students are also expected to demonstrate knowledge gains in reading, writing, numeracy, speaking, listening, and functional and workplace areas (U.S. Department of Education, 2019). To assess knowledge gains in the aforementioned areas, student learning is evaluated upon entry and exit into adult education courses using standardized, predetermined assessments (primarily TABE, CASAS, BEST). Student scores on the tests are assessed and students are assigned an educational functioning level (EFL), which is then used to place students in courses consistent with their skills and competencies (U.S. Department of Education, 2010). Educational gains are identified when students' EFL advances to a higher level upon their completion of adult education courses. Despite the importance of educational gains in assessing the impact of adult education courses and knowledge acquisition, there is surprisingly little research identifying factors that *promote* educational gains. However, a number of studies have identified *relationships* between educational gains and EFL with other student and programmatic factors. In a study centered on dispositional factors impacting motivation among Midwestern adult education students, Mellard and colleagues (2013) found that students who demonstrated educational gains also attended more hours of adult education than students who did not show gains. Additional analysis revealed that students who attended more hours of adult education also reported receiving more help. Considering these findings, it is plausible that receiving more assistance in adult education courses helps facilitate educational gains.

While the amount of time students spend in adult education courses is important in framing our understanding of educational gains, there is also some data to suggest there are racial and ethnic differences in educational gains. Obviously race and ethnicity are not primary determinants of success; however, on average, students of color in adult education perform less well than students of other racial and ethnic groups (Coley, 2008). In fact, African American, Hispanic and Asian adult education students are more likely to test into Levels 1 or 2, the least demanding skill levels, after completing adult education courses (2008). Similarly, Mellard and colleagues (2013) revealed that Hispanic adult education students were less likely to demonstrate educational gains than students of other racial and ethnic backgrounds. While the results of these studies are informative, the extent to which they inform adult education outcomes in the Commonwealth is unclear. Specifically, aggregate data indicates 38% of students enrolled in adult education programs in Pennsylvania achieved at least one EFL gain in 2017–2018 (National Reporting System, 2018), although this data has not been parsed out by race or ethnicity. Assessing changes in EFL across time is critical for understanding students' knowledge acquisition as they progress through adult education courses. EFL gains may also inform other adult education outcomes of interest. For instance, students who entered adult education courses at Levels 3 – 6 were more likely to cite obtaining a high school credential as a goal than students who entered courses at EFL levels 1 – 2 (Mellard et al., 2013). While it is unclear whether those students obtained a high school credential after they completed adult education courses, it is notable that students had different goals depending on whether or not they had a lower or higher EFL. Ultimately, these findings suggest additional research examining the relationship between adult education outcomes is warranted.

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Methodology and Sample

To continue to build on existing national and statewide adult education research, this study examines the association between adult education with student knowledge gains, course completion, high school credentialing and postsecondary enrollment. The conceptual model for this study can be found in Appendix 1.

The major objectives for this research are to:

- Examine the association between adult education and student educational gains, high school equivalency, and postsecondary enrollment.
- Investigate factors related to adult education completion, high school equivalency, student educational gains, and postsecondary enrollment among adult education students overall and for different groups of students.
- Provide data that can guide the direction for future research and policy decisions geared towards increasing adult education course completion rates for Pennsylvania students overall and different groups of students.

Using data provided from the Bureau of Postsecondary and Adult Education, this research will also address a priority research question put forth in **PDE's Research Agenda**: What percentage of students who begin adult education services earn high school equivalency credentials and go on to enroll in postsecondary?

Additional sub-questions included:

- What are the demographic characteristics of the adult education student population in Pennsylvania?
- To what extent are there differences in completion for adult education courses based on program type, student demographics and background characteristics?
- What percentage of adult education students report educational functioning level gains, high school equivalency and postsecondary enrollment after completing adult education courses? Are there differences in these outcomes among sub-groups of adult education students?
- Is there an intensity of instruction that correlates more strongly with better student outcomes?

Procedures and Data File Preparation

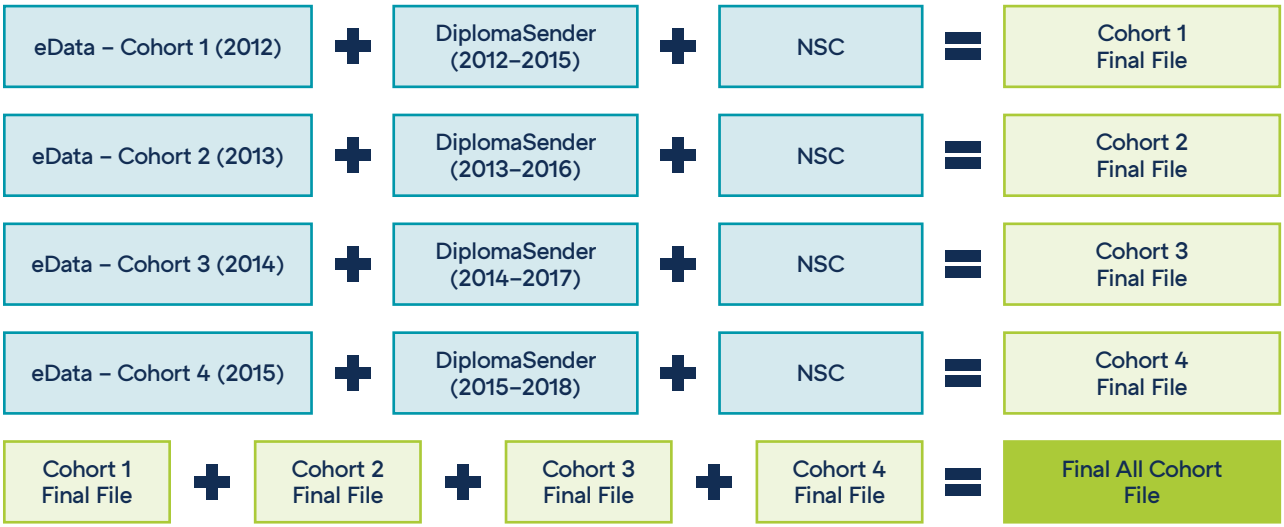
To investigate the aforementioned research questions, data from the eData system, National Student Clearinghouse (NSC), and the DiplomaSender datasets were linked for analysis. The eData system is a web-based data collection system for PDE's Bureau of Postsecondary and Adult Education, Division of Adult Education. It is primarily used for evaluating program performance and reporting aggregate student data to the United States and Pennsylvania Departments of Education. The eData files included demographic factors such as gender, ethnicity, race, highest grade, area of residence, special needs and economic disadvantage. Other variables related to student engagement and performance (e.g., intensity, persistence, educational functioning level gains) were also included in the eData files. See Appendix 2 for additional information regarding these variables. Three years of eData were obtained for four cohorts of students beginning in 2012–2013 through 2015–2016.

Data from DiplomaSender, a service PDE utilizes to manage and distribute high school equivalency data, were used to garner credentialing information for Pennsylvania adult education students. Four separate

files were merged with the corresponding eData file using a unique identifier. The DiplomaSender files contained data for July 2012–October 2015 (Cohort 1), July 2013–October 2016 (Cohort 2), July 2014–October 2017 (Cohort 3) and July 2015–October 2018 (Cohort 4). In addition to unique identifiers, the DiplomaSender files included whether or not the student passed the high school equivalency exam and the most recent test date. To assess students' postsecondary trajectories upon completion of adult education courses, the NSC database was utilized. There were a host of variables included in the NSC data file including enrollment status (part-time versus full-time), institution type (2-year versus 4-year), enrollment begin and end dates, and graduation status. However, college enrollment was the primary variable of interest utilized for this research. See Appendix 2. The Cohort 1 data file linked NSC data from 2012–2014, Cohort 2 data linked NSC data from 2013–2015, Cohort 3 data linked NSC data from 2014–2016 and Cohort 4 linked NSC data from 2015–2017.

The eData files "anchored" the merging process across cohorts. As an example, the eData file for Cohort 1 (2012) was merged with the DiplomaSender and NSC files for their respective follow-up years (through 2015 and 2014, respectively) using the identification number assigned to each adult education student. At the conclusion of these merging processes, there were four separate files representing each cohort and their follow-up data. To conduct data analysis across students, across time, and across cohorts, the resulting four cohort files were merged into a single file. The data file was then restructured so that students who participated in adult education courses across multiple years would be represented as a single case across time. See Figure 1.

FIGURE 1. Linking Process for Data Files



In addition to cohort analysis, this research also examines adult education trends by program type (ABE, ASE and ESL). While the majority of students were enrolled in only one program type, there were students who were enrolled in more than one program across cohorts. To facilitate analysis, the program type students were last enrolled in was identified as their "final" program type. A small number of students did not have a program type listed. These students were not included in study analysis.

To assess course completion status, a variable was created to indicate whether students completed any courses during their tenure in adult education. If they completed at least one course they were identified

as a "completer." Students who were not identified as "completers," but whose only status was "active" were identified as such. Students who did not qualify for completed or active status were classified as "inactive/left" students. To assess differences in completion by program and demographic characteristics, "completers" and "inactive/left" students only were included in analysis.

EFL gains were reported for every course a student completed. To assess EFL gains across courses and years, a grand total variable was computed. The grand total was then categorized to indicate whether the student showed *no change, EFL gains* or *EFL losses.* To analyze high school equivalency attainment, a dichotomous indicator was created to indicate whether the student obtained a high school equivalency at any point during their follow-up period. A similar dichotomous indicator was created to determine if students enrolled in postsecondary after completion of their adult education courses. To assess student intensity, or total hours enrolled in adult education courses, a grand total of hours was computed for all courses a student was enrolled in.

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Results

RESEARCH QUESTION 1:
What is the demographic description and breakdown of the adult education student population?

Across all cohorts there were 85,732 adult education students included in our analysis. Close to 54% of these students were enrolled in adult basic education (ABE) courses, 20.3% were classified as adult secondary students (ASE) and 26.1% were enrolled in English language (ESL) courses. As Table 1 demonstrates, the majority of students in this population were female (58%). A large proportion of the population, 40.6%, identified as White, 24.4% identified as Hispanic, 24.3% identified as Black/African American, 8.4% identified as Asian, 1.4% were multiracial, and a combined 0.9% were either American Indian/Alaskan Native or Native Hawaiian/Other Pacific Islander. Regarding socioeconomic status, 59.1% of the population was economically disadvantaged, which meant that within the past six months they received income-based assistance, or their family income fell below 70% of the standard income level. A majority of the population, 69.1%, resided in an urban area and less than one percent, 0.2%, reported having special needs. More than half of students in adult education in Pennsylvania, 67.7%, most recently attended U.S. schools. Overall, 44.3% of adult education students' highest grade completed was between 9th–11th grade, and another 11.8% attended but did not complete Grade 12. Close to 16% completed Grade 12 and received a High School Diploma, 1.6% earned a GED, 5.1% attended college, but did not receive a degree, and 9.3% earned a college or professional degree. Middle school (Grades 6th through 8th) was the highest grade completed by 7.9% of the remaining students, and 1.6% completed up to elementary school (Kindergarten through Grade 5). A combined 1.7% received a special education/IEP Diploma or no schooling. One percent of the population did not know their highest grade completed.

Close to 54% of these students were enrolled in adult basic education (ABE) courses, 20.3% were classified as adult secondary students (ASE) and 26.1% were enrolled in English language courses.

Generally, demographic trends were consistent across cohorts. Yet, there were subtle demographic differences between cohorts. There were slightly fewer Hispanic students, proportionally, in Cohort 1 than in Cohorts 2, 3 and 4. From 2012 (Cohort 1) to 2015 (Cohort 4), the proportion of students grew slightly more urban, had more experience attending non-U.S. based schools, and the percentage of students with a high school diploma or college/professional degree increased marginally. Despite these marginal differences, the composition of adult education students was comparable across cohorts. See Table 1 for additional descriptive statistics.

Despite these marginal differences, the composition of adult education students was comparable across cohorts.

TABLE 1. Demographic Statistics for Adult Education by Cohort

	Overall	Cohort 1 (2012)	Cohort 2 (2013)	Cohort 3 (2014)	Cohort 4 (2015)
	% (*N*)	% (*N*)	% (*N*)	% (*N*)	% (*N*)
Program Type					
ABE	53.7 (46,001)	52.3 (15,246)	53.5 (15,206)	55.2 (14,741)	54.6 (14,067)
ASE	20.3 (17,368)	21.2 (6,187)	20.3 (5,766)	16.4 (4,383)	15.4 (3,955)
ESL	26.1 (22,363)	26.5 (7,728)	26.2 (7,429)	28.3 (7,565)	30.0 (7,722)
Gender					
Male	42.0 (36,019)	40.7 (11,873)	40.6 (11,521)	40.8 (10,882)	40.0 (10,298)
Female	58.0 (49,713)	59.3 (17,288)	59.4 (16,880)	59.2 (15,807)	60.0 (15,446)
Race					
American Indian/Alaskan Native	0.6 (473)	0.5 (144)	.05 (114)	.05 (101)	0.7 (114)
Asian	8.4 (7,203)	9.3 (2,686)	8.0 (1,708)	7.9 (1,469)	7.9 (1,340)
Black or African American	24.3 (20,867)	25.3 (7,315)	23.3 (4,993)	24.8 (4,584)	23.4 (3,975)
Multi-Racial	1.4 (1,227)	1.2 (355)	1.6 (340)	1.6 (294)	1.4 (238)
Native Hawaiian/Other Pacific Islander	0.3 (230)	0.2 (71)	0.3 (64)	0.3 (52)	0.3 (43)
White	40.6 (34,801)	41.6 (12,017)	41.2 (8,820)	38.5 (7,111)	40.4 (6,853)
Hispanic	24.4 (20,931)	21.8 (6,294)	25 (5,349)	26.4 (4,880)	26 (4,408)
Age					
16 – 18	7.9 (6,783)	7.9 (2,315)	7.6 (2,167)	7.5 (2,010)	6.9 (1,780)
19 – 24	26.2 (22,453)	26.0 (7,589)	25.2 (7,147)	24.8 (6,630)	23.4 (6,029)
25 – 44	47.4 (40,650)	46.4 (13,536)	47.4 (13,476)	48.2 (12,865)	49.0 (12,602)
45 – 54	12.1 (10,391)	13.0 (3,778)	12.7 (3,617)	12.5 (3,348)	13.1 (3,371)
55 – 59	3.4 (2,924)	3.5 (1,021)	3.7 (1,050)	3.6 (949)	3.9 (1,009)
60 and older	3.0 (2,531)	3.2 (922)	3.3 (944)	3.3 (887)	3.7 (953)
Economic Disadvantage					
No	40.9 (35,067)	42.9 (12,505)	40.5 (11,492)	39.8 (10,613)	38.9 (10,005)
Yes	59.1 (50,665)	57.1 (16,656)	59.5 (16,909)	60.2 (16,076)	61.1 (15,739)
Area					
Rural	30.9 (26,508)	32.7 (9,541)	30.6 (8,703)	28.0 (7,463)	27.6 (7,105)
Urban	69.1 (59,224)	67.3 (19,620)	69.4 (19,698)	72.0 (19,226)	72.4 (18,639)
Special Education Status					
No	99.8 (85,533)	99.8 (29,093)	99.6 (28,296)	99.6 (26,574)	99.6 (25,630)
Yes	0.2 (199)	0.2 (68)	0.4 (105)	0.4 (115)	0.4 (114)

	Overall	Cohort 1 (2012)	Cohort 2 (2013)	Cohort 3 (2014)	Cohort 4 (2015)
	% (*N*)	% (*N*)	% (*N*)	% (*N*)	% (*N*)
Previous Schooling Type					
Non-U.S. Based Schooling	32.3 (27,725)	31.1 (9,073)	34.9 (9,907)	36.7 (9,808)	38.0 (9,792)
U.S. Based Schooling	67.7 (58,007)	68.9 (20,088)	65.1 (18,494)	63.3 (16,881)	62.0 (15,952)
Highest Grade Completed					
Elementary School (K–Grade 5)	1.6 (1,348)	1.8 (538)	1.9 (537)	1.8 (493)	1.7 (442)
Middle School (Grade 5–8)	7.9 (6,744)	8.5 (2,479)	8.3 (2,370)	8.5 (2,258)	7.9 (2,021)
High School (Grade 9–11)	44.3 (37,968)	47.6 (13,878)	44.8 (12,715)	42.4 (11,312)	39.4 (10,135)
Attended/Did Not Complete Grade 12	11.8 (10,143)	9.8 (2,855)	11.0 (3,110)	12.1 (3,222)	13.0 (3,357)
GED	15.8 (13,551)	14.4 (4,207)	15.0 (4,254)	15.8 (4,227)	16.8 (4,323)
High School Diploma/Grade 12	9.3 (7,973)	8.8 (2,574)	9.7 (2,761)	10.0 (2,661)	11.1 (2,849)
College or Professional Degree	1.6 (1,353)	1.4 (422)	1.5 (433)	1.3 (352)	1.5 (375)
Some College, No Degree	5.1 (4,402)	4.9 (1,422)	4.7 (1,338)	4.9 (1,312)	5.1 (1,304)
Special Education/IEP Diploma	0.6 (485)	0.8 (229)	0.7 (205)	0.8 (215)	0.8 (202)
No Schooling	1.1 (948)	1.2 (358)	1.4 (384)	1.4 (381)	1.6 (420)
Unknown	1.0 (817)	.7 (199)	1.0 (294)	1.0 (256)	1.2 (316)

ABE Demographic Characteristics

In total, 46,001 students were enrolled in ABE courses across four cohorts. Table 2 provides demographic information for ABE, as well as other program types. The majority of students enrolled in ABE courses identified as female (57.5%). The racial composition of students in ABE courses included 44.1% White students, 18.3% Hispanic students, 31.2% Black/African American students, and 3.7% Asian students. A combined 2.7% of students identified as multiracial, American Indian/Alaskan Native or Native Hawaiian/Other Pacific Islander. Sixty-one percent of ABE students were classified as economically disadvantaged and 64.8% resided in urban areas. The most recent educational experiences of close to 87% of the students in ABE courses were in U.S. schools. Regarding highest grade completed, 55.9% of ABE students' highest attainment was high school (9th through 11th grade). Of the remaining students' highest grade attainment, 14.2% attended, but did not complete 12th grade; 10.5% completed Grade 12 and earned a high school diploma; 1.4% earned a GED; 3.2% attended some college but did not receive a degree; 4.1% earned a college or professional degree. A combined 9% of students indicated that their highest grade completed was during elementary school, middle school, or that they received no schooling. Less than 1% of students did not know their highest level of education.

In total, 46,001 students were enrolled in ABE courses across four cohorts.

ASE Demographic Characteristics

Among adult education students, only 20.3%, or 17,368 students, were enrolled in ASE courses, as indicated in Table 2. Similar to the overall sample, more than half of the ASE population was female (54.2%). White students comprised 60.6%, Black/African American students comprised 24.8% and Hispanic students comprised 10.3% of ASE enrollment. The remaining 4.2% of ASE enrollment included

multiracial, Asian, American Indian/Alaskan Native and Native Hawaiian/Other Pacific Islander students. More than half of the students enrolled in ASE courses were identified as economically disadvantaged (55.3%) and resided in urban areas (53.9%). For a larger proportion of ASE students, 95.5%, the most recent schooling took place in the U.S., 55.6% completed grades nine through eleven at the high school level; 13.1% attended but did not complete 12th grade and 14.2% completed grade 12 and earned a high school diploma. Another 2.4% of ASE students earned a GED. While 5.2% attended college, but did not earn a degree, 3.5% earned a college or professional degree. A combined 5.4% listed elementary school or middle school as their highest grade completed. Another .5% reported special education/IEP diploma, no schooling or unknown as their highest level of education.

More than half of the students enrolled in ASE courses were identified as economically disadvantaged (55.3%) and resided in urban areas (53.9%).

ESL Demographic Characteristics

Twenty-six percent of adult education students in Pennsylvania were enrolled in ESL courses, as shown in Table 2. A significant proportion of students in these courses were female (61.9%). In contrast to enrollment trends in ABE and ASE, 47.9% of students enrolled in ESL courses identified as Hispanic, while another 23.6% of the students identified as Asian. Just 17.9% of students identified as White and 9.9% identified as Black/African American. Less than 1% identified as multiracial, Native Hawaiian/Other Pacific Islander or American Indian/Alaskan Native. Just under fifty-eight percent of the students in ESL courses experienced economic disadvantage and 89.6% of students resided in an urban area.

Contrary to students in ABE and ASE courses, most ESL students' most recent schooling experiences were outside of the country (92.9%). Twenty-eight percent of students in ESL courses, more than double the proportion of students in ABE and ASE courses, completed the twelfth grade and received a high school diploma. Compared to ABE and ASE students, a much larger proportion of ESL students, 24.5%, earned a college or professional degree. Close to 12% of ESL students completed high school grades 9–11, which was well below the percentage of ABE and ASE students to complete these grades. Close to ten percent of ESL students completed middle school grades 6 – 8, 9% attended some college, but did not obtain a degree, and 6% attended, but did not complete 12th grade. For 4.5% of the students in ESL courses, the highest grade completed was between kindergarten and Grade 5, and 3.5% reported receiving no schooling. A combined 3.2% did not know their highest level of education, earned a GED, or a special education/IEP diploma.

TABLE 2. Demographic Statistics for Adult Education by Program Type

	Overall	Adult Basic Education	Adult Secondary Education	English as a Second Language
	% (*N*)	% (*N*)	% (*N*)	% (*N*)
Overall				
Total	100 (85,732)	53.7 (46,001)	20.3 (17,368)	26.1 (22,363)
Gender				
Male	42.0 (36,019)	42.5 (19,553)	45.8 (7,953)	38.1 (8,513)
Female	58.0 (49,713)	57.5 (26,448)	54.2 (9,415)	61.9 (13,850)
Race				
American Indian/Alaskan Native	0.6 (473)	0.7 (304)	0.7 (126)	0.2 (43)
Asian	8.4 (7,203)	3.7 (1,706)	1.2 (209)	23.6 (5,288)
Black or African American	24.3 (20,867)	31.2 (14,344)	24.8 (4,309)	9.9 (2,214)
Multi-Racial	1.4 (1,227)	1.7 (800)	2.1 (370)	0.3 (57)
Native Hawaiian/Other Pacific Islander	0.3 (230)	0.3 (141)	0.2 (43)	0.2 (46)
White	40.6 (34,801)	44.1 (20,281)	60.6 (10,519)	17.9 (4,001)
Hispanic	24.4 (20,931)	18.3 (8,425)	10.3 (1,792)	47.9 (10,714)
Age				
16 – 18	7.9 (6,783)	9.7 (4,444)	11.3 (1,959)	1.7 (380)
19 – 24	26.2 (22,453)	29.3 (13,456)	33.3 (5,777)	14.4 (3,220)
25 – 44	47.4 (40,650)	44.5 (20,467)	41.1 (7,132)	58.4 (13,051)
45 – 54	12.1 (10,391)	11.1 (5,119)	10.0 (1,734)	15.8 (3,538)
55 – 59	3.4 (2,924)	3.2 (1,472)	2.9 (506)	4.2 (946)
60 and older	3.0 (2,531)	2.3 (1,043)	1.5 (260)	5.5 (1,228)
Economic Disadvantage				
No	40.9 (35,067)	38.9 (17,888)	44.7 (7,758)	42.1 (9,421)
Yes	59.1 (50,665)	61.1 (28,113)	55.3 (9,610)	57.9 (12,942)
Area				
Rural	30.9 (26,508)	35.2 (16,170)	46.1 (8,004)	10.4 (2,334)
Urban	69.1 (59,224)	64.8 (29,831)	53.9 (9,364)	89.6 (20,029)
Special Education Status				
No	99.8 (85,533)	99.6 (45,807)	100.0 (17,363)	100.0 (22,363)
Yes	0.2 (199)	0.4 (194)	0.0 (5)	0.0 (0)
Previous Schooling Type				
Non-U.S. Based Schooling	32.3 (27,725)	13.4 (6,163)	4.5 (778)	92.9 (20,784)
U.S. Based Schooling	67.7 (58,007)	86.6 (39,838)	95.5 (16,590)	7.1 (1,579)
Highest Grade Completed				
Elementary School (K–Grade 5)	1.6 (1,348)	0.6 (294)	0.2 (38)	4.5 (1,016)
Middle School (Grade 5–8)	7.9 (6,744)	8.0 (3,679)	5.2 (896)	9.7 (2,169)
High School (Grade 9–11)	44.3 (37,968)	55.9 (25,717)	55.6 (9,660)	11.6 (2,591)
Attended/Did Not Complete Grade 12	11.8 (10,143)	14.2 (6,533)	13.1 (2,273)	6.0 (1,337)
GED	1.6 (1,353)	1.4 (658)	2.4 (414)	1.3 (281)
High School Diploma/Grade 12	15.8 (13,551)	10.5 (4,817)	14.2 (2,467)	28.0 (6,267)
College or Professional Degree	9.3 (7,973)	4.1 (1,870)	3.5 (614)	24.5 (5,489)
Some College, No Degree	5.1 (4,402)	3.2 (1,471)	5.2 (911)	9.0 (2,020)
Special Education/IEP Diploma	0 .6 (485)	0.9 (393)	0.2 (30)	0.3(62)
No Schooling	1.1 (948)	0.4 (163)	0.0 (7)	3.5 (778)
Unknown	1.0 (817)	0.9 (406)	0.3 (58)	1.6 (353)

The proportion of students who completed ASE courses was somewhat higher than in the ABE and ESL programs.

Across programs, Cohorts 1, 3 and 4 reported similar completion rates, ranging between 25.0% – 27.5%.

RESEARCH QUESTION 2:
To what extent are there differences in completion for adult education courses based on program type, student demographics, and background characteristics?

Excluding students who *did not* report *Completed* or *Inactive/Left* status across the period data was analyzed for this study, 29.2% of adult education students completed at least one ABE, ASE, or ESL course, as indicated in Table 3. See Appendix 3 for definitions of *Completed*, *Inactive* and *Left*. Conversely, 70.8% of students enrolled in adult education courses never completed a course and their highest status was *Inactive/Left*. This trend was generally consistent across ABE and ESL programs. In ABE and ESL courses, approximately 26% of students completed at least one course from their respective programs, while close to 74% of students reported their highest status as *Inactive/Left*. The proportion of students who completed ASE courses was somewhat higher than in the ABE and ESL programs. Specifically, 37.8% of ASE students completed at least one course, whereas 62.2% did not complete any courses. To assess the extent of differences in completion across programs, a chi-square analysis was conducted. Across all cohorts, the highest rates of completion were among students enrolled in ASE courses, as shown in Figure 2. Although the difference in rates of completion between program types was statistically significant across all cohorts, Figure 2 shows that ASE student completion rates were significantly higher than ABE and ESL students in Cohorts 2, 3 and 4. However, they were only significantly higher than ABE students in Cohort 1. Though the test for each program year was significant, the effects were relatively small.

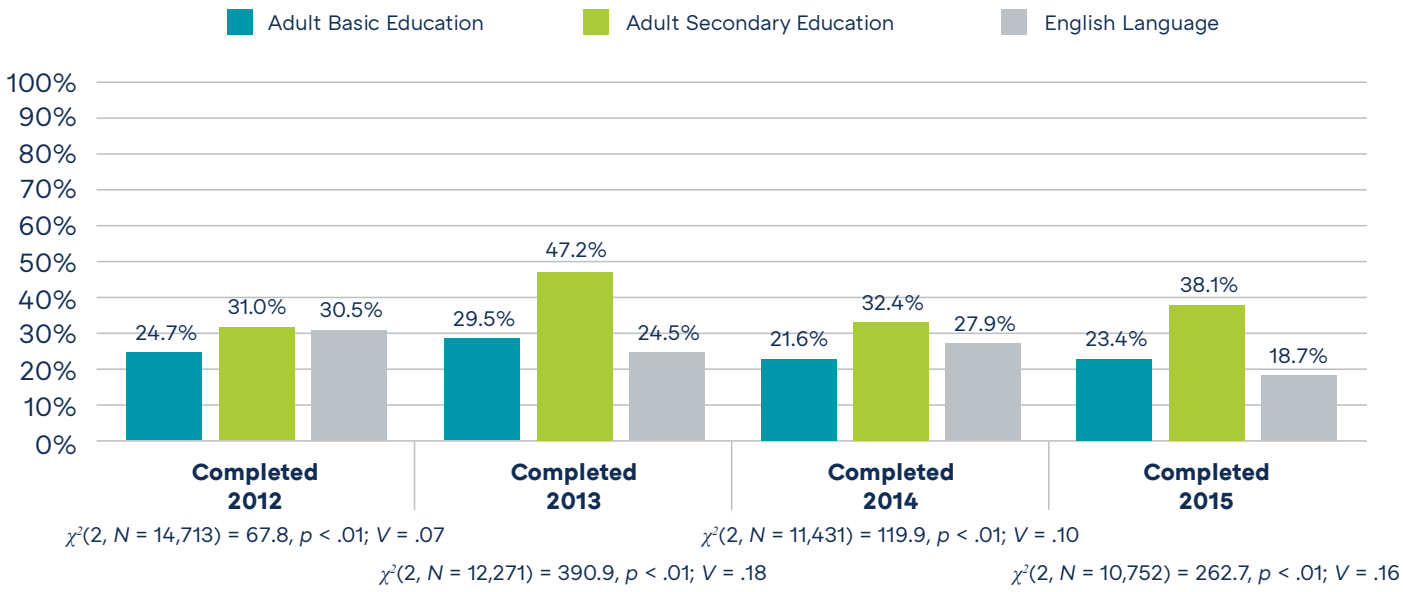
Table 3 shows the completion rates across cohorts and programs. Rates of completion were also examined by cohort. Across programs, Cohorts 1, 3 and 4 reported similar completion rates, ranging between 25.0% - 27.5%. Compared to the other cohorts, a slightly larger percentage of students from Cohort 2, 33.1%, completed adult education courses. This trend was consistent for ABE and ASE courses, as a higher percentage of students from Cohort 2 completed courses. Regarding ESL courses, a higher percentage of students from Cohort 1 completed courses than students from Cohorts 2, 3 and 4. Students from Cohort 4 reported the lowest rates of ESL course completion (18.7%).

TABLE 3. Adult Education Program Completion Rates by Cohort

	Overall	Cohort 1 (2012)	Cohort 2 (2013)	Cohort 3 (2014)	Cohort 4 (2015)
	% (*n*)	% (*n*)	% (*n*)	% (*n*)	% (*n*)
Across Programs					
Completed Course(s)	29.2 (13,263)	27.5 (4,041)	33.1 (4,057)	25.0 (2,863)	25.3 (2,719)
No Completed Courses	70.8 (32,159)	72.5 (10,672)	66.9 (8,214)	75.0 (8,568)	74.7 (8,033)
ABE					
Completed ABE Course(s)	26.0 (6,713)	24.7 (1,966)	29.5 (2,084)	21.6 (1,465)	23.4 (1,391)
No Completed Courses	74.0 (19,087)	75.3 (6,000)	70.5 (4,984)	78.4 (5,326)	76.6 (4,551)
ASE					
Completed ASE Course(s)	37.8 (4,043)	31.0 (1,058)	47.2 (1,452)	32.4 (748)	38.1 (841)
No Completed Courses	62.2 (6,641)	69.0 (2,358)	52.8 (1,622)	67.6 (1,562)	61.9 (1,366)
ESL					
Completed ESL Course(s)	26.6 (2,603)	30.5 (1,017)	24.5 (521)	27.9 (650)	18.7 (487)
No Completed Courses	73.4 (7,181)	69.5 (2,314)	75.5 (1,608)	72.1 (1,680)	81.3 (2,116)

NOTE: Students who did not indicate a *Completed* or *Inactive/Left* status were excluded from this analysis.

FIGURE 2. Completed Courses Across Cohorts by Program Type



Group Differences in Completed Courses

Chi-square analysis was used to assess differences in adult education course completion across student characteristics and demographic factors. The first set of analysis examines differences in student completion overall, regardless of program type. The latter set of analyses examines student differences in course completion by program type. Again, only students reported as *Complete* or *Inactive/Left* status were included in the analyses for this research question.

Differences in Completed Adult Education Courses by Gender

As Figure 3 shows, there were no significant differences between males and females in the rate of completion overall. Among the 19,933 male students, 28.9% completed courses, similar to 29.5% of the 25,489 female students.

Additional analyses assessed gender differences in course completion by program. Initial tests indicate there were not significant differences in completion between males (26.2%) and females (25.9%) enrolled in ABE courses. However, there were marginal gender differences among students enrolled in ASE and ESL courses, with females completing courses at a higher rate than males. Figure 4 shows that just over 36% of male students completed ASE courses, while 39.4% of female students completed ASE courses, although the effect was minimal (ϕ = .03). Among students in ESL courses, females had slightly higher completion rates than their male counterparts with just over 27% of female students completing ESL courses, compared to 25.4% of male students. As discussed previously under Research Question 2, students enrolled in ASE courses had significantly higher rates of course completion compared to students in ABE and ESL courses. This difference by program type was found for both males and females.

FIGURE 3. Adult Education Completed Courses vs. Inactive/Left Status by Gender

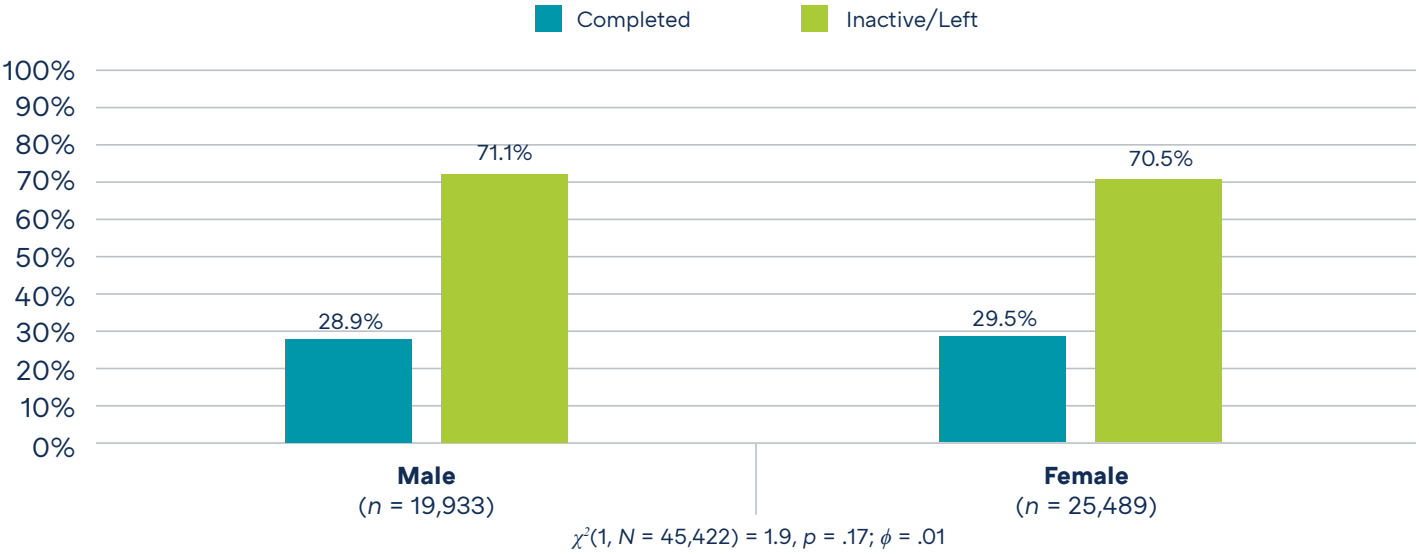
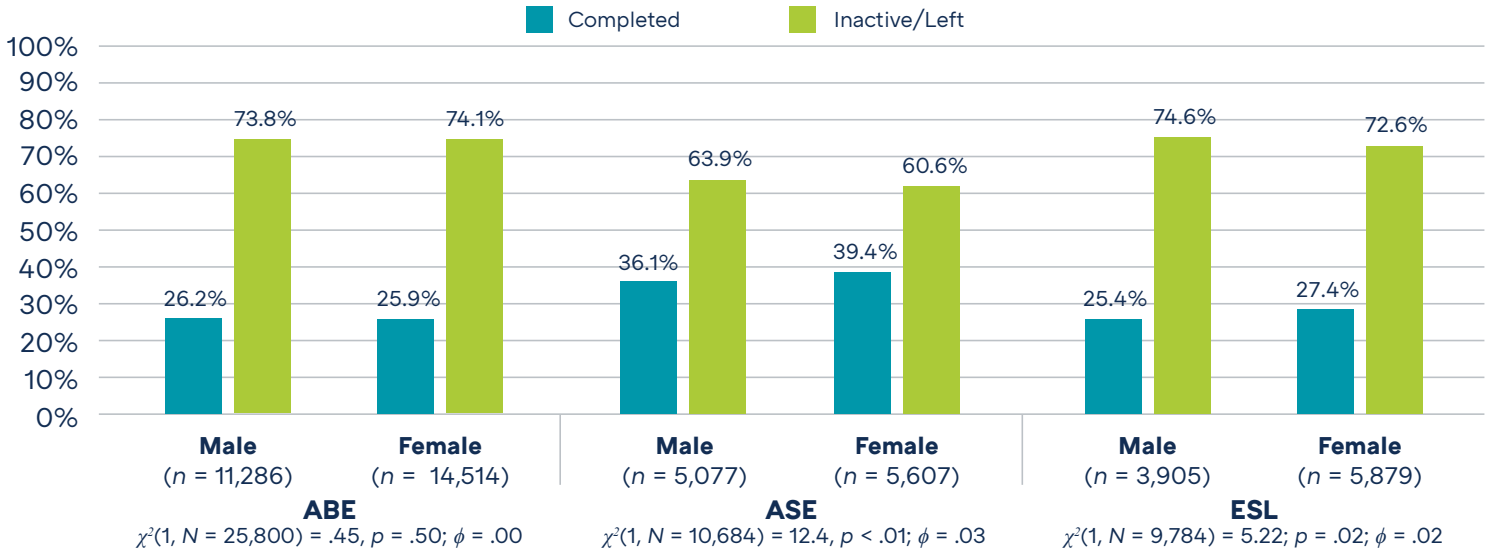


FIGURE 4. Adult Education Completed Courses vs. Inactive/Left Status by Gender



Differences in Completed Adult Education Courses by Race

There was a small, yet significant difference in overall course completion by race (χ^2 (5, N = 45,422) = 1,019.0, p < .01). Figure 5 shows that just over 36% of White students, 33.6% of Asian students, 27.9% of multiracial students, 23.4% of American Indian/Alaskan Native students, 21.6% of Black/African American students and 19.8% of Native Hawaiian/Other Pacific Islander students completed courses. While there were differences between the groups based on racial background, the effect was small (V = .15).

Analyses showed differences in completion by race among ABE, ASE and ESL students, however as Figures 6, 7 and 8 show, all effects were small (V = .16, V = .17 and V = .06). Asian and White students had the highest completion rate for ABE and ASE courses (see Figures 6 and 7). Among ESL students, American Indian/Alaskan Native and Asian students had the highest completion rate, as shown in Figure 8.

Asian and White students had the highest completion rate for ABE and ASE courses (see Figures 6 and 7). Among ESL students, American Indian/ Alaskan Native and Asian students had the highest completion rate, as shown in Figure 8.

FIGURE 5. Adult Education Completed Courses vs. Inactive/ Left Status by Race

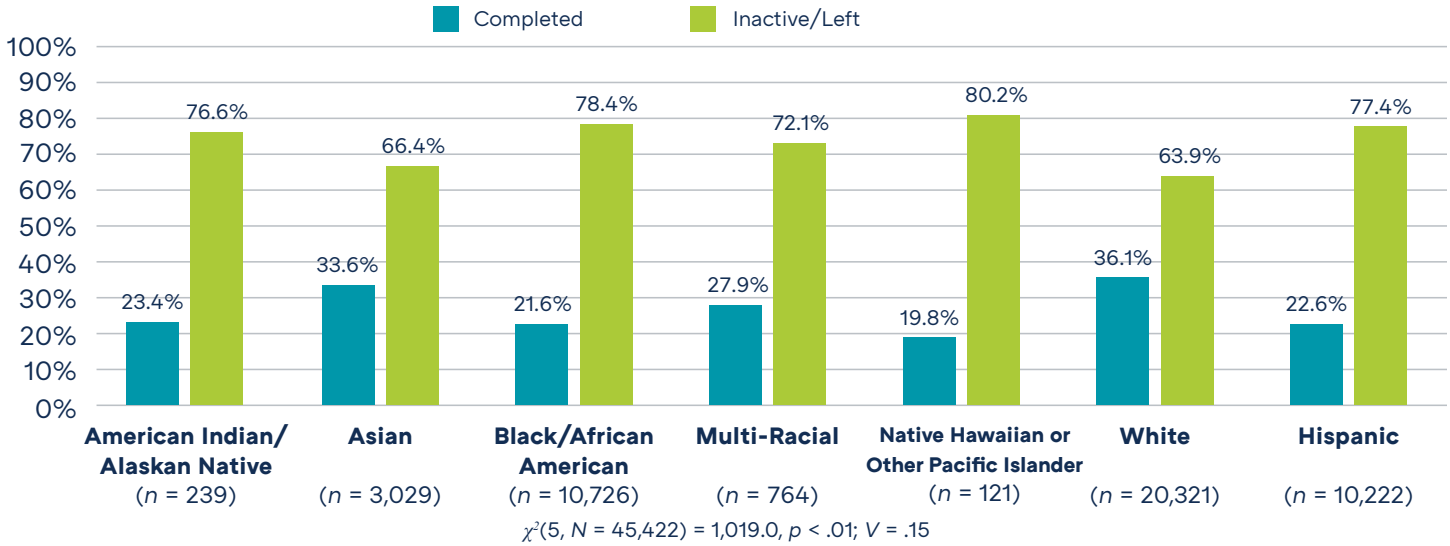
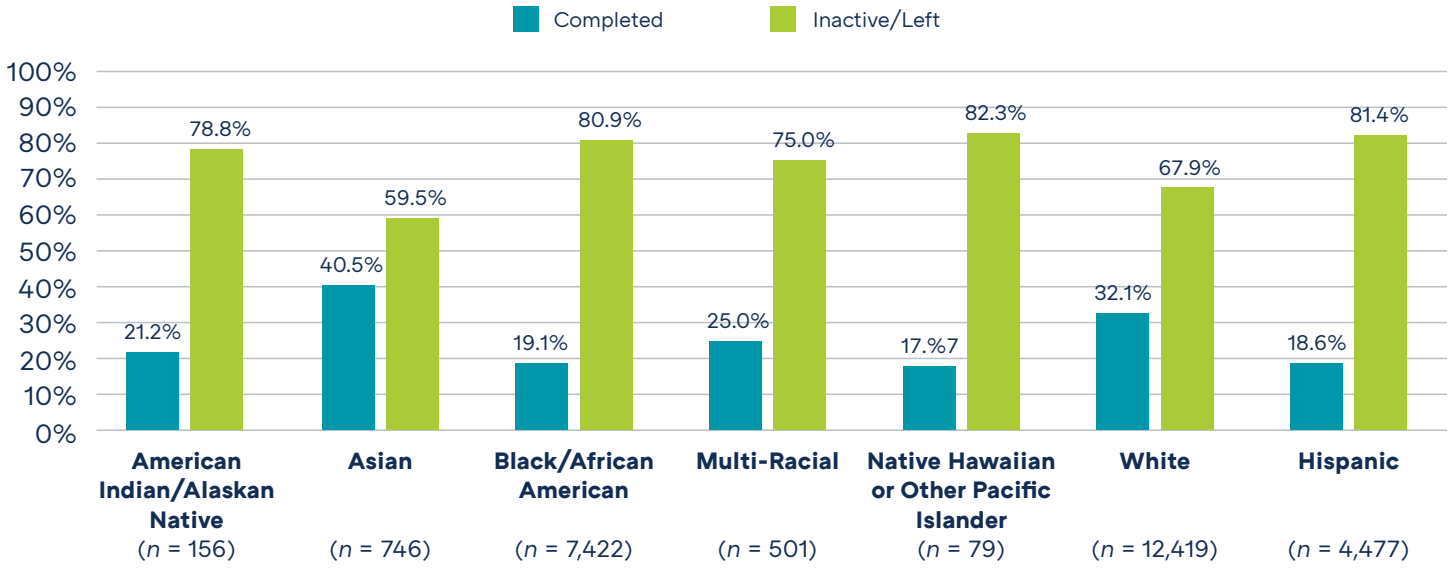
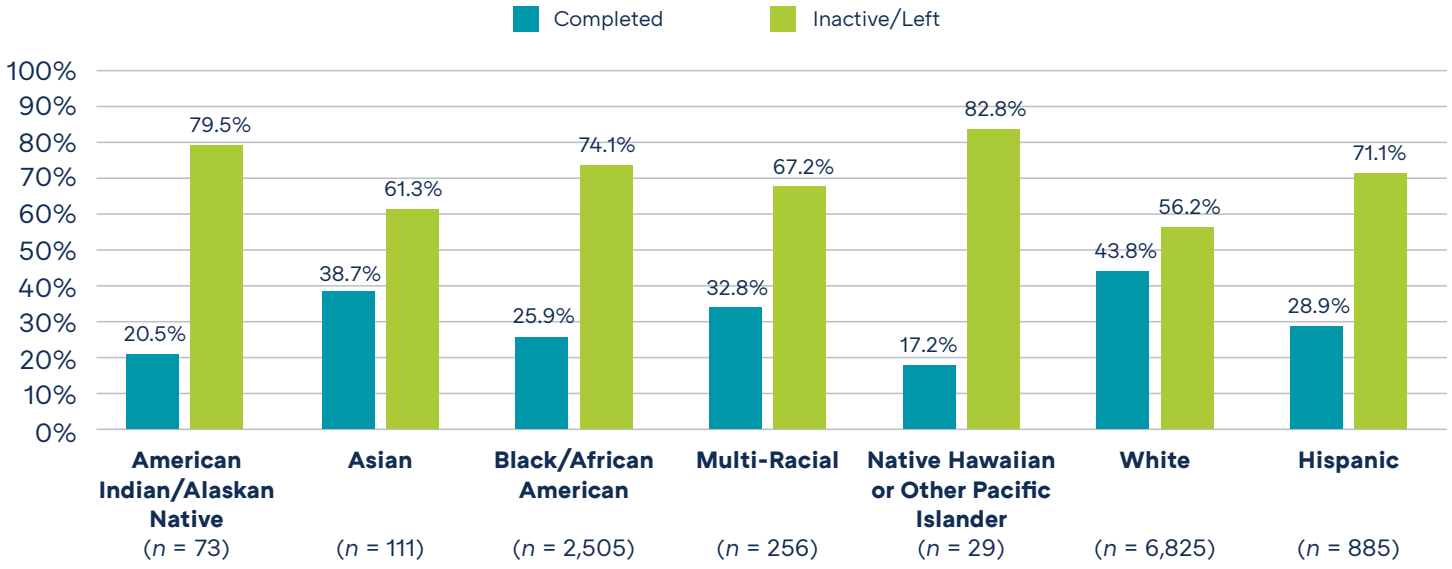


FIGURE 6. Adult Basic Education Completed Courses vs. Inactive/Left Status by Race



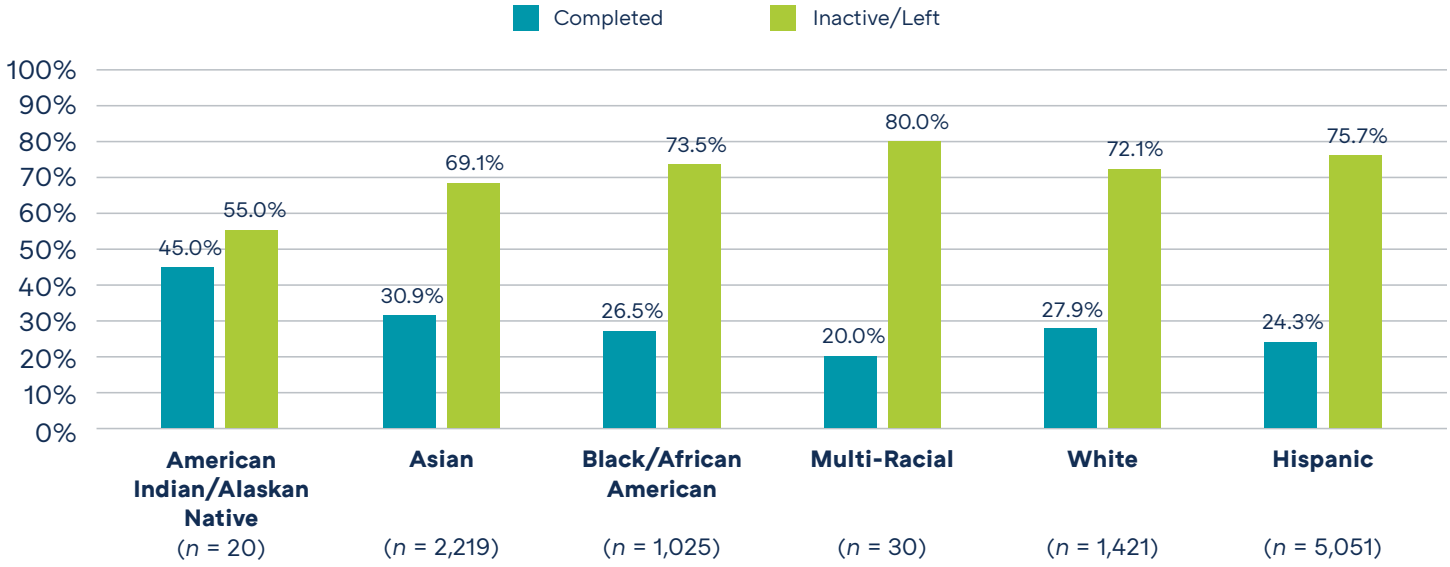
$\chi^2(6, N = 25{,}800) = 640.5, p < .01; V = .16$

FIGURE 7. Adult Secondary Education Completed Courses vs. Inactive/Left Status by Race



$\chi^2(6, N = 10{,}684) = 304.2, p < .01; V = .17$

FIGURE 8. English Learners Completed Courses vs. Inactive/Left Status by Race



$\chi^2(6, N = 9{,}784) = 39.8, p < .01; V = .06$

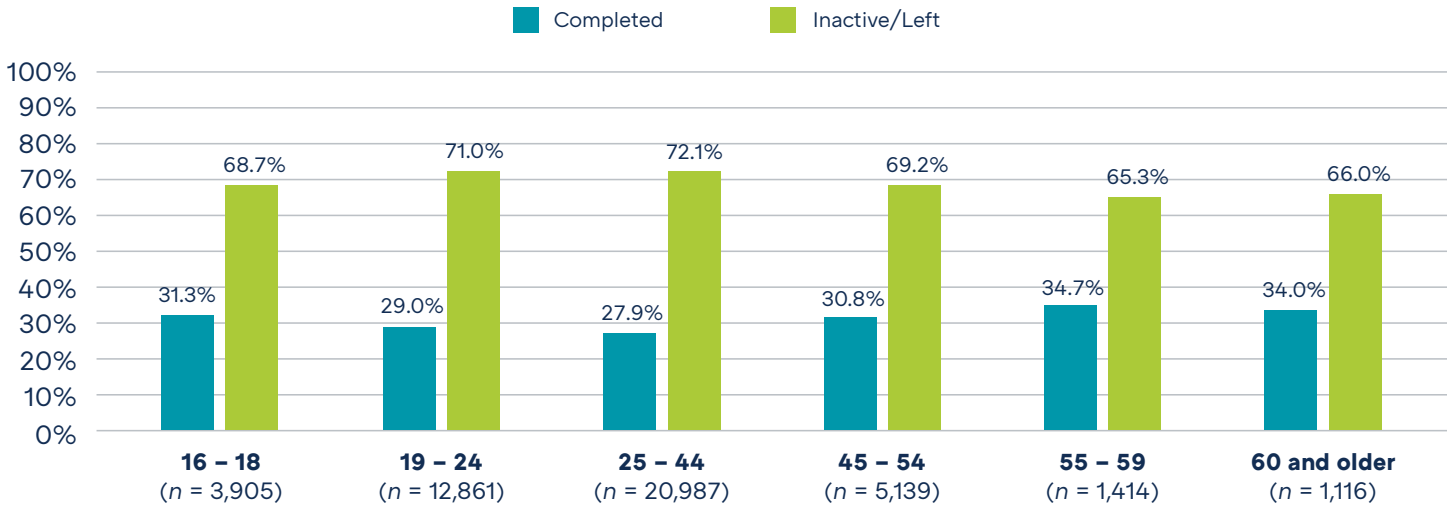
NOTE: Native Hawaiian/Other Pacific Islander students were excluded from this figure due to a small sample size ($n < 20$).

Differences in Completed Adult Education Courses by Age

Differences in overall course completion were evident for age (χ^2 (5, N = 45,422) = 63.1, $p < .01$), though the effect was minimal ($V = .04$), as indicated in Figure 9. The highest percentage of completion was reported among students between the ages of 55 – 59-years-old (34.7%), followed by students 60 years of age and older (34.0%). Among students 16 – 18-years-old, 31.3% completed at least one adult education course. Completion rates were comparable among 45 – 54-year-old students (30.8%), 19 – 24-year-old students (29.0%) and 25 – 44-year-old students (27.9%).

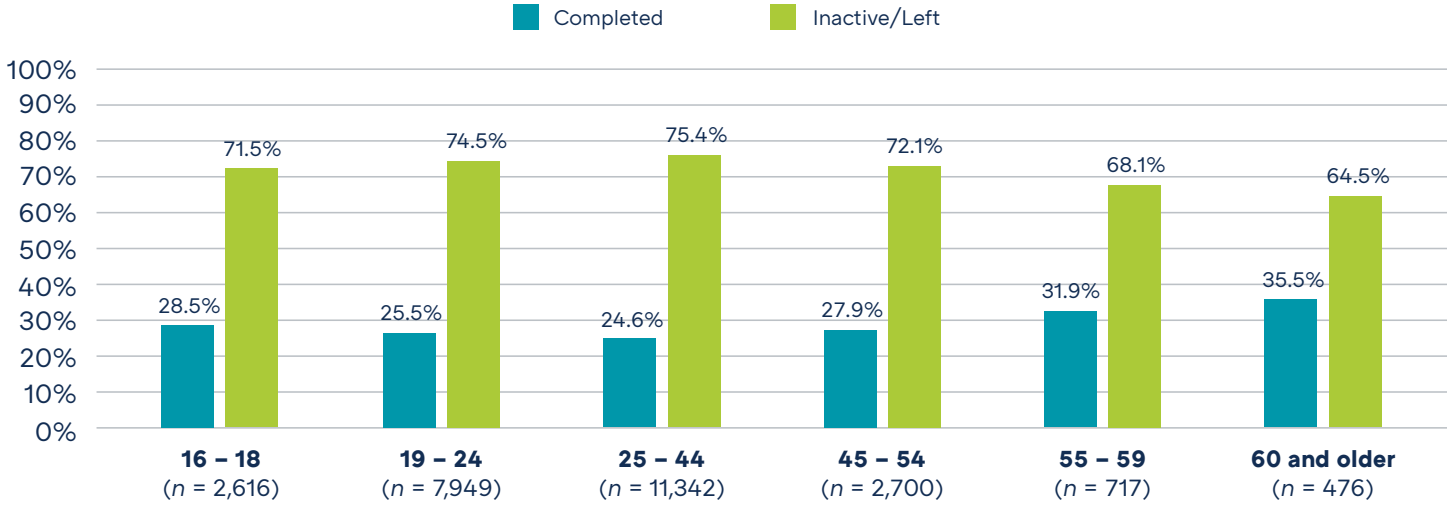
Age differences in course completion were also examined across program type. Results indicate there were significant differences in ABE ($\chi^2(5, N = 25{,}800) = 61.5, p < .01$) and ASE ($\chi^2(5, N = 10{,}684) = 45.4, p < .01$) course completion by age. As shown in Figure 10, for students enrolled in ABE, rates of completion were highest among students 60 years of age and older, followed by 55 – 59-year-old students, 16 – 18-year-old students, 45 – 54-year-old students, 19 – 24-year-old students and 25 – 44-year-old students. While there were age differences in course completion among students enrolled in ABE courses, the effect was very small ($V = .05$). Across all age groups, rates of completion were higher among ASE students than ABE students overall. Like students in ABE courses, rates of completion were highest among ASE students 60 years of age and older (51.3%), followed by students between the ages of 55 – 59-years-old (50.8%). In fact, these were the only two age groups in which the number of students to complete courses exceeded the number of students with inactive/left status. ASE students between 19 – 24-years-old and 25 – 44-years-old had the lowest levels of course completion, 36.5% and 36.7%, respectively (refer to Figure 11). Despite the differences in ASE course completion by age, the effect was small ($V = .07$). As indicated in Figure 12, no significant differences were found in ESL course completion by age. Course completion ranged from 22.6% among 16 – 18-year-olds to 27.7% among 45 – 54-year-olds.

FIGURE 9. Adult Education Completed Courses vs. Inactive/Left Status by Age



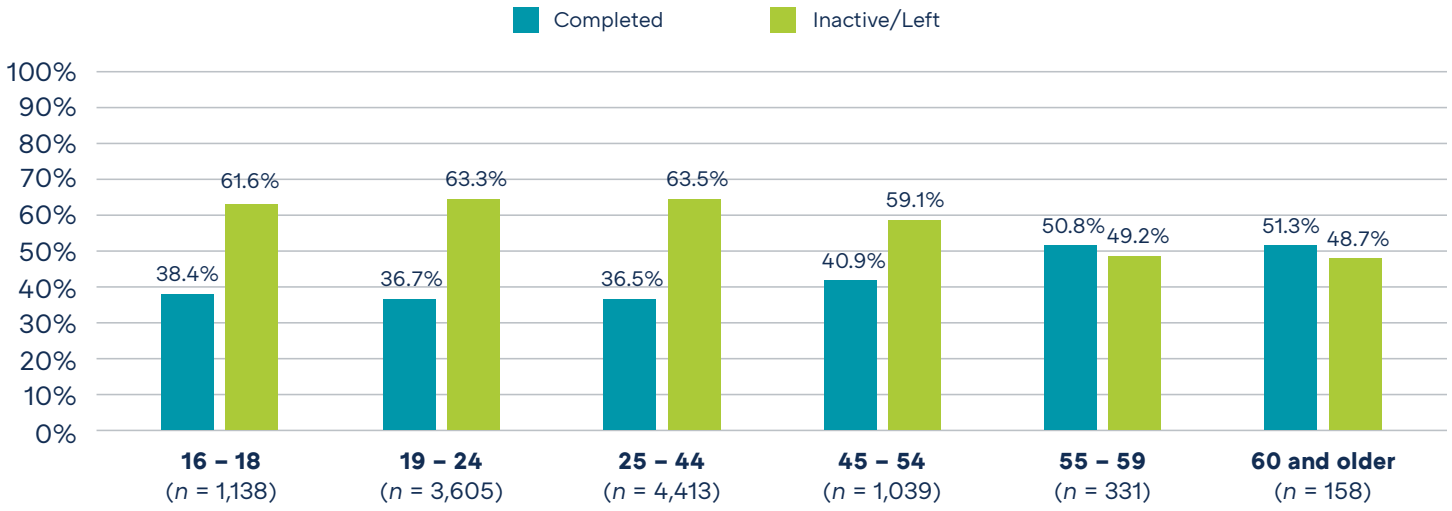
$\chi^2(5, N = 45{,}422) = 63.1, p < .01; V = .04$

FIGURE 10. Adult Basic Education Completed Courses vs. Inactive/Left Status by Age



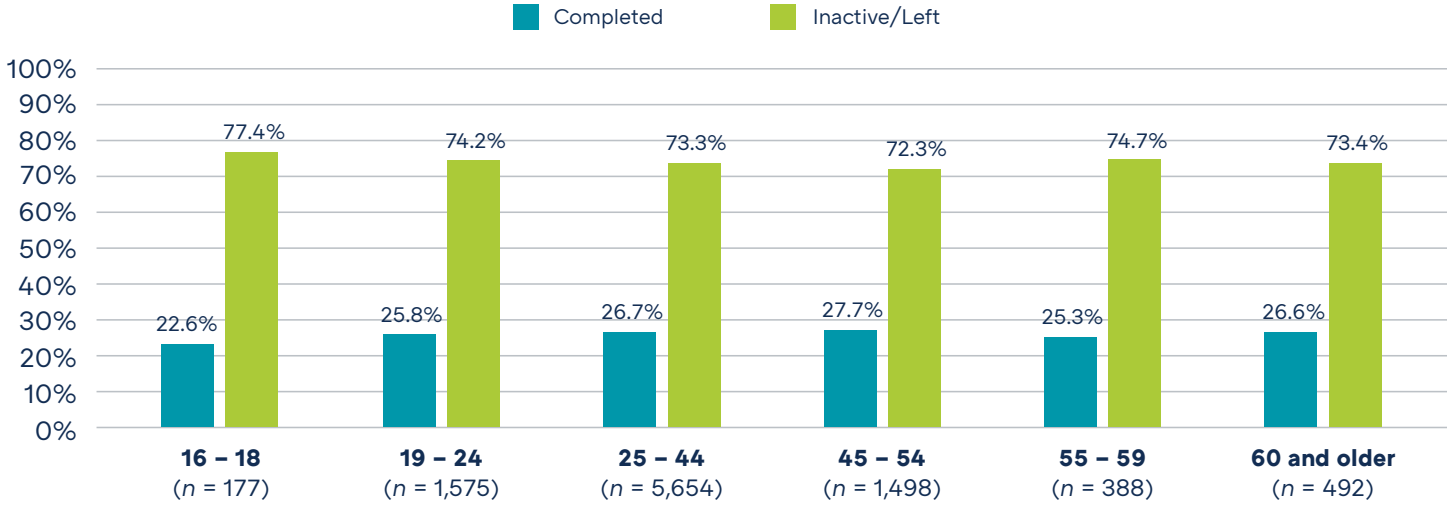
$\chi^2(5, N = 25{,}800) = 61.5, p < .01; V = .05$

FIGURE 11. Adult Secondary Education Completed Courses vs. Inactive/Left Status by Age



$\chi^2(5, N = 10{,}684) = 45.4, p < .01; V = .07$

FIGURE 12. English Learners Courses Completed vs. Inactive/Left Status by Age



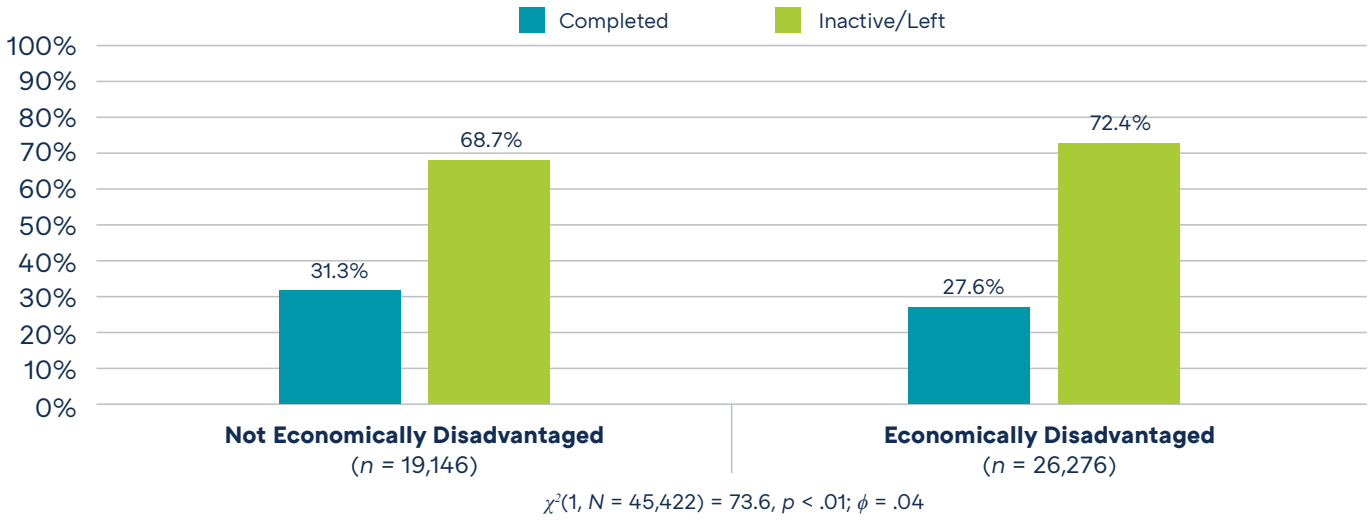
$\chi^2(5, N = 9{,}784) = 3.3, p = .66; V = .02$

Differences in Completed Adult Education Courses by Economic Status

Chi-square tests indicate there was a significant, yet very small effect, for economic status ($\chi^2(1, N = 45{,}422) = 73.6$, $p < .01$; $\phi = .04$). Specifically, Figure 13 shows a slightly lower percentage of students who identified as economically disadvantaged completed courses (27.6%), compared to students who were not economically disadvantaged (31.3%).

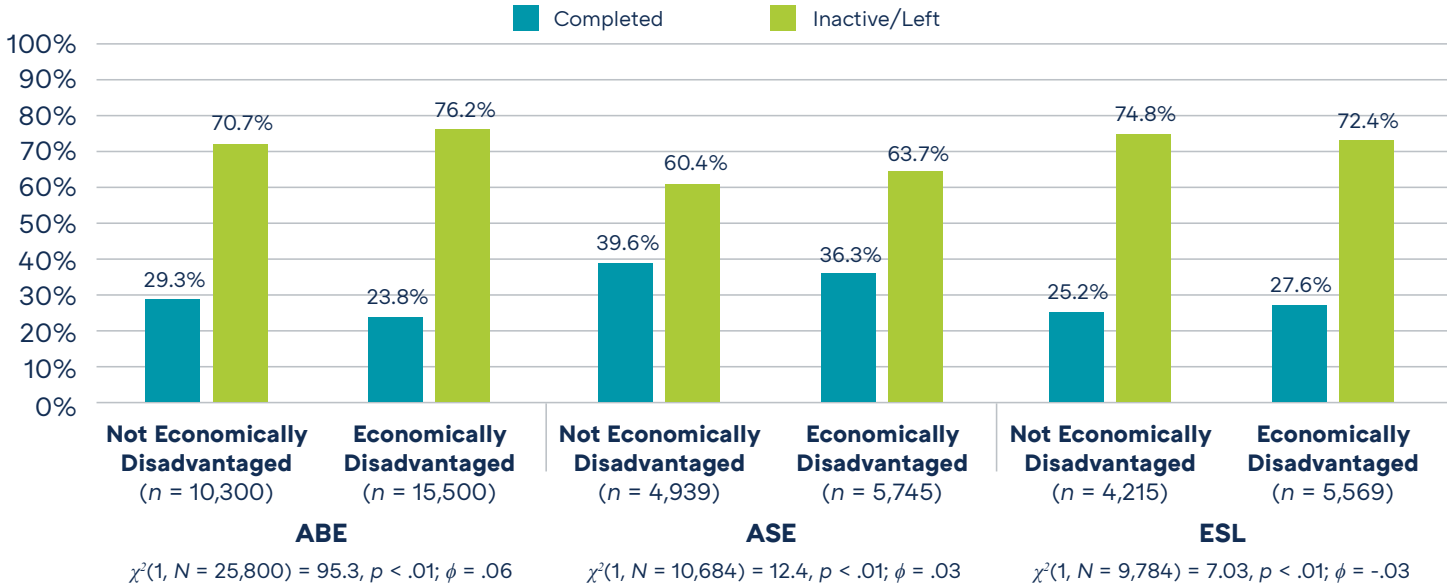
As indicated in Figure 14, slight differences were found in course completion rates by economic status across all programs, but the effects were small ranging from .03 to .06. Approximately 24% of students who experienced economic disadvantage completed ABE courses, compared to a slightly higher percentage of students who did not experience economic disadvantage (29.3%). Similarly, slightly higher rates of completion were reported for ASE students who did not experience economic disadvantage (39.6%), compared to just over 36% of ASE students who did experience economic disadvantage. While there were also slight differences in course completion among ESL students, individuals who experienced economic disadvantage had slightly higher rates of course completion (27.6%) compared to students who did not experience economic disadvantage (25.2%).

FIGURE 13. Adult Education Completed Courses vs. Inactive/Left Status by Economic Status



$\chi^2(1, N = 45{,}422) = 73.6$, $p < .01$; $\phi = .04$

FIGURE 14. Adult Education Completed Courses vs. Inactive/Left Status by Economic Status



$\chi^2(1, N = 25{,}800) = 95.3$, $p < .01$; $\phi = .06$ | $\chi^2(1, N = 10{,}684) = 12.4$, $p < .01$; $\phi = .03$ | $\chi^2(1, N = 9{,}784) = 7.03$, $p < .01$; $\phi = -.03$

Differences in Completed Adult Education Courses by Area

As Figure 15 shows, adult education course completion rates were significantly higher among rural students than urban students ($\chi^2(1, N = 45{,}422) = 545.2$, $p < .01$), however, the effect was small ($\phi = .11$). Close to 36% of rural students completed adult education courses compared to 25.2% of students from urban communities.

Students from rural communities completed ABE and ASE courses at a higher rate than students from urban communities.

Rates of ABE, ASE and ESL course completion were also examined among rural and urban students, as indicated in Figure 16. Significant differences between rural and urban students were found across all programs. Students from rural communities completed ABE and ASE courses at a higher rate than students from urban communities. Though there was a clear disparity in ABE and ASE course completion between rural and urban students, the effect of area was small, $\phi = .11$ and $\phi = .16$, respectively. Unlike the pattern among ABE and ASE students, the proportion of students from urban communities who completed ESL courses exceeded the proportion of rural students who completed courses. Among students enrolled in ESL courses, 27.3% of students from urban communities completed courses, while only 21.7% of students from rural communities completed their courses, $\chi^2(1, N = 9{,}784) = 18.3$, $p < .01$. Though there was a significant difference between these groups, the overall effect was very small ($\phi = -.04$).

FIGURE 15. Adult Education Completed Courses vs. Inactive/Left Status by Area

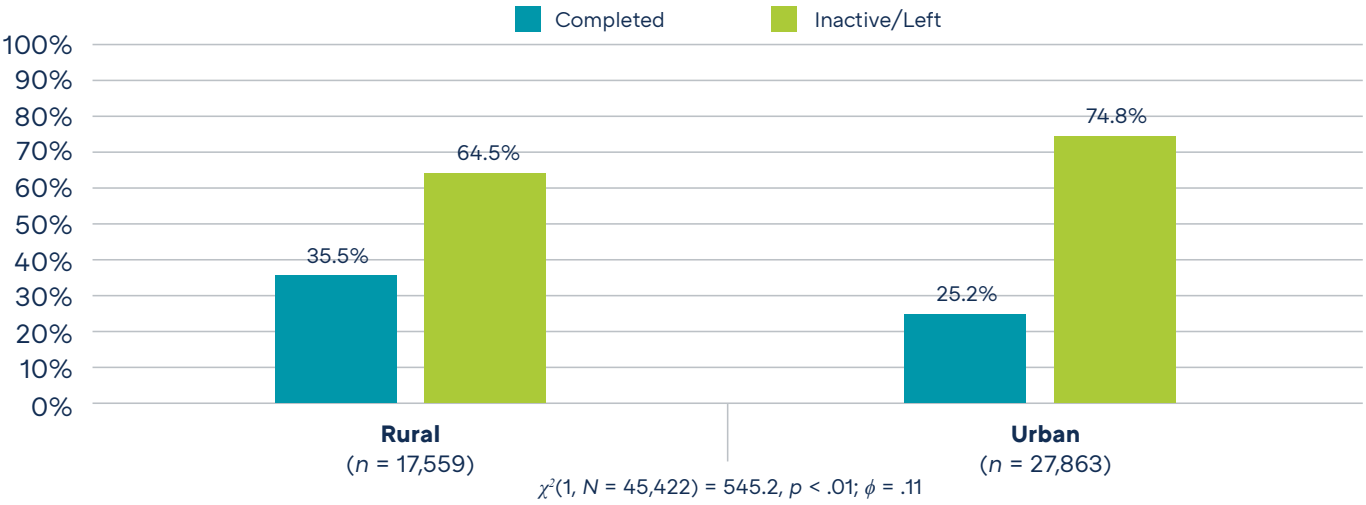
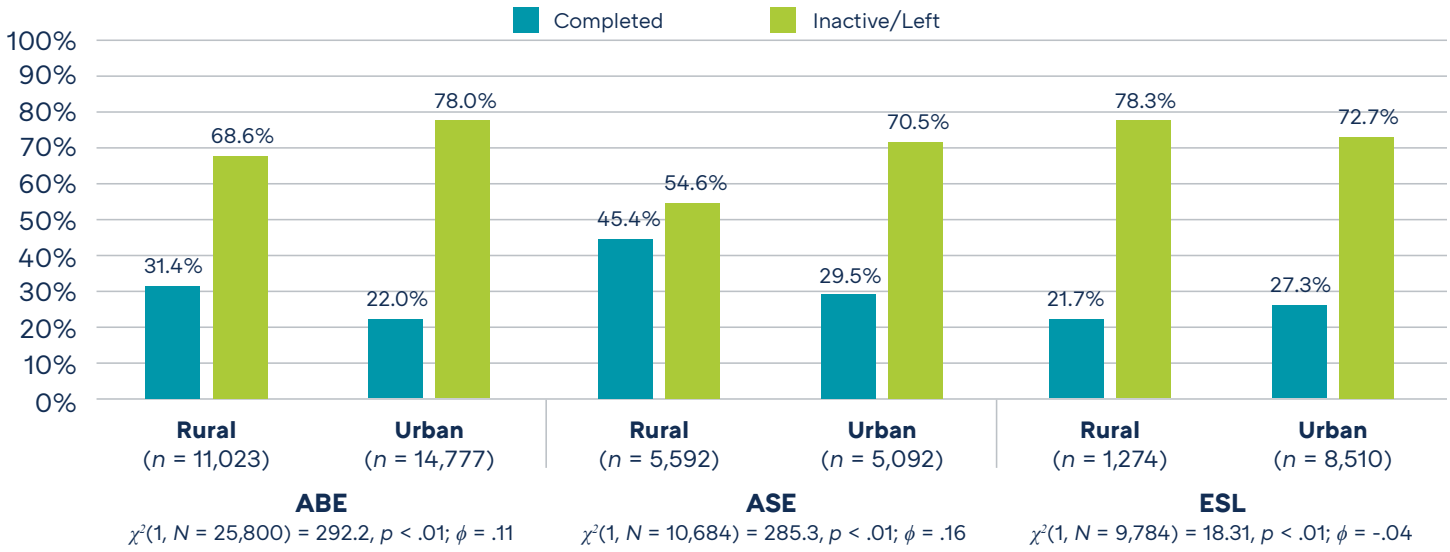


FIGURE 16. Adult Education Completed Courses vs. Inactive/Left Status by Area



Differences in Completed Adult Education Courses by Previous Schooling Type

Figure 17 shows the completion rates between students who attended non-U.S. based schools and those who did not. Although students who attended U.S. schools completed adult education courses at a slightly higher rate (29.6%) than students who attended schools outside of the country (28.0%), the effect was minimal (ϕ = -.02).

Analysis of differences in program completion based on schooling differences showed slight differences in favor of international schooling for ABE (28.6% vs. 25.7%) and ESL programs (27.0% vs. 22.6%), and no difference for ASE programs. As Figure 18 shows, however, the differences for ABE and ESL programs were small with minimal effects (ϕ = .02 and ϕ = .03). Completion rates among ASE students who attended non-U.S. based schools and U.S. based schools were comparable, regardless of their schooling status (37.0% and 37.9%, respectively).

FIGURE 17. Adult Education Completed Courses vs. Inactive/Left Status by Previous Schooling Type

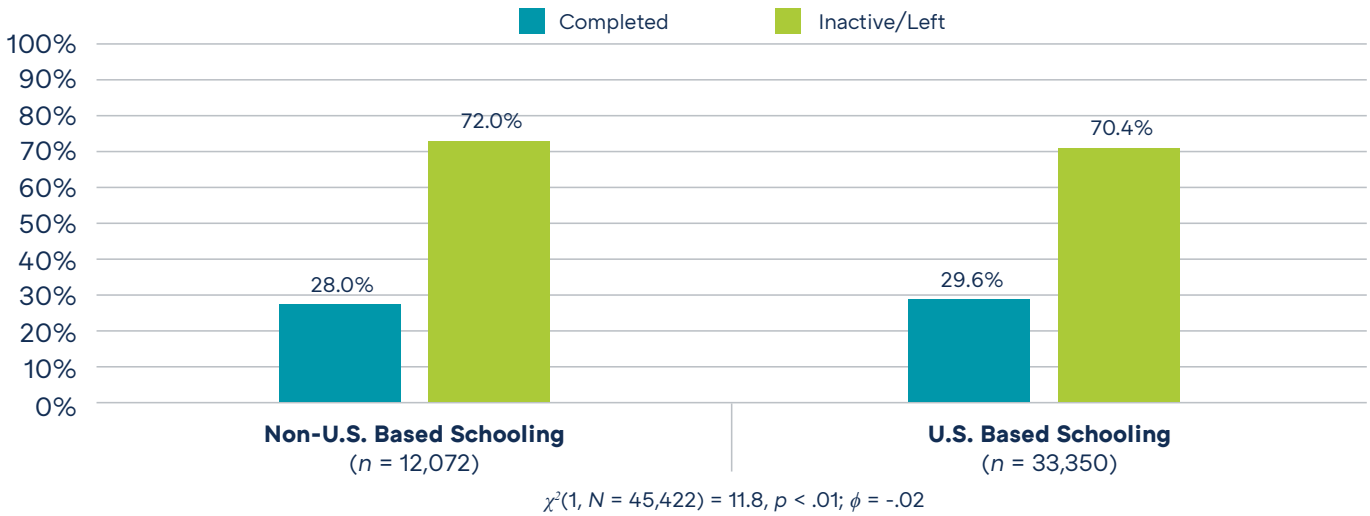
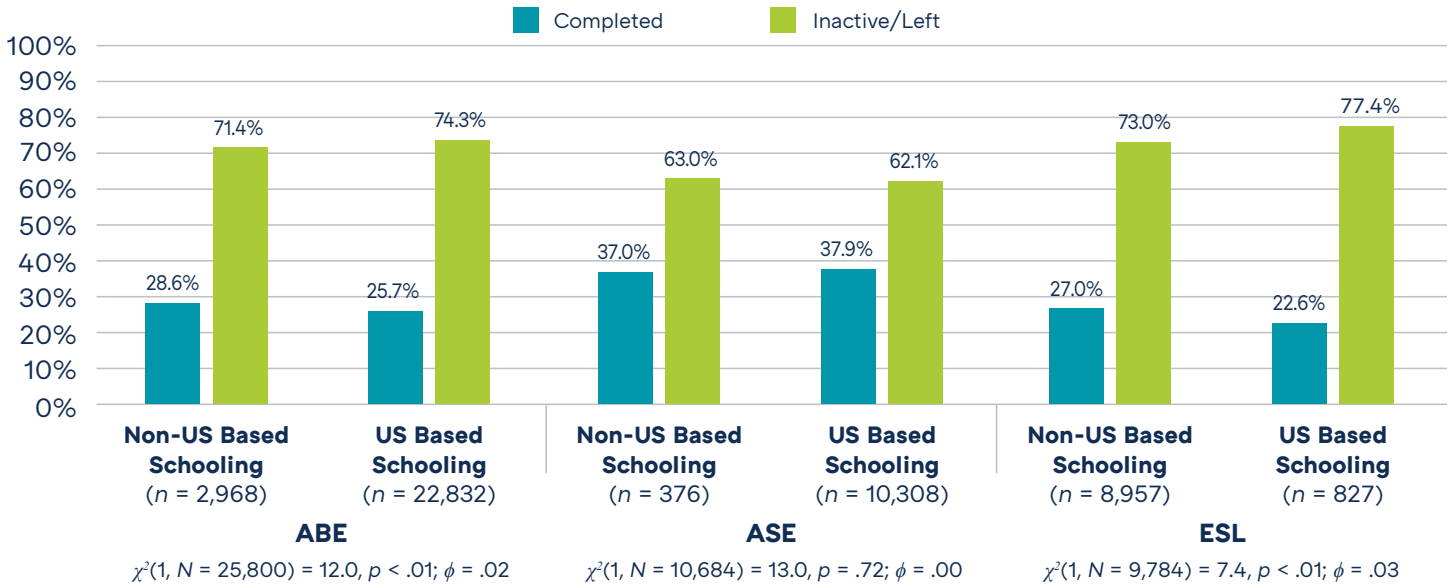


FIGURE 18. Adult Education Completed Courses vs. Inactive/Left Status by Previous Schooling Type



$\chi^2(1, N = 25{,}800) = 12.0, p < .01; \phi = .02$

$\chi^2(1, N = 10{,}684) = 13.0, p = .72; \phi = .00$

$\chi^2(1, N = 9{,}784) = 7.4, p < .01; \phi = .03$

Differences in Completed Adult Education Courses by Highest Grade Completed

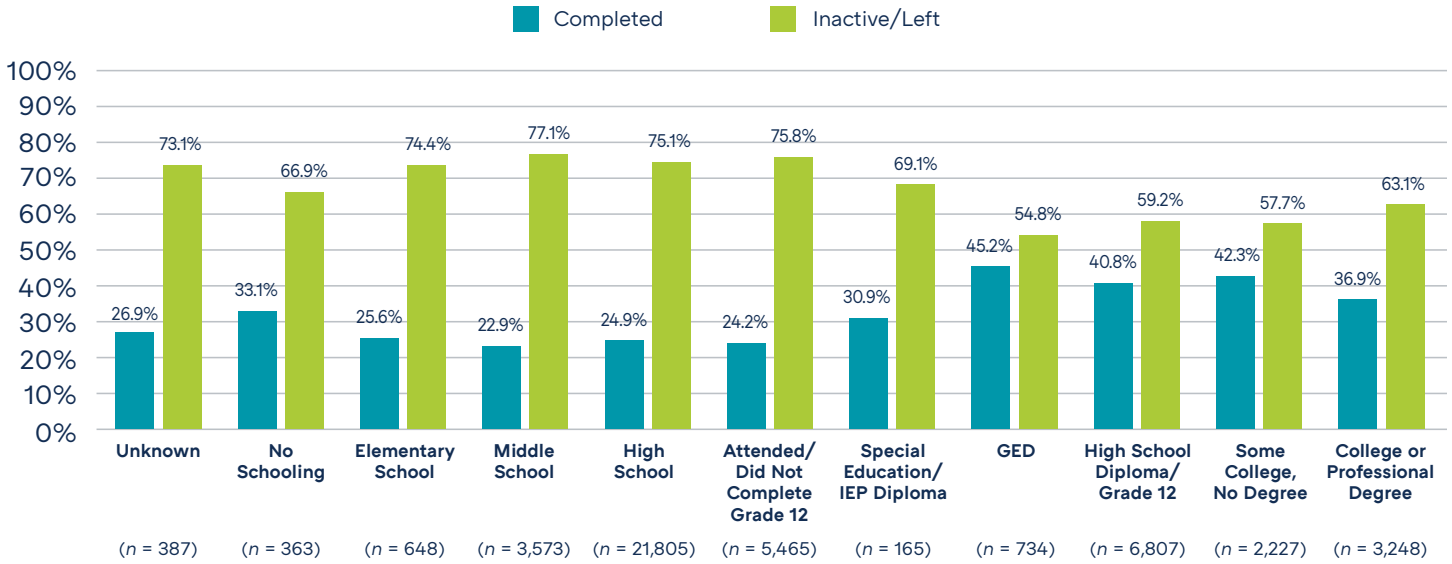
Tests to assess differences in course completion by highest grade completed indicate significant differences, but a small effect ($\chi^2(10, N = 42{,}000) = 1{,}087.9$, $p < .01$; $V = .16$). Figure 19 shows that rates of course completion were highest among students with a GED (45.2%), students who attended some college, but did not receive a degree (42.3%), and students who held a high school diploma and completed Grade 12 (40.8%). The lowest rates of course completion were found among students whose highest grade completed was in middle school (22.9%), students who attended high school but did not complete Grade 12 (24.2%) and students who attended 9th–11th grades in high school (24.9%).

Figures 20 – 22 show course completion rates for each program type by highest grade completed. Among students enrolled in ABE courses, there were significant differences based on a student's highest grade completed, $\chi^2(10, N = 25{,}800) = 842.3$, $p < .01$. Students with a college or professional degree (46.1%), high school diploma/Grade 12 (43.0%) and students with a GED (41.9%) reported the highest number of completed adult education courses. Conversely, students who completed middle school (19.9%), elementary school (20.9%) and students who attended, but did not complete Grade 12 (22.0%) reported the lowest levels of ABE completion. Despite course completion differences between groups, the effect was small ($V = .18$).

Among students in ASE courses, there were significant differences in course completion based on highest grade completed ($\chi^2(10, N = 10{,}684) = 1{,}023.8$, $p < .01$). Rates of course completion were highest among students who attended some college, but did not attain a degree (65.1%), students who received a high school diploma/completed Grade 12 (64.2%), and students who had a GED (61.4%). The lowest rates of ASE course completion were among students who received no schooling (16.7%), students who completed middle school (25.7%), and students who attended high school (29.2%). The effect of highest grade completed for ASE course completion was moderate ($V = .31$). Significant differences in course completion were also found among ESL students based on different levels of educational attainment ($\chi^2(10, N = 9{,}784) = 30.2$, $p < .01$). The highest levels of ESL course completion were among students who completed no schooling (33.8%), students who earned a special education/IEP diploma (32.1%) and students who attended some college but did not earn a degree (29.8%). The lowest rates of ESL course completion were among students who had a GED (21.6%), students who attended, but did not complete Grade 12 (23.9%) and students who attended high school (23.9%). Despite the significant difference in course completion between groups, the effect for highest grade completed was very small ($V = .06$). It should be noted that the proportion of students who completed ESL courses was lower compared to rates of completion among ABE and ASE students. Additionally, the effect of highest grade completed on adult education course completion was substantially higher for students in ASE ($V = .31$) compared to ABE ($V = .18$) and ESL ($V = .06$).

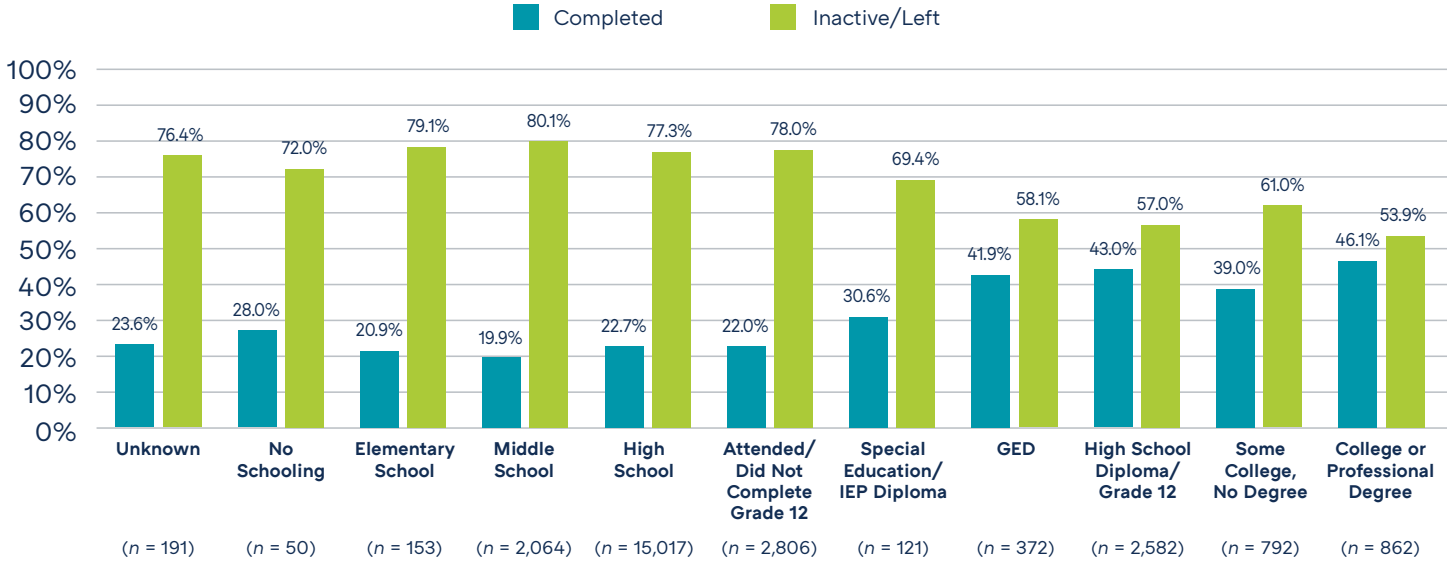
Rates of course completion were highest among students who attended some college, but did not attain a degree (65.1%), students who received a high school diploma/completed Grade 12 (64.2%), and students who had a GED (61.4%).

FIGURE 19. Adult Education Completed Courses vs. Inactive/Left Status by Highest Grade Completed



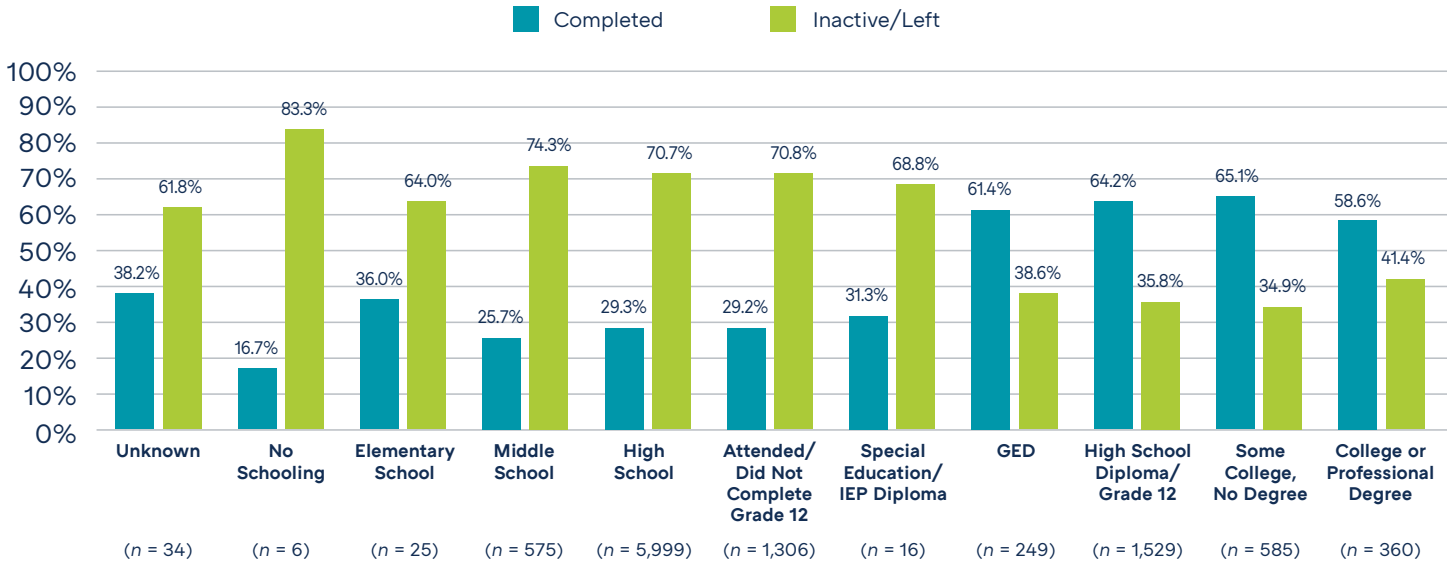
$\chi^2(10, N = 42{,}000) = 1{,}087.9, p < .01; V = .16$

FIGURE 20. Adult Basic Education Completed Courses vs. Inactive/Left Status by Highest Grade Completed



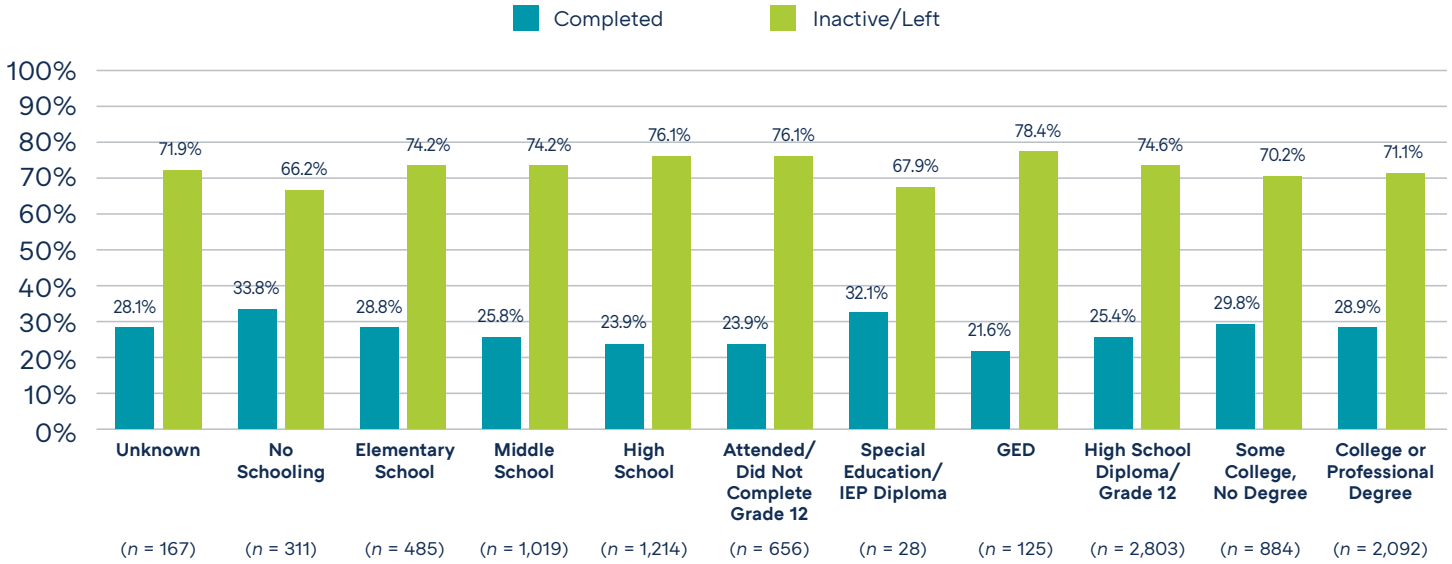
$\chi^2(10, N = 25{,}800) = 842.3, p < .01; V = .18$

FIGURE 21. Adult Secondary Education Completed Courses vs. Inactive/Left Status by Highest Grade Completed



$\chi^2(10, N = 10{,}684) = 1{,}023.8, p < .01; V = .31$

FIGURE 22. English Learners Completed Courses vs. Inactive/Left Status by Highest Grade Completed



$\chi^2(10, N = 9{,}784) = 30.2, p < .01; V = .06$

Research Question 3:
What percentage of adult education students report EFL gains, high school equivalency and postsecondary enrollment after completing adult education courses? Are there differences in these outcomes among sub-groups of adult education students?

Adult Education Engagement and Performance and Post-Study Outcomes

In addition to course completion, this research also examined EFL gains, high school equivalency and postsecondary enrollment as primary study outcomes. Descriptive statistics are provided across all adult education students, program types and cohorts in Figure 23.

EFL Gains

Among the 85,732 students with data available, only 46, 921 (54.7%) reported EFL data. Among those students with EFL data, 71.3% of them reported EFL gains. The remaining analysis discussed in this section focused only on students who completed at least one adult education course. As shown in Table 4, among students who completed at least one adult education course, 73.4% of students demonstrated EFL gains. Across programs, students in ABE courses had the highest proportion of students with EFL gains (75.9%), compared to 67.7% of students enrolled in ASE courses and 72.5% of students enrolled in ESL courses. Table 5 shows the proportion of students to demonstrate EFL gains was consistent across cohorts, ranging from 71.8% (cohort 1) to 74.0% (cohort 4).

High School Equivalency

Among the 57,968 students whose highest level of education was less than a high school diploma or GED when they entered adult education programs, 19% earned a high school equivalency credential during the period studied. It must be stressed that this figure includes an overwhelming majority of students who did not take a high school equivalency test. However, among students who had an explicit goal of achieving a high school equivalency and actually completed a full battery of tests, the rate of high school equivalency attainment between 2012/2013 through 2015/2016 ranged from 77.61% - 87.79%. The remaining analysis discussed in this section focused only on students who completed at least one adult education course. Among students whose highest education completed was less than a high school diploma, 35.0% of adult education students earned a high school equivalency. Table 4 shows the proportion of ABE and ASE students who earned a high school equivalency was comparable, 42.3% and 45.1% respectively. Although a small proportion of ESL

Although a small proportion of ESL students were reported to have obtained a high school equivalency (0.4%), a much higher proportion of these students entered adult education courses with a high school diploma or its equivalent.

students were reported to have obtained a high school equivalency (0.4%), a much higher proportion of these students entered adult education courses with a high school diploma or its equivalent. There were differences in high school equivalency across cohorts. Cohort 1 and Cohort 2 had the highest proportion of students to earn a high school equivalency, 45.1% and 38.9% respectively. Table 5 indicates a much smaller proportion of students earned a high school equivalency in Cohort 3 (19.6%) and Cohort 4 (20.9%).

Postsecondary Enrollment

Among the 76,942 adult education students without a college degree, 5.6% of the students entered postsecondary after their enrollment in adult education courses within a year. The remaining analysis discussed in this section focused only on students who completed at least one adult education course. Among adult education students in Pennsylvania enrollment in postsecondary institutions was low. Among students who had never enrolled in a postsecondary institution, only 12.1% of students enrolled in postsecondary institutions. Among adult education programs, ASE students had the highest rate of postsecondary enrollment (17.0%). Only 5.6% of ESL students later enrolled in postsecondary. A much higher percentage of ESL students had previously enrolled in postsecondary prior to beginning adult education courses, which may explain why the proportion of ESL students to enter postsecondary institutions was much lower compared to ABE and ASE students. Rates of postsecondary enrollment were similar across cohorts. The proportion of students to enroll in postsecondary ranged from 11.0% (Cohort 3) to 12.9% (Cohort 4).

FIGURE 23. EFL Gains, High School Equivalency and Postsecondary Enrollment Percentages by Program

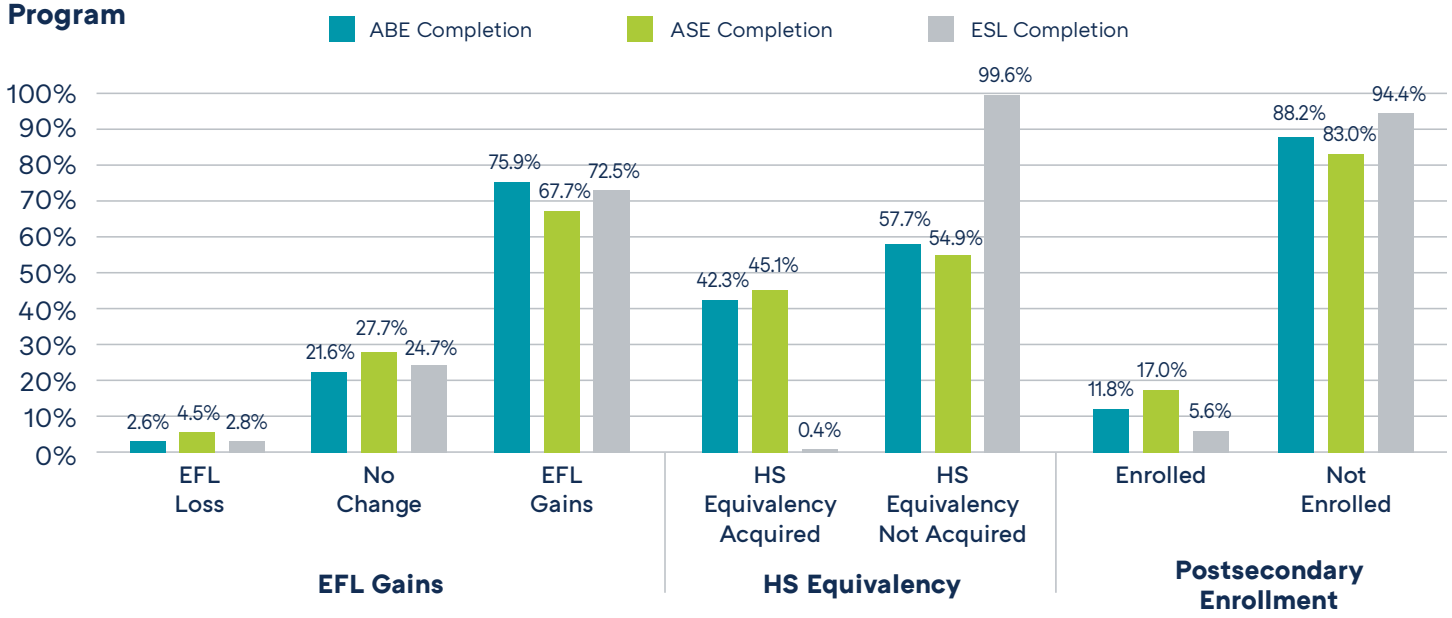


TABLE 4. EFL Gains, High School Equivalency and Postsecondary Enrollment Percentages by Program

	Overall	ABE	ASE	ESL
	% (*n*)	% (*n*)	% (*n*)	% (*n*)
EFL Gains				
Gains	73.4 (7,785)	75.9 (3,984)	67.7 (2,161)	72.5 (1,637)
No Gains	26.6 (2,819)	24.2 (1,266)	32.2 (1,029)	27.5 (621)
High School Equivalency				
Yes	35.0 (4,648)	42.3 (2,842)	45.1 (1,824)	0.4 (11)
No	65.0 (8,615)	57.7 (3,871)	54.9 (2,219)	99.6 (2,592)
Postsecondary Enrollment				
Yes	12.1(1,599)	11.8 (792)	17.0 (686)	5.6 (147)
No	87.9 (11,664)	88.2 (5,921)	83.0 (3,357)	94.4 (2,456)

NOTE: Analysis only includes students who completed at least one course.

TABLE 5. EFL Gains, High School Equivalency and Postsecondary Enrollment Percentages by Cohort

	Overall	Cohort 1 (2012)	Cohort 2 (2013)	Cohort 3 (2014)	Cohort 4 (2015)
	% (*n*)	% (*n*)	% (*n*)	% (*n*)	% (*n*)
Postsecondary Enrollment					
Yes	12.1(1,599)	12.0 (622)	12.3 (451)	11.0 (269)	12.9 (257)
No	87.9 (11,664)	88.0 (4,554)	87.7 (3,201)	89.0 (2,180)	87.1 (1,729)
High School Equivalency					
Yes	35.0 (4,648)	45.1 (2,333)	38.9 (1,419)	19.6 (480)	20.9 (416)
No	65.0 (8,615)	54.9 (2,843)	61.1 (2,233)	80.4 (1,969)	79.1 (1,570)
EFL Gains					
EFL Loss	3.2 (338)	3.8 (160)	2.6 (73)	3.5 (69)	2.4 (36)
No Change	24.1 (2,560)	24.5 (1,043)	24.4 (696)	23.4 (459)	23.7 (362)
EFL Gains	72.7 (7,706)	71.8 (3,061)	73.0 (2,082)	73.1 (1,433)	74.0 (1,130)

NOTE: Analysis only includes students who completed at least one course.

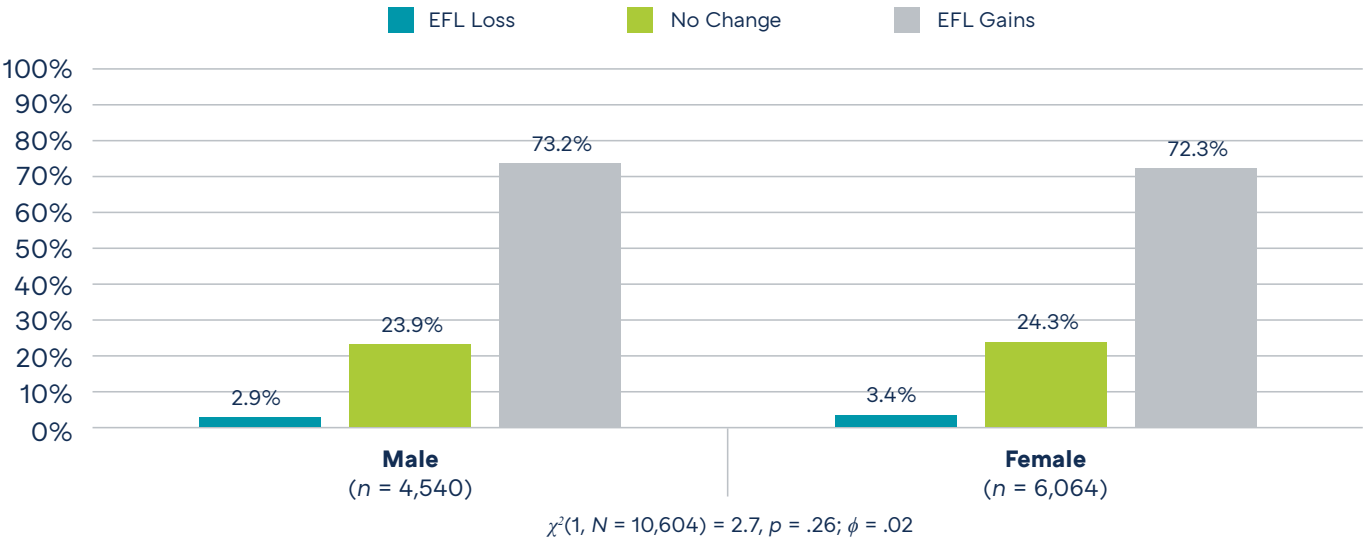
Assessment of Demographic Differences in Adult Education Outcomes

Chi-square tests were conducted to determine if there were differences in EFL gains, high school equivalency and postsecondary enrollment by gender, race, age, economic status, area, previous schooling type and highest grade completed.

Differences in EFL Gains Across Demographic Characteristics

Analyses showed there were no significant differences in EFL gains between male and female students. Figure 24 shows that 73.2% of males and 72.3% of females had EFL gains. Approximately 3% of males and females had EFL losses, while roughly 24% of males and females remained the same.

FIGURE 24. Adult Education Student EFL Gains by Gender

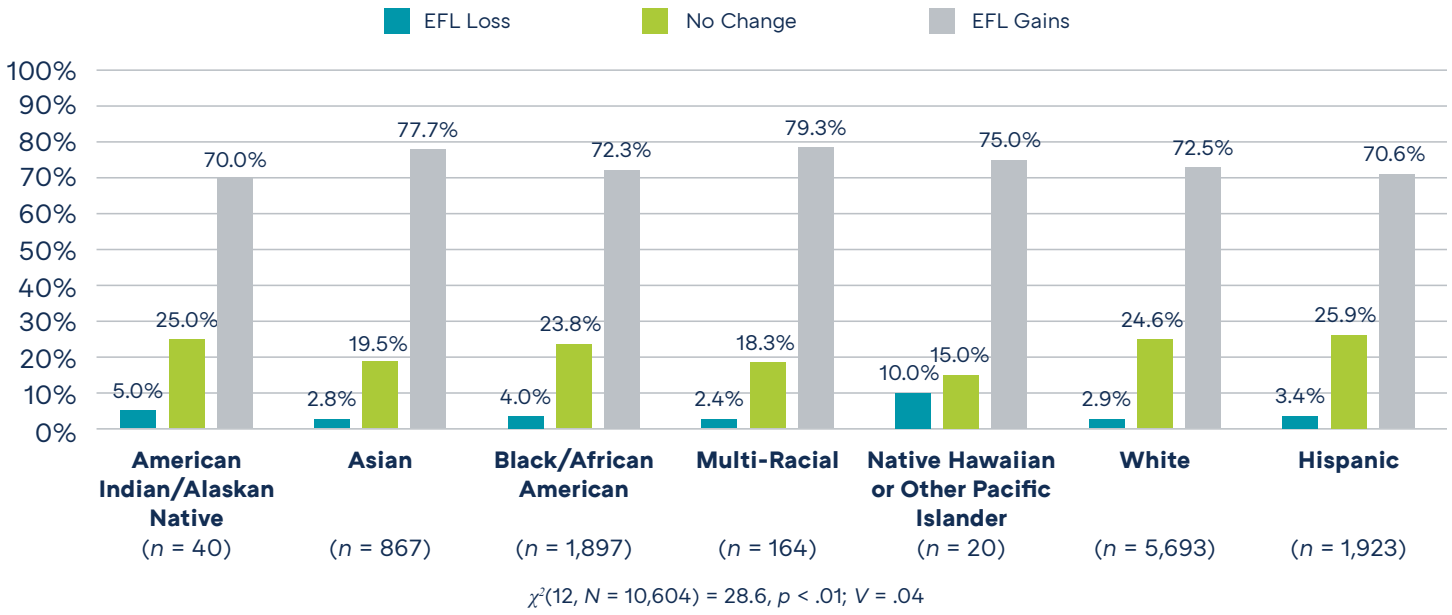


$\chi^2(1, N = 10{,}604) = 2.7, p = .26; \phi = .02$

Analysis of racial differences in EFL gains showed small, but significant differences between racial groups, $\chi^2(12, N = 10{,}604) = 28.6, p < .01$. Figure 25 shows the highest proportion of EFL gains were found among multiracial (79.3%) and Asian (77.7%) students. Rates of EFL gains were comparable across other racial groups, ranging from 70.0% for American Indian/Alaskan Native students to 75.0% for Native Hawaiian/Pacific Islander students. Though the differences were large enough to be statistically significant, the effect of race was very small ($V = .04$).

Analyses showed there were no significant differences in EFL gains between male and female students. Figure 24 shows that 73.2% of males and 72.3% of females had EFL gains.

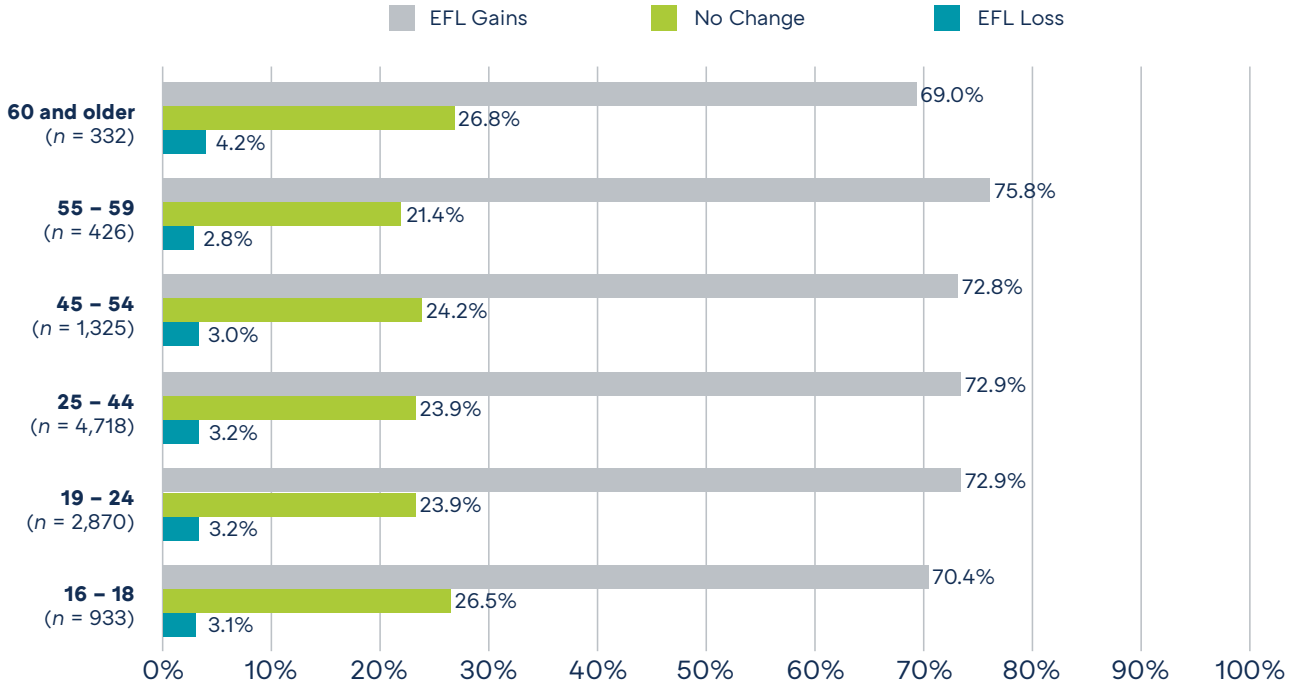
FIGURE 25. Adult Education Student EFL Gains by Race



$\chi^2(12, N = 10{,}604) = 28.6, p < .01; V = .04$

There were no significant differences between students based on age. Figure 26 shows the highest proportion of students to demonstrate EFL gains were between 55 and 59 years old (75.8%). Between 70.4% and 72.9% of students in age categories 16 – 18-years-old, 45 – 54-years-old, 19 – 24-years-old and 25 – 44-years-old had EFL gains. Students 60 years of age and older had the smallest proportion of students with EFL gains (69.0%).

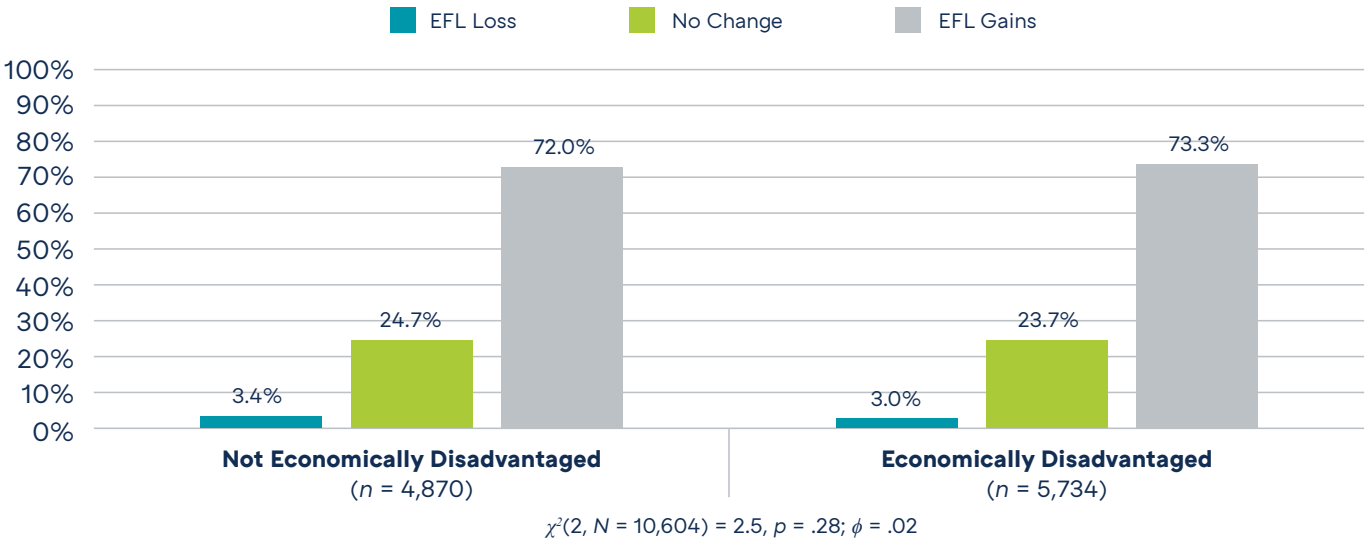
FIGURE 26. Adult Education Student EFL Gains by Age



$\chi^2(10, N = 10{,}604) = 8.0, p = .63; V = .02$

As Figure 27 shows, there were no significant differences in EFL gains by economic status. Compared to students who did not experience economic disadvantage, only a slightly higher percentage of economically disadvantaged students reported EFL gains, 72.0% and 73.3% respectively.

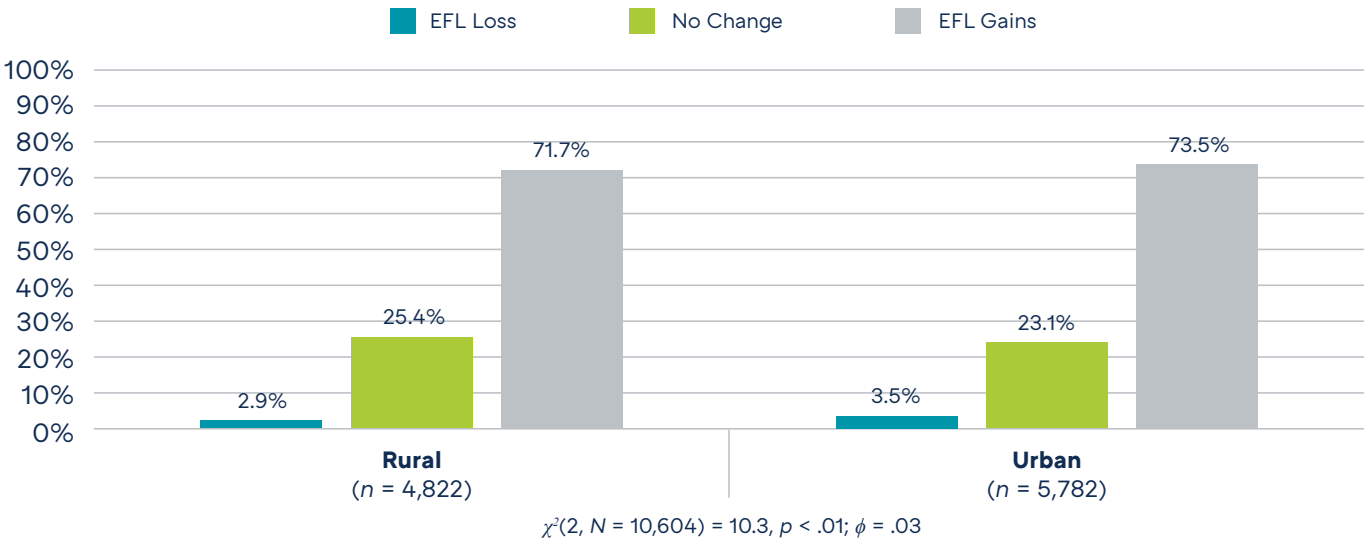
FIGURE 27. Adult Education Student EFL Gains by Economic Status



$\chi^2(2, N = 10{,}604) = 2.5, p = .28; \phi = .02$

As Figure 28 shows there were significant differences between students who resided in rural communities and students who resided in urban communities, $\chi^2(2, N = 10{,}604) = 10.3, p < .01$, but the effect was minimal ($\phi = .03$). A slightly higher percentage of students from urban communities reported EFL gains (73.5%) than students from rural communities (71.7%).

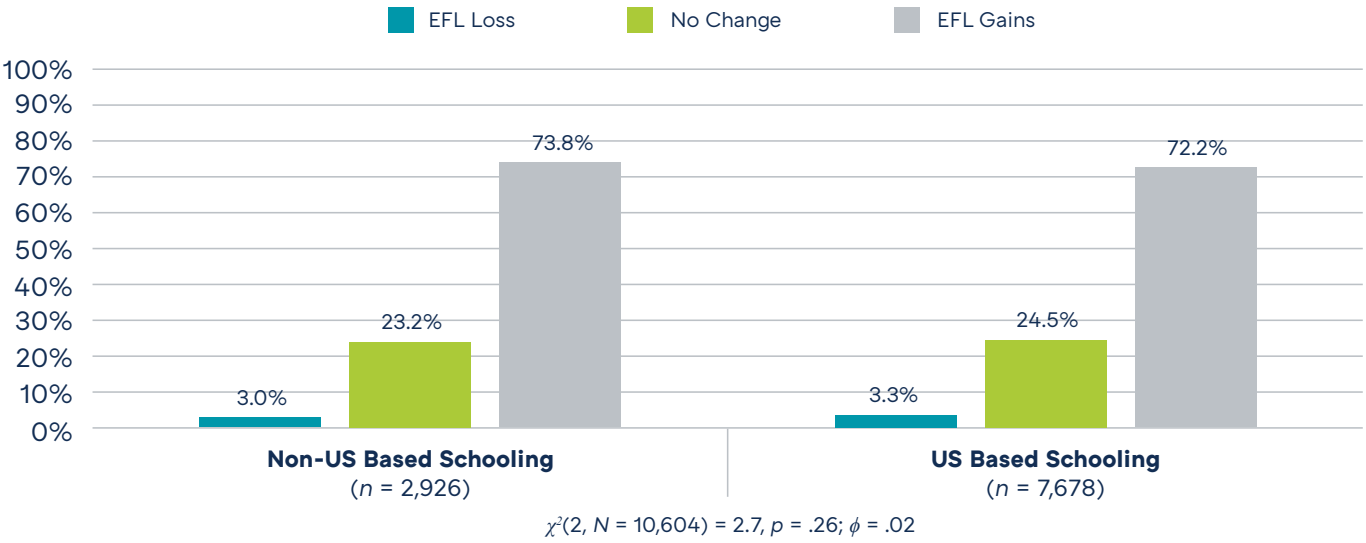
FIGURE 28. Adult Education Student EFL Gains by Area



$\chi^2(2, N = 10{,}604) = 10.3, p < .01; \phi = .03$

Among students who attended international schools, the proportion who reported EFL gains did not differ significantly from students who only attended U.S. based schools. Figure 29 shows only a slightly higher percentage of students who attended non-U.S. compared to U.S. based schools reported EFL gains (73.8% and 72.2%).

FIGURE 29. Adult Education Student EFL Gains by Previous Schooling Type

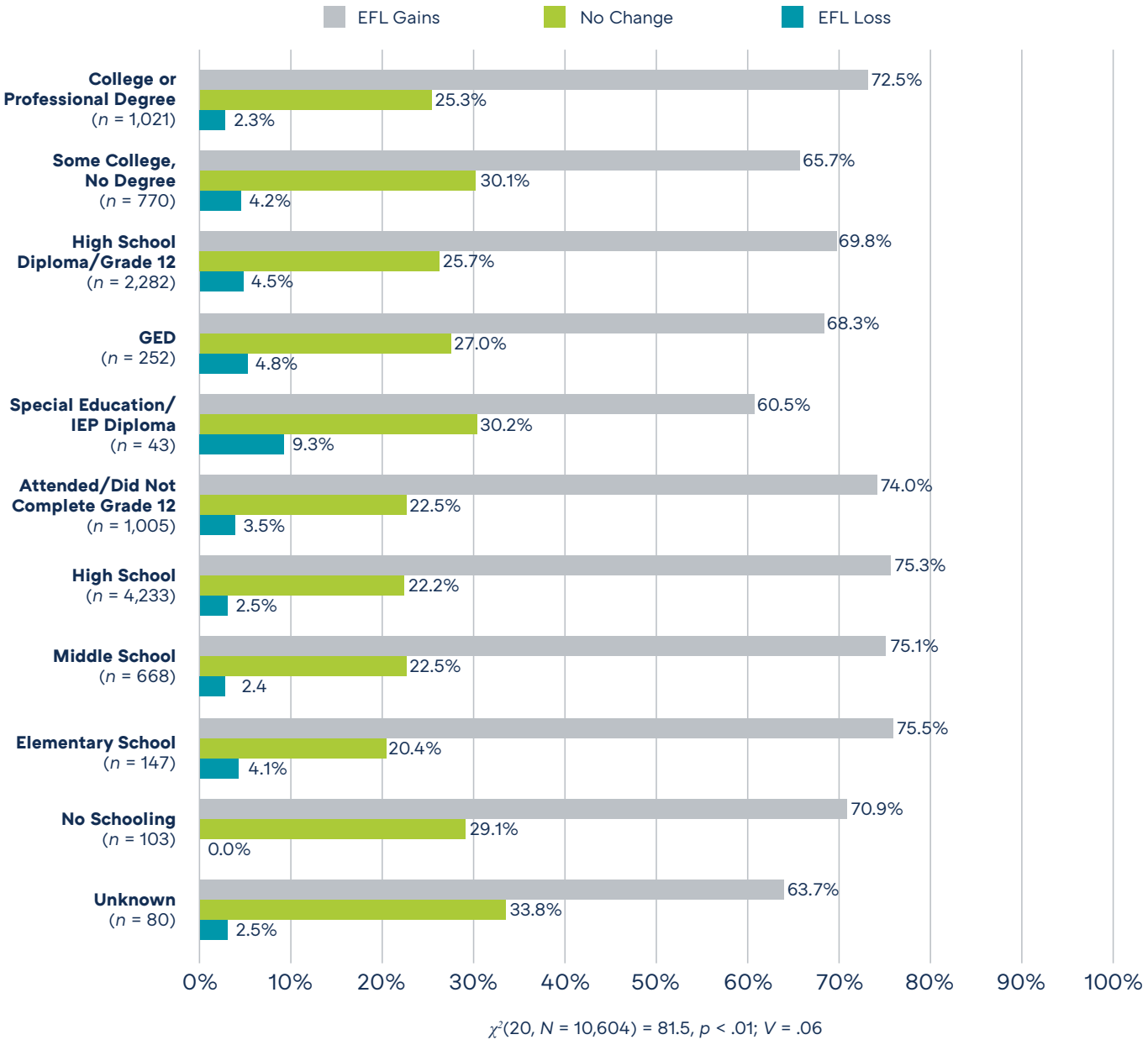


$\chi^2(2, N = 10{,}604) = 2.7, p = .26; \phi = .02$

Figure 30 shows there were significant differences in EFL gains among students based on level of education, $\chi^2(20, N = 10{,}604) = 81.5$, $p < .01$. There was a trend such that the highest proportion of students with EFL gains had the lowest levels of educational attainment. Specifically, students whose highest grade completed was in elementary school (75.5%), middle school (75.1%), high school (75.3%), and attended/but did not graduate Grade 12 (74.0%) reported the highest proportion of students with EFL gains. Students with a special education/IEP diploma (60.5%), students with an unknown level of education (63.7%), students with some college, but no degree (65.7%), and students with a GED (68.3%) had the lowest proportion of students who demonstrated EFL gains. Despite the differences between groups, there was only a small effect for the highest grade completed ($V = .06$).

Figure 30 shows there were significant differences in EFL gains among students based on level of education, $\chi^2(20, N = 10{,}604) = 81.5$, $p < .01$. There was a trend such that the highest proportion of students with EFL gains had the lowest levels of educational attainment.

FIGURE 30. Adult Education Student EFL Gains by Highest Grade Completed



$\chi^2(20, N = 10{,}604) = 81.5, p < .01; V = .06$

Differences in High School Equivalency Across Demographic Characteristics

Chi-square analyses were conducted to examine demographic differences in high school equivalency attainment. Students who received a high school credential or higher prior to enrolling in adult education courses were excluded from this analysis.

As Figure 31 shows, although the difference in high school equivalency between male (59.1%) and female students (55.8%) was statistically significant, $\chi^2(1, N = 7{,}856) = 8.7$, $p < .01$, the percentage difference was small, resulting in a minimal effect ($\phi = .03$).

FIGURE 31. Adult Education Students High School Equivalency Attainment by Gender

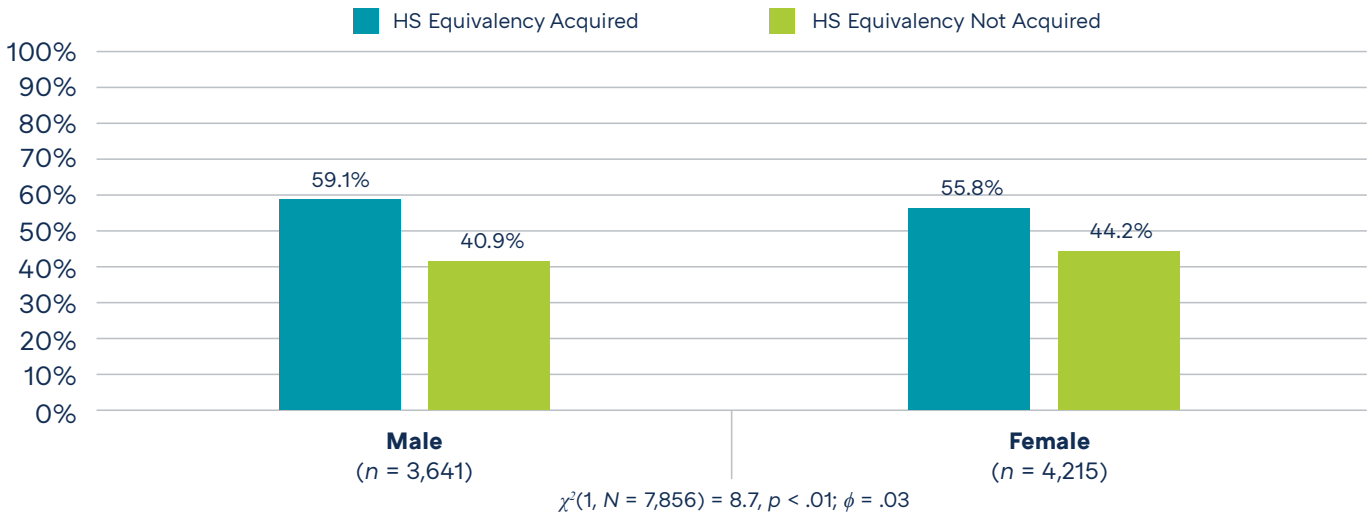
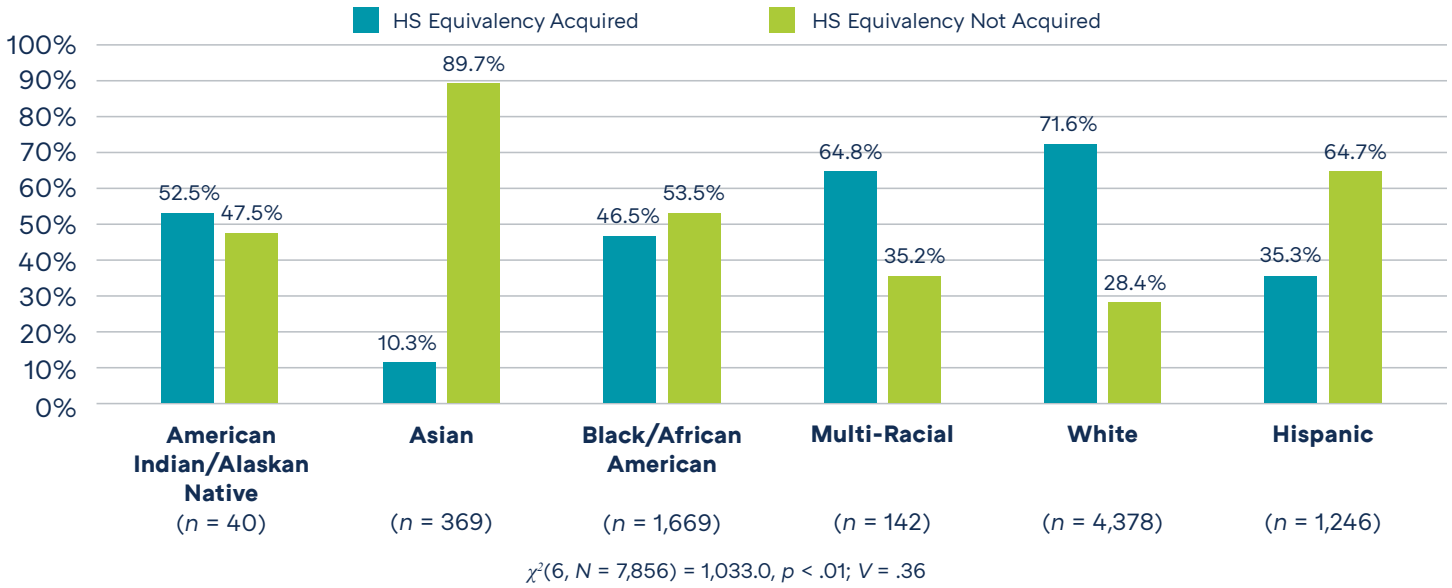


Figure 32 shows that significant and substantial differences in high school equivalency attainment were found based on race, $\chi^2(6, N = 7{,}856) = 1{,}033.0$, $p < .01$. White (71.6%), Multiracial (64.8%), American Indian/Alaskan Native (52.5%) and Black/African American (46.5%) students had the highest percentage of students to earn a high school equivalency. The lowest proportion of high school equivalency attainment was among Hispanic (35.3%) and Asian students (10.3%). Differences in proportions based on race were found to have a moderate effect ($V = .36$).

White (71.6%), Multiracial (64.8%), American Indian/Alaskan Native (52.5%) and Black/African American (46.5%) students had the highest percentage of students to earn a high school equivalency.

FIGURE 32. Adult Education Students High School Equivalency Attainment by Race



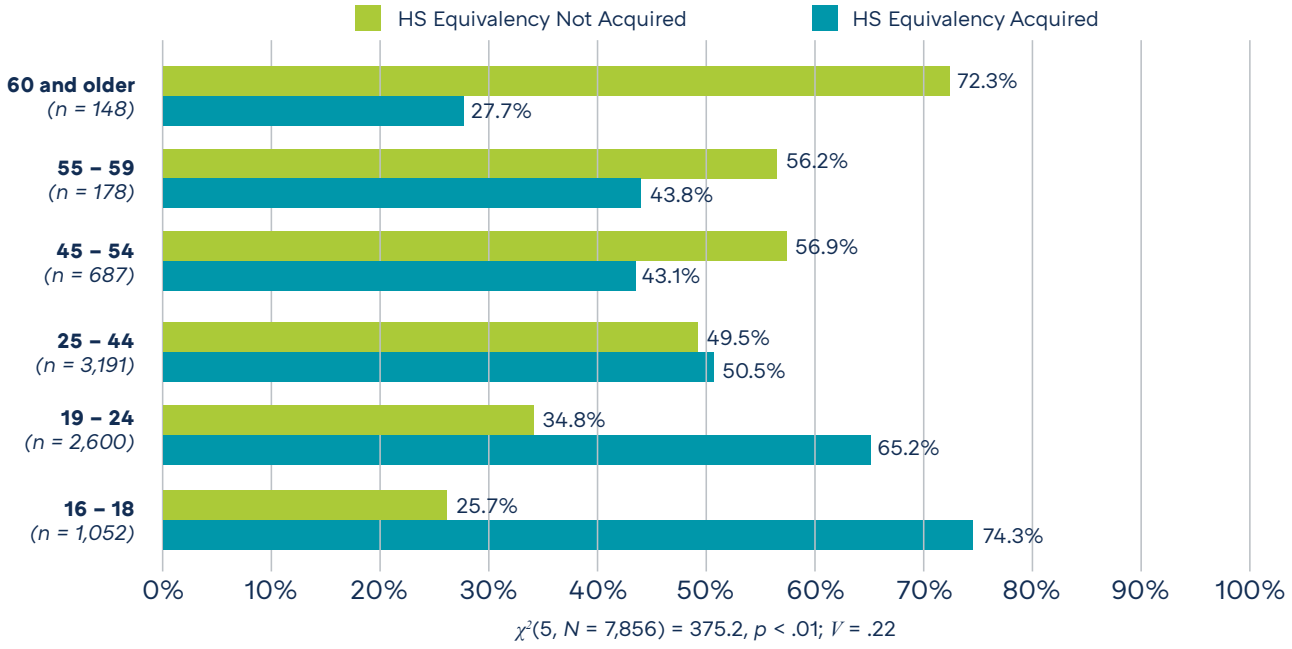
$\chi^2(6, N = 7{,}856) = 1{,}033.0, p < .01; V = .36$

NOTE: Native Hawaiiian/Other Pacific Islander students were excluded from this figure due to a small sample size.

High school equivalency attainment was found to differ significantly by age, $\chi^2(5, N = 7{,}856) = 375.2, p < .01$. Compared to older students, a significantly larger proportion of 16 – 18-years-old (74.3%) and 19 – 24-years-old (65.2%) students attained a high-school equivalency. See Figure 33. Students sixty-years of age and older (27.7%), students between 45 – 54-years old (43.1%) and students between 55 – 59-years-old (43.8%) had the lowest proportion of students to earn a high school equivalency. The effect of age in this analysis was moderate ($V = .22$).

Compared to older students, a significantly larger proportion of 16 – 18-years old (74.3%) and 19 – 24-years-old (65.2%) students attained a high school equivalency. See Figure 33.

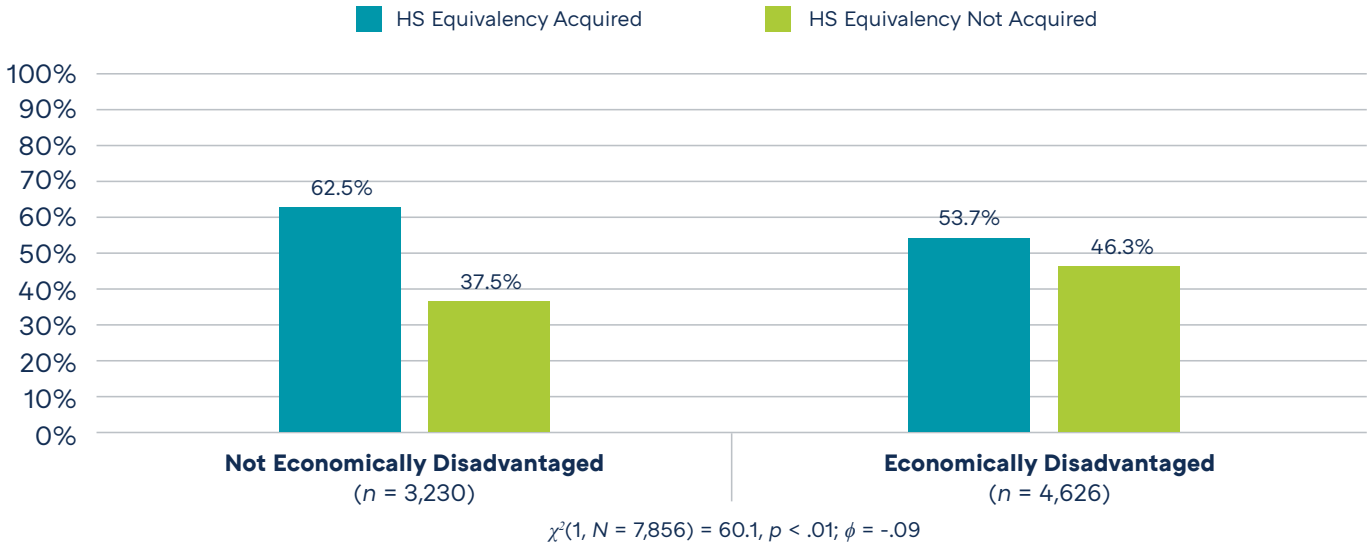
FIGURE 33. Adult Education Students High School Equivalency Attainment by Age



$\chi^2(5, N = 7{,}856) = 375.2, p < .01; V = .22$

Figure 34 shows there were significant differences in high school equivalency based on economic status, $\chi^2(1, N = 7{,}856) = 60.1$, $p < .01$. Attainment of high school equivalency was higher among students who did not experience economic disadvantage (62.5%) than those who experienced economic disadvantage (53.7%), however, the effect was very small ($\phi = -.09$).

FIGURE 34. Adult Education Students High School Equivalency Attainment by Economic Status



There were significant differences in high school equivalency attainment between rural and urban students, $\chi^2(1, N = 7{,}856) = 282.5$, $p < .01$. A larger proportion of students from rural communities, 67.3%, attained a high school equivalency, compared to just 48.5% of students from urban communities (see Figure 35). The effect of area on high school equivalency was small ($\phi = -.19$).

FIGURE 35. Adult Education Students High School Equivalency Attainment by Area

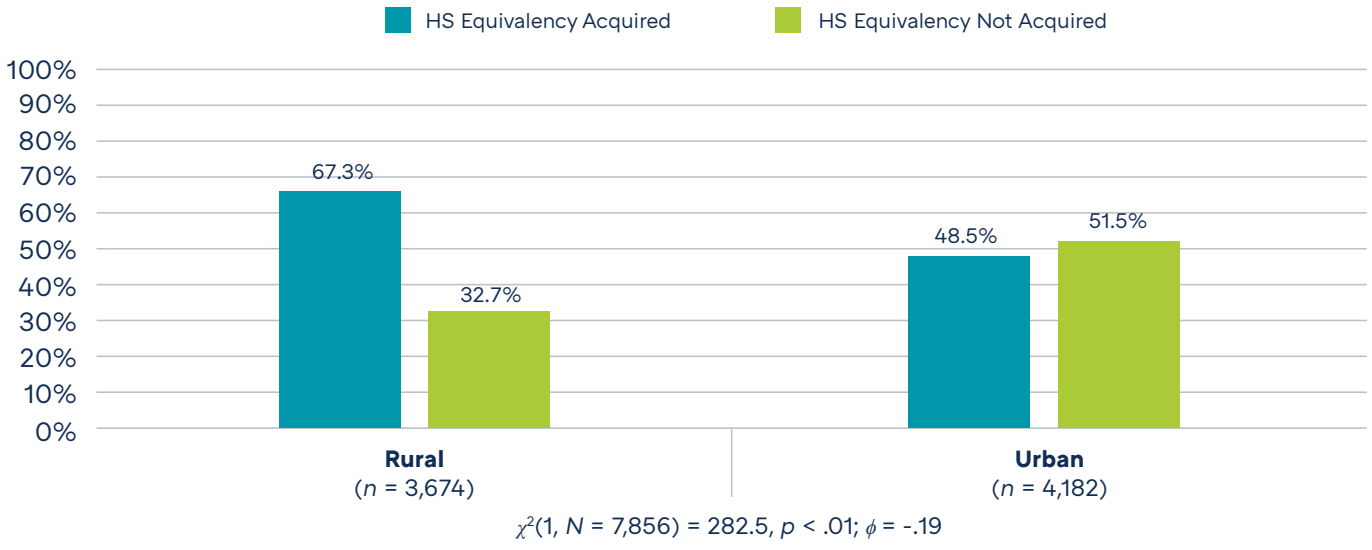
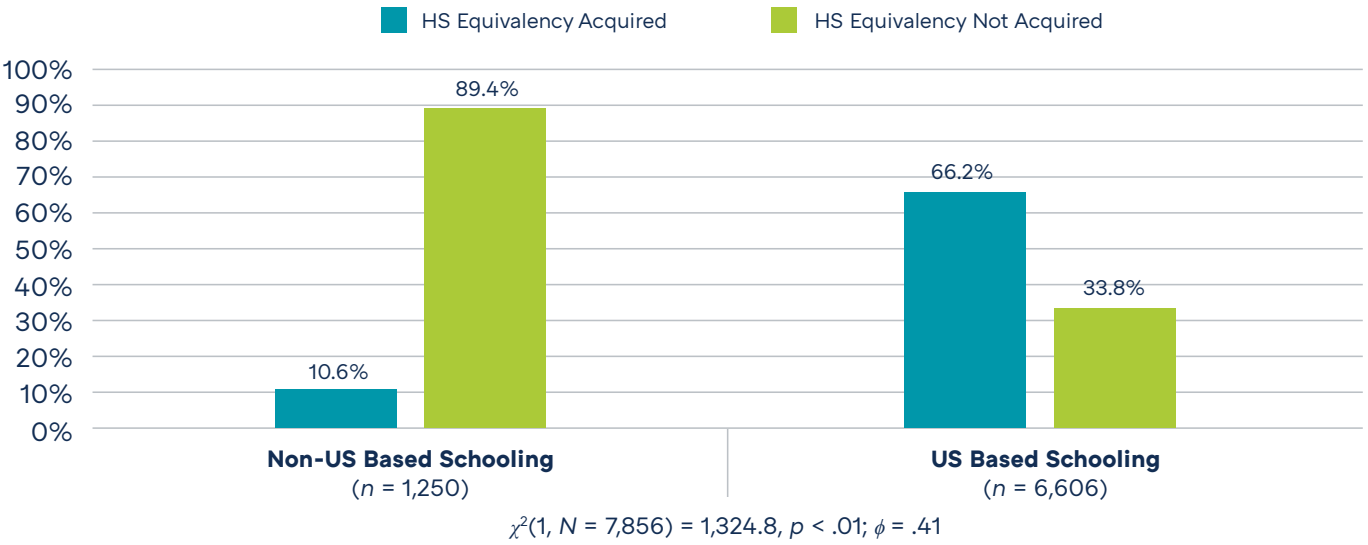


Figure 36 shows the most substantial difference in high school equivalency attainment was found between students who attended U.S. based schools and those who did not, $\chi^2(1, N = 7{,}856 = 1{,}324.8$, $p < .01$. Among students who attended U.S. based schools, 66.2% (n = 4,373) earned a high school equivalency compared to only 10.6% (n = 131) of students who attended international schools. The effect of previous schooling type on high school equivalency was moderate ($\phi = .41$). Considering the size of the effect for schooling type, it is worth noting that there were differences between students whose last school experience was outside of the U.S. and those whose last experience was in the U.S. by race, age, area and highest level of education completed.

FIGURE 36. Adult Education Students High School Equivalency Attainment by International Schooling

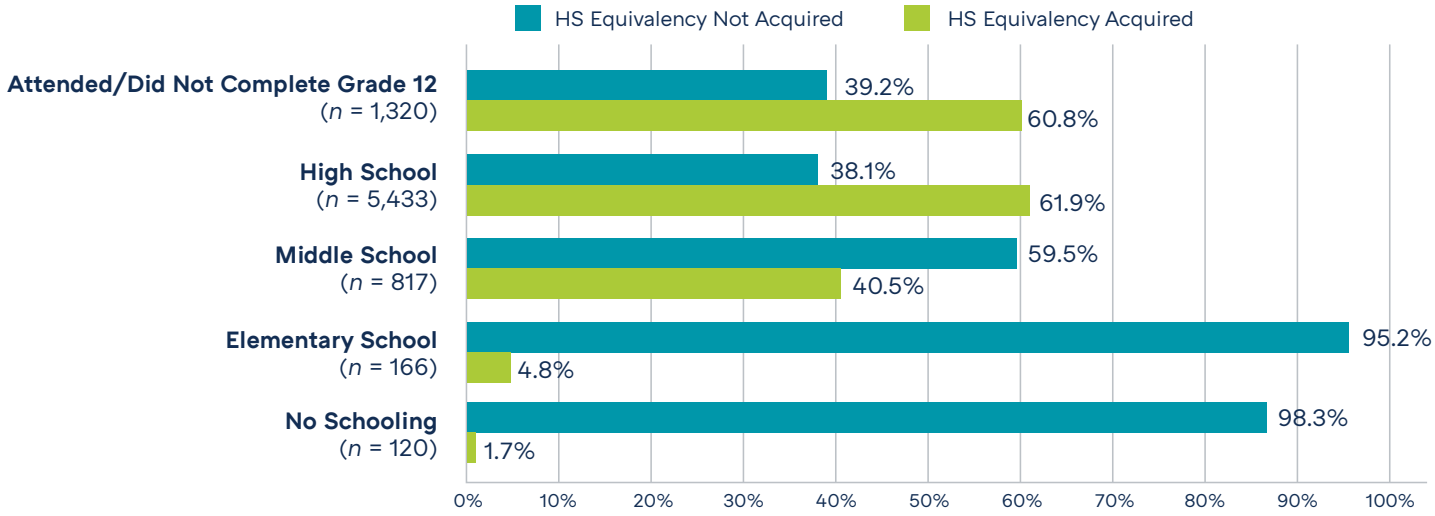


$\chi^2(1, N = 7{,}856) = 1{,}324.8$, $p < .01$; $\phi = .41$

Significant differences in high school equivalency attainment were found among students with different levels of education, as indicated in Figure 37. A larger proportion of students who completed at least the ninth grade or higher earned a high school equivalency. The largest proportion of students to earn a high school equivalency were students whose highest grade completed was in high school (61.9%), students who attended (but did not complete) Grade 12 (60.8%) and students who completed middle school (40.5%). The smallest proportion of students to earn a high school equivalency were students with no schooling (1.7%) and students who completed elementary school (4.8%). This chi-square test was significant, and the effect of highest grade completed was moderate, $\chi^2(4, N = 7{,}856) = 485.5$, $p < .01$; $V = .25$.

Among students who attended U.S. based schools, 66.2% (n = 4,373) earned a high school equivalency compared to only 10.6% (n = 131) of students who attended international schools.

FIGURE 37. Adult Education Students High School Equivalency Attainment by Highest Grade Completed



$\chi^2(4, N = 7{,}856) = 485.5, p < .01; V = .25$

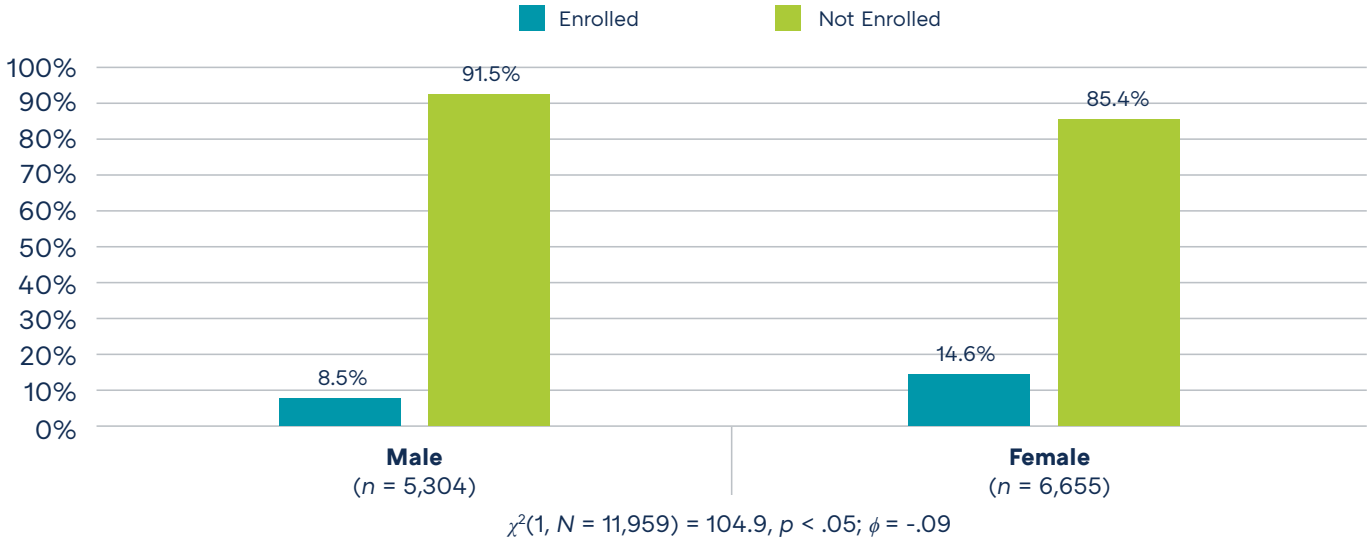
Differences in Postsecondary Enrollment Across Demographic Characteristics

Chi-square analyses were conducted to examine demographic differences in postsecondary enrollment. Students who previously obtained a college or professional degree were excluded from this analysis.

Among male and female students there was a significant difference in postsecondary enrollment, $\chi^2(1, N = 11{,}959) = 104.9$, $p < .01$. Among female students, 14.6% enrolled in postsecondary institutions, compared to 8.5% of male students (see Figure 38). The effect of gender on postsecondary enrollment was very small ($\phi = -.09$).

A larger proportion of students who completed at least the ninth grade or higher earned a high school equivalency.

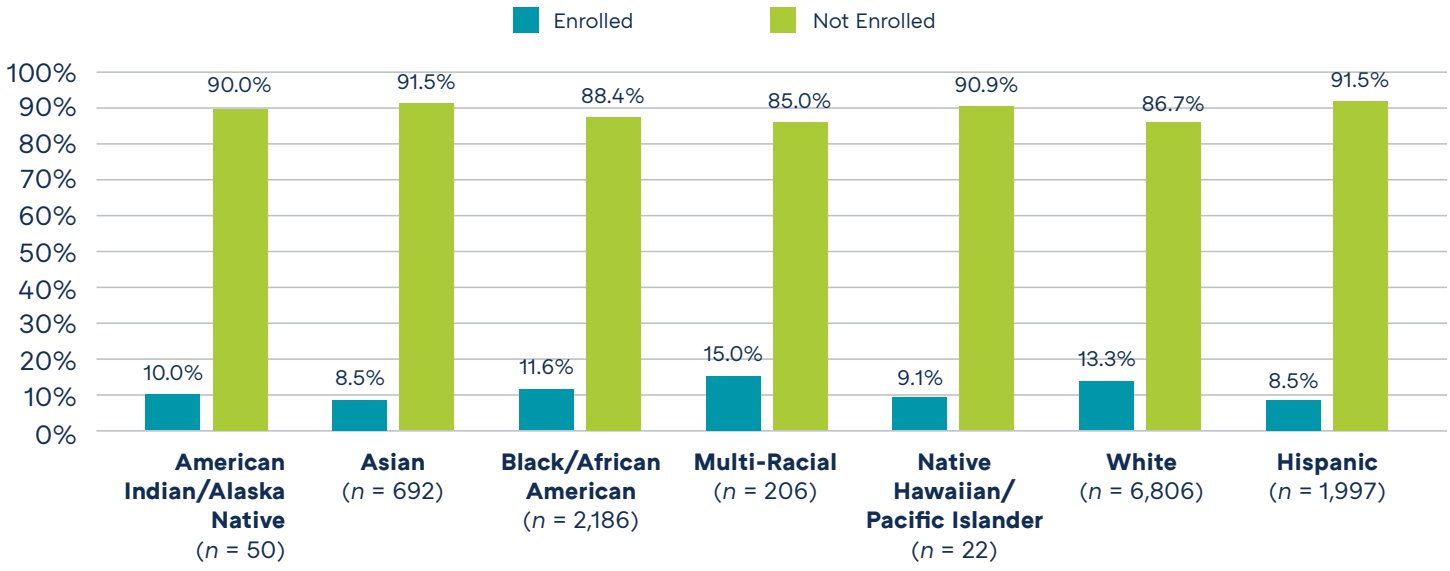
FIGURE 38. Adult Education Postsecondary Enrollment by Gender



$\chi^2(1, N = 11{,}959) = 104.9, p < .05; \phi = -.09$

Figure 39 shows there were also significant differences in postsecondary enrollment by race, $\chi^2(6, N = 11{,}959) = 44.0$, $p < .01$, albeit the effect was very small ($V = .06$). Multiracial (15.0%), White (13.3%) and Black/African American (11.6) students enrolled in postsecondary at slightly higher proportions than Asian (8.5%), Hispanic (8.5%) and Native Hawaiian/Pacific Islander (9.1%) students.

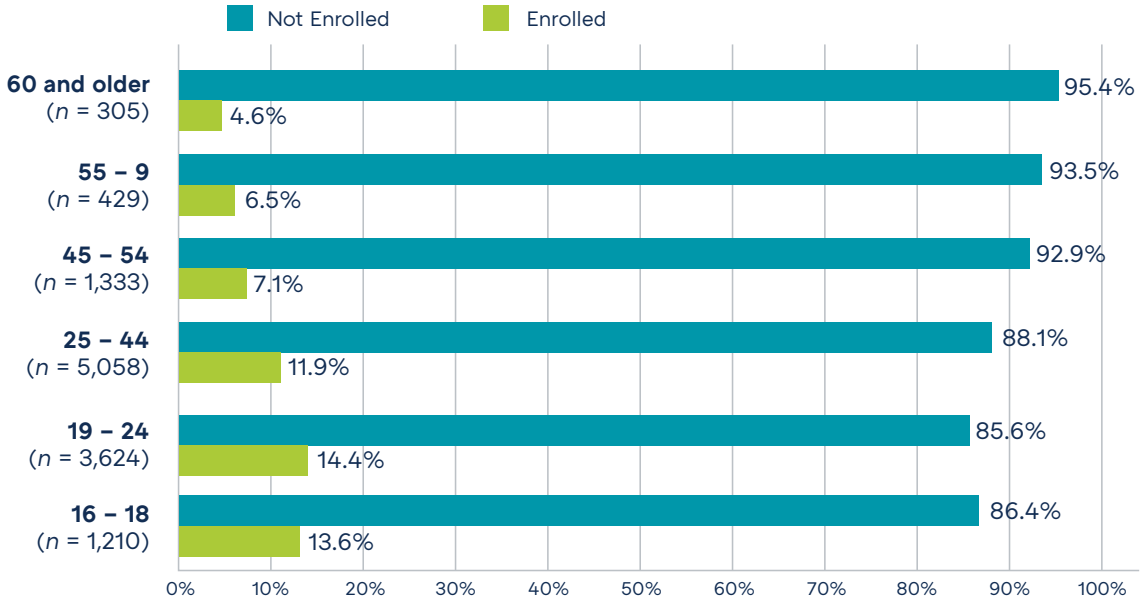
FIGURE 39. Adult Education Postsecondary Enrollment by Race



$\chi^2(6, N = 11{,}959) = 44.0, p < .01; V = .06$

There were significant differences in postsecondary enrollment by age, $\chi^2(5, N = 11{,}959) = 81.0$, $p < .01$, with younger students enrolled in postsecondary institutions at higher rates than older students. As shown in Figure 40, the highest proportion of students to enroll in postsecondary were students between 16 – 18-years-old (13.6%), 19 – 24-years-old (14.4%) and 25 – 44-years-old (11.9%). The lowest proportion of postsecondary enrollment was among students 60-years of age and older (4.6%) and 55 – 59-years-old (6.5%). Statistically, age had a very small effect on postsecondary enrollment ($V = .08$).

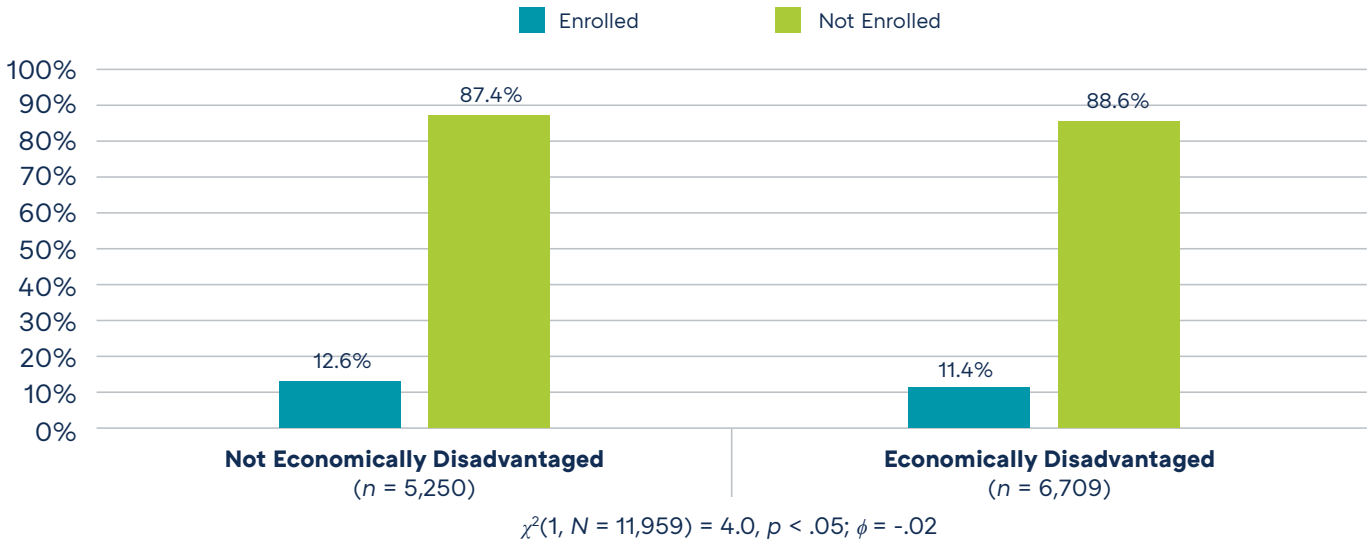
FIGURE 40. Adult Education Postsecondary Enrollment by Age



$\chi^2(5, N = 11{,}959) = 81.0$, $p < .01$; $V = .08$

Chi-square tests showed there were significant differences in postsecondary enrollment based on economic status, $\chi^2(1, N = 11{,}959) = 4.0$, $p < .05$ (see Figure 41). Postsecondary enrollment was slightly higher among students who did not experience economic disadvantage (12.6%) than those who experienced economic disadvantage (11.4%). However, the effect was very small ($\phi = -.02$).

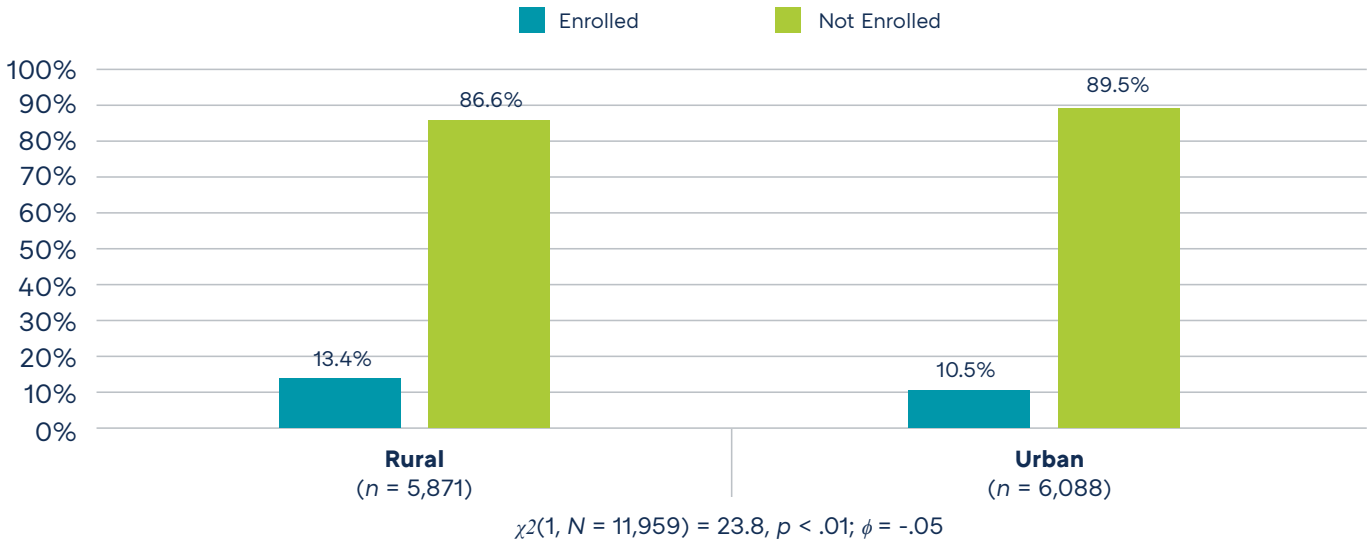
FIGURE 41. Adult Education Postsecondary Enrollment by Economic Status



$\chi^2(1, N = 11{,}959) = 4.0$, $p < .05$; $\phi = -.02$

There were significant differences in postsecondary enrollment between rural and urban students, $\chi^2(1, N = 11{,}959) = 23.8$, $p < .01$. A slightly higher percentage of students from rural communities, 13.4%, enrolled in postsecondary institutions than students from urban communities (10.5%). The effect of area on high school equivalency was small ($\phi = -.05$) (see Figure 42).

FIGURE 42. Adult Education Postsecondary Enrollment by Area

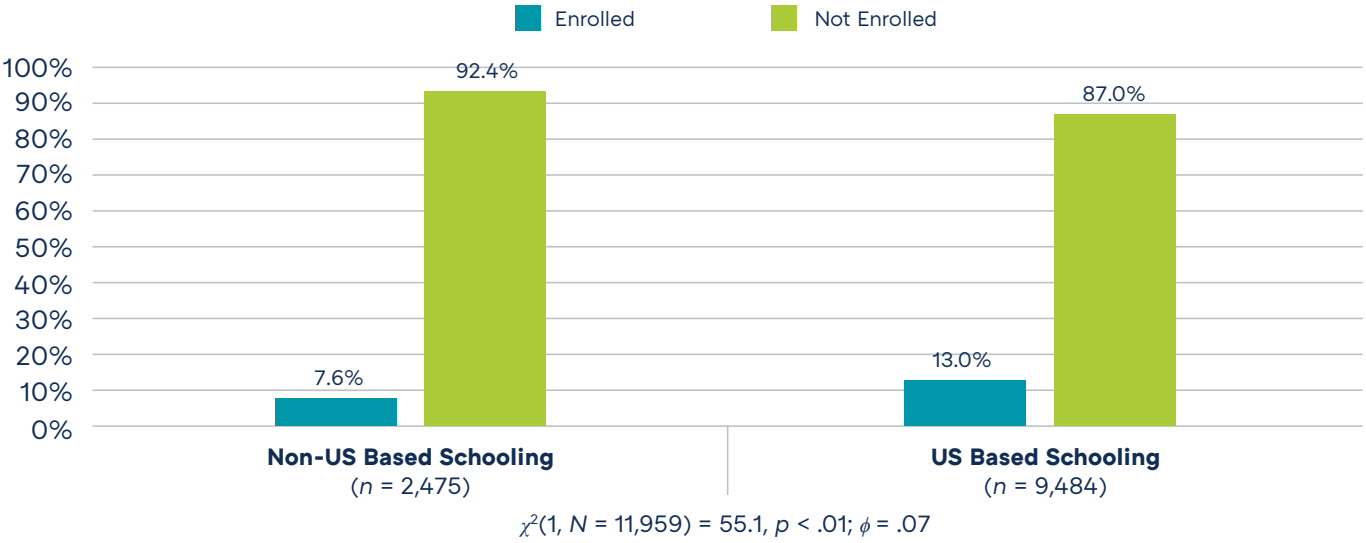


$\chi^2(1, N = 11{,}959) = 23.8$, $p < .01$; $\phi = -.05$

There were significant differences in postsecondary enrollment between students who attended U.S. based schools and students who previously attended non-U.S. based schools, $\chi^2(1, N = 11{,}959) = 55.1$, $p < .01$. Figure 43 shows that the proportion of students to enroll in postsecondary institutions who attended U.S. based schools was 13.0%, while just 7.6% of students who attended international schools enrolled in postsecondary. Though there was a significant difference between these groups, the effect was very small ($\phi = .07$).

Figure 43 shows that the proportion of students to enroll in postsecondary institutions who attended U.S. based schools was 13.0%, while just 7.6% of students who attended international schools enrolled in postsecondary.

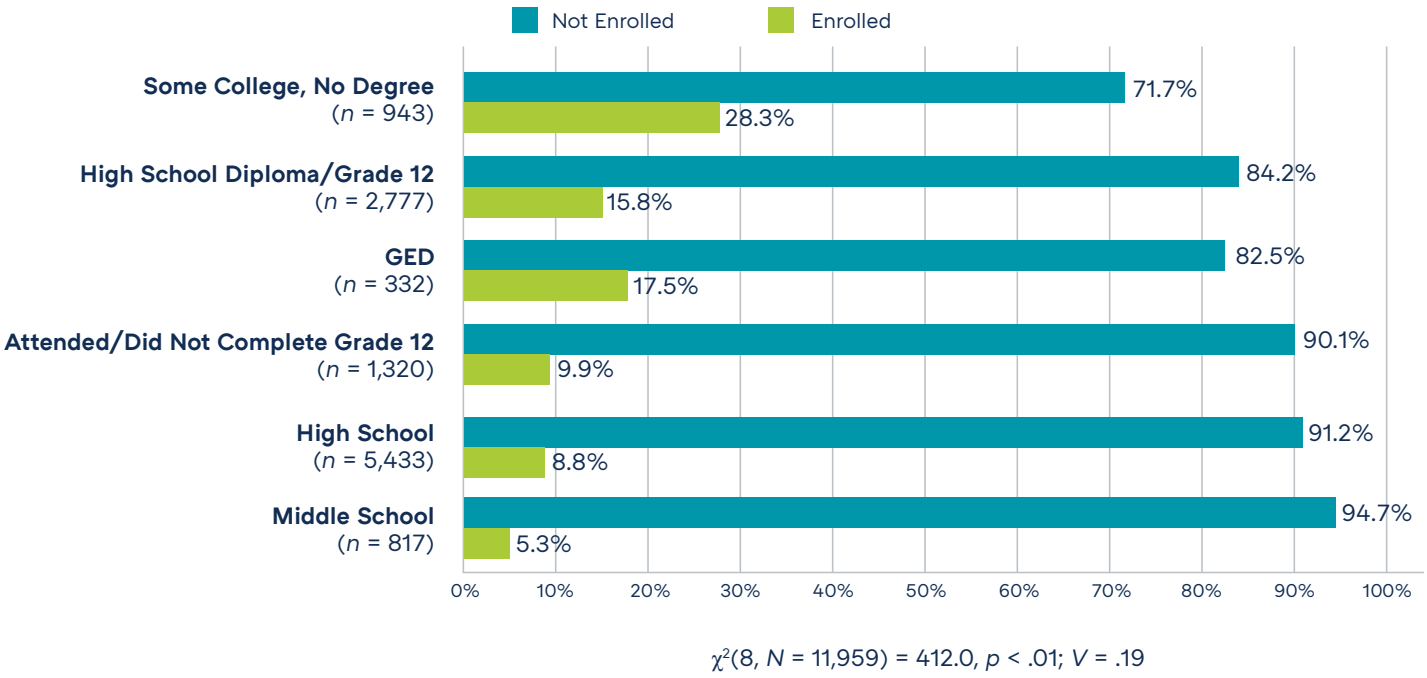
FIGURE 43. Adult Education Postsecondary Enrollment by Previous Schooling Type



Chi-square analyses revealed significant differences between students' postsecondary enrollment based on their highest grade completed, $\chi^2(8, N = 11{,}959) = 412.0$, $p < .01$. Rates of postsecondary enrollment were highest among students who attended some college, but did not obtain a degree (28.3%), students who held a GED (17.5%) and students who obtained a high school diploma (15.8%). The lowest rates of postsecondary enrollment were among students whose highest grade completed was in middle school (5.3%), students whose highest completed grade was in high school (8.8%) and students who attended but did not complete Grade 12 (9.9%). See Figure 44. This analysis also revealed a small effect for highest grade completed ($V = .19$).

Rates of postsecondary enrollment were highest among students who attended some college, but did not obtain a degree (28.3%), students who held a GED (17.5%) and students who obtained a high school diploma (15.8%).

FIGURE 44. Adult Education Postsecondary Enrollment by Highest Grade Completed



NOTE: Students who reported No Schooling, a Special Education/IEP Diploma, or Elementary School as their highest education were excluded from this figure due to a small sample size.

RESEARCH QUESTION 4:
Is there an intensity of instruction that correlates more strongly with better student outcomes?

The results of analysis examining the association between individual independent variables and outcomes of interest were discussed previously. Logistic regression analysis was conducted to examine the effects of intensity of instruction (number of hours of instruction) on student outcomes. Logistic regression was used because all outcomes were binary. In this phase of analysis we examined the differences in effects of the significant independent variables in isolation and in the context of additional explanatory variables. The analyses were exploratory in nature, which allowed for the examination of all individual independent variables and their association with EFL gains, GED attainment, and postsecondary enrollment.

The effect of intensity was tested both as a continuous variable measured in program hours and dichotomous variables based on the number of program hours. For the ABE and ESL programs, dichotomous variables could be tested up to 300 hours or more when predicting EFL gains. However, because the sample of students decreased significantly at higher intensity levels for the ASE program, intensity could only be measured up to 200 or more hours for ASE students when predicting EFL gains. Also, analysis was conducted utilizing only the 100 or more hours indicator for GED obtainment and postsecondary enrollment. Although multiple dichotomous intensity measures may have been tested individually with statistics provided in Tables 6 and 7, final models are provided based on 100 or more hours and 175 or more hours given that the "odds ratio" does not increase significantly beyond these points and to be consistent given ASE student samples.

In terms of previous education, two dichotomous measures were tested. The first represented whether a student entered the program with at least a "high school diploma or above" and the second whether a student entered the program with a "college education or professional degree." These dichotomous measures were tested to simplify the analysis given the number of previous education categories, but were also based on the analysis discussed on the effect of previous education.

Logistic Regression Results

Appendix 2 shows the independent variables and covariates that were tested individually for significance. Tables 6 and 7 show the statistically significant independent variables when tested individually and the final models. Although a continuous measure of intensity was tested, no significant effects were found. Only the dichotomous indicators of intensity showed significant effects, therefore, those are included in all final models. Figure 45 shows the percentage of students who reported EFL gains based on intensity of instruction within each program type.

Logistic regression analysis results indicate there is a statistically significant association between intensity and EFL gains, after controlling for other explanatory variables for ASE and ESL program students.

Logistic regression analysis results indicate there is a statistically significant association between intensity and EFL gains, after controlling for other explanatory variables for ASE and ESL program students. For ASE and ESL program analysis, a comparison of the odds ratio (Exp(β)) for the effect of intensity on EFL gains individually, versus after holding all other significant explanatory variables constant, shows a significant increase in odds regardless. Because intensity was

the only statistically significant effect for ABE students, those results will be discussed below. Final models for ASE and ESL are presented in Tables 6 and 7.

Intensity, gender, and previous education were all found to be significantly associated with EFL gains for the ASE program. For ASE program students, after controlling for other explanatory variables, the odds of a student showing EFL gains are 1.4 (final model 1) to 1.6 (final model 2) times higher, a 40 to 60 percent increase in odds, if the student had 100 or more hours of instruction time. The odds increase significantly from 2.3 (final model 3) to 2.77 (final model 4) times higher, a 130 to 170 percent increase in odds if a student had 175 or more hours of instruction. The odds are 1.7 times higher (70 percent increase in odds) if a student entered the ASE program with less than a high school diploma, 1.8 times higher (80 percent increase in odds) if they entered the program with less than a College or Professional Degree, and slightly more than 1.3 times higher (30 percent increase in odds) if they were male.

For ESL program students', intensity, Race/Ethnicity (Hispanic versus non-Hispanic), and Area (urban versus rural) were all found to be significantly associated with EFL gains. The findings for ESL program students differed slightly in that the significant effect of intensity was found beginning at 50 hours or more versus less than 50 hours of instruction. As Table 7 shows, the odds of achieving EFL gains were 1.69 times higher (69 percent increase in odds) if a student had 50 or more hours of instruction versus less than 50, after controlling for other explanatory variables (final model 1). The odds continue to increase at each level of instructional hours measured. Students who had 100 or more hours of instruction had 1.83 times higher odds (83 percent increase in odds), and students with 175 hours or more of instruction had almost 3.0 times higher odds (200 percent increase in odds). Additionally, the odds of an ESL student showing EFL gains were found to be approximately 1.3 times higher (30 percent increase in odds) if they were non-Hispanic and 1.4 times higher (40 percent increase in odds) if they were in an urban area.

For ASE program students, after controlling for other explanatory variables, the odds of a student showing EFL gains are 1.4 (final model 1) to 1.6 (final model 2) times higher, a 40 to 60 percent increase in odds, if the student had 100 or more hours of instruction time.

TABLE 6. Logistic Regression Analysis of EFL Gains for ASE Students

Individual Independent Variables	β	Se β	Wald's X^2	*df*	*p*	Exp(β) Odds Ratio	Model X^2 *(p)*	*n*
100 Hours or More[1] (Less than=0; Equal/More Than=1)	.484	.115	17.693	1	.001	1.622	18.704 (.001)	3,214
150 Hours or More[1]	.846	.191	19.535	1	.001	2.331	22.637 (.001)	3,214
175 Hours or More[1]	.995	.236	17.701	1	.001	2.704	21.462 (.001)	3,214
200 Hours or More[1]	1.147	.302	14.395	1	.001	3.147	18.361 (.001)	3,214
Gender (Male=0; Female=1)[2]	.308	.075	16.705	1	.001	1.361	16.822 (.001)	3,216
Highest Grade (Less than High School=0; High School or More=1)[2]	.592	.075	61.475	1	.001	1.807	61.808 (.001)	3,199
College or Professional Degree (No Degree=0; Degree=1)[2]	.679	.167	16.506	1	.001	1.973	16.224 (.001)	3,204
Final Model 1*							**81.999 (.001)**	**3,197**
Constant	.211	.063	11.203	1	.001	1.234		
100 Hours or More[1]	.351	.120	8.641	1	.003	1.421		
Gender (Female)[2]	.276	.077	12.818	1	.001	1.317		
Highest Grade (High School or More)[2]	.515	.078	43.591	1	.001	1.673		
Final Model 2*							**49.728 (.001)**	**3,202**
Constant	-.099	.165	.361	1	.548	.906		
100 Hours or More[1]	.493	.116	18.033	1	.001	1.637		
Gender (Female)[2]	.313	.076	16.862	1	.001	1.368		
College or Professional Degree[2]	.584	.169	12.028	1	.001	1.794		
Final Model 3*							**87.331 (.001)**	**3,197**
Constant	.223	.062	12.720	1	.001	1.249		
175 Hours or More[1]	.836	.239	12.215	1	.001	2.308		
Gender (Female)[2]	.273	.077	12.609	1	.001	1.314		
Highest Grade (High School or More)[2]	.527	.077	47.317	1	.001	1.694		
Final Model 4*							**53.000 (.001)**	**3,202**
Constant	-.090	.165	.300	1	.584	.914		
175 Hours or More[1]	1.017	.237	18.392	1	.001	2.766		
Gender (Female)[2]	.308	.076	16.312	1	.001	1.360		
College or Professional Degree[2]	.610	.168	13.112	1	.001	1.840		

**Final Models include all independent variables that were significant when tested individually and remained significant.*

[1] First is reference in logistic regression model.

[2] Last is reference in logistic regression model.

TABLE 7. Logistic Regression Analysis of EFL Gains for ESL Students

Individual Independent Variables	β	Se β	Wald's X^2	*df*	*p*	Exp(β) Odds Ratio	Model X^2 *(p)*	*n*
50 Hours or More [1] (Less than=0; Equal/More Than=1)	.534	.113	22.250	1	.001	1.706	21.629 (.001)	2,074
75 Hours or More [1]	.642	.102	39.459	1	.001	1.901	40.138 (.001)	2,074
100 Hours or More [1]	.612	.108	31.902	1	.001	1.845	33.287 (.001)	2,074
150 Hours or More [1]	.993	.142	49.167	1	.001	2.699	57.307 (.001)	2,074
175 Hours or More [1]	1.096	.159	47.596	1	.001	2.992	57.870 (.001)	2,074
200 Hours or More [1]	1.067	.173	38.082	1	.001	2.907	46.662 (.001)	2,074
250 Hours or More [1]	1.138	.214	28.209	1	.001	3.119	36.124 (.001)	2,074
300 Hours or More [1]	1.435	.284	25.623	1	.001	4.202	36.837 (.001)	2,074
Hispanic [2] (Non-Hispanic=0; Hispanic=1)	.411	.093	19.618	1	.001	1.508	19.698 (.001)	2,326
Area [1] (Rural=0; Urban=1)	.431	.138	9.800	1	.001	1.539	9.476 (.002)	2,326
Final Model 1*							**35.104 (.001)**	**2,074**
Constant	.237	.170	1.957	1	.162	1.268		
50 Hours or More [1]	.529	.114	21.636	1	.001	1.697		
Hispanic [2]	.275	.103	7.193	1	.007	1.317		
Area [1]	.330	.155	4.535	1	.033	1.391		
Final Model 2*							**53.066 (.001)**	**2,074**
Constant	.289	.157	3.378	1	.066	1.336		
75 Hours or More [1]	.640	.103	38.353	1	.001	1.896		
Hispanic [2]	.229	.103	4.909	1	.027	1.258		
Area [1]	.394	.156	6.343	1	.012	1.483		
Final Model 3*							**45.617 (.001)**	**2,074**
Constant	.404	.153	6.980	1	.008	1.498		
100 Hours or More [1]	.602	.109	30.307	1	.001	1.825		
Hispanic [2]	.235	.103	5.171	1	.023	1.265		
Area [1]	.366	.156	5.512	1	.019	1.442		
Final Model 4*							**68.501 (.001)**	**2,074**
Constant	.495	.149	10.985	1	.001	1.640		
175 Hours or More [1]	1.070	.159	45.123	1	.001	2.917		
Hispanic [2]	.235	.104	5.154	1	.023	1.265		
Area [1]	.315	.156	4.077	1	.043	1.371		

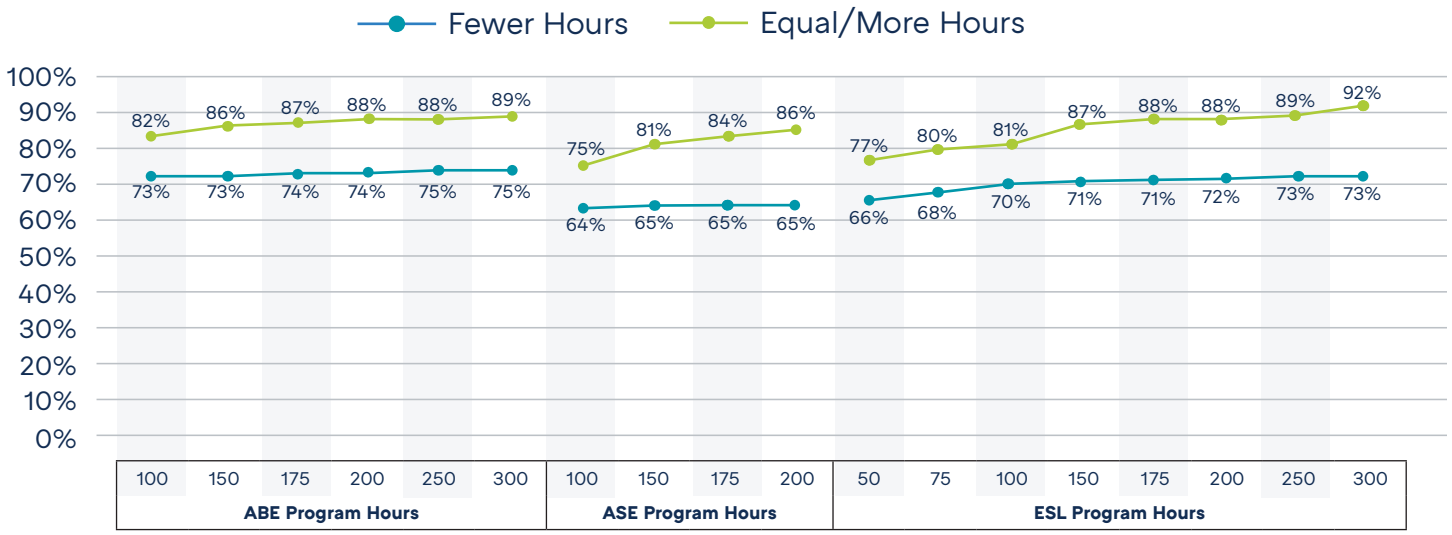
**Final Models include all independent variables that were significant when tested individually and remained significant.*

[1] First is reference in logistic regression model.

[2] Last is reference in logistic regression model.

A significant effect was found for intensity for ABE students, but no other student characteristics. Analysis showed that the odds are 1.77 times higher (77 percent increase in odds) if a student had 100 or more hours of instruction versus less than 100 hours. The odds were found to be 2.46 times higher (146 percent increase in odds) if a student had 175 hours and up to 2.57 times higher (157 percent increase in odds) if a student had 300 or more hours of instruction.

FIGURE 45. Percentage of Students to Report EFL Gains by Intensity and Program



Although no significant differences were found in postsecondary enrollment for students based on intensity of instruction (number of hours) within programs, some significant effects were found for GED obtainment. Although EFL gains were associated with each program type, allowing for analysis within each program, GED attainment was not specific to each program. This made it very difficult to separate out the effects of each program. To attempt to measure the effect of intensity of instruction by program two variables were tested. The first was a measure of whether a student had hours associated with each program or not, and the second was a measure of whether a student had 100 or more program hours versus less than 100 hours. This analysis could only be conducted for the ASE and ABE programs because very few students within the ESL program went on to obtain a GED and the sample of ESL program students was too low to report based on intensity level for GED and postsecondary enrollment analysis.

Logistic regression analysis showed that participation in the ASE program had a much larger effect on GED obtainment for students than participation in the ABE program. First, the odds for obtaining a GED were found to be 6.85 times higher if a student had "any" ABE hours versus did not and 12.28 times higher if a

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student had “any” ASE hours versus did not, after controlling for other program hours, race/ethnicity (White versus non-White), and income status. A closer look based on the number of program hours showed that students with more than 100 ASE program hours had 1.39 times higher odds of obtaining a GED compared to students with less than 100 ASE program hours (39 percent increase in odds), after controlling for whether the students had ABE hours, race/ethnicity, and income status. The reverse was found for ABE program participants with students with less than 100 ABE program hours having 1.17 times higher odds of obtaining a GED compared to students with more than 100 ABE hours (17 percent increase in odds), after controlling for whether the students had ASE hours, race/ethnicity, and income status. This shows that ABE students with less than 100 hours had slightly higher odds of obtaining a GED when compared to ABE students with 100 or more hours.

Analysis also showed that students who were not economically disadvantaged and White students had significantly higher odds of obtaining a GED, controlling for ABE and ASE program intensity. The effect of Race/Ethnicity (White versus non-White) was found to be much larger than both intensity and Income Status. For our cohorts, White students were 2.4 times more likely (140 percent increase in odds) to obtain a GED compared to non-White students. Students who were not economically disadvantaged had 1.24 higher odds (a 24 percent increase in odds) of obtaining a GED.

These findings indicate that there is a statistically significant effect of intensity on EFL gains and GED obtainment for the adult education students in our cohorts, even after controlling for other significant explanatory variables. The prediction accuracy for whether a student will experience EFL gains or obtain a GED ranged from 80–100 percent, indicating a high level of sensitivity.

Analysis also showed that students who were not economically disadvantaged and White students had significantly higher odds of obtaining a GED, controlling for ABE and ASE program intensity.

Discussion

RESEARCH QUESTION 1:

What are the demographic characteristics of the adult education student population in Pennsylvania?

Consistent with past research (Coley, 2008), female enrollment in adult education programs outpaced male enrollment in Pennsylvania. While enrollment in adult education is typically split evenly between males and females nationally, the rate of female enrollment outpaces males in Pennsylvania (58% versus 42%). While other studies cite male enrollment between 47% - 50% (State of Iowa Department of Education, 2016; Tamassia, Lennon, Yamamoto & Kirsch, 2007), the proportion of females enrolled in adult education courses in the Commonwealth is slightly higher than what is reported in other studies for female enrollment (State of Iowa Department of Education, 2016; U.S. Department of Education, Office of Career, Technical, and Adult Education, 2014). Research exploring the path towards adult education enrollment for males and females would be useful in understanding the gender difference in enrollment. Considering females made up only 41.7% of high school dropouts in Pennsylvania for the 2016–2017 academic year (Pennsylvania Department of Education, 2019), it is reasonable to assume that male enrollment would be slightly higher than what the current data suggests. Future research exploring the decision-making process and factors associated with adult education enrollment would be especially useful in understanding the consistent difference in male-female adult education enrollment.

Considering Hispanics are just under 8% and African Americans are 12% of the population in Pennsylvania, Hispanic and Black/African American students were overrepresented in adult education courses (18.3% and 31.22% respectively) overall.

Regarding race and ethnicity, rates of enrollment in adult education courses were highest among White students (40.6%). This was unsurprising, as close to 81% of the state identifies as White. However, when broken down by program type the rate of enrollment in ABE and ASE courses was highest among White students (44.1% and 60.6% respectively), but the rate of enrollment in ESL courses was highest among Hispanic (47.9%) students. Considering Hispanics are just under 8% and African Americans are 12% of the population in Pennsylvania, Hispanic and Black/African American students were overrepresented in adult education courses (18.3% and 31.22% respectively) overall. Though we do not have data about student immigration status, it is also likely that Hispanic students were accessing the language assistance offered in ESL courses. Similarly, African American students were overrepresented in ABE (31.2%) and ASE (24.8%) courses. It is possible that lower rates of high school graduation among African American students in Pennsylvania, 72.1% (Pennsylvania Department of Education, 2019), may compel them to enroll in adult education courses at a disproportionate rate.

The age distribution of adult education students in Pennsylvania was consistent with national data. Specifically, most of the adult education population is made up of students between 19 and 44 years old (73.6%). Furthermore, 16 – 18-year-old students were primarily enrolled in ABE and ASE courses, while students 60 years of age and older were the least represented age group in ABE and ASE courses. The distribution of students in ESL courses was slightly different with the majority of students (58.4%) between 25 – 44 years old, compared to 44.5% for ABE and 41.1% for ASE courses. A significantly lower percentage of students in ESL courses were between 19 and 24 years old (14.4%), compared to ASE (33.3%) and ABE (29.3%).

More than half of the students enrolled in adult education courses in Pennsylvania experienced economic disadvantage at some point in their enrollment. This was consistent across programs and suggests Pennsylvania is fulfilling one of the primary goals of the WIOA, targeting vulnerable populations including low-income individuals. Adult education programs are particularly useful for low-income communities, as research by Morgan and colleagues (2017) concluded that ABE students earned more income over time compared to individuals with similar backgrounds who did not complete ABE courses. Considering the growing body of research examining the link between adult education and income (Morgan et al., 2017; U.S. Department of Education, OCTAE, 2014), the economic benefits of adult education for individual students, as well as the Commonwealth (via increased revenue), cannot be overstated.

Generally, Pennsylvania students entered adult education courses with education levels comparable to what has been reported in national and international studies (Desjardins, 2015; MacArthur et al., 2012). Specifically, a significant proportion of adult education students in Pennsylvania completed Grades 9–11 or higher (44.3%). When looking more closely at differences by program type, a majority of ABE and ASE students completed Grades 9–11 (55.9% and 55.6% respectively), compared to only a small percentage of ESL students (11.6%). A larger percentage of students in ESL courses had a High School Diploma (28%) or College or Professional Degree (24.5%), compared to ABE students (10.5% and 4.1% respectively) and ASE students (14.2% and 3.5% respectively). Research by Desjardins (2015) concluded that individuals with higher levels of educational attainment were more likely to enroll in adult education courses, regardless of the student's age, gender and other demographic factors.

Pennsylvania is fulfilling one of the primary goals of the WIOA, targeting vulnerable populations including low-income individuals.

The findings from this work indicate more than half of ESL students entered adult education courses with a high school diploma, some college attendance or a college/professional degree. While a greater proportion of ESL students entered adult education courses with a higher level of education, a greater proportion (compared to ABE and ASE students) also reported having a 5th grade education or less. Again, this suggests there are underlying differences between ESL students compared to ABE and ASE students. To gain a greater understanding of these differences, research efforts should continue to study ABE, ASE and ESL students as a single adult education group, as well as isolated program types. Regarding past education experiences, it is also notable that more than one-third of the students in Pennsylvania adult education courses previously received schooling outside of the country. This may not be unprecedented, as MacArthur and colleagues (2012) found that 30% of the students in their study also received education outside of the U.S.

Taken together, the demographic composition of Pennsylvania's adult education students is consistent with national trends. While it is encouraging that a diverse group of students is engaged in adult education in Pennsylvania, it is also worth noting that there are notable demographic differences between students enrolled in ABE and ASE courses compared to ESL students. Future research efforts should continue to investigate this trend.

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RESEARCH QUESTION 2:

To what extent are there differences in completion for adult education courses based on program type, student demographics, and background characteristics?

Overall, close to 30% of adult education students in Pennsylvania completed at least one course. However, ASE students consistently completed courses at higher rates than ABE and ESL students. Considering this pattern of completion, it is likely that ASE students enter adult education courses with a set of skills that help facilitate course completion. Specifically, these students may possess study skills, numeracy and literacy skills that are less prevalent among ABE and ESL students. While there were not large differences in course completion between males and females, there were some obvious differences in completion by race/ethnicity. White and Asian students completed courses at a higher rate than Native Hawaiian/Pacific Islander, Black/African American, Hispanic and American Indian/Alaskan Native students. The disparities identified in this research are consistent with disparities in other educational areas in Pennsylvania and nationally (U.S. Department of Education, National Center for Educational Statistics, 2018).

Adult education as a whole should take systemic and programmatic steps to try to explain these disparate outcomes, as well as reduce these disparities. An examination of course completion by racial/ethnic group and program type revealed that rates were similar to the overall adult education rates for ABE and ASE students with White and Asian students completing courses at a higher rate than other students. However, among ESL students the proportion of American Indian/Alaskan Native students to complete courses doubled. In fact, the American Indian/Alaskan Native student group had the highest proportion (45%) of students to complete ESL courses. Interestingly, although Hispanic students made up the largest proportion of ESL students (47.9%), they had one of the lowest course completion rates (24.3%). While there is not a clear explanation for higher course completion rates among American Indian/Alaskan Native ESL students, it is possible that these students entered ESL courses more familiar with the language than other non-native English speakers. There is evidence to suggest many American Indian/Alaskan Native primary and secondary students enrolled in English-language courses do not speak a language other than English, they simply need assistance speaking and utilizing the language in formal, academic settings (Carjuzaa & Ruff, 2016).

Overall, close to 30% of adult education students in Pennsylvania completed at least one course. However, ASE students consistently completed courses at higher rates than ABE and ESL students.

Differences in course completion by age were largely a function of the large sample size. Completion rates were similar across all age ranges for ESL students; however, it is worth mentioning that the course completion rates were marginally higher among older students in ABE and ASE courses. Perhaps older students are more motivated to complete adult education courses as a result of their cumulative life experiences. Considering a line of research by Comings (1999) which suggests motivations for enrolling in adult education informs adult education students' persistence, additional research is necessary to assess this theory.

Though there were marginal differences in course completion by economic status and previous schooling type, there were more pronounced differences in course completion by area. Though close to 70% of adult education students in Pennsylvania were from urban communities, a larger proportion of rural

students completed adult education courses compared to urban students overall. Rural students in ABE and ASE courses demonstrated higher completion rates than urban students, but this trend was not evident among ESL students. Specifically, a slightly higher proportion of urban ESL students completed courses than rural students. Taken together, these findings raise several questions. First, are there specific challenges that urban students face that hinder their progression in adult education courses generally? If so, how can adult education programs in the Commonwealth increase supports for urban students in ABE and ASE courses? Specifically, are there other demographic, programmatic or systemic factors that exacerbate the difference between rural and urban ASE students? Concerning the differences between rural and urban students' course completion rates, it is interesting that the difference between rural and urban students was larger for ASE students (45.4% versus 29.5%). A closer examination of demographic characteristics showed that rural ASE students were less racially/ethnically diverse and entered their courses with slightly higher levels of education than urban ASE students and rural and urban students enrolled in ABE courses. While this does not definitively explain the larger effect of area among ASE students, it does provide greater contextual information for future research in this area.

Rural students in ABE and ASE courses demonstrated higher completion rates than urban students, but this trend was not evident among ESL students.

Across programs, ABE and ASE students with higher levels of education had higher rates of course completion, consistent with previous research (Greenberg et al., 2013). However, this trend did not hold for ESL students. Although the majority of ESL students entered the adult education program with a high school diploma or higher, there were no true differences in course completion among ESL students, regardless of their level of education. Taken together, these results suggest the characteristics that influence course completion among ABE and ASE students may operate somewhat differently for ESL students. The knowledge and skills highly educated ABE and ASE students use to move through their programs may not be as useful among highly educated ESL students. Taken together, it appears that the ways in which race/ethnicity, age, area and highest level of education influence our understanding of course completion among ABE and ASE students, may not quite fit for ESL students. Practice and policy efforts to support and increase course completion among ESL students must take a decidedly different approach to engage these students. More importantly, findings from this research suggest future efforts should analyze adult education programs independently (e.g. ABE, ASE, ESL) to identify the unique processes, outcomes and differences between programs, in addition to examining them as a comprehensive adult education program.

Taken together, it appears that the ways in which race/ethnicity, age, area and highest level of education influence our understanding of course completion among ABE and ASE students, may not quite fit for ESL students.

RESEARCH QUESTION 3:

What percentage of adult education students report EFL gains, high school equivalency and postsecondary enrollment after completing adult education courses? Are there differences in these outcomes among sub-groups of adult education students?

Overall, most of the students who completed at least one adult education course also demonstrated EFL gains and the percentage was consistent across programs. However, substantially fewer students acquired a high school equivalency or enrolled in postsecondary institutions. While EFL assessments are given during class time and within the structured time of adult education courses, seeking a high school equivalency and enrolling in postsecondary requires students to be self-motivated enough to seek out such opportunities. Clearly there are other factors or barriers that influence whether students attain a high school equivalency or enroll in postsecondary, but one's motivation to pursue these educational opportunities cannot be discounted. While rates of high school equivalency attainment and postsecondary enrollment were similar for ABE and ASE students, the percentage of ESL students to achieve these outcomes was significantly lower. While we know a majority of ESL students came into the program with a high school education or more, many of their counterparts entering into the program with lower levels of education may have experienced immigration-related challenges that created barriers and served as roadblocks to earning a high school equivalency or entering postsecondary. It is also important to note that high school equivalency and postsecondary enrollment are not primary goals for ESL students. Upon completion of ESL courses the goal for ESL students is to help facilitate the development and attainment of English proficiency and academic achievement (Pennsylvania Department of Education, 2020). Considering this, lower rates of high school equivalency attainment and postsecondary enrollment are less troubling than they seem on the surface.

While rates of high school equivalency attainment and postsecondary enrollment were similar for ABE and ASE students, the percentage of ESL students to achieve these outcomes was significantly lower.

While differences in high school equivalency and postsecondary enrollment were evident among ESL students and students in the other adult education programs, it is also worth noting that there were interesting differences in outcomes within programs. Namely, despite ASE students having the highest rates of course completion, they also had the lowest percentage of students with EFL gains. One would assume that students with the highest rates of completion would also demonstrate the highest rates of EFL gains. While the underlying reason for these discrepant findings is unclear, it is possible that ASE students entered with more skills and knowledge and with fewer gains to be made. Finally, it is also worth noting that rates of high school equivalency attainment and enrollment in postsecondary were much higher among students who completed at least one adult education course than students who did not. Hence, completing at least one course may increase the likelihood that a student will realize more positive outcomes related to their enrollment in adult education.

Findings from this study suggest there were differences in EFL gains, high school equivalency and postsecondary enrollment as a function of student demographics.

Findings from this study suggest there were differences in EFL gains, high school equivalency and postsecondary enrollment as a function of student demographics. There were not significant or meaningful differences in EFL gains by gender, age, economic status, area or previous schooling type. While the overall test that examined EFL gains by race was significant, those differences were primarily between racial groups in the rate of EFL losses or the percentage of students who experienced no change, and not differences in EFL gains.

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Although there were statistically significant differences in EFL gains among students with different levels of education, it should be noted that a majority of students experienced gains regardless of level of education. Overall, there was a trend such that the highest proportion of students with EFL gains were students who entered the adult education program with the lowest levels of educational attainment. Students whose highest level of education was special education/IEP diploma, students whose education was unknown and students who attended some college but did not receive a degree were reported to have the lowest percentage of students to demonstrate EFL gains. Findings from this study are consistent with previous research which suggests special education students have unique struggles in adult education courses (Mellard & Becker Patterson, 2008).

Group differences in attainment of a high school equivalency were evident among students with different racial/ethnic backgrounds, ages, economic status, area, previous schooling type and highest grade completed. The majority of White students (71.4%), multiracial (64.8%) students, and close to or more than half of American Indian/Alaskan Native and Black/African American students acquired a high school equivalency within two years of completing their adult education courses. Yet, just over a third of Hispanic and a very low percentage of Asian students (10.3%) attained the high school equivalent.

The 2017 *Annual Statistics Report on the HiSET Exam*, a widely used high school equivalency exam in the Commonwealth (Educational Testing Service, 2018), revealed slightly different statistics for Pennsylvania students. Specifically, the percentage of Black/African American, multiracial and White students to obtain a high school equivalency was higher among adult education students in this study. Conversely, the percentage of Asian, Hawaiian/Pacific Islander, Hispanic and American Indian/Alaskan Native students in this study to acquire a high school equivalency was significantly lower compared to the rates reported in the HiSET report. A notable difference between the students in this research and those students included in the HiSET annual report is that the current study only included adult education students, whereas the HiSET report included all Pennsylvania students who took the exam, whether they completed adult education courses or not. More broadly though, the results from this study, as well as other reports of high school equivalency (GED Testing Service, 2014), suggest racial/ethnic disparities in high school equivalency attainment are not uncommon. These disparities are not without consequence for adult education students. Without high school equivalency credentials, students are unable to move into postsecondary institutions, preventing them from taking advantage of a host of opportunities within those institutions. Extrapolating from more general assertions put forth by Van Horn and Kassab (2011), it is possible that the skills deficits that exist among students of color are carried into adult education courses and are evident in them seeking and attaining a high school equivalency. As stated previously, students coming into the program with lower levels of education or as ESL students, may experience immigration-related challenges or barriers that serve as roadblocks to earning a high school equivalency. Additional research is warranted to gain a greater understanding of why disparities in high school equivalency attainment persist.

Differences in high school equivalency attainment were also evident for age. A very clear pattern emerged suggesting rates of high school equivalency attainment were lower among older students. More than half of students under 44-years-old earned a high school equivalency, while significantly fewer students over the age of 60 earned similar credentials. Younger students may perceive a greater benefit in attaining a high school equivalency than older students; they may enter their programs with an explicit goal of attaining a high school equivalency credential. Conversely, students over the age of 60 may enter adult education programs with the sole purpose of acquiring more knowledge and skills. They may not perceive any benefit in earning a high school credential at their age. However, it is also possible that younger and older students seek high school equivalency credentials at comparable rates, but older students have more difficulty actually passing the required exams. Future research in this area should examine the rates at which younger and older students complete, not pass, high school equivalency exams.

Notable differences in high school equivalency attainment were also found between rural and urban students. Rural students were significantly more likely to acquire the credential than urban students (67.3% versus 48.5%). These findings mirror research by Van Horn and Kassab (2011), whose quantitative analyses also indicated that a slightly larger percentage of rural students passed their high school credentialing exam than urban students. However, this relationship may be even more complex and warrant additional research. Notably, while Van Horn and Kassab (2011) identified a host of demographic factors associated with obtaining a high school credential for both rural and urban students (higher level of educational attainment, younger age, higher income), they also concluded that being male and White was more strongly associated with obtaining the credential among urban adult education students only. Reasons for obtaining a high school credential also differed among rural and urban adult education students who obtained a high school credential (2011). Hence, differences in rural and urban students' rates of high school credentialing may be explained by an even more complex set of factors.

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The effect of previous education experiences may be especially critical, considering findings from the current study. Specifically, students who attended US-based schools were much more likely to acquire a high school equivalency credential than students who attended an international school (66.2% versus only 10.6%). There may be a host of reasons students with international schooling experience did not obtain a high school equivalency credential. These students may have experienced cultural or language barriers that hindered their performance on the exams. Overall, a closer examination revealed that there were stark differences between students whose last education experience was outside of the U.S. and other students. First, there were more Asian and Hispanic students with schooling experience outside of the U.S., yet a much higher percentage of White students whose last schooling experiences were in the U.S. Additionally, a majority of students whose last schooling was outside of the U.S. were older (58.5% between 25 - 44 years old) and more likely to reside in urban areas (87.3% urban) than U.S. based students (52.1% between 16 – 24 years old; 46.9% urban). Regarding highest education completed, a much higher percentage of U.S. based students attended high school (91.5%), compared to non-U.S. based schooling students (51.1%). Taken together, the differences between these groups are consistent with demographic differences previously referenced. Hence, the lower rate of high school equivalency attainment among students whose last schooling was outside of the U.S. is consistent with other findings in this report.

As one might expect, students who entered adult education courses with higher levels of education (students entering with a high school diploma/GED or higher excluded) had the highest rates of high school equivalency attainment. This suggests students with at least a middle school education when entering an adult education program may have the requisite knowledge and skills to successfully pass the high school credentialing exam after completion of their program. These students may have also perceived the acquisition of a high school credential as less challenging and been more persistent in their efforts to obtain a credential because they were so close to obtaining a traditional high school diploma before entering adult education courses. Area, previous schooling type and highest grade completed have also been identified as crucial factors in previous research (Van Horn & Kassab, 2011). Future empirical studies must examine the simultaneous effects of these variables on high school equivalency attainment.

As one might expect, students who entered adult education courses with higher levels of education (students entering with a high school diploma/GED or higher excluded) had the highest rates of high school equivalency attainment.

Consistent with previous research (Rutschow & Crary-Ross, 2014; U.S. Department of Education, 2013), only a small percentage of adult education students enrolled in postsecondary institutions after completing their courses. Unlike EFL gains and high school equivalency, there were not true differences in postsecondary enrollment by race, economic status, area or previous schooling type. Because postsecondary enrollment was so rare among students in this study, demographic differences in postsecondary enrollment were statistically more difficult to detect. Perhaps more variation within the sample would have yielded more robust findings regarding postsecondary enrollment.

Despite the dearth of students who enrolled in postsecondary overall, there were marginal group differences in postsecondary enrollment by gender, age, international school and highest grade completed. Females in this study were slightly more likely to continue to postsecondary after completing adult education courses. While the reasons for this are unclear, it is consistent with national trends which indicate females outnumber males in postsecondary enrollment (Coley, 2008; U.S. Department of Education, National Center for Education Statistics, 2018). Parallel to the findings for high school equivalency, younger students were more likely to enroll in postsecondary. Older adult education students may have more familial and financial demands preventing them from moving forward with this phase of their education (Bosworth, 2008). Students whose last enrollment was in non-U.S. based schools were slightly less likely to enroll in postsecondary. It is possible that these students were less familiar with the postsecondary enrollment process than their U.S.-based peers. Also, many of these students may face some of the financial and social challenges typically experienced by immigrant and first-generation students (Abrica & Martinez, 2016; Cooper et al., 2018), making it less likely for them to pursue postsecondary education. Regarding highest grade completed, a significantly higher percentage of students who entered adult education courses with some college experience, but no degree transitioned into postsecondary institutions after completing their adult education program. More than half of these students were enrolled in ASE courses, likely because they entered into adult education programs with more knowledge and skills than their counterparts with less education. Students with a GED also entered postsecondary at a higher rate than other students. In addition to having more knowledge and skills than students with lower levels of education, students whose highest level of education was a GED may have also been more explicit and intentional in their pursuit of postsecondary enrollment. Specifically, some GED students may perceive adult education courses as a steppingstone towards their ultimate goal of postsecondary enrollment.

RESEARCH QUESTION 4:

Is there an intensity of instruction that correlates more strongly with better student outcomes?

The likelihood of Commonwealth adult education students achieving EFL gains, obtaining a GED or enrolling in postsecondary are influenced by a complex set of factors and vary by program. Regarding EFL gains, results suggest ABE, ASE and ESL students were more likely to demonstrate gains if they received at least 100 hours of instructional time. The odds of achieving EFL gains increased even more among students from all programs when they received 175 hours or more of instruction. The likelihood of acquiring a high school credential also increased among ASE students when they received 100 hours or more of instruction. By itself a benchmark of 100 hours may seem arbitrary, yet studies suggest students who engage in adult education for 100 hours also report more desirable outcomes. Rose and Wright (2006) analyzed NRS data from three states and concluded that 50% of the students who completed 100–110 hours of instructional time reported EFL gains and acquired a high school credential. Similarly, Morgan and colleagues (2017) concluded that the odds of obtaining a high school credential increased when ABE students completed 100 hours or more of instruction. According to the U.S. Department of Education (2003) the average amount of time adult education students spend in their courses is 113 hours. Hence, it appears that "average" engagement in adult education programs is positively associated with the likelihood of achieving some of the educational goals put forth for adult education students. However, among ABE and ASE students, findings from this study suggest the likelihood of achieving gains is even more pronounced when they receive 175 hours of instruction or more. Conversely, ESL students' chances of achieving EFL gains increased significantly when they received 50 hours of instruction or more, suggesting these students benefit even when they receive less than 100 hours of instructional time. The program specific analysis utilized in this study suggests the odds of demonstrating EFL gains and attaining a high school credential vary by intensity, but also by program. Furthermore, while the research focusing on 100 hours or more is valuable, this study provides a strong justification for examining the likelihood of desired educational outcomes at more and less intense levels of adult education.

Regarding EFL gains, results suggest ABE, ASE and ESL students were more likely to demonstrate gains if they received at least 100 hours of instructional time.

The relationship between intensity of instruction with attainment of a high school credential cannot be oversimplified. While there was an increased likelihood of acquiring a high school credential among ASE students who received 100 hours or more of instruction time, it is worth noting that having fewer instructional hours was associated with increased odds of obtaining a high school credential among ABE students. Although this may seem counterintuitive, if the prior education of students in this program is considered, this finding makes sense. A majority of ABE students with prior education that included "attended but did not complete Grade 12" (65%) and "some high school" (61%) went on to obtain a GED. Additionally, as the findings for EFL gains showed, students with less than a high school diploma had higher odds of experiencing EFL gains. It is likely a lower intensity of instruction (fewer hours) is needed for these students to experience gains and reach the level needed to go on to obtain a GED, thus the effect we find regarding intensity. Despite the differences in high school credential attainment between ABE and ASE students who receive 100 hours of instruction or more, students from both programs were more

likely to earn a high school credential if they received any ABE (6.85 higher odds) or ASE (12.28 higher odds) instruction. In other words, ABE and ASE students' chances of acquiring a high school credential increase if they receive any instruction. Many students enter adult education programs with the explicit goal of acquiring a high school credential (Tighe et al., 2013). Hence, it could be that students who acquire any hours in adult education are simply more likely to earn a high school credential.

In other words, ABE and ASE students' chances of acquiring a high school credential increase if they receive any instruction.

Despite the relationship between program intensity with EFL gains and high school credential attainment, there continues to be a persistent relationship between these outcomes and demographic factors. Namely, among ASE students, the likelihood of achieving EFL gains increased when the student was male, and even more so when the student had less than a high school diploma or college/professional degree. Knowledge gains may be more robust among students with less education. Specifically, students who enroll in ASE courses and have a high school diploma or college/professional degree may not show any demonstrable EFL gains from their pre-test to post-test, as they are entering their courses with a stronger academic skill set. Among ESL students, the chances of achieving EFL gains were higher among non-Hispanic students. This finding is consistent with a more general trend in the educational literature which suggests educational outcomes among Hispanic students' lag behind other racial/ethnic groups (Kena et al., 2014; Merolla, 2018; Stillwell & Sable, 2013). This finding suggests that even among other ESL students, Hispanic students might face unique cultural barriers that hinder their academic performance. Contrary to prior research (Van Horn & Kassab, 2011), results from this study also show that ESL students residing in urban areas had a higher likelihood of achieving EFL gains than their rural counterparts. While this might seem surprising given the literature touting more positive academic outcomes among rural students (2011), it is also possible that ESL students in urban communities benefit from more access to cultural, social and educational resources in urban communities that students in rural communities do not have access to. ESL students may also reap the benefits of having tighter social networks in urban areas that are more populated by immigrants and non-native English speakers (Pew Research Center, 2018).

Despite the relationship between program intensity with EFL gains and high school credential attainment, there continues to be a persistent relationship between these outcomes and demographic factors.

Demographic effects were also evident for high school credential attainment. Specifically, White students and students who were not low-income had a much higher chance of acquiring a high school credential than non-White students and students experiencing economic disadvantage, regardless of intensity of instruction. Unfortunately, even intense academic engagement does not seem to dull the well-established relationship between academic outcomes with income (Crosnoe & Mueller, 2014; Palardy, 2013) and race (Murnane, 2013; National Center for Educational Statistics, 2017) for students. Economically disadvantaged and non-White students often face challenges

White students and students who were not low-income had a much higher chance of acquiring a high school credential than non-White students and students experiencing economic disadvantage, regardless of intensity of instruction.

their peers do not have to navigate which may hinder their performance and achievement in adult education spaces. Finally, it is worth noting that demographic factors did not have any impact on the likelihood of achieving EFL gains among ABE students. This suggests that receiving intense ABE instruction (100 or more hours) in and of itself is critical for students who enter adult education courses with fewer skills. Among ABE students, intense instruction alone has a favorable impact on student educational outcomes.

Study Limitations and Future Research

The conclusions of this research are based on data collected by individual adult education programs across the state. These programs vary greatly in the amount of resources they have to carry out their programs and perform other administrative duties. Relevant to the current study, a lack of resources may have impacted the quality of data reported, as well as the frequency of data reporting for some programs. While the authors are unable to identify specific instances of inaccurate data, there were multiple instances of incomplete reporting. Despite federal and state guidance that dictates the methodology for how adult education data should be collected and categorized, it is likely that there was some variation in the data collection methodology across programs.

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Several thought-provoking findings were revealed in this study. However, in many cases the significant tests of association were found to have small effect sizes. This suggests there are other factors that should be considered to fully understand adult education processes and student outcomes in Pennsylvania. Additionally, given the differences found by program type, it would be beneficial to examine additional research questions and student group differences individually for each program type. Lastly, we were unable to examine student motivation, student familial characteristics, or specific information about the adult education programs and teachers involved in adult education courses. To increase our general understanding of adult education students in Pennsylvania, these variables should be included in future research.

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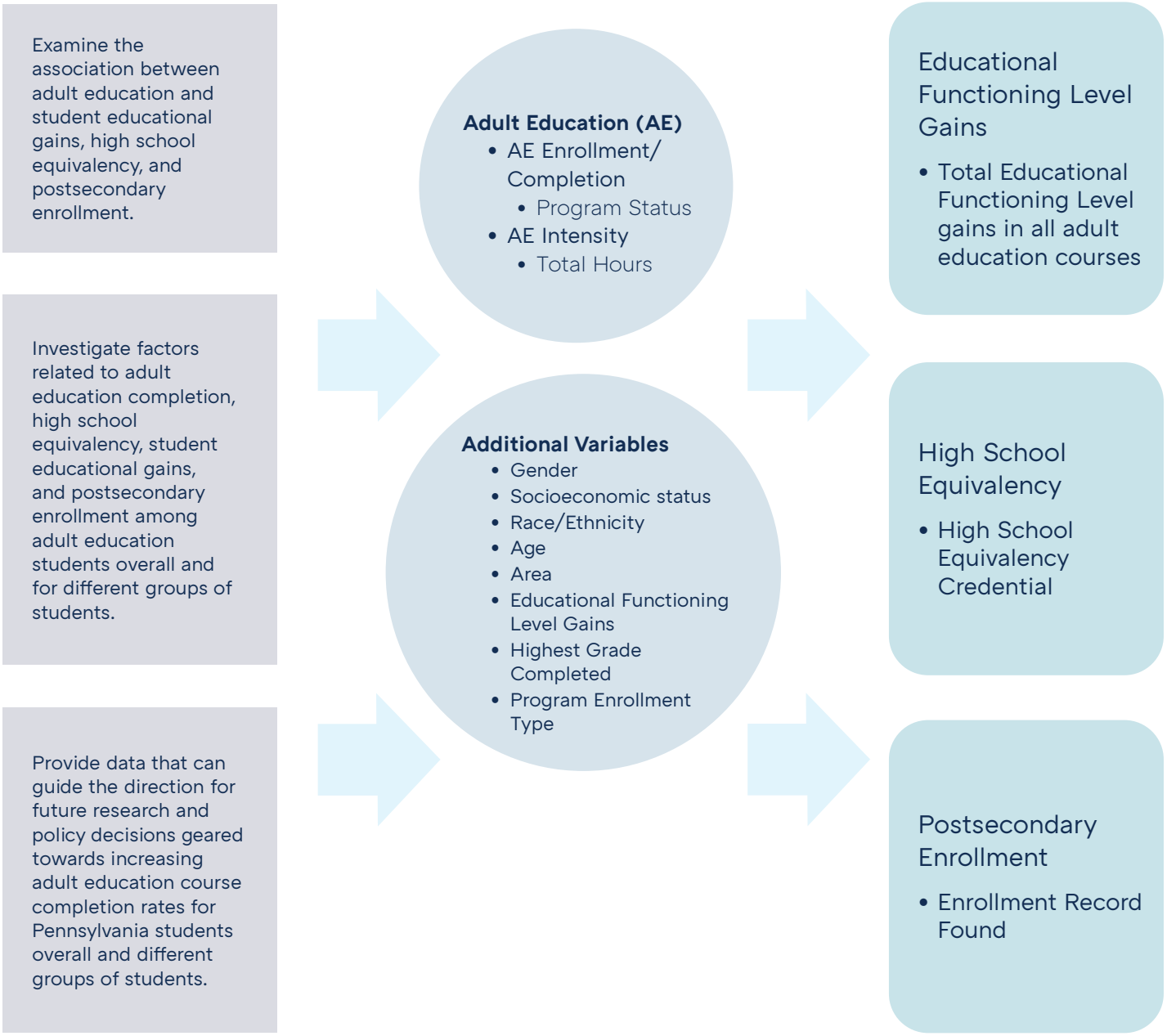
Appendix 1

Study Conceptual Model



Appendix 2

Description of Study Variables for Analytic Models

Variable Type	Description	Data Source
Outcome Variables (Dependent Variables)		
Educational Functioning Level Gains	• Measured as a dichotomous and categorical variable that captures entry educational functioning levels in reading, writing, speaking, and listening and functional areas • Measured as a dichotomous and continuous variable that captures exit educational functioning levels in reading, writing, speaking, and listening and functional areas	eData
High School Equivalency	• High School Equivalency Diploma: *Yes* versus *No*	DiplomaSender eData
Postsecondary Enrollment	• Enrollment status: *Identifies if a "postsecondary record" was found for the student*	NSC
Predictors (Independent Variables)		
Enrollment Status	• Adult status: *Active, Inactive, Completed* and *Left* ◦ Analysis only conducted on students who were *Inactive, Completed* or *Left*	eData
Adult Education Intensity	• Total number of hours *(continuous)* • Categorical variables representing intensity based on 50, 75, 100, 150, 175, 200, 250, and 300 hours or more of adult education instructional time.	eData eData
Covariates		
Gender	• Dichotomous variable that represents *Male* and *Female*	eData
Socioeconomic Status	• Socioeconomic disadvantage: A dichotomous variable that includes *Yes* or *No* to *"A person who within the past 6 months has received income-based assistance, such as housing supplement or food stamps, or whose total family income is below 70 percent of the lower living standard income level."*	eData
Race/Ethnicity	• Categorical variable that includes the following: *American Indian or Alaskan Native, Black or African American, White (not Hispanic), Hispanic/Latino, Asian, or Native Hawaiian or Other Pacific Islander*	eData
Age	• Categorical variable created from Date of birth *(open-ended)*	eData
Area	• Dichotomous variable that represents *Rural* and *Urban residency*	eData
Highest grade completed	• Categorical variable that includes *Elementary School, Middle School, High School, Attended/Did Not Complete Grade 12, High School Diploma/Grade 12, High School Equivalency Diploma, Special Education/IEP Diploma, Some College/No Degree, College/Professional Degree, No Schooling, Unknown*	eData
Program Enrollment Type	• Categorical variable that represents *ABE*, *ASE*, and *ESL program enrollment*	eData

Appendix 3

Study Definitions

1. **Active:** Students who were actively enrolled in adult education courses and did not report any other enrollment status (i.e. completed, inactive, left).

2. **Adult Education:** Services or instruction below the postsecondary level for individuals who have attained 16 years of age; are not enrolled or required to be enrolled in secondary school under state law; and who

    a. lack sufficient mastery of basic education skills to enable the individuals to function effectively in society,

    b. do not have a secondary school diploma or its recognized equivalent, and have not achieved an equivalent, and have not achieved an equivalent level of education, or

    c. are unable to speak, read, or write the English language.

3. **Adult Basic Education:** ABE courses are designed for adults who lack competence in reading, writing, and math, and are looking to acquire basic literacy and numeracy skills. Instruction in reading, writing and math are offered at grade-level equivalents through eighth grade.

4. **Adult Secondary Education:** ASE courses provide instruction to individuals who have some literacy skills and can function in everyday life, but are not proficient in reading, writing, and math. Instruction in reading, writing and math is offered at 9–12 grade-level equivalents. These courses also support individuals' transition to postsecondary education or training.

5. **Completed Courses:** Students who completed at least one ABE, ASE or ESL course during their tenure in adult education. They may have reported other enrollment statuses during their adult education tenure, but the course completion status superseded any other status.

6. **English as a Second Language:** ESL courses help individuals achieve competence in reading, writing, speaking and comprehension of the English language. These programs focus on strengthening individuals advanced language skills required for academic settings. ESL courses provide concentrated instruction in English for students who primarily speak another language.

7. **Highest Level of Education Completed:** The following categories represent the highest levels of education completed by students enrolled in adult education courses:

    a. Elementary School: Represents students whose highest education was between Kindergarten and Grade 5.

    b. Middle School: Represents students whose highest education was between Grade 6 through Grade 8.

    c. High School: Represents students whose highest education was between Grade 9 through Grade 11.

d. **Attended/Did Not Complete Grade 12:** Represents students whose highest education was enrollment in Grade 12 but did not complete Grade 12.

e. **High School Diploma/Grade 12:** Represents students who enrolled in and completed Grade 12 and received a high school diploma.

f. **College or Professional Degree:** Represents students whose highest education was a college or professional degree.

g. **GED:** Represents students whose highest education was a high school equivalency credential outside of a traditional K–12 institution.

h. **Some College, No Degree:** Represents students whose highest level of education was some college but did not obtain a college degree.

i. **Special Education/IEP Diploma:** Represents students whose highest level of education was a special education or IEP diploma.

j. **No Schooling:** Represents students who report not having any formal schooling/education.

k. **Unknown:** Represents students whose highest level of education was unknown.

8. **Inactive/Left:** Students who reported an enrollment status as either inactive or left and had not completed a single adult education course.

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POL PK-20 Policy

ECE Early Childhood Education

K12 K-12 Education

PSE Postsecondary Education

WRK Workforce

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