# AN ANALYSIS OF BACCALAUREATE TIME TO COMPLETION AND GPA BY TYPE OF ACCELERATED COLLEGE CREDIT

**Wil Perkins**
*Harding University*
*wperkins@harding.edu*

**Aarek Farmer**
*Freed-Hardeman University*
*afarmer@fhu.edu*

## Abstract

This study explored differences in the time to completion (graduation) and final GPA of first time in college (FTIC) students based on the type of earned institutional credits when accepted, and the academic results due to race and sex. Existing data from 6591 college graduates from two private universities were analyzed using descriptive statistics and ANOVAs. The results showed statistically significant differences in the time it took students to graduate as well as statistically significant differences in final GPAs based on the type of earned credits at the time of acceptance. Furthermore, significant differences in completion time and GPA existed among students with different races as well as between males and females.

**Keywords:** time to completion, first-time college students, dual enrollment, exam credit, GPA, accelerated college credit

## Introduction

Accelerated College Credit (ACC) refers to a broad set of programs allowing high school students to earn college credit before graduation. High school students may earn college-level credit in one of three ways. Exam credit includes Advanced Placement (AP) and International Baccalaureate courses. High school instructors facilitate these classes, but they are to be more rigorous than a regular high school course. However, for high school students to earn college-level credits in AP, students must take an optional exam at the end of the course and score high enough to be granted credit at the postsecondary

institution (Hodara & Pierson, 2018). Exam credit courses allow high school students to attend a course on campus while being exposed to more rigorous coursework.

High school students may also earn college credit by taking a college-level course. Earning these credits is accomplished in one of two ways. Students may earn college credit by taking a dual-credit course. High school instructors teach these college courses at the high school (Pierson et al., 2018). The teachers of these courses have to meet state licensure requirements and often have a master's degree in the subject matter they teach (Hodara & Pierson, 2018; Shields et al., 2021). Therefore, students earn college credit through agreements between the local college and the high school.

Additionally, students earn college credit through dual enrollment, simultaneously being enrolled in high school and a postsecondary institution (Hodara & Pierson, 2018). These high school students attend college courses in person or online. Often, the purpose of these courses is to allow students to meet high school requirements while simultaneously earning college credit. This method may require high school students to travel to college, but it allows them to experience campus life.

The practice of high school students completing college courses continues to rise. Thomas et al. (2013) formulated that in the 2010-11 academic year, 1.4 million high school students were enrolled in a higher education course. The National Alliance of Concurrent Enrollment Partnerships (2022) cited that the dual enrollment of high school students in college-level courses has had an annual 7% growth since 2002-03. There is no indication that this trend will soon slow down.

These programs are advertised as a means to help prepare students for the rigor of college and reduce time, thus saving student money. Despite these claims, few studies have examined whether ACC programs are effective. Researchers are split as to the results of these programs on college success. Both Miller et al. (2017) and Speroni (2011) agree that these credits do not ultimately benefit college students academically. However, Blankerberger et al. (2017) and Ison (2022) argue that students with ACC are more likely to earn a college credential than those students who do not have these credits. Since ACC programs are often touted as a way to improve education outcomes, studies must explain what, if any, benefit is derived from high school students participating in such programs.

This study adds to the growing literature on ACC and baccalaureate obtainment by utilizing data from two private universities in the south to analyze how taking college courses while in high school affects bachelor's degree outcomes. ACC was divided into three categories: exam credit, junior or community college credit, and four-year institutions.

## Literature Review

### Competing Agendas

When ACC programs were first introduced in the 1950s, the primary motivation was to provide a way for high school students to have access to more rigorous coursework that would prepare them for college (Hodara & Pierson, 2018; Pierson, Hodara, & Luke, 2018; Troutman et al., 2018). However, this is no longer the only motivation given that Miller et al. (2019) acknowledged that for the state of Washington's school system, dual-credit courses are a tool used to address inequity and to allow students to "buy down" the cost of higher education. For others, ACC programs have been identified as a way to improve college participation and postsecondary credentials (Miller et al., 2018; Pierson et al., 2018). Some postsecondary institutions market the taking of college-level work in high school as a means to reduce the time to completion (Hodara & Pierson, 2018; Thomson, 2017). Having different agendas for high school students completing college-level courses means that the students these programs target are changing, complicating the ability to assess outcomes.

With competing messaging about the value of these courses, students and their parents arrive on campus expecting that every college credit earned in high school will be helpful. However, this is rarely the case because of how bachelor's degree programs are built, and the sequencing of courses does not always promote faster degree attainment (Witkowsky et al., 2020). Additionally, not all ACCs help students in their chosen degree program, leaving advisors with the difficult task of planning schedules with relevant courses (Witkowsky et al., 2020). The experience often leaves students feeling that someone along the way did not provide them with all the necessary information.

Postsecondary institutions and policymakers often promote the value added by ACC programs. However, some colleges treat these programs as a means to gloss over their

shortcomings. Thompson (2017) argued that this mindset treats students as consumers who are used to meet cost-reduction initiatives and to improve graduation metrics. In 2016, six states spearheaded initiatives to get more high school students into college courses without clearly understanding these programs' effectiveness (Thompson, 2017). Students and their families often buy into the promises associated with ACC programs, but the reality is not what is expected. Additional research is needed to help clarify the potential value of ACC opportunities.

**Exam Credit**

The College Board popularized college credit by exam by introducing the Advanced Placement (AP) program in the 1955-1956 academic year (Valentine, 1987). Students can earn credit for college by taking a high school course designed to be more challenging and provide the students with the knowledge base to succeed in the next level of the subject matter. The ongoing debate is whether these courses prepare students for college success.

Some researchers tout the advantages of exam-based credit. Hodara and Pierson (2018) asserted that exam-credit students were more likely to enroll in college, at least for their first year, than students who participated in dual-credit or dual-enrollment courses. Students who possessed AP mathematics or AP English were more likely to be college ready in English, reading, and mathematics than students without these credits and remain enrolled past their freshman year, as ascertained by Bowers and Foley (2018). In addition, Hurt and Maeda (2021) calculated that students with AP credit tend to have higher grades than their non-AP peers; however, the correlation was not statistically robust.

Some researchers find that exam-credit courses do not always help students. Burkholder and Wieman (2019) admitted that students with AP physics do not outperform those who have taken a regular high school physics course. Additionally, there is the anecdotal belief of collegiate faculty that exam courses lack rigor. This mindset results in students being advised to repeat the course to ensure that they understand the subject adequately (Hurt & Maeda, 2021; Sadler & Sonnert, 2018). The repetition of college credit already earned delays students' graduation plans and adds to the cost of their education. Warne (2017) has chided the research community because little independent research confirms whether AP academically benefits students.

**Community College Credit**

The ability of high school students to complete courses at the local community college is ubiquitous. The number of students taking dual-enrollment courses from junior colleges has increased significantly since the early 2000s (Fink et al., 2017). Many believe that access to college courses for high school students is a viable means to achieve greater postsecondary credentials for the American workforce (Ison, 2022). Therefore, it is not surprising that Fink et al. (2017) nationally have shown that 15% of the Fall 2010 students enrolled in a community college participated in a dual-enrollment program.

Some researchers have found a positive correlation between participation in ACC programs based in community colleges and degree attainment. Blankerberger et al. (2017) have shown that students who participated in dual-enrollment programs and enrolled in a community college after high school were more likely to complete a baccalaureate degree than those who did not participate in dual enrollment. Furthermore, Fink et al. (2017) demonstrated that of those who participated in a community college's dual-enrollment program, 64% earned a college credential within five years.

**Race**

One of the variables affecting ACC participation, college enrollment, and completion is the student's race. Students of racial and ethnic minorities are less likely to participate in ACC options than their peers (Miller et al., 2019; Pierson et al., 2018; Shields et al., 2021). Cisneros et al. (2014) further supports that race is a factor by indicating that Black, Hispanic, and American Indian students are less likely to enroll in AP courses than White and Asian students. The lack of participation in ACC programs from these cohorts may reflect a lack of college enrollment from these groups. Irwin et al. (2021) held that since 2019, the college enrollment rate for Black students dropped, while all other ethnic groups had no measurable difference. Therefore, a lack of participation in ACC and enrollment negatively affects completion rates.

However, Hodara and Pierson (2018) have distinguished that students who participated in ACC programs were 22% more likely to persist in college, and these findings were consistent for Black, Hispanic, and Native American students. Ison (2022) observed that Black and Hispanic students are more likely to earn a college credential than their

White peers if they participated in dual enrollment. The positive correlation between minority students, participation in ACC opportunities, and college enrollment is encouraging.

**Sex**

The sex of the student is also a variable to be considered. It is not just minority students who are underrepresented in ACC programs; male students are also (Shields et al., 2021). Peirson et al. (2018) have clarified that this is true among all racial and ethnic groups. On average, female students have a 6.5% higher probability of enrolling in a dual-credit course, making up the majority of participants in ACC options (Peirson et al., 2018). This lack of male involvement in ACC opportunities designed to induce college participation is mirrored in national data. The overall six-year graduation rate is 60% for males and 66% for females (Irwin et al., 2021).

Researchers have concluded that male students who participate in ACC programs benefit from these programs by being more likely to enroll and persist in higher education (Karp et al., 2008). Therefore, even though males do not engage in ACC options at as high a rate as females, encouraging their participation is helpful.

**Accelerated College Credit**

ACC programs allow students to enter college with previously earned college credits, which are very popular. The National Alliance of Concurrent Enrollment Partnerships (2022) disclosed that in the 2010-2011 academic year, over a million high school students completed over two million college courses. Several researchers tout the benefits of students participating in these programs (Blankerberger et al., 2017; Bowers & Foley, 2018; Fink et al., 2017; Hodara & Pierson, 2018; & Ison, 2022). Because of these results, state policymakers seek ways to expand participation in ACC programs (Thomson, 2017). Despite the touted positive results, some are concerned about the growth of these programs.

The complete picture of how these courses affect students is not fully understood. This has caused several researchers to ask for more investigations into the academic benefits of the ACC (Fink et al., 2017; Pierson et al., 2018; Thomson, 2017; Troutman et al., 2018; Warne, 2017). Hodara and Pierson (2018) judged that the positive association

between ACC and educational outcomes varied in magnitude based on the model used. They discovered that the pass rates were highest for dual-credit students and lowest for the AP exam, while dual-enrollment students completed more courses but passed at lower rates (Hodara & Pierson, 2018).

## Methodology

The purpose of this study was to determine if differences in time to completion (graduation) and final GPA existed among first-time in college (FTIC) students based on the type of earned institutional credits when accepted (i.e., (a) students with no previous college credits, (b) students with previous exam credits only, (c) students with previous 2-year credits (dual credit from a junior or community school), and (d) students with previous 4-year credits (dual enrollment from a 4-year college/university)). Furthermore, a goal of this study was to explore whether race and sex impacted differences in time to completion and final GPA when also controlling for race and sex. The target population included first-time college students from two private universities in the Southeast United States. The final sample included data from 6,591 students. The following questions guided the study:

1. Is there a significant difference in the (a) time to completion and (b) GPA of FTIC students based on the type of earned institutional credits when accepted?

2. Is there a significant difference in the time to completion of FTIC students based on the type of earned institutional credits when accepted when controlling for (a) race and (b) sex?

3. Is there a significant difference in the final GPA of FTIC students based on the type of earned institutional credits when accepted when controlling for (a) race and (b) sex?

After IRB approval was obtained to conduct the study, existing data were retrieved from two universities, which included student data on ethnicity, sex, type of earned credits prior to acceptance, GPA at graduation, and ACT at acceptance. All data were entered into Intellectus Statistics (2023), and descriptive statistics were run as well as a series of ANOVAs.

### Sample Population

Regarding the final sample demographics, the majority of the students were white (*n* = 5817, 88.26%) and female (*n* = 3839, 58.25%). Furthermore, the majority of the students came in with no dual-enrollment credits (*n* = 2781, 42.19%). Frequencies and percentages are presented in Table 1.

**Table 1**

*Final Sample Demographics*

| Variable | *n* | % |
|---|---|---|
| Ethnicity | | |
| Asian | 38 | 0.58 |
| Other | 192 | 2.91 |
| Black | 201 | 3.05 |
| Foreign National | 136 | 2.06 |
| Hispanic | 169 | 2.56 |
| White | 5817 | 88.26 |
| Missing | 38 | 0.58 |
| Type of Earned Credits (prior to acceptance) | | |
| Combination of Exam and College Credits | 487 | 7.39 |
| Previous 4-year College Credits | 937 | 14.22 |
| Previous 2-year College Credits | 1805 | 27.39 |
| Previous Exam Credits | 223 | 3.38 |
| No Dual Enrollment | 2781 | 42.19 |
| Missing | 358 | 5.43 |
| Sex | | |
| Female | 3839 | 58.25 |
| Male | 2752 | 41.75 |

*Note*. Due to rounding errors, percentages may not equal 100%. "Missing" denotes participants in which ethnicity and/or types of earned credits data were not available.

Regarding GPA at the time of graduation, the population had an average of 3.31 (*SD* = 0.71, $SE_M$ = 0.009, *Min* = 0.00, *Max* = 4.00, Skewness = -2.79, Kurtosis = 10.33, *Mdn* = 3.46).

The population averaged 3.94 years to completion or graduation (*SD* = 0.63, $SE_M$ = 0.008, *Min* = 1.00, *Max* = 7.67, Skewness = 1.67, Kurtosis = 6.62, *Mdn* = 3.67). The population had an average 25.69 ACT score prior to acceptance (*SD* = 6.44, $SE_M$ = 0.08, *Min* = 0.00, *Max* = 39.00, Skewness = -1.21, Kurtosis = 3.82, *Mdn* = 26.00). This data are summarized in Table 2.

**Table 2**

*Summary Statistics for GPA, Years to Completion, and ACT*

| Variable | *M* | *SD* | *n* | $SE_M$ | *Min* | *Max* | *Skewness* | *Kurtosis* | *Mdn* |
|---|---|---|---|---|---|---|---|---|---|
| GPA | 3.31 | 0.71 | 6591 | 0.009 | 0.00 | 4.00 | -2.79 | 10.33 | 3.46 |
| Years to Completion | 3.94 | 0.63 | 6390 | 0.008 | 1.00 | 7.67 | 1.67 | 6.62 | 3.67 |
| ACT | 25.69 | 6.44 | 6591 | 0.08 | 0.00 | 39.00 | -1.21 | 3.82 | 26.00 |

## Results

### Research Question 1

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in the number of years it took an FTIC student to graduate as well as final GPA based on the type of previously earned credits. The assumption of normality was assessed by plotting the quantiles of the model residuals against the quantiles of a Chi-square distribution, also called a Q-Q scatterplot (DeCarlo, 1997). For the assumption of normality to be met, the quantiles of the residuals must not strongly deviate from the theoretical quantiles. Strong deviations could indicate that the parameter estimates are unreliable. Homoscedasticity was evaluated by plotting the residuals against the predicted values (Bates et al., 2014; Field, 2017; Osborne & Walters, 2002). The assumption of homoscedasticity is met if the points appear randomly distributed with a mean of zero and no apparent curvature. To identify influential points, studentized residuals were calculated, and the absolute values were plotted against the observation numbers (Field, 2017; Pituch

& Stevens, 2015). Studentized residuals are calculated by dividing the model residuals by the estimated residual standard deviation. An observation with a studentized residual greater than 3.09 in absolute value, the 0.999 quantile of a t distribution with 6087 degrees of freedom, was considered to have a significant influence on the results of the model.

**Years to Completion**

The ANOVA was examined based on an alpha value of .05. The results of the ANOVA were significant, $F(4, 6{,}083) = 79.73$, $p < .001$, indicating that there were significant differences in the time it took an FTIC student to graduate based on the type of previously earned credits they had received at acceptance (Table 3). The eta squared was 0.05, indicating that the type of earned credits explained approximately 5% of the variance in the time it took a student to complete. The means and standard deviations are presented in Table 4.

**Table 3**

*Analysis of Variance Table for Time to Completion (Years) by Type of Earned Credits*

| Term | *SS* | *df* | *F* | *p* | $\eta_p 2$ |
|---|---|---|---|---|---|
| Type of Earned Credits | 125.17 | 4 | 79.73 | < .001 | 0.05 |
| Residuals | 2,387.29 | 6083 | | | |

**Table 4**

*Mean, Standard Deviation, and Sample Size for Time to Completion (Years) by Type of Earned Credits*

| Combination | *M* | *SD* | *n* |
|---|---|---|---|
| No Dual Enrollment | 4.07 | 0.70 | 2770 |
| Previous Exam Credits | 3.76 | 0.41 | 223 |
| Previous 2-year College Credits | 3.85 | 0.62 | 1723 |
| Previous 4-year College Credits | 3.85 | 0.50 | 885 |
| Combination of Exam and College Credits | 3.63 | 0.49 | 487 |

**Post-hoc Comparisons**

A t-test was calculated between each group combination to further examine the differences among the variables based on an alpha of .05. HSD *p*-value adjustment was used to correct for the effect of multiple comparisons on the familywise error rate. Students with no dual enrollment (*M* = 4.07, *SD* = 0.70) spent a significantly longer amount of time to graduate than students entering college with previous exam credits (*M* = 3.76, *SD* = 0.41), *p* < .001, with previous 2-year college credits (*M* = 3.85, *SD* = 0.62), *p* < .001, and with previous 4-year college credits (*M* = 3.85, *SD* = 0.50), p < .001, and with a combination of exam and college credits (*M* = 3.63, *SD* = 0.49), *p* < .001.

Students with previous 2-year college credits (*M* = 3.85, *SD* = 0.62) and previous 4-year college credits (*M* = 3.85, *SD* = 0.50) spent a significantly longer amount of time to graduate than students entering college with a combination of exam and college credits (*M* = 3.63, SD = 0.49), *p* < .001.

GPA

The ANOVA was examined based on an alpha value of .05. The results of the ANOVA were significant, *F*(4, 6,228) = 47.45, *p* < .001, indicating that there were significant differences in GPA based on the type of previously earned credits they had received at acceptance (Table 5). The eta squared was 0.03 indicating that the type of earned credits explained approximately 3% of the variance in GPA. The means and standard deviations are presented in Table 6.

**Table 5**

*Analysis of Variance Table for GPA by Type of Earned Credits*

| Term | *SS* | *df* | *F* | *p* | $\eta_p 2$ |
|---|---|---|---|---|---|
| Type of Earned Credits | 60.03 | 4 | 47.45 | < .001 | 0.03 |
| Residuals | 1,969.48 | 6228 | | | |

**Table 6**

*Mean, Standard Deviation, and Sample Size for GPA by Type of Earned Credits*

| Combination | *M* | *SD* | *n* |
|---|---|---|---|
| No Dual Enrollment | 3.28 | 0.48 | 2781 |
| Previous Exam Credits | 3.61 | 0.36 | 223 |
| Previous 2-year College Credits | 3.40 | 0.57 | 1805 |
| Previous 4-year College Credits | 3.36 | 0.83 | 937 |
| Combination of Exam and College Credits | 3.58 | 0.36 | 487 |

**Post-hoc Comparisons**

A t-test was calculated between each group combination to further examine the differences among the variables based on an alpha of .05. HSD p-value adjustment was used to correct for the effect of multiple comparisons on the familywise error rate. For students entering college with no dual enrollment ($M$ = 3.28, $SD$ = 0.48), their GPA was significantly lower than students with previous exam credits ($M$ = 3.61, $SD$ = 0.36), $p$ < .001, previous 2-year college credits ($M$ = 3.40, $SD$ = 0.57), $p$ < .001, previous 4-year college credits ($M$ = 3.36, $SD$ = 0.83), $p$ < .001, and a combination of exam and college credits ($M$ = 3.58, $SD$ = 0.36), $p$ < .001.

For students entering college with previous exam credits ($M$ = 3.61, $SD$ = 0.36), their GPA was significantly higher than that of students entering college with previous 2-year college credits ($M$ = 3.40, $SD$ = 0.57), $p$ < .001 and with previous 4-year college credits ($M$ = 3.36, $SD$ = 0.83), $p$ < .001.

For students entering college with previous 2-year college credits ($M$ = 3.40, $SD$ = 0.57) and previous 4-year college credits ($M$ = 3.36, $SD$ = 0.83) their GPA was significantly lower than that of students entering college with a combination of exam and college credits ($M$ = 3.58, $SD$ = 0.36), $p$ < .001.

**Research Question 2**

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in the number of years it took an FTIC student to graduate based on the type of previously earned credits while accounting for an interaction between ethnicity and sex. Though the results of the ANOVA were significant, $F$(15, 6,048) = 39.78, $p$ < .001,

indicating that there were significant differences in time to completion, the interaction effect between race and sex was not significant, $F(5, 6{,}048) = 1.52$, $p = .181$, $\eta^2 p = 0.00$, indicating there were no significant differences in time to completion for students when considering combinations of race and sex. The main effect, race, was significant, $F(5, 6{,}048) = 20.00$, $p < .001$, $\eta_p 2 = 0.02$, indicating that there were significant differences in time to completion among students with different races. The main effect, sex, was significant, $F(1, 6{,}048) = 12.51$, $p < .001$, $\eta_p 2 = 0.00$, indicating that there were significant differences in time to completion between males and females. See Table 7 for Analysis of Variance results.

**Table 7**

*Analysis of Variance Table for Time to Completion by Race, Sex, and Type of Earned Credits*

| Term | *SS* | *df* | *F* | *p* | $\eta_p 2$ |
|---|---|---|---|---|---|
| Race | 37.73 | 5 | 20.00 | < .001 | 0.02 |
| Sex | 4.72 | 1 | 12.51 | < .001 | 0.00 |
| Type of Earned Credit | 101.47 | 4 | 67.22 | < .001 | 0.04 |
| Race:Sex | 2.86 | 5 | 1.52 | .181 | 0.00 |
| Residuals | 2,282.30 | 6048 | | | |

**Post-hoc Comparisons**

A t-test was calculated between each group combination to further examine the differences among the variables based on an alpha of .05. Tukey's HSD *p*-value adjustment was used to correct for the effect of multiple comparisons on the familywise error rate.

**Race**

The time to completion for White students ($M = 3.90$, $SD = 0.62$) was significantly shorter than for Hispanic students ($M = 4.08$, $SD = 0.84$), $p = .004$, foreign national students ($M = 4.10$, $SD = 0.78$), p = .003, and Black students ($M = 4.46$, $SD = 0.78$), $p < .001$.

The time to completion for Hispanic students ($M = 4.08$, $SD = 0.84$) was significantly shorter than for Black students ($M = 4.46$, $SD = 0.78$), $p < .001$.

The time to completion for foreign national students ($M = 4.10$, $SD = 0.78$) was significantly shorter than for Black students ($M = 4.46$, $SD = 0.78$), $p < .001$.

The time to completion for Black students ($M$ = 4.46, $SD$ = 0.78) was significantly longer than for students listing "other" as their race ($M$ = 3.99, $SD$ = 0.68), $p$ < .001 and Asian students ($M$ = 3.88, $SD$ = 0.81), $p$ < .001.

**Sex**

The time to completion for male students ($M$ = 4.05, $SD$ = 0.70) was significantly longer than for female students ($M$ = 3.85, $SD$ = 0.58), $p$ < .001.

**Research Question 3**

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in the final GPA of FTIC students based on the type of previously earned credits while accounting for an interaction between ethnicity and sex. Though the results of the ANOVA were significant, $F(15, 6{,}189) = 35.08$, $p$ < .001, the interaction effect between race and sex was not significant, $F(5, 6{,}189) = 1.43$, $p = .211$, $\eta^2p = 0.00$, indicating that there were no significant differences in GPA when considering different combinations of race and sex. The main effect, race, was significant, $F(5, 6{,}189) = 25.79$, $p$ < .001, $\eta_p2 = 0.02$, indicating there were significant differences in GPA among students with different races. The main effect, sex was significant, $F(1, 6{,}189) = 5.22$, $p = .022$, $\eta_p2 = 0.00$, indicating there were significant differences in GPA between males and females. See Table 8 for Analysis of Variance results.

**Table 8**

*Analysis of Variance Table for GPA by Race, Sex, and Type of Earned Credits*

| Term | *SS* | *df* | *F* | *p* | $\eta_p2$ |
|---|---|---|---|---|---|
| Race | 38.89 | 5 | 25.79 | < .001 | 0.02 |
| Type of Earned Credits | 48.09 | 4 | 39.87 | < .001 | 0.03 |
| Sex | 1.57 | 1 | 5.22 | .022 | 0.00 |
| Race:Sex | 2.15 | 5 | 1.43 | .211 | 0.00 |
| Residuals | 1,866.13 | 6189 | | | |

**Post-hoc Comparisons**

A t-test was calculated between each group combination to further examine the differences among the variables based on an alpha of .05. Tukey's HSD p-value adjustment was used to correct for the effect of multiple comparisons on the familywise error rate.

**Race**

The GPA of White students ($M$ = 3.38, $SD$ = 0.56) was significantly higher than the GPA of Hispanic students (M = 3.21, SD = 0.45), p < .001 and Black students (M = 2.87, SD = 0.74), p < .001.

The GPA of Hispanic students ($M$ = 3.21, $SD$ = 0.45), foreign national students ($M$ = 3.26, $SD$ = 0.49), Asian students ($M$ = 3.31, $SD$ = 0.50), p < .001, and students listing "other" as their race ($M$ = 3.34, SD = 0.50), $p$ < .001, was significantly higher than the GPA of Black students ($M$ = 2.87, $SD$ = 0.74), $p$ < .001.

**Sex**

The GPA of male students ($M$ = 3.24, $SD$ = 0.60) was significantly smaller than that of female students ($M$ = 3.44, $SD$ = 0.53), $p$ < .001.

## Limitations

This study utilized data from only two private universities in the southeastern United States, which limits the generalizability of the findings to other institutions. However, the postsecondary schools do have students from all 50 states and several foreign nations. Furthermore, a number of other variables can contribute to both time to completion and GPA; however, those variables were not accounted for in this study. Further exploration regarding specific variables that might impact both time to completion and GPA would be beneficial across a larger and more diverse sample population.

## Findings

**Years to Completion**

The results indicate significant differences in time to graduation based on the type of ACC courses completed. Students who did not earn college credits in high school took longer to graduate than those who entered with hours completed. Among those with ACC, students with exam credits had better results than students with hours from a 2-year or 4-year school. Additionally, students with exam and college credits received the best results. However, this was a small effect size.

While the combination of race, sex, and type of ACC was not significant for years to completion, the post-hoc comparisons revealed differences between the racial and sex cohorts. Asian, White, and students who self-identified as "other" all had graduation rates under four years. All other groups were more than four years, with Black students having the longest time to completion. Furthermore, sex was significant. The results revealed that male students took longer to reach graduation than female students. This result was similar across all the racial categories.

**GPA**

Data were analyzed to explore whether ACC influenced the final GPA of students. The study's findings disclosed that differences existed in GPA based on the type of previously earned credits. Students with exam credit fare the best, with students who had a combination of exam and college credit coming in second. The result, once again, was a small effect size. The combination of the type of ACC, sex, and race did not produce a significant result. However, the post-hoc comparison did reveal differences between race and sex regarding the students' final GPA. All racial groups had a higher than 3.0 GPA, except for Black students, with White students performing the best. Male students, once more, lagged behind their female counterparts in their academic performance.

## Discussion

While not unexpected, the results of our analysis did have a few surprises. Finding that students with ACC had a shorter time to completion and higher overall GPAs reinforces the result of many other researchers who found these programs to be beneficial to students (Blankerberger et al., 2017; Bowers & Foley, 2018; Fink et al., 2017; Hodara & Pierson, 2018; & Ison, 2022). It also bolsters the assertion of Hurt and Maeda (2021) that AP credit assists students in having higher GPAs.

The small effect size is troubling, considering how popular ACC programs have become in recent years. The eta squared of 0.05 for time to completion and 0.03 for GPA indicates that the magnitude of ACC has limited practical application. This further supports Witkowsky et al. (2020), noting that the ACC often runs counter to how higher education designs degree programs, thus leaving FTIC students, with these credits, having difficulty finding relevant courses. The literature suggests that students are arriving on campus with

ACC because school administrators and state policymakers promoted them as a way to get ahead in college. However, the students, nor their parents, genuinely understand the full ramifications of what having these courses means to their academic progress. Thompson (2017) warned that states should not promote these programs without a better understanding of their effectiveness and consequences.

The post-hoc comparisons from this study reinforced the evidence that students' race and sex influence college completion and academic performance. Female students have been academically outperforming their male counterparts for years. It is encouraging that many racial groups had completion rates under four years and cumulative GPAs above 3.0, but disappointing that Black students still lag.

## Recommendations

The fact that a correlation between ACC and a reduced time to completion as well as a higher GPA was found means that institutions should actively seek out male students, especially Black male students who would greatly benefit from these courses. If one of the goals of ACC is to address inequity (Miller et al., 2019), then a focus on the purposeful recruitment of male students from all racial groups is necessary.

The small effect size means that state policymakers and program administrators should be more open about the purported benefits of ACC. This research shows that not everyone who arrived with ACC credit experienced the same results. Many institutions use dual credit and dual enrollment as a recruitment tool, so students who ultimately attend another college may suffer a disadvantage. A future research topic would be to track the completion rate for students who attend where they took ACCs and those who finish elsewhere.

The fact that a combination of exam and college credits were the most beneficial demonstrates that one type of ACC does not fit all. Admittedly, the lack of a more significant effect for ACC may lie with students who, once they arrive on campus, want to have the whole 4-year experience rather than attempting to finish as quickly as possible. Additional research tracking how students ultimately use their ACC would be necessary to see if the hours are leveraged toward completing as quickly as possible or used as a cushion to take fewer hours each semester but still graduate on time.

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