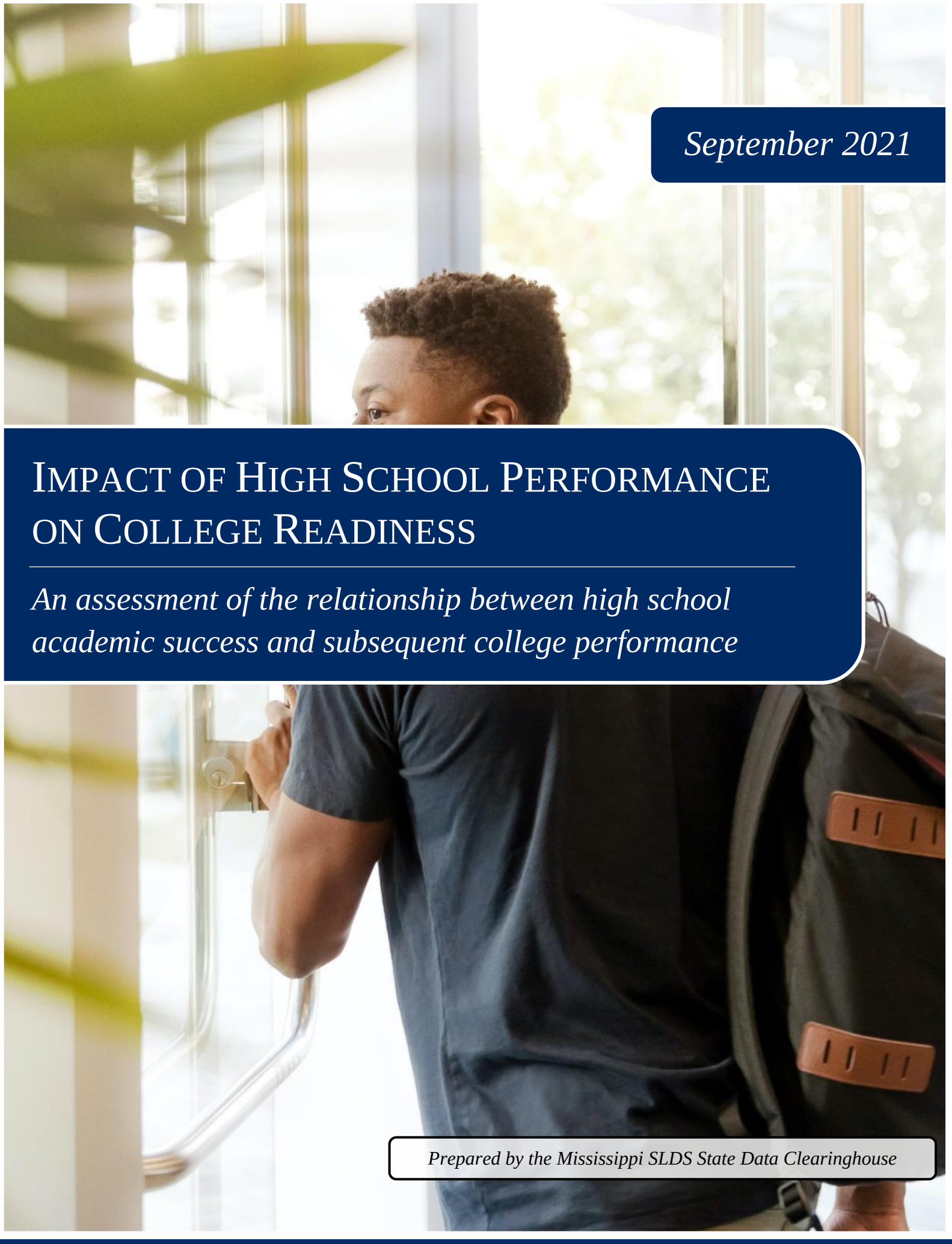

September 2021

Impact of High School Performance on College Readiness

An assessment of the relationship between high school academic success and subsequent college performance

Prepared by the Mississippi SLDS State Data Clearinghouse

IMPACT OF HIGH SCHOOL PERFORMANCE ON COLLEGE READINESS

An assessment of the relationship between high school academic success and subsequent college performance

September 2021

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About Mississippi's State Longitudinal Data System (SLDS)

Mississippi's State Longitudinal Data System (SLDS) is one of the most comprehensive systems in the country and includes administrative records from more than 25 education, workforce, and human service agencies in the state. The SLDS allows for the alignment of multiple sources of de-identified administrative data over time to evaluate educational or workforce strategies in terms of real outcomes, such as entrance into employment, wages, and skill gains. Mississippi State University's NSPARC services as the State Data Clearinghouse for the SLDS and contributed to this report.

About NSPARC

NSPARC is university research center at Mississippi State University and is a trusted and reliable source for high-quality research and analysis. We specialize in use-inspired research, data analytics, and software architecture and development. Our research emphasizes workforce and economic development, but the diversity of expertise on our team means we cover a broad range of topics in education, economics, health, human services, and corrections. Unique experience with administrative records and longitudinal data systems, matched with our ability to apply the latest methodological and machine learning approaches allows us to draw meaningful insights from data to address challenges faced by policymakers, employers, economic developers, and state agencies.

For more information, contact NSPARC at nsparc@nsparc.msstate.edu or 662-325-9242.

OVERVIEW

Using data from Mississippi's State Longitudinal Data System (SLDS) and the National Student Clearinghouse, this study examines the relationship between high school academic success and college readiness. Outcomes for three cohorts of Mississippi public high school graduates are examined.

The analysis is structured in two parts. First, a descriptive overview is provided of the relationship between the high school performance measures and first-year post-secondary outcomes. Second, a series of multilevel mixed-effects logistic regression models are fitted to estimate the impact of high school performance on the odds of successful post-secondary outcomes, net of student socioeconomic characteristics and school-level variations.

The high school academic performance measures examined, include:

- Subject area proficiency (performance on Algebra I and English II subject area tests),
- Advanced academics (participation in advanced placement courses, dual credit courses, and accumulation of Carnegie Units),
- Performance on the ACT, and
- Level of school absenteeism.

These are examined in relation to four key indicators of college readiness: (1) enrollment in a post-secondary institution within a year of high school graduation, (2) enrollment in post-secondary math and English remedial courses, (3) GPA at the end of the first semester of enrollment, and (4) continuation (i.e., retention) of enrollment in the second year.

Results show that student performance in high school has a significant impact on readiness to transition to post-secondary education, even after controlling for the influence of socioeconomic characteristics and the high school attended. Specifically, the results show that students who achieve proficiency on high school standardized tests, participate in advanced academic opportunities, have higher scores on the ACT, and miss fewer instructional days, had significantly higher odds of enrolling in college, achieving basic metrics of success in their first year, and continuing enrollment for a second year. The findings of this study provide a base for the development of a mechanism to evaluate and guide the college readiness of students throughout high school.

DATA

DATA SOURCES

Data for this study come from Mississippi's SLDS. Mississippi's SLDS is a centralized integrated data system governed by several data stakeholders that include the Mississippi Department of Education (MDE), all 15 Mississippi community colleges, Mississippi Community College Board (MCCB), Institutions of Higher Learning (IHL), Mississippi Department of Human Services (MDHS), Mississippi Department of Health (MSDH), Head Start, Mississippi Department of Corrections (MDOC), Mississippi Department of Rehabilitation Services (MDRS), Mississippi Development Authority (MDA), and Mississippi Department of Employment Security (MDES). The system is designed to answer education and workforce development questions and generate information to empower education and workforce policymakers and leaders in the state.

This study required data from the following SLDS data stakeholders:

- Mississippi Department of Education (MDE)
- Mississippi Institutions of Higher Learning (IHL)
- Mississippi Community Colleges

In addition to data from Mississippi's SLDS, the study also required information on student enrollment in post-secondary institutions outside of Mississippi. In this regard, supplemental post-secondary enrollment data was obtained from the National Student Clearinghouse (NSC), which provides the enrollment status of students for both in-state and out-of-state post-secondary institutions.

Student Cohorts

A pooled cohort design was used for this study. Three cohorts were included for academic years 2016-2017, 2017-2018, and 2018-2019. Each cohort was comprised of students graduating from a Mississippi public high school with a regular diploma. These graduates were followed over the course of two years after graduation to determine their enrollment status at a two-year or four-year post-secondary institution within one year after graduation, their academic performance in their first semester of enrollment, and their retention status in a second year.

Indicators

Several indicators were used to measure the dependent variables (post-secondary outcomes) and principal independent variables (high school academic performance). These indicators have been found by previous studies to have an impact on student post-secondary performance.

Several student-level demographic and economic characteristics were also included as control variables.

Post-Secondary Outcomes

Student post-secondary outcomes were measured in four ways: (1) enrollment in a post-secondary institution within a year of high school graduation, (2) enrollment in post-secondary math and English remedial courses, (3) GPA at the end of the first semester of enrollment, and (4) continuation (i.e., retention) of enrollment for a second year.

Post-secondary enrollment. Binary variable where students were classified as "1" if enrolled in a U.S. post-secondary institution within one year following high school graduation and "0" otherwise.

Remedial course enrollment. [1] Binary variable where students were classified as "1" if not enrolling in at least one college-level non-credit remedial course in language arts, math, or reading during Fall semester of enrollment and "0" otherwise.

GPA. [1] Binary variable where students were classified as "1" if maintaining a GPA at or above 2.5 (i.e., a mid-C average) in their Fall semester of enrollment and "0" otherwise. A 2.5 cutoff for this indicator was used, based on prior research utilizing this score as a lower-bound indicator of post-secondary success (Sanchez, 2013).

College retainment.[1] Binary variable where students were classified as "1" if maintaining enrollment in a post-secondary institution in the Fall semester of the second year and "0" otherwise.

High School Academic Performance

High school academic performance was measured using variables designed to gauge subject area proficiency, participation in advanced academic activities, performance on the ACT, and level of absenteeism from school. Selection of these variables was informed by earlier research on determinants of high school and post-secondary

[1] Due to data availability, only includes students enrolled in a Mississippi public post-secondary institution.

academic success (Adelman, 2006; Adelman et al., 2003; Blankenberger et al., 2017; Center for Research in Education and Social Policy, 2018; Hargrove et al., 2008; Liu et al., 2021; Pierson et al., 2017; Radunzel and Noble, 2012; Smith et al., 2017; Struhl and Vargas, 2012).

Subject area proficiency was gauged using two Mississippi standardized subject area tests:

Algebra I. Binary variable where students were coded as "1" if scoring proficient or advanced, and "0" if scoring below proficient.

English II. Binary variable where students were coded as "1" if scoring proficient or advanced, and "0" if scoring below proficient.

Advanced academic activities were measured using three indicators of advanced high school coursework:

AP course participation. Binary variable where students were coded as "1" if enrolled in an AP course and/or completed an AP course exam, and "0" otherwise.

Dual Credit/Dual Enrollment. Binary variable where students were coded as "1" if enrolled in one or more courses offering dual credit with a Mississippi post-secondary institution, and "0" otherwise.

Carnegie Units. Continuous variable measured as the total number of Carnegie units attained as student at the time of high school graduation.

Performance on the ACT was gauged as:

ACT Score. Continuous variable measured as student composite ACT score at a time before high school graduation.

Level of absenteeism from high school was gauged as:

Average Absenteeism. Continuous variable measured as a student's annual average number of absences from grades 9-12.

Control Variables

Several student-level demographic and economic factors associated with student academic performance were also included as control variables:

Free Lunch. Binary variable where students were coded as "1" if eligible for free or reduced-price lunch through the Title 1 program in any of their high school years, and "0" otherwise.

Homeless Status. Binary variable where students were coded as "1" if classified as homeless in any of their high school years, and "0" otherwise.

Gender. Binary variable where students were coded as "1" for female and "0" for male.

Race. Categorical variable where students were coded as black, white, and other race.

English Language Learners (ELL). Binary variable where students were coded as "1" if classified as an English language learner in any of their high school years and "0" otherwise.

Migrant status. Binary variable where students were coded as "1" if classified as a migrant in any of their high school years and "0" otherwise.

Disability. Binary variable where students were coded as "1" if classified as having an intellectual or physical disability in any of their high school years and "0" otherwise.

Cohort. Categorical variable to control for any effects of the academic year of graduation. Three cohort years (2017, 2018, and 2019) are used for students graduating in the 2016-2017, 2017-2018, and 2018-2019 academic years, respectively.

METHODOLOGY: ANALYTICAL STRATEGY

The examination of the relationship between high school academic performance and post-secondary outcomes includes both descriptive and multivariate components.

The descriptive analysis provides an examination of the one-to-one relationship of each high school academic performance indicator with each post-secondary performance outcome. Specifically, the percentage of graduates attaining each post-secondary outcome is calculated by the level of high school performance.

For the multivariate analysis, a series of multilevel mixed-effects logistic regression models are fitted to estimate the impact of high school performance on the odds of successful post-secondary outcomes, net of individual student characteristics and unobserved school-level factors. This modelling approach allows for inferences to be drawn about students (level one) across a diverse set of high schools (level two) as schools differ across a spectrum of social, economic, and regional characteristics that may be correlated with student post-secondary performance. Separate models were estimated for each of the dependent variables: 1) enrollment in a post-secondary institution within a year of high school graduation, (2) non-enrollment in post-secondary math and English remedial courses, (3) GPA at the end of the first Fall semester of enrollment, and (4) continuation (i.e., retention) of enrollment in the second year.

RESULTS: DESCRIPTIVE ANALYSIS

The results of the descriptive analysis are reported in Tables 1-4. These results showcase a strong association between several of the high school academic performance variables and the post-secondary outcome measures. The following section reports on the percentage of high school graduates attaining each post-secondary outcome for each high school performance indicator.

COLLEGE ENROLLMENT

A total of 71,853 students graduating from a Mississippi public high school in Academic Years 2016-2017, 2017-2018, and 2018-2019 are included in the analysis. Of these, 71.6 percent enrolled in a 2-year or 4-year college nationwide within one year after graduation.

Table 1 reports the high school performance levels, by their post-secondary education enrollment status. Clear differences across all high school performance indicators can be observed between students that (1) enrolled and (2) did not enroll in post-secondary education.

For subject area proficiency, high school graduates that enrolled in a post-secondary school, when compared to their non-enrolled counterparts, were more likely to have scored proficient on their high school Algebra I assessment (54.9 percent vs. 33.9 percent) and English II assessment (57.2 percent vs. 35.0 percent). This same pattern was observed when examining the measures of high school advanced activities. College-enrolled high school graduates, compared to those that did not enroll, were more likely to have participated in AP courses (31.6 percent vs. 13.1 percent), enrolled in dual credit courses (38.9 percent vs. 11.2 percent), and had attained a slightly

higher average number of Carnegie units (35.9 vs. 33.6). Finally, those that enrolled had a higher average ACT score (18.7 vs. 16.2) and a lower number of annual absences (10.3 vs. 14.1) than their non-enrolled peers.

REMEDIATION

Of the 27,500 high school graduates that enrolled in an in-state public university or community college, approximately 70 percent did not require remedial coursework in the first fall semester of enrollment.

Table 2 reports the high school performance levels for students enrolled in an in-state public university or community college, by their remedial college course enrollment status. Clear differences across all high school performance indicators can be observed between students that (1) did not enroll in remedial coursework and (2) enrolled in remedial coursework.

For subject area proficiency, students not taking remedial coursework in college, when compared to their counterparts taking remedial courses, were more likely to have scored proficient on their high school Algebra I assessment (72.8 percent vs. 33.8 percent) and English II assessment (75.9 percent vs. 36.6 percent). A similar pattern was observed when examining the measures of high school advanced activities. College students not enrolled in remedial coursework, compared to those that were enrolled were more likely to have participated in AP courses (45.4 percent vs. 18.9 percent), enrolled in dual credit courses (66.6 percent vs. 26.7 percent), and had attained a higher average number of Carnegie units (37.3 vs. 34.4). Finally, those not enrolled in remediation had a higher average ACT score (20.9 vs. 16.1) and a slightly lower number of annual absences (9.1 vs. 10.8) their enrolled peers.

GPA

The average cumulative GPA for the 27,500 high school graduates enrolled in an in-state public university or community college at the end of their first Fall semester of enrollment was 2.89. Approximately 71.1 percent of these students had a GPA at or above 2.5.

Table 3 reports the high school performance levels for students enrolled in an in-state public university or community college, by their GPA level at the end of their first Fall semester of enrollment. Clear differences across all high school performance indicators can be observed between students that (1) had a cumulative GPA at or above 2.5 and (2) below 2.5.

For subject area proficiency, students with a GPA at or above 2.5, when compared to their counterparts with a GPA less than 2.5, were more likely to have scored proficient on their high school Algebra I assessment (67.9 percent vs. 44.0 percent) and English II assessment (71.0 percent vs. 46.8 percent). A similar pattern was observed when examining the measures of high school advanced activities. Those with a 2.5 or higher GPA, compared to their counterparts, were more likely to have participated in AP courses (42.6 percent vs. 24.3 percent), enrolled in dual credit courses (62.4 percent vs. 35.0 percent), and had attained a slightly higher average number of Carnegie units (36.8 vs. 35.4). Finally, those with a 2.5 or higher GPA had a higher average ACT score (20.2 vs. 17.5) and a lower number of annual absences (9.0 vs. 11.2) than their peers with a GPA of less than 2.5.

RETENTION

Of the 27,500 high school graduates that enrolled in an in-state public university or community college, 81.1 percent remained enrolled in the following year.

Table 4 reports the high school performance levels for students enrolled in an in-state public university or community college, by second year retention status. As with the other post-secondary outcomes, clear differences across all high school performance indicators can be observed between students that (1) were retained in their second year and (2) were not retained.

For subject area proficiency, students that were retained, when compared to their counterparts that were not retained, were more likely to have scored proficient on their high school Algebra I assessment (64.5 percent vs. 45.5 percent) and English II assessment (67.6 percent vs. 48.5 percent). A similar pattern was observed when examining the measures of high school advanced activities. Those that were retained, compared to their counterparts, were more likely to have participated in AP courses (40.8 percent vs. 22.4 percent), enrolled in dual credit courses (58.4 percent vs. 37.6 percent), and had attained a slightly higher average number of Carnegie units (36.7 vs. 35.3). Finally, those that were retained had a higher average ACT score (19.8 vs. 17.6) and a lower number of annual absences (9.1 vs. 11.9) compared to their peers that were not retained.

RESULTS: MULTIVARIATE ANALYSIS

The previous descriptive results do not consider the influence of other factors that could affect the associations between the independent and dependent variables included in this study. The multilevel mixed-effects logistic regression models presented in this section estimate the effects of student high school academic performance on post-secondary outcomes while controlling for several potentially explanatory student demographic and economic characteristics, as well as the effects of unobserved school factors. Two models were run for each dependent variable, one that included only the high school academic performance measures (Model 1) and one that added the student demographic and economic control variables (Model 2). The descriptive statistics for the variables included in the models are reported in Tables 5-6, and the results of the analysis are presented in Tables 7-10. The discussion below reports the Model 2 results.

Overall, the results confirm the associations observed in the descriptive analysis and show that the high school academic performance measures included in this study have a significant impact on college readiness. The model results show that higher levels of performance on these measures increase the odds of college enrollment, decrease the odds of requiring math or English remediation, and increase the odds of attaining a GPA at or over 2.5 and remaining enrolled in the subsequent year.

COLLEGE ENROLLMENT

The results of the analysis are reported in Table 7, Model 2. All high school performance measures were found to be statistically significant and in the expected direction.

Participating in dual credit courses had the largest, most substantive impact – high school graduates that had taken dual credit courses were 2.57 times as likely to enroll in college than their counterparts. The results also show that scoring proficient on the high school Algebra I and English II assessments increased the odds of enrolling in college by 12.3 percent and 8.2 percent, respectively, and participating in AP courses was associated with a 31.6 percent increase in the odds of enrollment. Each additional Carnegie unit that a student attained in high school was associated with a 3.1 percent increase, and each point increase in ACT score a 11.3 percent increase, in the odds of enrollment. Finally, for every additional day that a student was absent during an average high school year, the odds of enrolling in college declined by approximately four percent.

REMEDIATION

The results of the analysis are reported in Table 8, Model 2. All high school performance measures, except proficiency on the English II standardized assessment, were found to be statistically significant and in the expected direction.

Scoring higher on the ACT had a large significant impact on enrollment in remedial courses -- each point increase in student ACT score was associated with a substantial 33.6 percent increase in the odds of no remediation requirement. As with the results from the college enrollment analysis, participating in dual credit courses had a large, substantive impact on the likelihood of remedial course enrollment – the odds of not requiring remedial

coursework were twice as high for students that had taken dual credit courses during their high school career. The results also show that scoring proficient on the high school Algebra I assessment increased the odds of no remediation by a substantial 74.3 percent and participating in AP courses was associated with a 22.1 percent increase. The results for high school absenteeism show a small but statistically significant association -- for every additional day that a student was absent during an average high school year, the odds of not needing remediation declined by 1.4 percent. Finally, the impact of Carnegie unit attainment was small and barely significant at the .05 level, where each additional Carnegie unit that a student attained in high school was associated with a .7 percent increase in the odds of no remediation.

GPA

The results of the analysis are reported in Table 9, Model 2. All high school performance measures were found to be statistically significant and in the expected direction.

Dual credit participation continues to be a strong predictor of post-secondary outcomes, albeit reduced in strength in this analysis. The results show that participating in dual credit courses increased the odds of attaining a GPA at or greater than 2.5 by 53.1 percent. The results also show that scoring proficient on the high school Algebra I and English II assessments increased the odds of a 2.5+ GPA by 45.2 percent and 13.9 percent, respectively, and participating in AP courses was associated with a 23.7 percent increase. Similarly, each point increase in ACT score was associated with a 7.1 percent increase in the odds of a 2.5+ GPA. The results for high school absenteeism show that for every additional day that a student was absent during an average high school year, the odds of attaining a 2.5+ GPA declined by 3.6 percent. Finally, like previous results, the impact of Carnegie unit attainment was small and barely significant at the .05 level and showing that each additional Carnegie unit that a student attained in high school was associated with a .6 percent increase in the odds of attaining a 2.5+ GPA.

RETENTION

The results of the analysis are reported in Table 10, Model 2. All high school performance measures were found to be statistically significant and in the expected direction.

Dual credit participation continues to be a strong predictor. The results show that participating in dual credit courses increased the odds students remaining enrolled in college for a second year by 39.8 percent. The results also show that scoring proficient on the high school Algebra I and English II assessments increased the odds retention by 18.9 percent and 10.1 percent, respectively, and participating in AP courses was associated with a substantial 42.1 percent increase. Each point increase in ACT score was associated with a 7.7 percent increase in the odds retention. The results for high school absenteeism remained consistent across models and showed that for every additional day that a student was absent during an average high school year, the odds of being retained declined by approximately four percent. Finally, like previous results, the impact of Carnegie unit attainment was small but significant at the .05 level and showing that each additional Carnegie unit a student attained was associated with a .5 percent increase in the odds of retention.

CONCLUSION

The findings of this study clearly demonstrate the link between the academic performance of Mississippi public high school students and their short-term post-secondary outcomes. These results provide a foundation for future research that can extend this analysis to other points along the college and career pathway. The findings also provide a base the development of a mechanism to evaluate and guide the college readiness of students throughout high school.

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TABLE 1. HIGH SCHOOL PERFORMANCE BY POST-SECONDARY ENROLLMENT STATUS

	Enrolled	Not Enrolled
	Percent	**Percent**
Algebra I		
Proficient/Advanced	54.9	33.9
Less than Proficient	45.1	66.1
English II		
Proficient/Advanced	57.2	35.0
Less than Proficient	42.8	65.0
AP Participation		
Yes	31.6	13.1
No	68.4	86.9
Dual Credit		
Yes	38.9	11.2
No	61.1	88.8
	Enrolled	**Not Enrolled**
	Mean	**Mean**
Absence (days)	10.3	14.1
ACT Score	18.7	16.2
Carnegie Unit	35.9	33.6

TABLE 2. HIGH SCHOOL ENROLLMENT BY REMEDIAL COURSE ENROLLMENT STATUS

	Not Taking Remedial Course	Taking Remedial Course
	Percent	**Percent**
Algebra I		
Proficient/Advanced	72.8	33.8
Less than Proficient	27.2	66.2
English II		
Proficient/Advanced	75.9	36.6
Less than Proficient	24.1	63.4
AP Participation		
Yes	45.4	18.9
No	54.6	81.1
Dual Credit		
Yes	66.6	26.7
No	33.4	73.3
	Not Taking Remedial Course	**Taking Remedial Course**
	Mean	**Mean**
Absence (days)	9.1	10.8
ACT Score	20.9	16.1
Carnegie Unit	37.3	34.4

TABLE 3. HIGH SCHOOL PERFORMANCE BY COLLEGE CUMULATIVE GPA LEVEL

	Cumulative GPA ≥ 2.5	**Cumulative GPA < 2.5**
	Percent	**Percent**
Algebra I		
Proficient/Advanced	67.9	44.0
Less than Proficient	32.2	56.0
English II		
Proficient/Advanced	71.0	46.8
Less than Proficient	29.0	53.2
AP Participation		
Yes	42.6	24.3
No	57.4	75.7
Dual Credit		
Yes	62.4	35.0
No	37.6	65.0
	Cumulative GPA ≥ 2.5	**Cumulative GPA < 2.5**
	Mean	**Mean**
Absence (days)	9.0	11.2
ACT Score	20.2	17.5
Carnegie Unit	36.8	35.4

TABLE 4. HIGH SCHOOL PERFORMANCE BY STUDENT RETENTION IN THE SECOND YEAR

	Retained	Not Retained
	Percent	**Percent**
Algebra I		
Proficient/Advanced	64.5	45.5
Less than Proficient	35.5	54.5
English II		
Proficient/Advanced	67.6	48.5
Less than Proficient	32.4	51.5
AP Participation		
Yes	40.8	22.4
No	59.2	77.6
Dual Credit		
Yes	58.4	37.6
No	41.6	62.4
	Retained	**Not Retained**
	Mean	**Mean**
Absence (days)	9.1	11.9
ACT Score	19.8	17.6
Carnegie Unit	36.7	35.3

TABLE 5: DESCRIPTIVE STATISTICS FOR MULTIVARIATE ANALYSIS OF POST-SECONDARY ENROLLMENT

	Mean	SD
% Postsecondary Enrollment	71.6	-
High School Performance Measures		
Algebra I (1 = Proficient/Advanced)	49.0	-
English II (1 = Proficient/Advanced)	50.9	-
Absence (days)	11.4	8.4
ACT Score	18.0	4.2
AP Participant (1 = yes)	26.3	-
Carnegie Unit	35.3	10.6
Dual Credit Course Participant (1 = yes)	31.0	-
Background Characteristics		
Race		
White	47.4	-
Black	48.5	-
Other	4.2	-
Gender (1 = female)	51.9	-
Migrant Status (1 = yes)	0.7	-
Homeless Status (1 = yes)	12.3	-
Free or Reduced Lunch Status (1 = yes)	90.9	-
English Language Learner (1 = yes)	2.8	-
Disability (1 = yes)	8.1	-
Cohort		
2017	27.7	-
2018	36.3	-
2019	36.0	-
N Observations	71,853	-

TABLE 6: DESCRIPTIVE STATISTICS FOR MULTIVARIATE ANALYSES OF POSTSECONDARY REMEDIATION, GPA, AND RETENTION

	Mean	SD
% Not Taking Remedial Courses	69.7	-
% Retained in Next Fall Semester	81.1	-
% Cumulative GPA ≥ 2.5	71.1	-
High School Performance Measures		
Algebra I (1 = Proficient/Advanced)	60.9	-
English II (1 = Proficient/Advanced)	64.0	-
Absence (days)	9.6	7.2
ACT Score	19.4	4.4
AP Participant (1 = yes)	37.4	-
Carnegie Unit	36.4	11.0
Dual Credit Course Participant (1 = yes)	54.5	-
Background Characteristics		
Race		
White	51.2	-
Black	45.7	-
Other	3.2	-
Gender (1 = female)	58.3	-
Migrant Status (1 = yes)	0.6	-
Homeless Status (1 = yes)	9.3	-
Free or Reduced Lunch Status (1 = yes)	89.3	-
English Language Learner (1 = yes)	1.9	-
Disability (1 = yes)	5.7	-
Cohort		
2017	24.9	-
2018	36.4	-
2019	38.8	-
N Observations	27,500	-

TABLE 7. MULTILEVEL MIXED-EFFECTS LOGISTIC REGRESSION MODEL OF POST-SECONDARY ENROLLMENT

	Model 1			Model 2		
	B	**SE**	**Odds Ratio**	**B**	**SE**	**Odds Ratio**
Intercept	-1.451***	0.090		-2.022***	0.105	
High School Performance Measures						
Algebra I (Less than Proficient as ref.)						
Proficient/Advanced	0.140***	0.022	1.151	0.116***	0.024	1.123
English II (Less than Proficient as ref.)						
Proficient/Advanced	0.095***	0.023	1.100	0.079**	0.024	1.082
Absence (days)	-0.040***	0.001	0.961	-0.042***	0.001	0.959
ACT Score	0.089***	0.004	1.094	0.107***	0.004	1.113
AP Participant (1 = yes)	0.328***	0.029	1.388	0.275***	0.029	1.316
Carnegie Unit	0.029***	0.002	1.029	0.030***	0.002	1.031
Dual Credit Course Participant (1 = yes)	1.007***	0.028	2.737	0.945***	0.029	2.572
Background Characteristics						
Race (White as ref.)						
Black				0.458***	0.026	1.581
Other				-0.280***	0.068	0.755
Gender (1 = female)				0.647***	0.019	1.910
Migrant Status (1 = yes)				-0.180	0.126	0.836
Homeless Status (1 = yes)				-0.258***	0.029	0.772
Free or Reduced Lunch Status (1 = yes)				-0.125**	0.046	0.882
English Language Learner (1 = yes)				-0.135!	0.081	0.874
Disability (1 = yes)				-0.214***	0.032	0.807
Cohort (2017 as ref.)						
Cohort 2018				-0.030	0.024	0.970
Cohort 2019				-0.170***	0.024	0.843
N Students		71,853			71,853	
N Schools		243			243	
Random Effects						
Unconditional Variance School Level		0.1425			0.1425	
Model Residual Variance School Level		0.1199			0.1161	
Percent Variance Explained School Level		15.84			18.53	
ICC (Unconditional Model) School Level		0.0415			0.0415	

*Note: !p<.10, *p*<.05, **p*<.01, ***p*<.001 (two-tailed test)

TABLE 8. MULTILEVEL MIXED-EFFECTS LOGISTIC REGRESSION MODEL OF NOT TAKING REMEDIAL COURSE

	Model 1			Model 2		
	B	**SE**	**Odds Ratio**	**B**	**SE**	**Odds Ratio**
Intercept	-5.500***	0.163		-4.895***	0.192	
High School Performance Measures						
Algebra I (Less than Proficient as ref.)						
Proficient/Advanced	0.383***	0.038	1.466	0.555***	0.041	1.743
English II (Less than Proficient as ref.)						
Proficient/Advanced	0.026	0.040	1.026	0.029	0.041	1.030
Absence (days)	-0.013***	0.002	0.987	-0.014***	0.002	0.986
ACT Score	0.306***	0.008	1.357	0.289***	0.008	1.336
AP Participant (1 = yes)	0.200***	0.044	1.221	0.200***	0.045	1.221
Carnegie Unit	0.010**	0.003	1.010	0.007*	0.003	1.007
Dual Credit Course Participant (1 = yes)	0.745***	0.039	2.107	0.696***	0.041	2.005
Background Characteristics						
Race (White as ref.)						
Black				-0.319***	0.046	0.727
Other				-0.337*	0.145	0.714
Gender (1 = female)				-0.372***	0.035	0.689
Migrant Status (1 = yes)				0.144	0.238	1.155
Homeless Status (1 = yes)				-0.084	0.060	0.920
Free or Reduced Lunch Status (1 = yes)				-0.247**	0.083	0.781
English Language Learner (1 = yes)				0.071	0.177	1.074
Disability (1 = yes)				0.019	0.069	1.019
Cohort (2017 as ref.)						
Cohort 2018				0.507***	0.044	1.660
Cohort 2019				0.526***	0.046	1.692
N Students		27,500			27,500	
N Schools		243			243	
Random Effects						
Unconditional Variance School Level		0.8078			0.8078	
Model Residual Variance School Level		0.0994			0.0990	
Percent Variance Explained School Level		87.69			87.74	
ICC (Unconditional Model) School Level		0.1971			0.1971	

*Note: !p<.10, *p<.05, **p<.01, ***p<.001 (two-tailed test)*

TABLE 9. MULTILEVEL MIXED-EFFECTS LOGISTIC REGRESSION MODEL OF ATTAINING A COLLEGE CUMULATIVE GPA ≥ 2.5

	Model 1			Model 2		
	B	**SE**	**Odds Ratio**	**B**	**SE**	**Odds Ratio**
Intercept	-1.203***	0.122		-0.833***	0.147	
High School Performance Measures						
Algebra I (Less than Proficient as ref.)						
Proficient/Advanced	0.271***	0.035	1.311	0.373***	0.037	1.452
English II (Less than Proficient as ref.)						
Proficient/Advanced	0.179***	0.037	1.197	0.130***	0.037	1.139
Absence (days)	-0.029***	0.002	0.971	-0.036***	0.002	0.964
ACT Score	0.080***	0.006	1.083	0.069***	0.006	1.071
AP Participant (1 = yes)	0.262***	0.038	1.300	0.213***	0.038	1.237
Carnegie Unit	0.010***	0.003	1.010	0.006*	0.002	1.006
Dual Credit Course Participant (1 = yes)	0.562***	0.034	1.753	0.426***	0.035	1.531
Background Characteristics						
Race (White as ref.)						
Black				-0.358***	0.039	0.699
Other				-0.099	0.121	0.906
Gender (1 = female)				0.305***	0.030	1.357
Migrant Status (1 = yes)				0.200	0.211	1.221
Homeless Status (1 = yes)				-0.127*	0.052	0.880
Free or Reduced Lunch Status (1 = yes)				-0.099	0.067	0.906
English Language Learner (1 = yes)				0.101	0.152	1.106
Disability (1 = yes)				-0.134*	0.060	0.875
Cohort (2017 as ref.)						
Cohort 2018				0.225***	0.038	1.252
Cohort 2019				0.398***	0.040	1.489
N Students		27,500			27,500	
N Schools		243			243	
Random Effects						
Unconditional Variance School Level		0.2880			0.2880	
Model Residual Variance School Level		0.0947			0.0749	
Percent Variance Explained School Level		67.12			73.99	
ICC (Unconditional Model) School Level		0.0805			0.0805	

*Note: !p<.10, *p<.05, **p<.01, ***p<.001 (two-tailed test)*

TABLE 10. MULTILEVEL MIXED-EFFECTS LOGISTIC REGRESSION MODEL OF RETAINED IN THE 2ND YEAR OF COLLEGE

	Model 1			Model 2		
	B	**SE**	**Odds Ratio**	**B**	**SE**	**Odds Ratio**
Intercept	-0.040	0.130		-0.133	0.165	
High School Performance Measures						
Algebra I (Less than Proficient as ref.)						
Proficient/Advanced	0.150***	0.040	1.161	0.173***	0.042	1.189
English II (Less than Proficient as ref.)						
Proficient/Advanced	0.115**	0.042	1.122	0.096*	0.042	1.101
Absence (days)	-0.042***	0.002	0.959	-0.044***	0.002	0.957
ACT Score	0.068***	0.006	1.070	0.074***	0.007	1.077
AP Participant (1 = yes)	0.391***	0.043	1.478	0.352***	0.044	1.421
Carnegie Unit	0.006*	0.003	1.006	0.005*	0.003	1.005
Dual Credit Course Participant (1 = yes)	0.380***	0.039	1.462	0.335***	0.041	1.398
Background Characteristics						
Race (White as ref.)						
Black				0.093*	0.044	1.097
Other				-0.186	0.133	0.830
Gender (1 = female)				0.292***	0.034	1.339
Migrant Status (1 = yes)				0.455!	0.263	1.576
Homeless Status (1 = yes)				-0.250***	0.056	0.778
Free or Reduced Lunch Status (1 = yes)				-0.195*	0.079	0.823
English Language Learner (1 = yes)				0.407*	0.176	1.503
Disability (1 = yes)				-0.023	0.066	0.977
Cohort (2017 as ref.)						
Cohort 2018				0.099*	0.044	1.104
Cohort 2019				0.033	0.044	1.033
N Students		27,500			27,500	
N Schools		243			243	
Random Effects						
Unconditional Variance School Level		0.1443			0.1443	
Model Residual Variance School Level		0.0846			0.0755	
Percent Variance Explained School Level		41.39			47.65	
ICC (Unconditional Model) School Level		0.0420			0.0420	

*Note: !p<.10, *p<.05, **p<.01, ***p<.001 (two-tailed test)*