

Using the SAT[®] to Support Student Success on Campus: What Have We Learned from Recent Research?

October 2019

The utility and value of SAT[®] scores extends beyond the admissions office in various ways to inform important campus decisions about retention, degree completion, and students' areas of academic weaknesses that need strengthening. This document summarizes findings from recent studies that inform these conversations and can guide campus use of SAT scores to promote student success.

Introduction

SAT scores are intended to be useful for much more than college admission decisions (College Board, 2017). The SAT was redesigned in 2016 to better reflect the work that students do in high school, focusing on the core knowledge and skills that research has shown to be critical for students to be ready for college and career.

SAT scores provide insight about students' academic success in several areas by:

- Predicting student retention rates;
- Identifying students who may benefit from academic support services; and
- Placing students who may excel or need enrichment in particular academic domains, including math, English, history/social studies, and science (Marini et al., 2019, in press; Westrick et al., 2019, in preparation).

Research on a robust national data set shows that SAT scores have significant value in providing insight and actionable information to improve students' academic success. Specifically:

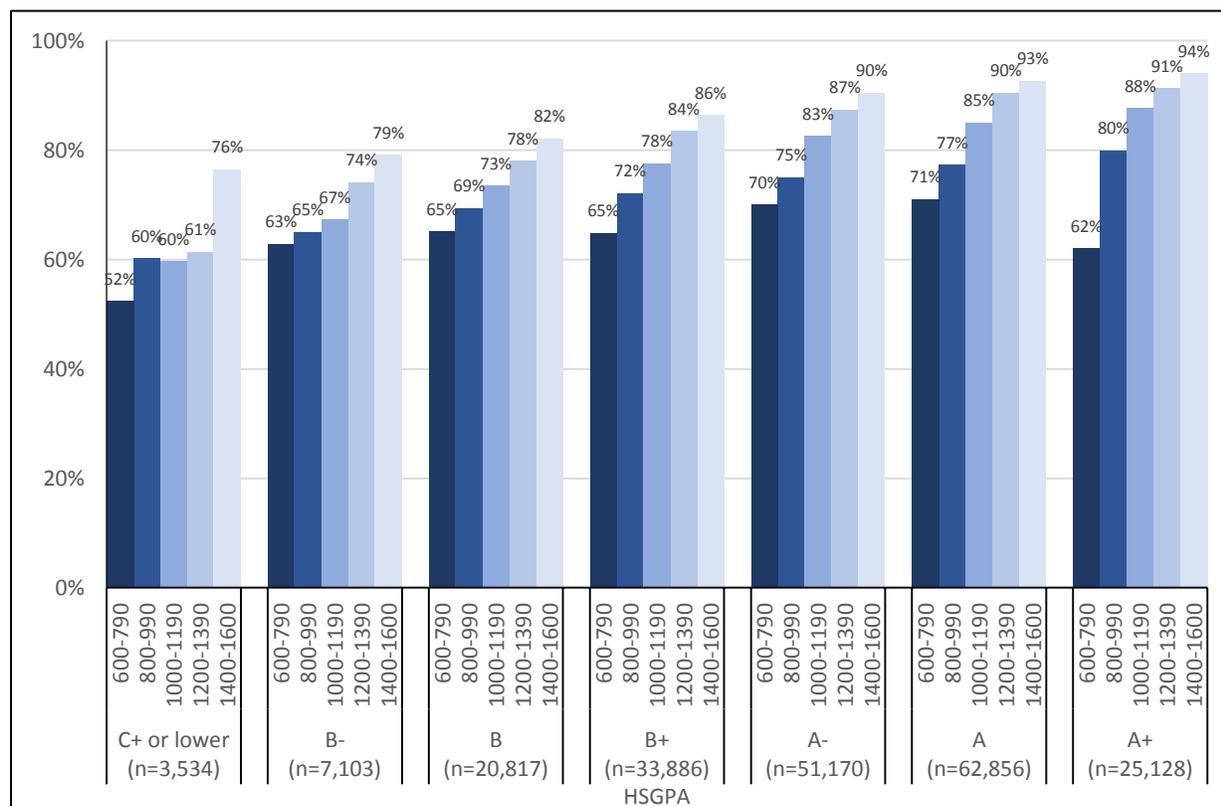
- SAT scores show a positive relationship with retention to the second year of college at the same institution.
- Even among students with high HSGPAs, we see substantial differences in student retention rates that are revealed by SAT scores.

- The combination of HSGPA and SAT scores provides a more complete and accurate understanding of student academic performance and retention in college compared to either metric used in isolation.
- Students who underperform in college—compared to their predicted performance based on HSGPA and SAT—are at greater risk for departure from college compared to students who perform as expected. Using this information in targeted interventions can improve retention rates.
- The strategic use of HSGPA and SAT scores provides colleges and universities with an opportunity to target students at risk for departure with pivotal academic resources and assistance, and boost institutional completion rates.
- SAT Math, SAT Evidence-Based Reading and Writing (ERW), and SAT Essay scores are effective tools to help place students in first-year college courses within similar academic domains.
- For students whose best language is not English, the SAT Essay improves our ability to predict their first semester college writing performance (above HSGPA and SAT ERW scores) by more than 30%.

Identifying Students at Risk for Not Returning

Combining HSGPA and SAT information reveals critical insights about student retention in college that are not evident when using either measure alone. SAT scores contextualize the meaning of a HSGPA and how that HSGPA ultimately translates to college performance. Even students with very high HSGPAs show substantial differences in retention when SAT scores are used to assess retention to the institution.

Figure 1. Mean Second-Year Retention Rate by HSGPA and SAT Total Score Bands



Source: Westrick, P. A., Marini, J. P., Young, L., Ng, H., Shmueli, D., & Shaw, E. J. (2019). *Validity of the SAT® for Predicting First-Year Grades and Retention to the Second Year* (College Board Research Report). New York: College Board.

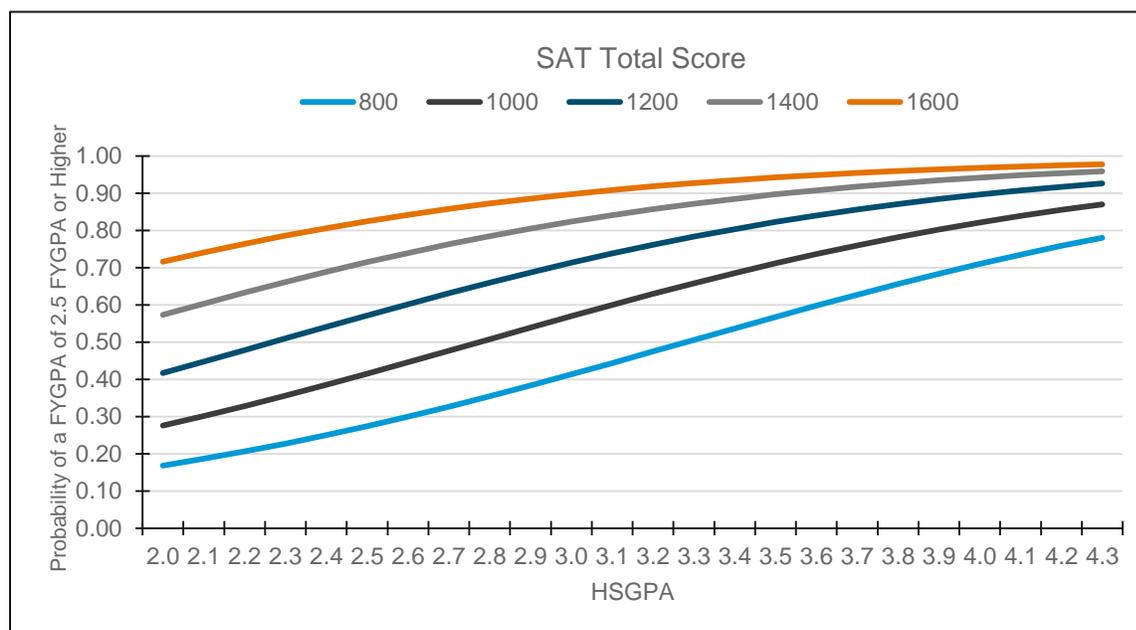
Key Takeaways

- Understanding retention rate differences by HSGPA and SAT scores alerts faculty and staff to students who may benefit from academic intervention and, as a result, stand a better chance of completing their educational goals.
- This figure shows a positive relationship between SAT scores and retention across all HSGPA categories (controlling for HSGPA), but especially so for students within the A and B HSGPA categories who represented more than 98% of the study sample (based on more than 223,000 students across 171 four-year institutions).
- For example, students with a HSGPA of A but with an SAT score between 800–990 have an average second-year retention rate of 77%, while the same A students with an SAT score between 1400–1600 have a 93% retention rate.

Using HSGPA and SAT scores to predict future academic success identifies students who may benefit from academic support programs to

succeed in their first year of college. Absent SAT scores, HSGPA information alone is not sufficient to identify whether students may need additional academic supports to be successful in their first year of college.

Figure 2. Probability of a 2.50 or Higher FYGPA Given HSGPA and SAT Total Score



Source: Westrick, P. A., Marini, J. P., Young, L., Ng, H., Shmueli, D., & Shaw, E. J. (2019). *Validity of the SAT[®] for Predicting First-Year Grades and Retention to the Second Year* (College Board Research Report). New York: College Board.

Key Takeaways

- SAT scores provide meaningful information in predicting a student's probability of earning a 2.50 or higher FYGPA in college at every point on the HSGPA scale.
- Even among students with higher HSGPAs we see the added SAT value in understanding student success in college.
- This figure shows students' probability of earning a FYGPA of 2.50 or higher in college given their HSGPA and selected SAT Total score. For example, a student with a HSGPA of 3.00 and SAT Total score of 1000 has approximately a 57% chance of earning a FYGPA of 2.50 or higher, while a student with the same HSGPA (3.00) and SAT Total score of 1400 has approximately an 82% chance of earning a FYGPA of 2.50 or higher.

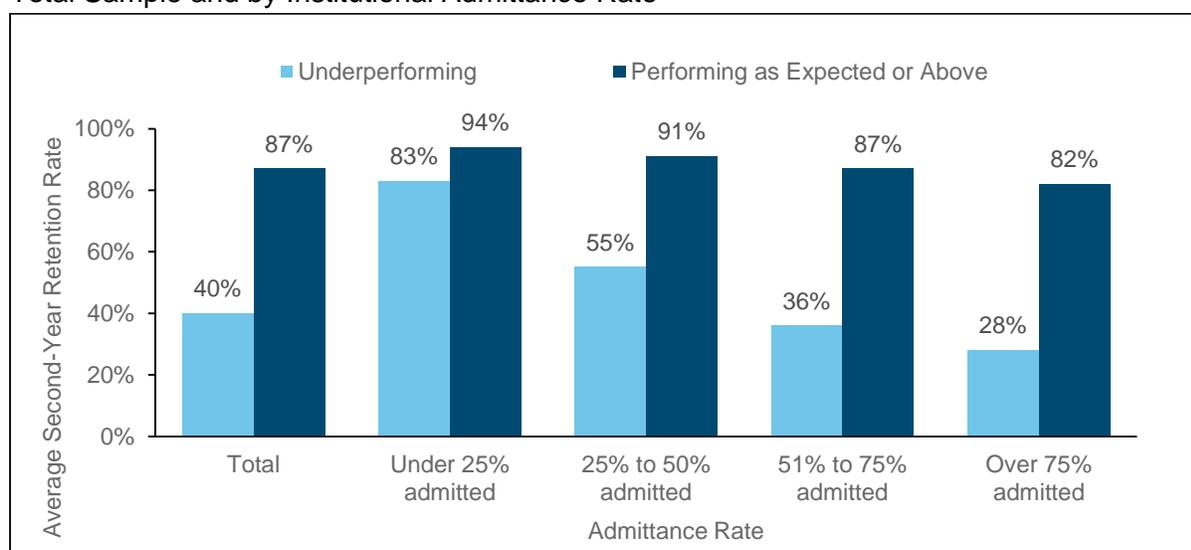
Tracking Student Progress and Performance

Arriving at a predicted FYGPA for students using both HSGPA and SAT scores is an effective tool to identify students who may be at risk for not returning to college.

The difference between a student's actual and predicted performance (based on SAT scores and HSGPA) during the first year can be used to categorize students into two groups—those who performed as well as predicted or better and those who underperformed from what was expected. Students who greatly underperform are students who earn grades in college that are much lower than predicted by their high school performance, and these students depart college at higher rates than do other students (Shaw & Mattern, 2013).

Not all students classified as underperforming, and therefore at risk for departure, have a low FYGPA. In the most recent study on this (Westrick et al., 2019), 24% of the students classified as underperforming had a FYGPA of 2.00 or higher, a FYGPA that many consider an acceptable minimum for avoiding academic probation. For example, a student predicted to earn a FYGPA of 3.80 but who earned a FYGPA of 2.25 would be in good academic standing, but by utilizing their predicted performance (based on SAT scores and HSGPA) the student could be flagged as being at-risk for departure due to greatly underperforming.

Figure 3. Retention Rates of Students Underperforming and Performing as Expected or Better, Total Sample and by Institutional Admittance Rate



Source: Westrick, P. A., Marini, J. P., Young, L., Ng, H., Shmueli, D., & Shaw, E. J. (2019). *Validity of the SAT[®] for Predicting First-Year Grades and Retention to the Second Year* (College Board Research Report). New York: College Board.

Key Takeaways

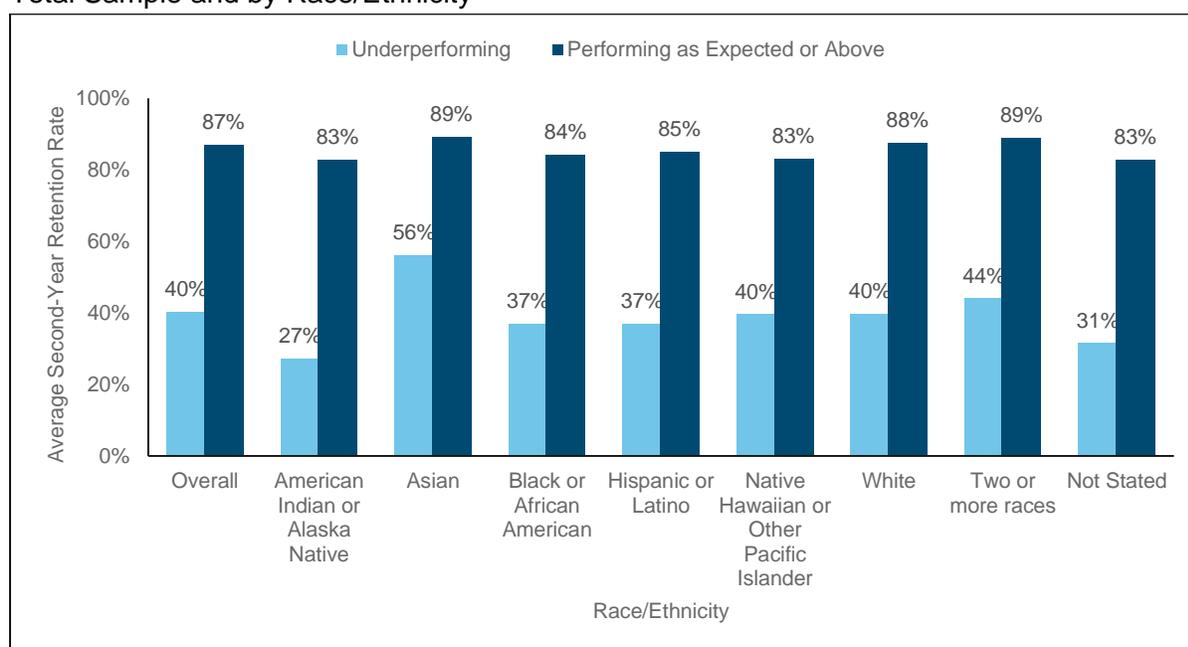
- Accurate prediction is essential in promoting student retention at an institution. Accepting students and positioning them for success based on the information one has about them (e.g., determining possible supports needed) is a key strategy for successful institutional retention and completion initiatives.
- This figure shows retention rates for students who underperform and those

performing as well as expected or above. This chart shows higher retention rates when students perform as expected or better.

- Overall, 87% of students who performed as expected or above returned for the second year, while only 40% of students who underperformed returned for the second year.
- This is especially true at less selective institutions, as the likelihood of underperforming students returning for the second year dramatically decreases as institutional admission selectivity decreases.

Calculating the difference between the predicted and actual FYGPA to identify underperforming students is a useful tool to identify and improve underrepresented minority student retention rates.

Figure 4. Retention Rates of Students Underperforming and Performing as Expected or Above, Total Sample and by Race/Ethnicity



Source: Marini, J. P., Westrick, P. A., Young, L., Ng, H., Shmueli, D., & Shaw, E. J. (2019). *Differential Validity and Prediction of the SAT[®]: Examining First-Year Grades and Retention to the Second Year* (College Board Research Report). New York: College Board.

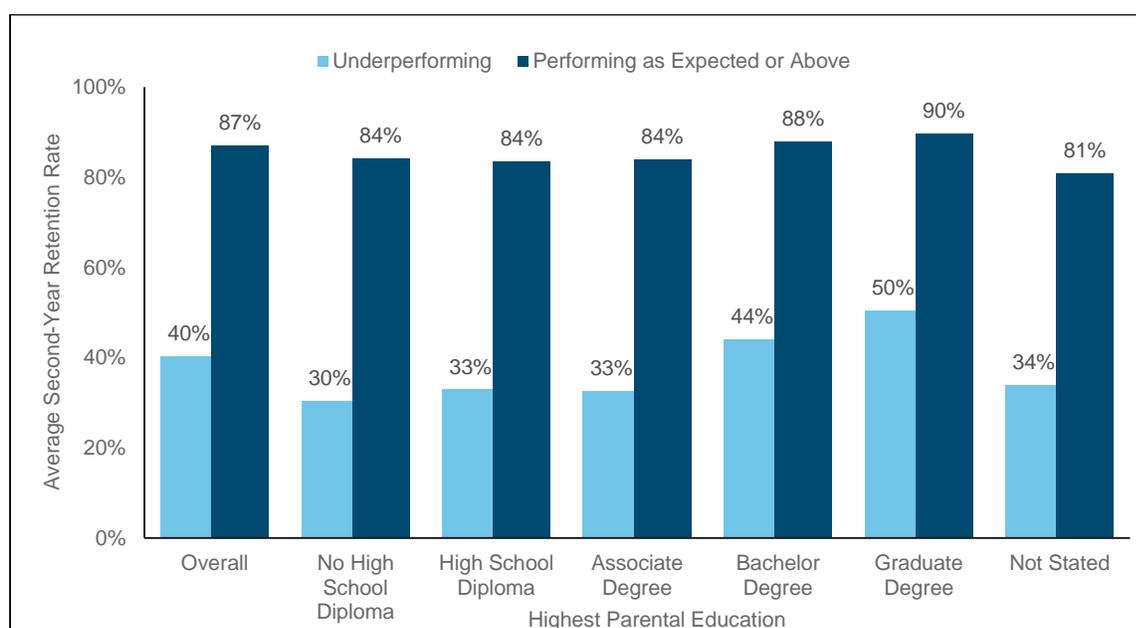
Key Takeaways

- Retention rates for those students performing as expected or above range from 83%–89% across all race and ethnicities. The largest difference in retention rates between students who underperform and those who perform as expected or above is seen in American Indian and Alaska Native students (27% vs. 83%).

- The smallest differences are seen in Asian students (56% vs. 89%) and those identifying as Two or More Races (44% vs. 89%). Furthermore, when compared to the overall rates in the sample (40% vs. 87%), underrepresented minority students have lower retention rates in both categories.

Calculating the difference between the predicted and actual FYGPA to identify underperforming students is a useful tool to identify and improve first-generation college student retention rates.

Figure 5. Retention Rates of Students Underperforming and Performing as Expected or Above, Total Sample and by Highest Parental Education Level



Source: Marini, J. P., Westrick, P. A., Young, L., Ng, H., Shmueli, D., & Shaw, E. J. (2019). *Differential Validity and Prediction of the SAT[®]: Examining First-Year Grades and Retention to the Second Year* (College Board Research Report). New York: College Board.

Key Takeaways

- The likelihood of underperforming students returning for the second year dramatically decreases as parental education level decreases, indicating that examining underperformance as a risk factor for not returning may be particularly helpful for students whose parents have not earned a bachelor's degree.
- Students who have parents with bachelor's degrees (44% vs. 88%) and those with graduate degrees (50% vs. 90%) have higher mean retention rates than the full sample

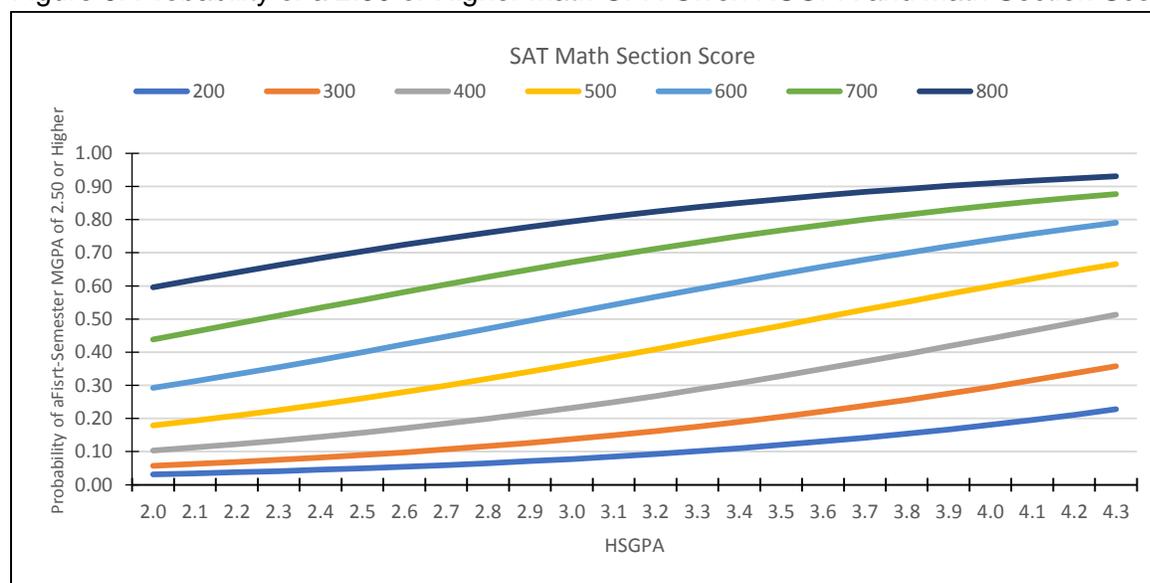
(40% vs. 87%) in both categories of student performance. The lowest rates are seen when a student's parents have no high school diploma (30% vs. 84%).

Course Placement and Identifying Students Who May Benefit from Targeted Academic Support

SAT scores provide valuable information about how students are expected to perform in the matching academic domain in college, which can improve placement decisions and strengthen advising conversations on campus.

The SAT Math section provides important information beyond HSGPA regarding student preparedness for math coursework and is an effective tool for placing students in appropriate college-level math courses. The combination of HSGPA and SAT Math scores provides a more complete and accurate understanding of student performance in math.

Figure 6. Probability of a 2.50 or Higher Math GPA Given HSGPA and Math Section Score



Source: Westrick, P. A., Marini, J. P., Young, L., Shmueli, D., Ng, H., & Shaw, E. J. (in preparation). *Validity of the SAT® for Predicting First-Semester, Domain-Specific Grades* (College Board Research Report). New York: College Board.

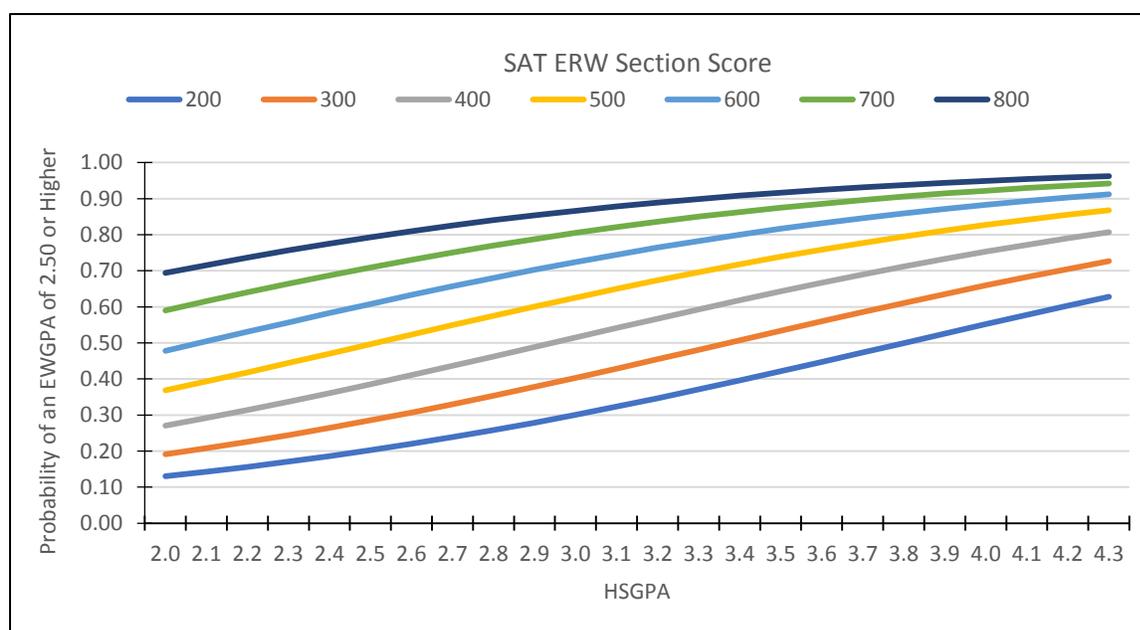
Key Takeaways

- SAT Math scores provide meaningful information in predicting a student's probability of earning a 2.50 or higher in college-level math at every point on the HSGPA scale.
- Even among students with the highest HSGPAs, we see the added SAT Math value in understanding student math success in college.

- This figure shows students' probability of earning a first semester math GPA of 2.50 or higher in college given their HSGPA and selected SAT Math score. For example, a student with a HSGPA of 3.00 and SAT Math score of 500, has approximately a 36% chance of earning a math GPA of 2.50 or higher, while a student with the same HSGPA (3.00) and SAT Math score of 700 has an approximately 67% chance of earning a math GPA of 2.50 or higher.

The SAT Evidence-Based Reading and Writing (ERW) section provides important information beyond HSGPA regarding student preparedness for English and writing coursework and is a useful tool to place students in appropriate college-level composition courses. The combination of HSGPA and SAT ERW scores provides a more complete and accurate understanding of students' performance in English.

Figure 7. Probability of a 2.50 or Higher English and Writing GPA Given HSGPA and SAT ERW Section Score



Source: Westrick, P. A., Marini, J. P., Young, L., Shmueli, D., Ng, H., & Shaw, E. J. (in preparation). *Validity of the SAT[®] for Predicting First-Semester, Domain-Specific Grades* (College Board Research Report). New York: College Board.

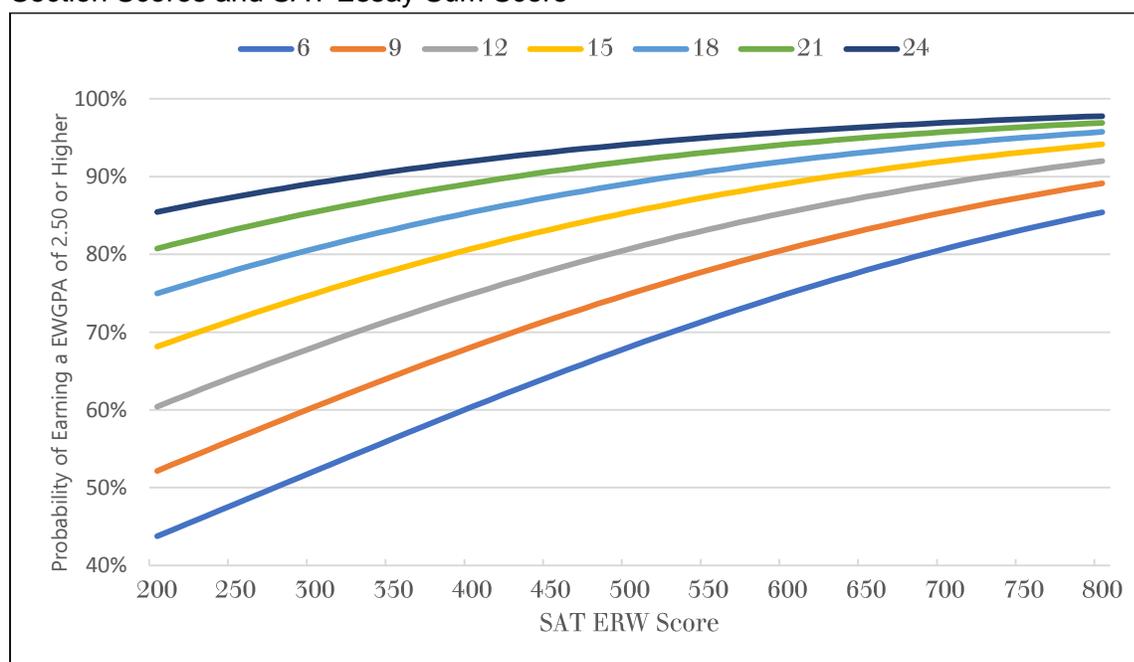
Key Takeaways

- SAT ERW scores provide meaningful information in predicting a student's probability of earning a 2.50 or higher in college-level English and writing at every point on the HSGPA scale.

- Even among students with the highest HSGPAs, we see the added SAT ERW value in understanding student English and writing success in college.
- This figure shows students' probability of earning a first semester English and writing GPA of 2.50 or higher in college given their HSGPA and selected SAT ERW score. For example, a student with a HSGPA of 3.00 and SAT ERW score of 500, has approximately a 63% chance of earning an English and writing GPA of 2.50 or higher, while a student with the same HSGPA (3.00) and SAT ERW score of 700 has an approximately 80% chance of earning an English and writing GPA of 2.50 or higher.

The SAT Essay is a useful tool for course placement and provides important information regarding student preparedness for college-level writing. It provides information that is unique and additive above other measures such as SAT ERW scores.

Figure 8. Probability of Earning a 2.50 or Higher English and Writing GPA Given SAT ERW Section Scores and SAT Essay Sum Score



Source: Marini, J. P., Westrick, P. A., Young, L., Shmueli, D., Shaw, E. J., & Ng, H. (in press). *Validity of SAT Essay Scores for Predicting First-Year College Grades* (College Board Research Report). New York: College Board.

Key Takeaways

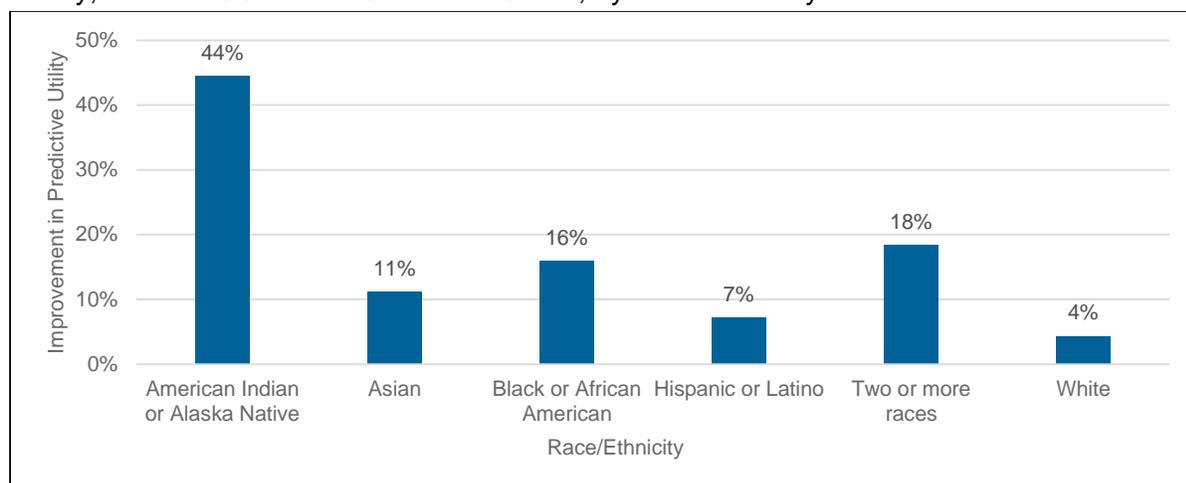
- At each SAT ERW score point, the probability of a student earning a 2.50 or higher EWGPA increases with each additional SAT Essay sum score.
- Using SAT Essay scores in conjunction with SAT ERW scores in a compensatory model like the one illustrated above helps institutions to predict a student's likelihood of

succeeding in writing-intensive courses despite having a low level of performance on either of the two predictors.

- Including SAT Essay scores with SAT ERW scores increases an institution's ability to identify applicants who may excel despite having low SAT ERW scores and applicants who may struggle despite high SAT ERW scores. The ability to identify students who may struggle academically allows institutions to target these students for academic support, which likely benefits both the student and the institution regarding course success, overall academic performance, and, ultimately, student retention.

For several student subgroups, the information added by SAT Essay scores above HSGPA and SAT ERW scores provides unique and critically useful insight regarding their college performance in English and writing courses. This is especially true for ELL students and underrepresented minority students.

Figure 9. Improvement in the Prediction of First Semester English and Writing GPA by the SAT Essay, above HSGPA and SAT ERW Score, by Race/Ethnicity



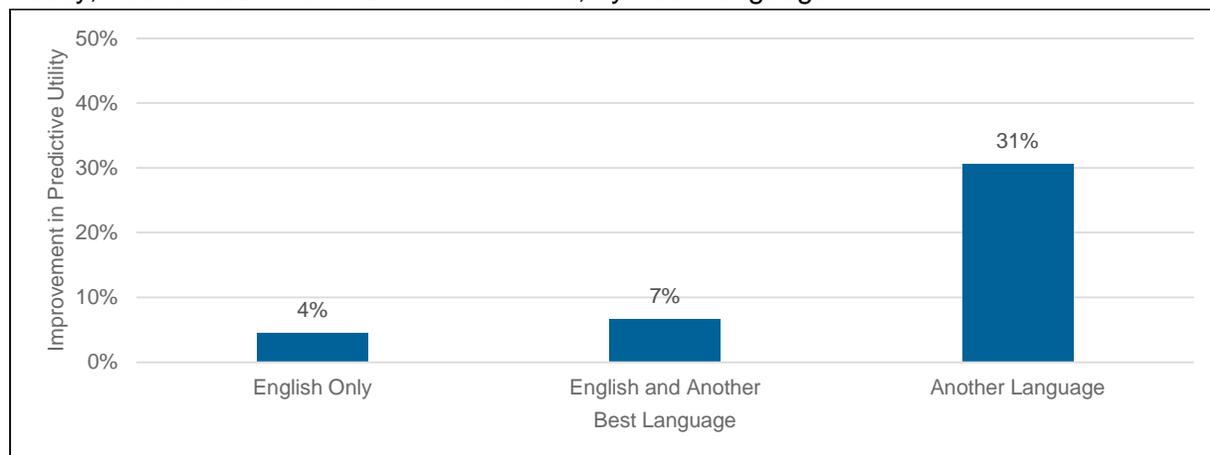
Source: Marini, J. P., Westrick, P. A., Young, L., Shmueli, D., Shaw, E. J., & Ng, H. (in press). *Validity of SAT Essay Scores for Predicting First-Year College Grades* (College Board Research Report). New York: College Board.

Key Takeaways

- For some student racial/ethnic subgroups, the SAT Essay can improve our ability to predict their college performance in English and writing by more than 15% (and by more than 40% for students identifying as American Indian or Alaska Native) above using the combination of HSGPA and SAT ERW scores.
- As the nation's student population becomes more diverse, institutions may find that the SAT Essay scores add even greater value over time, particularly for identifying students who may struggle with the writing skills needed to be successful in college. For American Indian or Alaska Native students, Black or African American students, and students

identifying as two or more races, the added value of the SAT Essay is especially important for understanding their writing performance in college.

Figure 10. Improvement in the Prediction of First Semester English and Writing GPA by the SAT Essay, above HSGPA and SAT ERW Score, by Best Language



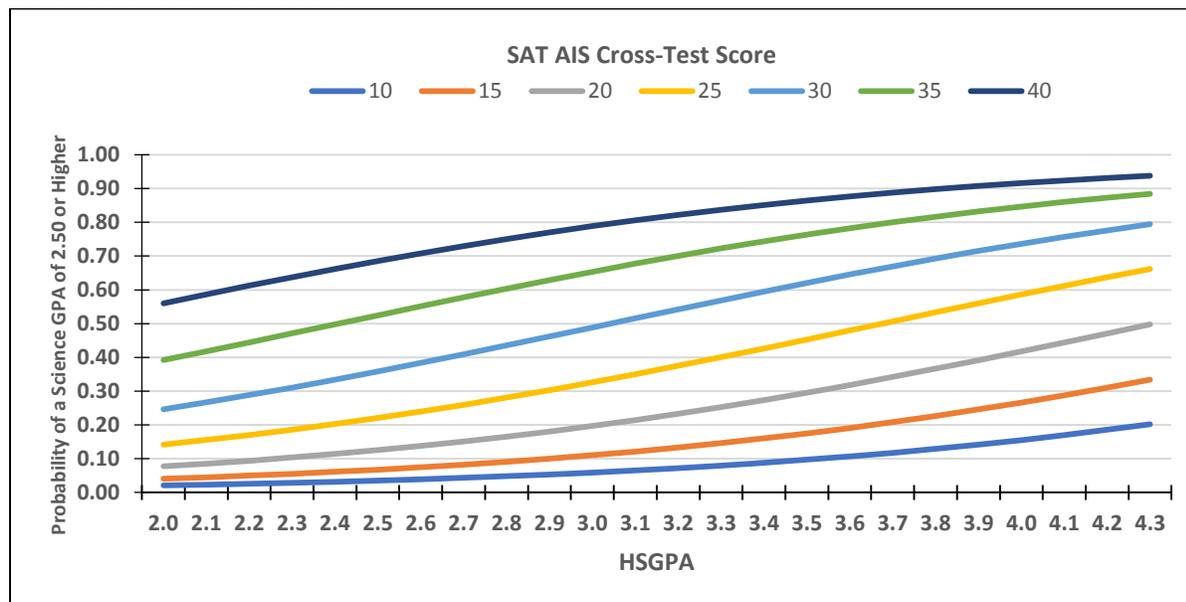
Source: Marini, J. P., Westrick, P. A., Young, L., Shmueli, D., Shaw, E. J., & Ng, H. (in press). *Validity of SAT Essay Scores for Predicting First-Year College Grades* (College Board Research Report). New York: College Board.

Key Takeaways

- For students whose best language is not English, the SAT Essay can improve our ability to predict their college performance in English and writing by more than 30% above using the combination of HSGPA and SAT ERW scores.
- As the nation's student population becomes more diverse, institutions may find that the SAT Essay scores add even greater value over time, particularly for identifying students who may struggle with the writing skills needed to be successful in college. For students whose best language is not English, the added value of the SAT Essay is especially important for understanding their writing performance in college.

The SAT Analysis in Science cross-test score provides highly useful information above HSGPA regarding student preparedness for science coursework in college. The combination of SAT Analysis in Science cross-test score and HSGPA provides a more complete and accurate understanding of student performance in science coursework.

Figure 11. Probability of a 2.50 or Higher Science GPA Given HSGPA and SAT Analysis in Science Cross-Test Score



Source: Westrick, P. A., Marini, J. P., Young, L., Shmueli, D., Ng, H., & Shaw, E. J. (in preparation). *Validity of the SAT® for Predicting First-Semester, Domain-Specific Grades* (College Board Research Report). New York: College Board.

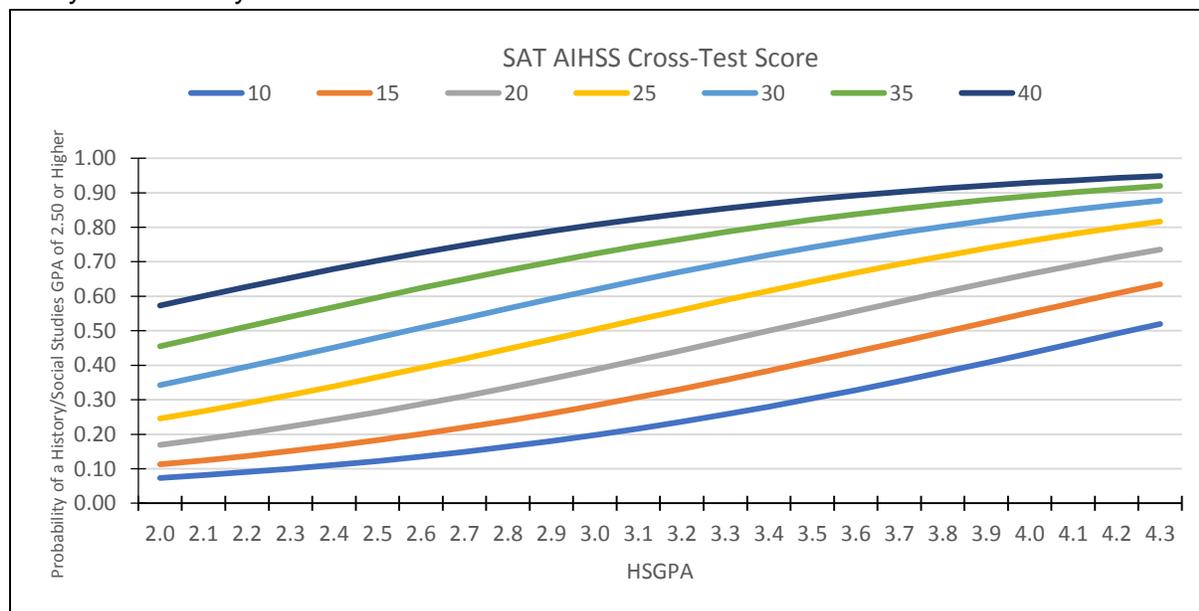
Key Takeaways

- The SAT Analysis in Science cross-test score provides meaningful information in predicting a student's probability of earning a 2.50 or higher in college-level science coursework at every point on the HSGPA scale.
- This figure shows students' probability of earning a first semester science GPA of 2.50 or higher in college given their HSGPA and selected SAT Analysis in Science cross-test score. For example, a student with a HSGPA of 3.00 and SAT Analysis in Science cross-test score of 25, has approximately a 33% chance of earning a science GPA of 2.50 or higher, while a student with the same HSGPA (3.00) and SAT Analysis in Science cross-test score of 35 has an approximately 65% chance of earning a science GPA of 2.50 or higher.
- Even among students with very strong HSGPAs, such as a 3.80, a student's predicted success in first semester science coursework ranges from 13% to 90% depending on their SAT Analysis in Science cross-test score, making this score a useful tool for identifying students who may benefit from special academic assistance after college enrollment.

The SAT Analysis in History/Social Studies cross-test score provides highly useful information beyond HSGPA regarding student preparedness for history and social studies coursework in college. The combination of SAT Analysis in

History/Social Studies cross-test score and HSGPA provides a more complete and accurate understanding of student performance in those courses.

Figure 12. Probability of a 2.50 or Higher History/Social Studies GPA Given HSGPA and SAT Analysis in History/Social Studies Cross-Test Score



Source: Westrick, P. A., Marini, J. P., Young, L., Shmueli, D., Ng, H., and Shaw, E. J. (in preparation). *Validity of the SAT® for Predicting First-Semester, Domain-Specific Grades*. (College Board Research Report). New York: College Board.

Key Takeaways

- The SAT Analysis in History/Social Studies cross-test score provides meaningful information in predicting a student's probability of earning a 2.50 or higher in college-level history/social studies coursework at every point on the HSGPA scale.
- This figure shows students' probability of earning a first semester history/social studies GPA of 2.50 or higher in college given their HSGPA and selected SAT Analysis in History/Social Studies cross-test score. For example, a student with a HSGPA of 3.00 and SAT Analysis in History/Social Studies cross-test score of 25, has approximately a 50% chance of earning a history/social studies GPA of 2.50 or higher, while a student with the same HSGPA (3.00) and SAT Analysis in History/Social Studies cross-test score of 35 has an approximately 72% chance of earning a history/social studies GPA of 2.50 or higher.
- Even among students with very strong HSGPAs, such as a 3.80, a student's predicted success in first semester history/social studies coursework ranges from 38% to 91% depending on their SAT Analysis in History/Social Studies cross-test score, making this score a useful tool for identifying students who may benefit from special academic assistance after college enrollment.

Conclusion

Beyond the admissions office, the SAT adds significant value beyond HSGPA in identifying students at risk for not returning, tracking student progress and performance to understand who may benefit from additional support to remain on track to earn their degree, making course placement decisions and setting placement policies, and understanding areas of student academic strength and weakness. As the fall 2017 entering college cohort continues to progress through college, we will continue to study relationships between SAT scores and later college outcomes and share those results as they are available.

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