

National SAT[®] Validity Study— An Overview for Admissions and Enrollment Leaders

This report summarizes outcomes from the first national operational SAT[®] validity study since the SAT was redesigned and launched in March 2016. The study examines the utility of SAT scores for college admission decisions, focusing on student outcomes in college as represented by first-year grade point average (FYGPA) and retention to the second year of college. It is based on data from more than 223,000 students across 171 four-year colleges and universities.¹

Key Takeaways:

- The SAT is strongly predictive of college success; students with higher SAT scores are more likely to have higher grades in college.
- Using the SAT in conjunction with high school GPA (HSGPA) is the most powerful way to predict future academic performance.
- The SAT is useful beyond admissions; data show that SAT scores are important predictors of student retention to the second year.
- Colleges can use SAT scores to identify students who may need academic support before they start college and throughout their college education.

Major Findings

Results show that the SAT is essentially as effective as high school grades in predicting students' college performance, and when these two measures are combined, offer the most accurate understanding of student performance than either measure used alone:

- SAT scores are strongly predictive of college performance—students with higher SAT scores are more likely to have higher grades in college.
- SAT scores are predictive of student retention to their second year—students with higher SAT scores are more likely to return for their second year.
- SAT scores and high school grade point average (HSGPA) are both related to academic performance in college but tend to measure slightly different aspects of academic preparation. The SAT adds value above and beyond HSGPA in predicting college success. Using SAT scores in conjunction with HSGPA is the most powerful way to predict future academic performance.
- On average, SAT scores add 15% more predictive power above grades alone for understanding how students will perform in college. SAT scores help to further differentiate student performance in college within narrow HSGPA ranges, described in detail in the discussion that follows.

1. Readers are encouraged to consult the full study for complete details: *Validity of the SAT for Predicting First-Year Grades and Retention to the Second Year* (Westrick, Marini, Young, Ng, Shmueli, & Shaw, 2019): sat.org/validitystudy.

SAT Score Relationships with First-Year Grade Point Average

Students' SAT scores and HSGPA were analyzed to determine the extent to which these measures predict students' FYGPA. Table 1 shows the correlations of the singular predictors and combinations of predictors with FYGPA. Positive correlations indicate that students with higher SAT scores and HSGPAs tend to earn higher grades in college. The adjusted correlations of the different predictors with FYGPA ranged from .47 (SAT Math) to .61 (SAT and HSGPA); the correlation between SAT and FYGPA was .51.²

Table 1: Corrected (Raw) Correlations of Predictors with FYGPA

Predictor(s)	Correlation ³
SAT, HSGPA	.61 (.42)
HSGPA	.53 (.33)
SAT	.51 (.32)
SAT Evidence-Based Reading and Writing (ERW)	.49 (.29)
SAT Math	.47 (.27)
Note: <i>N</i> = 223,858. References to "SAT" alone include SAT ERW and SAT Math sections.	

Despite the strength of each variable analyzed individually to predict student collegiate success, the use of these predictors in combination provides institutions with the greatest benefits. When HSGPA and SAT are combined, the correlation with FYGPA jumps to .61, an increase of .08 and a 15% boost in predictive utility over using HSGPA alone.

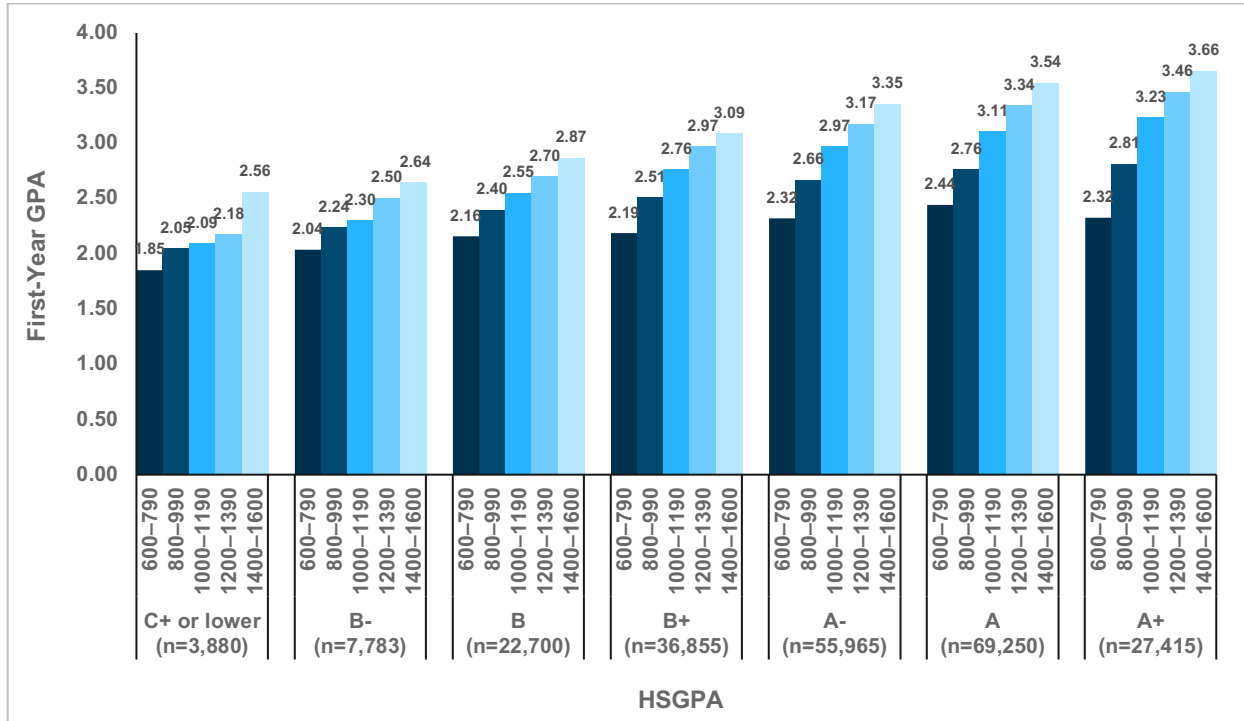
These results have implications for campus faculty and administrative leaders who must select students from among many applicants with strong and similar HSGPAs. In this study, for example, over two-thirds of the students report HSGPAs of A or above. When we hold HSGPA constant, however, we gain greater insight into the full range of students' capabilities by understanding their SAT scores (see Figure 1). Based on SAT Total score bands within each narrow HSGPA category, it is evident that the relationship between SAT scores and FYGPA remains positive and increases by SAT score:

- As HSGPA increases from C+ or lower to A+, the gaps among students within the same HSGPA category, but within different SAT score bands, increase revealing marked differences in their college performance.
- Isolating those students with HSGPA averages of A+ (the rightmost panel in Figure 1), those earning SAT Total scores between 600 and 790 had a mean FYGPA of 2.32, but students earning SAT Total scores between 1400 and 1600 had a mean FYGPA of 3.66—more than a full letter grade higher than the students with the lower scores but in the same HSGPA group. In other words, despite earning similar grades in high school, these students display significantly variable college outcomes.

2. Cohen (1988) defined correlations with absolute values of .50 or higher as large, correlations with absolute values less than .50 and greater than or equal to .30 as medium, and correlations with absolute values less than .30 but greater than or equal to .10 as small.

3. Correlations were calculated at the institution-level and then averaged, weighted by the number of students in each institutional analysis. Correlations were then adjusted to account for the selectivity of the student sample and restriction of range, consistent with the Standards for Educational and Psychological Testing (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, 2014).

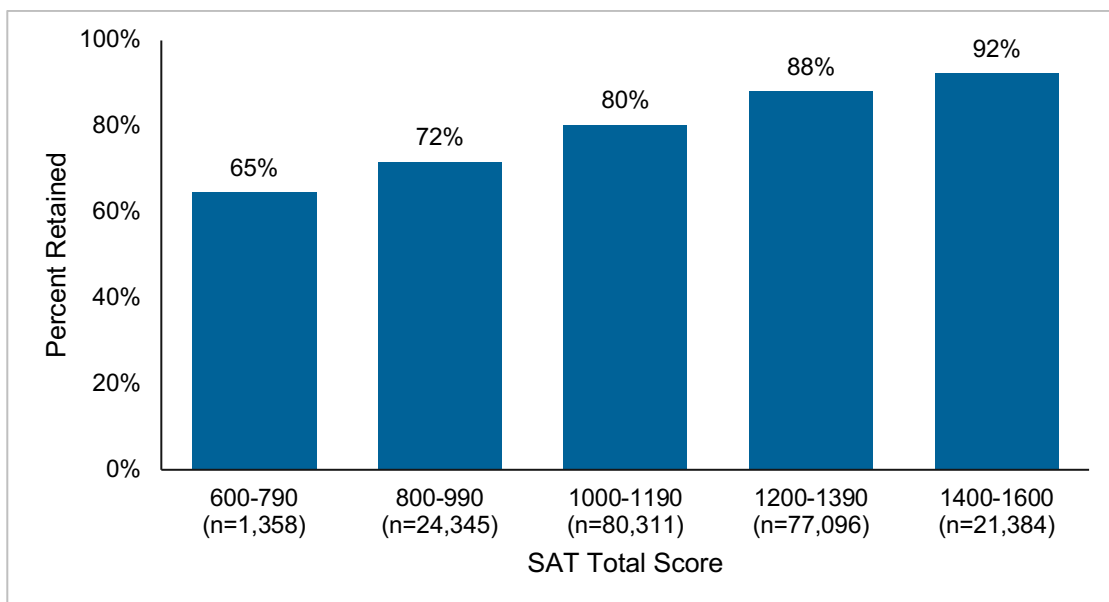
Figure 1: Mean FYGPA by HSGPA and SAT total score bands.



SAT score relationships with retention to second year.

SAT scores also show a positive relationship with retention to the second year at the same institution. As SAT scores increase, the likelihood that a student will return for a second year also increases. Figure 2 shows the average second-year retention rate by SAT Total score bands for students retained at the same institution. For example, students with SAT Total scores between 800 and 990 had a mean retention rate of 72%. In contrast, students with SAT Total scores between 1400 and 1600 had a mean retention rate of 92%.

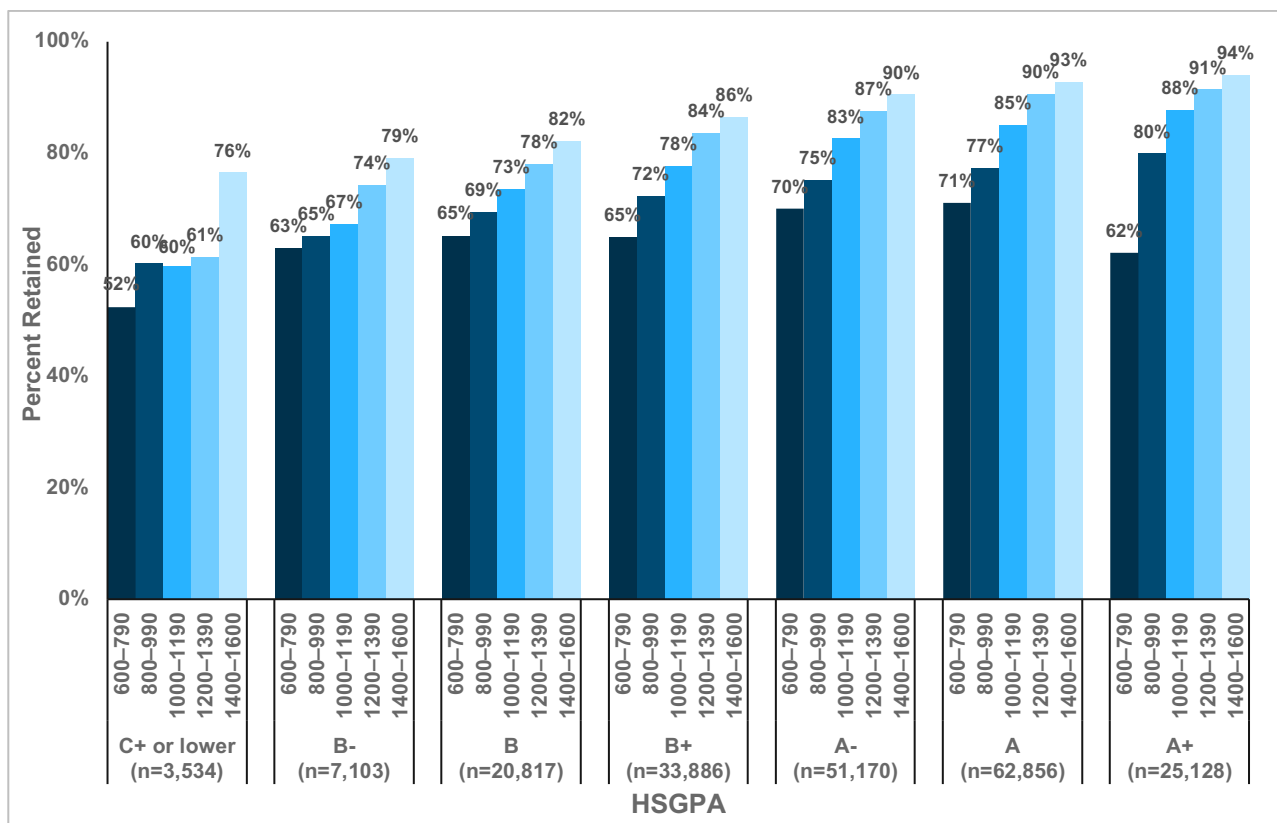
Figure 2: Mean second-year retention rate by SAT total score bands.



Using the SAT with HSGPA provides more nuanced information. Figure 3 depicts second-year retention rates when using HSGPA and SAT scores jointly. The figure shows a positive relationship between SAT scores and retention across all HSGPA categories, especially for students within the A and B HSGPA categories, students who represented more than 98% of the study sample.

- Using SAT score bands within each HSGPA category, the data show the relationship between SAT scores and retention remains positive and increases by SAT score.
- Even among students with higher HSGPAs, we see the added SAT value in understanding student retention. Even among students with A+ HSGPAs, retention rates vary by as much as 32 percentage points.

Figure 3: Mean second-year retention rate by HSGPA and SAT total score bands.

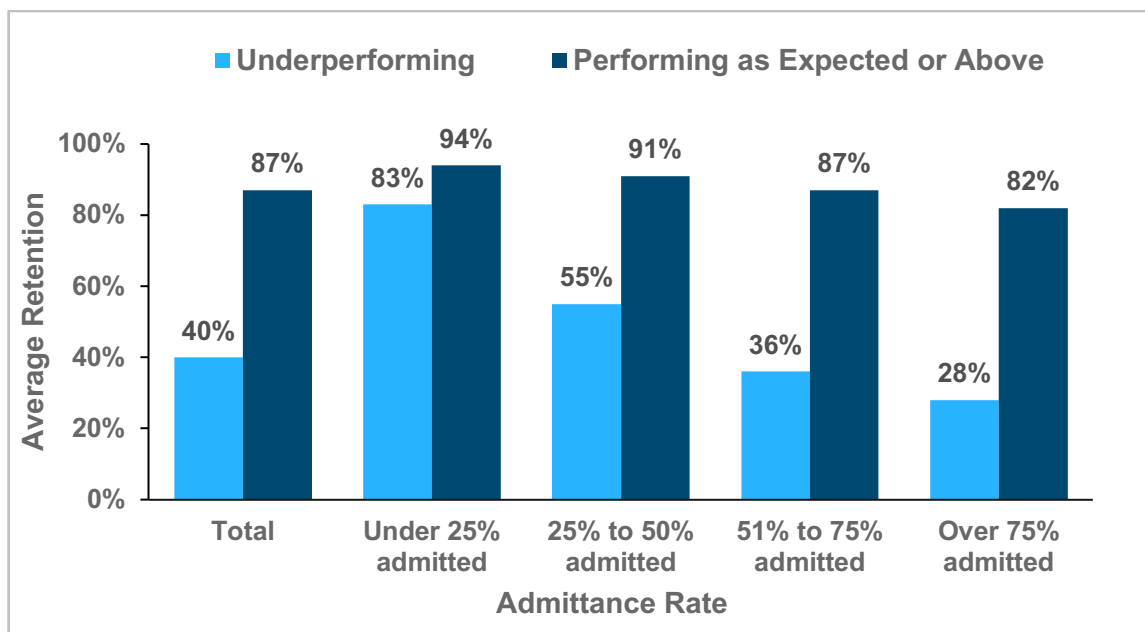


Combining HSGPA and SAT information reveals additional insights about student performance in college that are not evident to an institution when using either measure alone. Understanding these differences allows campuses the flexibility to admit students who demonstrate a wide range of academic capabilities, directing those needing specific assistance to targeted programs designed to sustain and improve their likelihood of success.

Predicting Retention and Identifying Students at Risk of Departure

Students who largely under- or overperform in college—compared to their predicted performance based on SAT and HSGPA—are at greater risk for departure (Shaw & Mattern, 2013). By calculating students’ actual and predicted performance in college using SAT and HSGPA data, students can be classified into two groups: those who perform as expected or better, and those who underperform in their first-year of college. Figure 4 shows retention rates for students who underperform and those who perform as well as expected or better. Eighty-seven percent of students who performed as expected or better returned for the second year, while only 40% of students who underperformed returned for the second year. The likelihood of underperforming students returning for the second year dramatically decreases as institutional admission selectivity decreases.

Figure 4: Retention rates of students underperforming and performing as expected or better, total sample and by institutional admittance rate.



Arriving at a predicted FYGPA for students using both HSGPA and SAT scores—and comparing these data with a student’s actual college performance—is a simple and powerful way to find and serve students who may be at risk for leaving the institution. Of course, not all students classified as underperforming, and therefore at greater risk for departure, have a low FYGPA. In this sample, 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. By taking account of their predicted performance (based on SAT scores and HSGPA), admissions and enrollment leaders have information to proactively flag students as being at risk for dropping out.

Next Steps

Future research will examine SAT validity by institutional and student subgroups and will expand the analysis of the relationship between SAT scores and other college outcomes, including course-specific grades, later college performance, and degree completion. Future briefs will highlight how the SAT, along with other measures of students’ achievements, can serve the needs of higher education admissions and enrollment leaders.

References

- American Educational Research Association, American Psychological Association, and National Council on Measurement in Education (2014). *Standards for educational and psychological testing*. Washington DC: AERA.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Shaw, E. J., & Mattern, K.D. (2013). Examining student under- and overperformance in college to identify risk of attrition. *Educational Assessment*, 18(4), 251–268.
- 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*. New York: College Board. Available at sat.org/validitystudy.

