

An Updated Look at SAT Score Relationships with College Degree Completion

June 2022

Paul A. Westrick, Jessica P. Marini, and Emily J. Shaw

Key Takeaways

- The SAT has a positive relationship with bachelor's degree completion within four years.
 - Students who completed a bachelor's degree within four years had an average SAT Total score of 1188, which was 110 points higher than the average SAT Total score for students who did not complete a bachelor's degree within four years.
 - After controlling for HSGPA, the SAT had a positive relationship with bachelor's degree completion within four years. This was true for the overall sample and across all subgroups.
 - The SAT contextualized HSGPA (and vice versa) when estimating students' likelihood of completing a bachelor's degree within four years.
- As SAT scores predict bachelor's degree completion, these study results allow institutions to use SAT scores with confidence when making decisions related to admissions, placement, scholarship/honors programs, instructional support, and academic advising on campus.

Introduction

The purpose of this study is to understand how well SAT scores predict the completion of a bachelor's degree within four years. As the first entering college cohort of students to have taken the redesigned SAT (entering class of 2017) has progressed through more than four years of college now, we are able to study SAT score relationships with degree completion. Though higher education institutions have an interest in understanding the utility of admission tests for decisions related to admission, course placement, scholarships, honors programs, student persistence, and academic advising, the prediction of degree completion may be the most vital use case of admission tests – also because it so clearly relates to many of the aforementioned use cases. The current study adds to the literature on the validity of the SAT as a predictor of four-year college degree completion (Burton & Ramist, 2001; Mattern & Patterson, 2014; Mattern, Patterson, & Wyatt, 2013; University of California Academic Senate, 2020) and provides institutions with evidence they may use to guide campus planning as they help students navigate the academic path from college admission to degree completion.

Sample

For this study we matched College Board student data from the 2017 entering college cohort with four-year outcome data from the National Student Clearinghouse. Students in the sample had to have SAT scores, a self-reported high school grade point average (HSGPA), and they had to have enrolled as a first-year student at a four-year institution in the fall term of 2017. Our

final sample consisted of 868,312 students at 1,699 four-year institutions across the U.S. Descriptive statistics for the sample are presented in Table 1.

Table 1: Descriptive Statistics

Group	Measure	<i>N</i>	<i>Mean</i>	<i>SD</i>
Overall	SAT ERW	868,312	570	89
	SAT Math	868,312	561	98
	SAT Total	868,312	1131	175
	HSGPA	868,312	3.52	0.54
Degree Completers	SAT ERW	420,504	598	82
	SAT Math	420,504	590	92
	SAT Total	420,504	1188	162
	HSGPA	420,504	3.70	0.46
Non-Completers	SAT ERW	447,808	544	87
	SAT Math	447,808	534	95
	SAT Total	447,808	1078	170
	HSGPA	447,808	3.35	0.57

In the overall sample, 48% of the students completed a bachelor’s degree within four years from any institution. This finding was comparable to the 50% four-year graduation rate found in previous research (Mattern, et al., 2013), and higher than the national average of 38% at four-year institutions where the students had initially enrolled (National Center for Education Statistics, 2021).

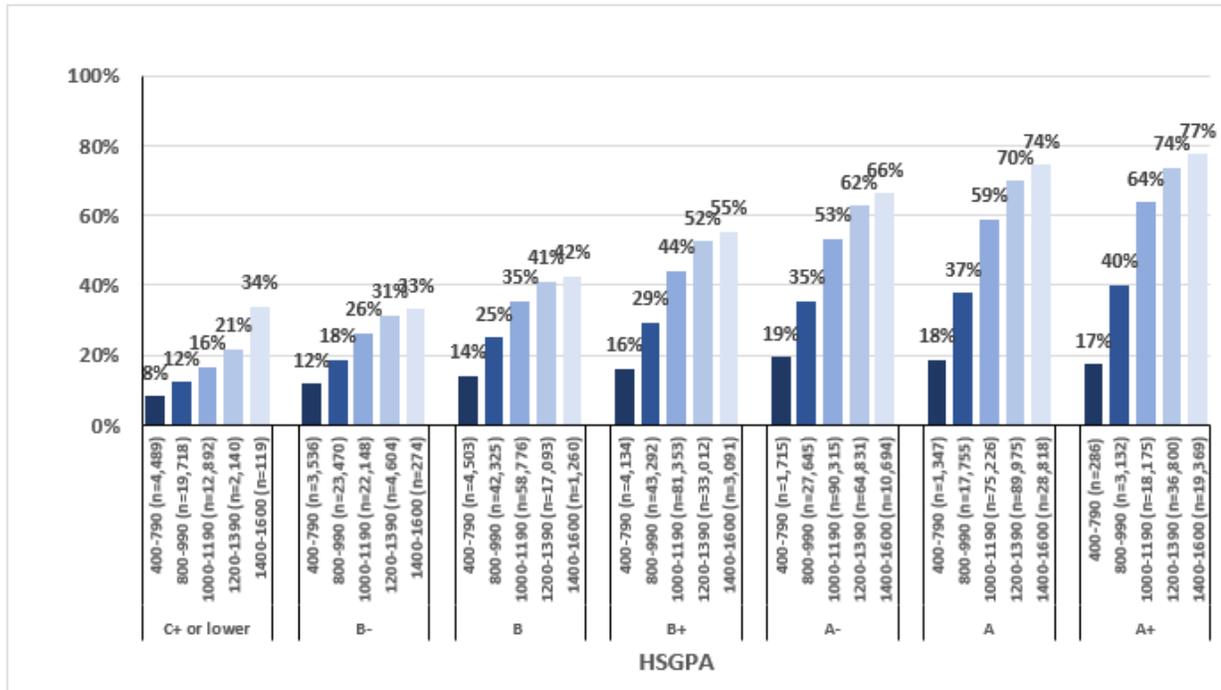
Results

Overall Analyses

We first examined the differences between students who completed a bachelor’s degree within four years (degree completers) and students who did not complete a bachelor’s degree within four years (non-completers). To do this, we calculated the standardized mean differences (*d*, Cohen, 1988) between the SAT scores and HSGPAs for the two groups. After subtracting the mean scores for the non-completers from the mean scores for the completers for each measure, and then dividing the difference by the pooled standard deviations for each measure, the standardized mean differences for SAT ERW section scores, SAT Math section scores, SAT Total scores, and HSGPA were 0.64, 0.59, 0.66, and 0.67, respectively. Any standardized mean difference greater than ± 0.50 is considered a medium effect size (Cohen, 1988). The results indicate that precollege academic achievement, as measured by SAT scores and HSGPA, had strong relationships with degree completion within four years.

We next examined the relationship between SAT total score and degree completion after controlling for HSGPA. Figure 1 allows us to visualize the added information that SAT scores provide above HSGPA. After controlling for HSGPA, degree completion rates increased by SAT score bands, consistent with previous research findings (Mattern et al., 2013). This indicates that these two academic measures uniquely contribute to our understanding of student degree completion. If the SAT did not add informational value above HSGPA, then the SAT score bands would indicate the same levels of completion within HSGPA groupings. However, there are clear differences in completion rates within HSGPA groupings by SAT score bands.

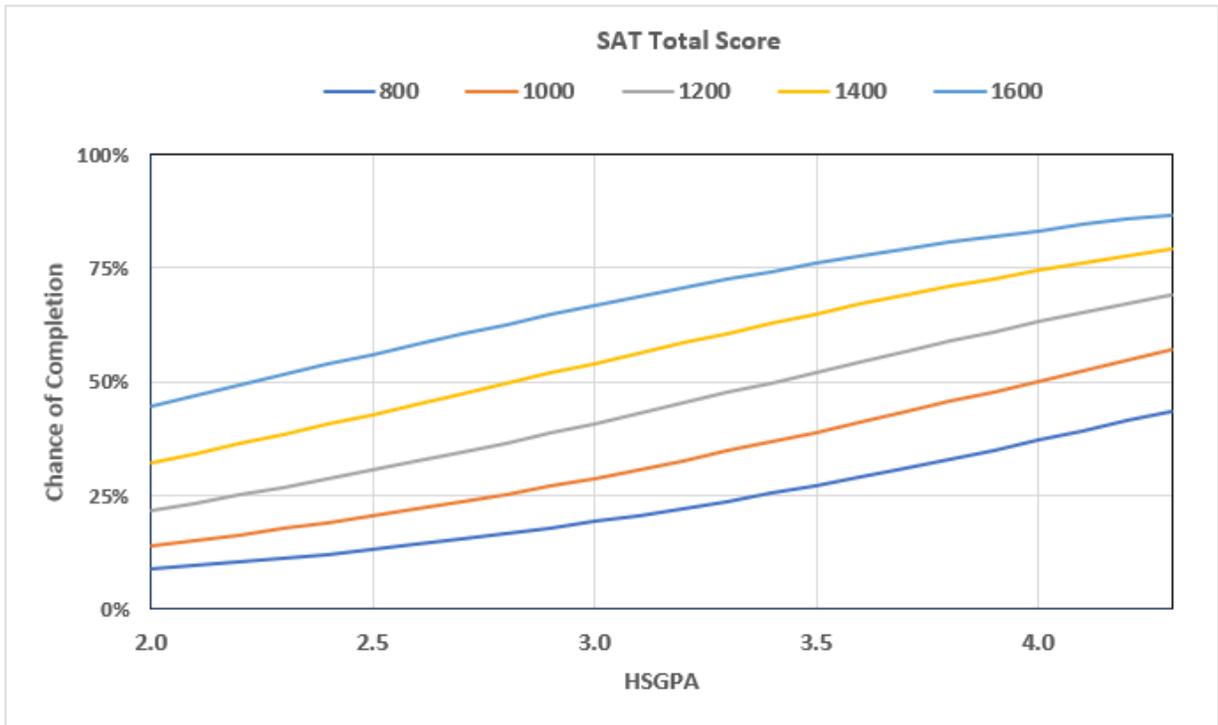
Figure 1: Bachelor's Degree Completion Rates by HSGPA and SAT Total Score Bands



For example, among students with an “A” HSGPA, students with SAT Total scores between 800 and 990 had a degree completion rate of 37%, but students with SAT Total scores between 1400 and 1600 had a 74% completion rate, twice as high as the rate for the students in the lower score band with the same HSGPA.

To further illustrate the added value of SAT scores beyond HSGPA in predicting degree completion, Figure 2 shows the probability of students earning a bachelor's degree within four years given their HSGPA and selected SAT Total scores. For example, a student with a HSGPA of 4.0 and an SAT Total score of 1000 has approximately a .50 probability, or a 50% chance, of earning a bachelor's degree within four years. However, a student with the same HSGPA of 4.0 and an SAT Total score of 1400 has approximately a 75% chance of earning a bachelor's degree within four years.

Figure 2: Probability of Bachelor's Degree Completion within Four Years given HSGPA and SAT Total Score



This analysis demonstrated that SAT scores contextualize HSGPA all along the HSGPA scale, adding information that improves the prediction of students earning a bachelor's degree within four years. These results were consistent with previous research findings (Mattern et al., 2013; Mattern & Patterson, 2014).

Subgroup Analyses

We conducted additional subgroup analyses to further our understanding of the relationship between SAT scores and bachelor's degree completion within four years after controlling for HSGPA. Specifically, we examined results by gender, first-generation status, under-represented minority (URM) status, and students' best language.

Figures 3 and 4 present the results for female ($n=488,307$) and male students ($n=380,005$), respectively. Consistent with previous research (Mattern, Shaw, & Marini, 2013), completion rates were consistently higher for female students than they were for male students, but the pattern of completion rates increasing as SAT Total scores increased, within HSGPA levels, was evident in both groups.

Figure 3: Bachelor's Degree Completion Rates by HSGPA and SAT Total Score Bands, Female Students

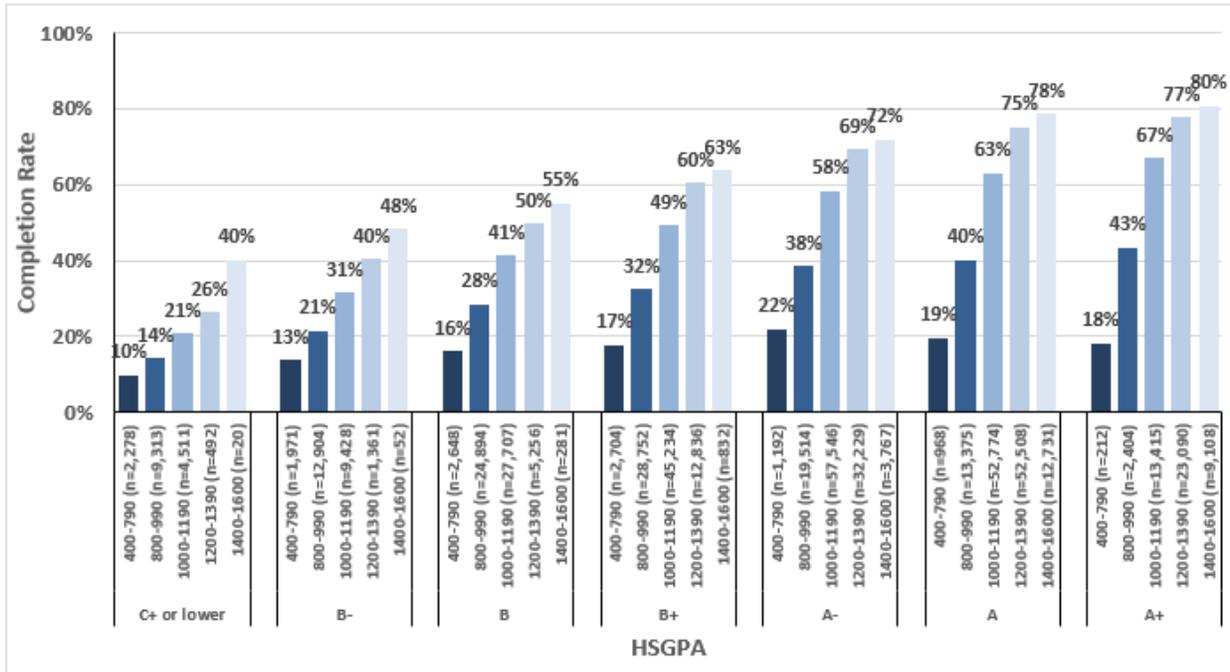
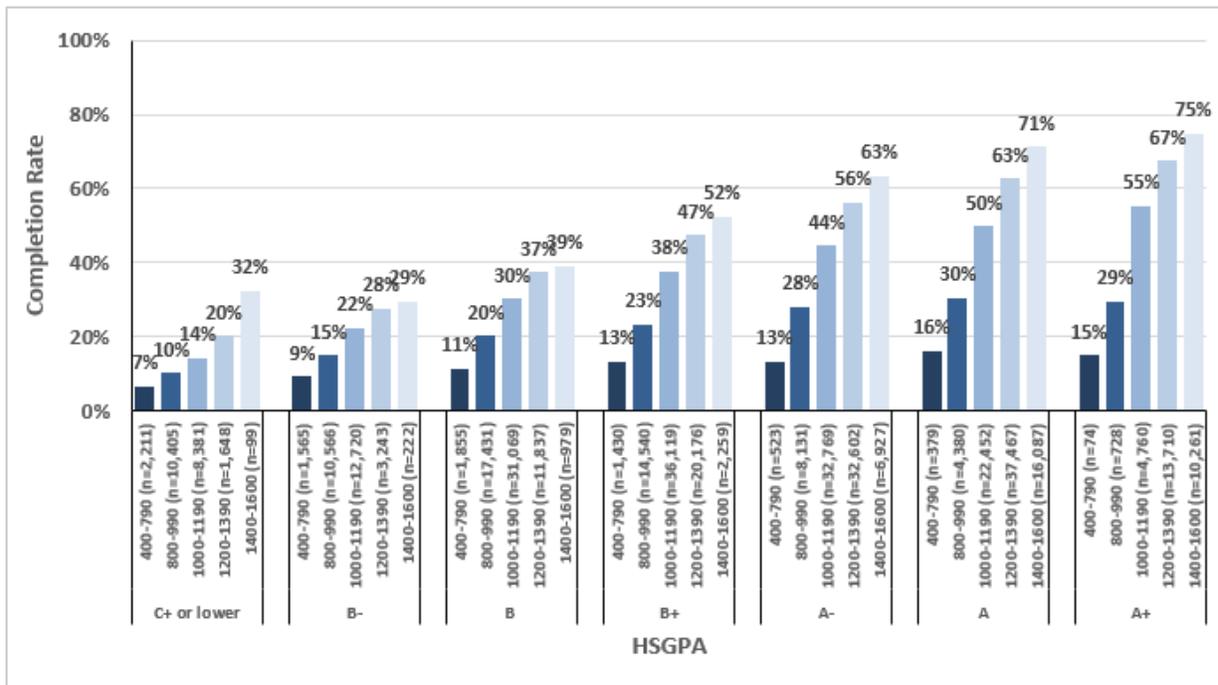


Figure 4: Bachelor's Degree Completion Rates by HSGPA and SAT Total Score Bands, Male Students



Figures 5, 6, and 7 present the results for first generation college students ($n=260,137$), URM students ($n=314,816$), and students whose self-reported best language was either Another Language or English and Another Language ($n=147,802$), respectively. Completion rates tended to be slightly lower for these groups than those found in the overall sample, a finding consistent with past research (Mattern, Shaw, & Marini, 2013). However, completion rates increased in tandem with SAT score increases, consistent with the overall results.

Figure 5: Bachelor's Degree Completion Rates by HSGPA and SAT Total Score Bands, First Generation Students

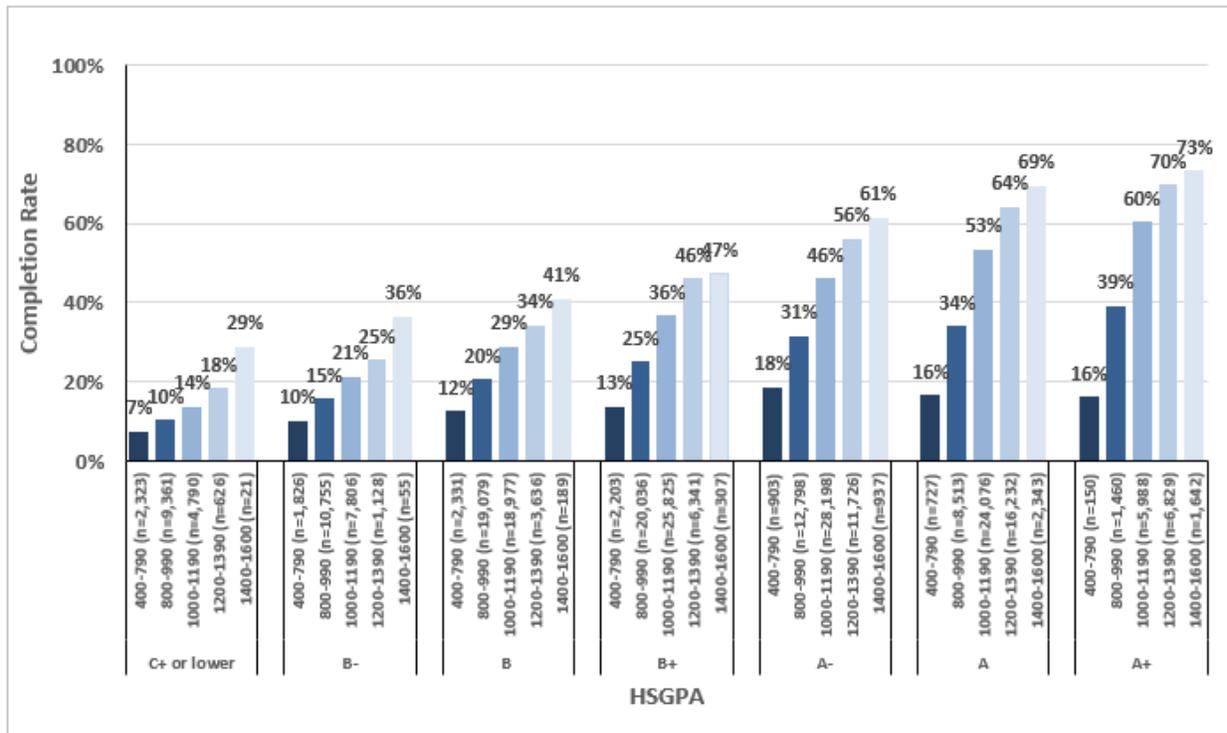


Figure 6: Bachelor's Degree Completion Rates by HSGPA and SAT Total Score Bands, URM Students

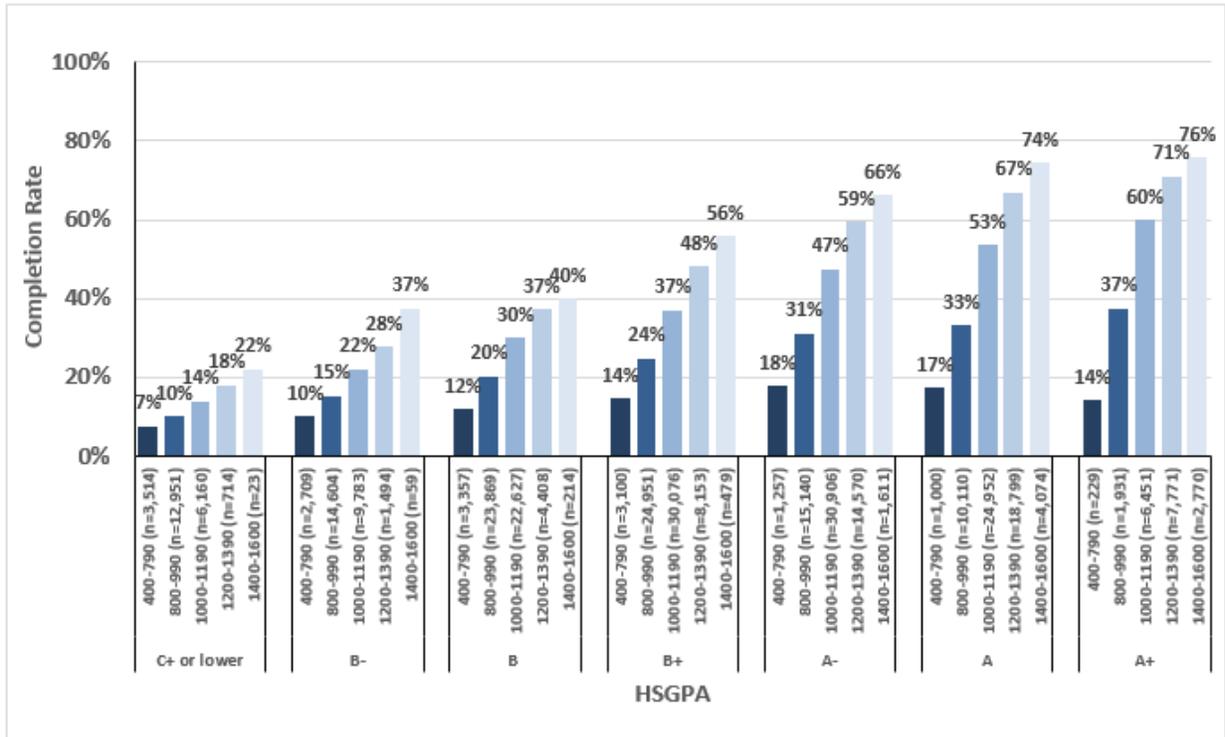
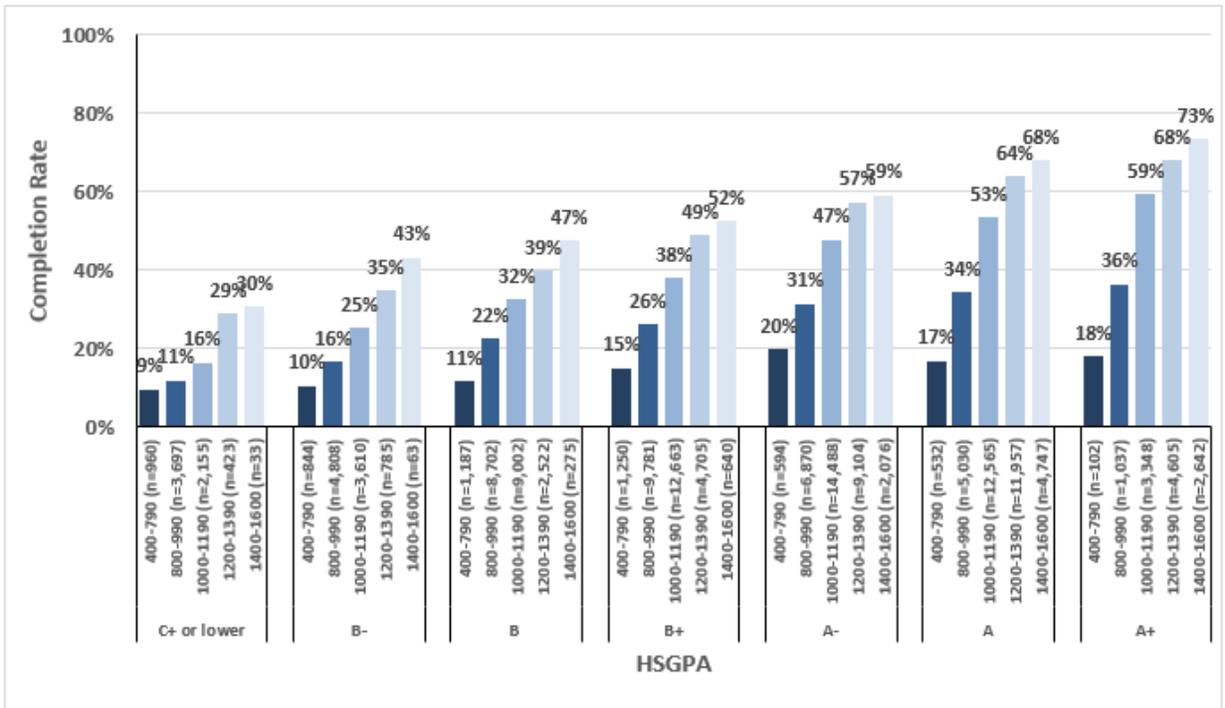


Figure 7: Bachelor's Degree Completion Rates by HSGPA and SAT Total Score Bands, Best Language is Another Language or English and Another Language



Conclusion

This study provides strong evidence of the SAT's validity as a predictor of bachelor's degree completion within four years. In addition, it is clear that the SAT adds informational value regarding student degree completion, above and beyond HSGPA information. While many are familiar with research on the SAT as a predictor of first-year academic performance, the predictive strength of the SAT over four years is much more robust than many realize. This study also offers evidence that this robust predictive power is not just for the overall sample, but also for subgroups such as URM and first-generation students, as well as students whose best language is not exclusively English. This information can allow institutions to use SAT scores with confidence when making decisions related to admissions, placement, scholarship/honors programs, instructional support, and academic advising on campus, knowing that SAT scores serve as strong and accurate predictors of students' completion of a four-year degree.

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