

# SAT And ACT Analysis

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April 2024

## 1 Background Through Prior Literature

Schools across the country decide to administer the ACT or SAT, and depending on the school, could one test be more beneficial? Meredith C. Frey, Ph. D, collaborated with colleagues to provide how the SAT really associates with intelligence. In her article published by the National Institute of Health, what stood out to me how, “The SAT Mostly Measures Ability, Not Privilege”. (Frey) In this section of the paper Frey mentioned how intelligence is the number one variable to SAT performance. She described how socioeconomic status can potentially play a factor on someone’s result, but that would be because of ethnic background effecting variables like someone’s “epistemic belief of learning, performance-avoidance goals, and parental education.” (Frey) She also covered how paying “coaches” to help with things like “strategy or time-management” has little to no impact. Frey then described the effects of the SAT on success in and after college. However, she used the variable of

individual SAT scores to conclude that the larger scores can correlate with more advanced courses in college, and even wealth as an individual ages. Despite that, she provides a strong counterpoint from the claims that society makes today about how SAT scores favor the wealthy.

FairTest provided a different perspective that both tests had potential bias, but they focused more on the ACT. In the short article, it initially covered background information on both tests. One thing to note was that “the SAT predominates on the East and West Coasts, and the ACT is more common in the Midwest, Southwest, and Deep South.” (FairTest) One indicator of bias they mentioned in the ACT was in the language of the test. They claimed, “Idiomatic terms such as ‘ball and chain’ (to indicate a married partner) and ‘straight from the horse’s mouth’ may not be familiar to many test-takers.” (FairTest) In the conclusion of this article, they pushed for universities to drop the requirement of standardized test scores, which has now been done.

## **2 Statement of the Problem**

Throughout my time in high school, my history in taking both tests leads me to investigate this topic. I also was curious to see the heavy amount of data on different Ohio school districts being from Columbus. After the debate on potential bias in these exams, I want

to learn what test I should incorporate if I was the superintendent of a school district. The goal in this paper is to determine if there is a causal effect of the percent of students that take the ACT, SAT, or both, on graduating college after six years. Also, another goal is to compare the tests and see which is more impactful with college graduation.

### **3 The Data**

In the first regression ran the regressors were the percent of students taking the ACT, with other variables of total enrollment in the district, the teacher attendance rate, and the student poverty rate. In regression two, the different regressor is the percent of students taking the SAT to compare with taking the ACT. In regression three, the percent of students taking either the SAT or ACT is involved. I made this data by adding the test involvement of the ACT and SAT. Regressions two and three have the same control variables.

Table 1:

	<i>Dependent variable:</i>		
	CollegeGradRate		
	(1)	(2)	(3)
‘% of Students Taking ACT (17-18)’	0.385*** (0.028)		
‘% of Students Taking SAT (17-18)’		0.422*** (0.043)	
‘% of Students Taking Either SAT or ACT (17-18)’			0.338*** (0.020)
‘Enrollment (11-12)’	0.0002** (0.0001)	0.0001 (0.0001)	−0.00004 (0.0001)
‘Teacher Attendance Rate’	0.105** (0.049)	0.095* (0.053)	0.110** (0.047)
‘Student Poverty Rate (11-12)’	−0.00004*** (0.00000)	−0.0001*** (0.00000)	−0.00004*** (0.00000)
Constant	15.459*** (5.317)	42.850*** (5.067)	15.375*** (4.894)
Observations	607	607	607
R <sup>2</sup>	0.749	0.717	0.776
Adjusted R <sup>2</sup>	0.747	0.715	0.774
Residual Std. Error (df = 602)	6.775	7.189	6.402
F Statistic (df = 4; 602)	449.112***	381.913***	520.938***

*Note:*

\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

## 4 The Empirical Results and Conclusions

Looking at the results from the first regression covering the effects of success from the ACT, the coefficient (.385) which is statistically significant at the one percent level meaning the coefficient is more than 2.576 standard errors from zero. Moreover, in regression two, looking at the SAT, the coefficient of .422 is also significant at the same level. Not accounting for other variables, it takes 16.94 percent of the students taking the SAT to have a 50 percent chance of graduating college.

Additionally, the enrollment of students was only significant in the ACT regression, and it was at the five percent level. With the positive coefficient, the more students in a district would equate to increasing the graduation rate. Also, the teacher attendance rates in the regressions were around .1 with the coefficients in regressions one and three being significant at five percent and regression two being significant at ten percent.

Overall, the data presented concludes a few important things. Primarily the higher ratio of students that take a standardized test, the better. Regression three showed a positive implication with a coefficient of .338 significant at the one percent level. Second, the data portrayed that the SAT was more rewarding to college graduation. After looking through research and the data, unless I lived in a school district with a significantly above average financial

success, I would encourage my students to take the SAT because it is less dependent on teacher quality while being more dependent on intelligence.

## **5 Extensions and Limitations**

The main limitation I came across involved the number of students taking the SAT. In the data for Ohio High Schools, the average percent of students who took the ACT across all school districts was around 61% while only slightly over 4% of the students across all districts took the SAT. This shows ACT tests are mostly provided across the state, and driven students who want to take the SAT would often have to go out of their way to find a testing center.

## **6 References**

FairTest. (2007, August 20). The ACT: Biased, inaccurate, and misused - Fairtest. Fairtest - National Center for Fair & Open Testing. <https://fairtest.org/act-biased-inaccurate-and-misused/>

Frey, M. C. (2019). What we know, are still getting wrong, and have yet to learn about the relationships among the SAT, intelligence and achievement. *Journal of Intelligence*, 7(4), 26.  
<https://doi.org/10.3390/jintelligence7040026>

Gibson\_APData. (n.d.). OSU Carmen Canvas.

[https://osu.instructure.com/courses/159596/files/61133433?module\\_item\\_id=11775277](https://osu.instructure.com/courses/159596/files/61133433?module_item_id=11775277)

GuideStar. (n.d.). College entrance examination board. GuideStar

Profile. Retrieved April 17, 2024, from <https://www.guidestar.org/profile/13-1623965>

Ohio Department of Education and Workforce. (n.d.). State-Funded

ACT tests. Ohio Department of Education and Workforce. Re-

trieved April 17, 2024, from <https://education.ohio.gov/Topics/Testing/State-Funded-ACT-Test>