

Using SAT Scores to Predict Success in Introductory Financial Accounting  
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### Abstract

This paper presents the results of a continuing study tracking the correlation between SAT scores and grades in the Introductory Financial Accounting course taught by the author at Lock Haven University of Pennsylvania. The author teaches two sections of Introductory Financial Accounting each semester beginning in the fall of 2007. The results are from 12 sections consisting of 272 students. The paper will describe and document the method used to obtain the data and apply the analysis to the data. It will conclude with a discussion of the results and possible uses in recruitment of students.

The author uses data from Research Report No. 2005-5 from the College Board, "Validity of the SAT for Predicting First-Year College Grade Point Average" to compare results from the research report with results from the study.

### Introduction

Over the years there have been numerous studies on SAT scores and their use to predict success for first year students in colleges and universities throughout the United States. The College Board has recently issued Research Report No. 2008-5, Validity of the SAT for Predicting First-Year College Grade Point Average. Their study included 151,316 students from 110 colleges and universities. This study included students that took the new three part SAT exam and included their High School GPA.

The analytic method used for their study was the comparison of the single and multiple correlations of the students SAT scores and their high school grade point average (HSGPA) with First Year College GPA. The Accounting Study focused on SAT scores with the students' grade in Introductory Financial Accounting, accordingly statistics from the College Board study related to HSGPA are ignored.<sup>1</sup>

The descriptive Statistics on the Accounting Study are:

| Predictor        | Mean | SD   |
|------------------|------|------|
| SAT-CR           | 460  | 68.7 |
| SAT-M            | 491  | 72.6 |
| SAT-W            | 452  | 73.4 |
| Accounting Grade | 1.96 | 1.16 |
| N=272            |      |      |

<sup>1</sup> While HSGPA is ignored in the Accounting Study, it is interesting to note that the self reported HSGPA for the 151,316 students averaged 3.60. Grade inflation is not a topic of this study but considering HSGPA of 3.60 and FYGPA of 2.97 it is rather obvious that C is not an average score anymore.

The descriptive Statistics on the College Board Sample are:

| Predictor | Mean | SD   |
|-----------|------|------|
| SAT-CR    | 560  | 95.7 |
| SAT-M     | 579  | 96.7 |
| SAT-W     | 554  | 94.3 |
| FYGPA     | 2.97 | 0.71 |
| N=151,316 |      |      |

The average SAT scores for the students at Lock Haven are lower than the of the College Board study. Critical Reading was 100 points lower, math was 88 points lower and Writing was 102 points lower. The average grade in Introductory Financial Accounting is 1.96 or C on a 4 point scale. The average first year grade point average is 2.97 or a B on a 4 point scale. The College Board study reported that the FYGPA ranged from 0 to 4.27. Many institutions do not report a grade higher than 4.0, Lock Haven is included in those that limit the grade to 4.0.

The broad range of institutions, courses and instructors that contribute to the FYGPA contribute to the reliability of the FYGPA. In the Accounting study the Accounting grade used is from one instructor, the author, and limited to one course, Introductory Financial Accounting.

### Data Analyses

The Accounting study used comparisons of both the single correlations of predictors, the three separate SAT scores, and multiple correlations of the SAT scores with the students' grades in Introductory Financial Accounting.

The Accounting Study obtained the unadjusted and adjusted correlations of Predictors with the students accounting grade<sup>2</sup>

| Predictors           | Raw R | Adj. R |
|----------------------|-------|--------|
| SAT-CR               | 0.25  | 0.24   |
| SAT-M                | 0.40  | 0.39   |
| SAT-W                | 0.29  | 0.28   |
| SAT-M, SAT-CR        | 0.40  | 0.39   |
| SAT-CR, SAT-M, SAT-W | 0.41  | 0.40   |
| SAT-M, SAT-W         | 0.40  | 0.40   |
| SAT-CR, SAT-W        | 0.30  | 0.28   |

<sup>2</sup> The College Board study did not look at the multiple correlations of Math and Writing nor Critical Reading and Writing. The two multiple correlations are presented for the Accounting Study to see if a combination of either was a stronger predictor of success in the course. The Math and Writing correlation was very similar to the Critical Reading and Math combination.

The College Board's Study obtained the unadjusted and adjusted correlations of Predictors with FYGPA

| Predictors           | Raw R | Adj. R |
|----------------------|-------|--------|
| SAT-CR               | 0.29  | 0.48   |
| SAT-M                | 0.26  | 0.47   |
| SAT-W                | 0.33  | 0.51   |
| SAT-M, SAT-CR        | 0.32  | 0.51   |
| SAT-CR, SAT-M, SAT-W | 0.35  | 0.53   |

The strongest single predictor for success in a student's FYGPA as determined by the College Board study was student's score in the Writing section of the SAT with a correlation of .33. The accounting study found that the strongest predictor for success in the Introductory Financial Accounting course is the student's score in the Math section of the SAT with a correlation of .40.

The accounting study found that the strongest predictor for success in the course was using the multiple correlation of all three SAT scores. The correlation when using all three SAT scores was .41, up just .01 from using the Math score by itself. Interestingly enough, the strongest predictor for FYGPA was also the multiple correlation of all three SAT scores. The correlation of the three scores with the FYGPA was .35 up .02 from using the Writing score by itself.<sup>3</sup>

Grades Stratified by SAT scores.

#### Critical Reading

| Score      | Number | Percent of Students | Percent of Grade | Average Grade |
|------------|--------|---------------------|------------------|---------------|
| 200 -> 299 | 0      | 0.00%               | 0.00%            | 0.00          |
| 300 -> 399 | 51     | 18.75%              | 14.12%           | 1.47          |
| 400 -> 499 | 151    | 55.51%              | 54.93%           | 1.93          |
| 500 -> 599 | 59     | 21.69%              | 25.55%           | 2.30          |
| 600 -> 699 | 10     | 3.68%               | 4.89%            | 2.60          |
| 700 -> 800 | 1      | 0.37%               | 0.51%            | 2.70          |

<sup>3</sup> While not part of the accounting study, adding HSGPA to the three SAT scores provided a multiple correlation of .46 with the FYGPA in the College Board study.

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Math

| Score      | Number | Percent of Students | Percent of Grade | Average Grade |
|------------|--------|---------------------|------------------|---------------|
| 200 -> 300 | 1      | 0.37%               | 0.00%            | 0.00          |
| 300 -> 399 | 20     | 7.35%               | 5.00%            | 1.33          |
| 400 -> 499 | 129    | 47.43%              | 41.33%           | 1.70          |
| 500 -> 599 | 99     | 36.40%              | 41.71%           | 2.24          |
| 600 -> 699 | 22     | 8.09%               | 11.34%           | 2.74          |
| 700 -> 800 | 1      | 0.37%               | 0.62%            | 3.30          |

Writing

| Score      | Number | Percent of Students | Percent of Grade | Average Grade |
|------------|--------|---------------------|------------------|---------------|
| 200 -> 299 | 4      | 1.47%               | 0.70%            | 0.93          |
| 300 -> 399 | 59     | 21.69%              | 18.56%           | 1.67          |
| 400 -> 499 | 133    | 48.90%              | 46.26%           | 1.85          |
| 500 -> 599 | 71     | 26.10%              | 31.21%           | 2.34          |
| 600 -> 699 | 5      | 1.84%               | 3.27%            | 3.48          |
| 700 -> 800 | 0      | 0.00%               | 0.00%            | 0.00          |

The students SAT scores were stratified in increments of 100 points and were compared to the students' grades. Using 500 as the mid-point score, I compared the percentage of students with a score below 500 with a percentage of the grade points earned in the class. I also compared the percentage of students with a SAT score of 500 or more to the percentage of grade points earned in the class.

| Score Strata | Critical Reading Percentages |             | Math Percentages |             | Writing Percentages |             |
|--------------|------------------------------|-------------|------------------|-------------|---------------------|-------------|
|              | % of Students                | % of Grades | % of Students    | % of Grades | % of Students       | % of Grades |
| <500         | 74.26%                       | 69.05%      | 55.15%           | 46.33%      | 72.06%              | 65.52%      |
| >=500        | 25.74%                       | 30.95%      | 44.86%           | 53.67%      | 27.94%              | 34.48%      |

The stratification of the SAT scores as compared to the students' grades confirms the correlation results and using SAT scores as a predictor of success in the class. The correlation between Math SAT and Grade was .40 and the students with Math SAT scores equal to or over 500 were 44.86 % of the students but they scored 53.67 % of the grade points, a difference of +8.82 %. The correlations of the other two sections both confirm the relative strength of each as a predictor of success in the course with the

higher the correlation, the larger the increased percentage of grade points over percentage of students.

|                  | Correlation to Grade | $\geq 500$ SAT<br>difference between<br>% of Students and<br>% of Grade |
|------------------|----------------------|-------------------------------------------------------------------------|
| Critical Reading | .25                  | + 5.21%                                                                 |
| Math             | .40                  | + 8.82%                                                                 |
| Writing          | .29                  | + 6.64%                                                                 |

### Conclusion

The study obtains the results of using SAT scores as a predictor of success in the Introductory Financial Accounting course taught by Randall L. Hartman at Lock Haven University of Pennsylvania. The results show the best single SAT score as a predictor of success in the course is the Math SAT score. The best combination of predictors of course score is all three SAT scores with only a slightly improved correlation from using only the Math score as a predictor.

These results are confirmed by examining the stratified SAT scores and the grades earned in each strata. While there are many other factors that contribute to student success, using the Math SAT score provides a strong indicator of success in Introductory Financial Accounting and should be considered when counseling and advising students about their career field and what they should major in while pursuing their college education.

### References

- Kobrin, J., Patterson, B., Shaw, E., Mattern, K., and S. Barbuti. (2008). "Validity of the SAT for predicting first-year college grade point average." College Board Research Report No. 2008-5. New York: College Board.
- University of California, Board of Admissions and Relations with Schools. (2002). "The use of admissions tests by the University of California." University of California, Office of the President