

Office of Academic Assessment

A Profile of Students with SAT-Q Scores Between 480 and 550

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Introduction

All newly admitted USM students with SAT-Q (Scholastic Assessment Tests-Quantitative) scores of 480 or above are considered to have met the basic proficiency in mathematics and are counseled into a 100-level mathematics course. Conversely, students with SAT-Q scores below this cut-off score are required to take USM's locally developed mathematics placement examination. Scores on the mathematics placement test determine the mathematics course that students are recommended to take during their first year.

This academic policy has been in existence since 1984 after a number of test score analyses studies were conducted on various proficiency levels. In addition, the academic performance of 1632 students was tracked for a period of two years. The results of the study indicated that nearly 80% of the students who had SAT-Q scores of 450 or higher also obtained high scores on the mathematics placement test and had successful grades (C or higher) in their 100-level mathematics courses. The SAT-Q cut-off score was changed from 450 to 480 in 1994 due to the national SAT study by The College Board (i.e. revisions of the test and the re-centering of the scoring process). Consequently, further analysis was conducted using a sample of 443 USM students. The results showed that many students who had SAT-Q scores of 480 or higher were recommended for a 100-level mathematics course based upon their mathematics placement test scores. That is, the study verified that 480 was an appropriate cut-off score.

Over the past five years, periodic tracking studies examining mathematics course grades in 100-level mathematics courses have shown that a large percentage of students are receiving failure grades, incomplete, and withdrawal grades. Due to the discussions of the mathematics faculty, there are concerns of whether the SAT-Q cut-off score for mathematics proficiency is too low. That is, students who have SAT-Q scores above 480 may benefit from developmental mathematics course work before taking the 100-level mathematics courses. Based upon the request of the Chair of the Mathematics Proficiency Committee, student profiles were examined for students who had scores between 480 (the current cut-off) and 550 (a proposed cut-off).

Sample

The sample consisted of 395 students who were enrolled in 100-level mathematics courses during the spring 2002 and fall 2002 semesters. All of these students had SAT-Q scores between 480 and 550; therefore, meeting the minimum mathematics proficiency requirement upon entry to USM. The data show the results of

the student's first mathematics course. Based upon the number of students with SAT-Q scores between 480 and 550, the mathematics courses examined were MAT 105, 108, 120, 140, and 152.

Results

Table A displays the profile of the grade breakdown of each math course, and the number of students with each SAT-Q score between 480 and 550. As shown on the chart, 61% of the students who took MAT 105 received passing grades (C or higher), 26% received failure grades (D-F), and 12% received other grades (I, L, or W). The percentage of passing grades is considerably lower for the students in the other mathematics courses.

TABLE A

Profile of Courses and Grade Distribution

Course	105 N=122	108 N=82	120 N=122	140 N=40	152 N=29
Math 100-level Grades	N	N	N	N	N
A	12	4	6	2	0
B	30	3	27	11	3
C	33	8	25	7	7
Total Passing	75 (61%)	15 (18%)	58 (48%)	20 (50%)	10 (34%)
D	13	12	18	3	2
F	19	23	25	7	7
Total Failing	32 (26%)	35 (43%)	43 (35%)	10 (25%)	9 (31%)
I	1	0	4	0	0
L	3	11	1	2	0
W	11	21	16	8	10
Total Other	15 (12%)	32 (39%)	21 (17%)	10 (25%)	10 (34%)
SATQ Scores	N	N	N	N	N
480	22	7	17	6	2
490	19	14	20	2	3
500	13	8	14	4	6
510	16	21	17	6	5
520	19	13	21	10	6
530	8	15	10	4	1
540	11	3	10	3	2
550	14	1	13	5	4

Table B shows the profile of each SAT-Q score between 480 and 550 and the grade distribution in the student's first mathematics course at USM. Approximately 46% of the students who had scores of 480 (N=54) had passing scores in their mathematics course, and nearly 54% had failure or other grades. However, over 60% of the students with SAT-Q scores of 540 or 550 had passing grades in their chosen mathematics courses.

TABLE B

SATQ SCORES	480 N=54	490 N=58	500 N=45	510 N=65	520 N=69	530 N=38	540 N=29	550 N=37
Math 100-level Grades	N	N	N	N	N	N	N	N
A	2	3	4	4	2	2	4	3
B	11	10	7	11	14	5	9	7
C	12	7	7	7	19	8	6	14
Total Passing	25 (46%)	20 (34%)	18 (40%)	22 (34%)	35 (51%)	15 (38%)	19 (66%)	24 (65%)
D	9	11	6	7	4	4	1	5
F	7	15	9	17	18	8	3	4
Total Failing	16 (30%)	26 (45%)	15 (33%)	24 (37%)	22 (35%)	12 (31%)	4 (14%)	9 (24%)
I	0	0	1	0	1	0	0	0
L	3	5	3	3	4	3	0	0
W	10	7	8	16	7	8	6	4
Total Other	13 (24%)	12 (21%)	12 (26%)	19 (29%)	12 (18%)	11 (18%)	6 (21%)	4 (11%)
Math 100-level Courses	N	N	N	N	N	N	N	N
105	22	19	13	16	19	8	11	14
108	7	14	8	21	13	15	3	1
120	17	20	14	17	21	10	10	13
140	6	2	4	6	10	4	3	5
152	2	3	6	5	6	1	2	4

Table C shows the profile of students grouped by SAT-Q scores. More specifically, the passing and failure rates were examined between students with SAT-Q scores between 480 to 520 and those with scores of 520 to 550. On the average, the results show that students with the higher SAT-Q scores were less likely to fail their mathematics course than those with the lower SAT-Q scores. Another interesting note, students in the MAT 105 were clearly more likely to pass their mathematics course than students in the MAT 108, 120, 140, and 152 courses.

TABLE C

Math Courses	SAT-Q Scores Bet 480-510 (N=222)			SAT-Q Scores Bet 520-550 (N=173)		
	Passing	Failure	Other	Passing	Failure	Other
MAT 105	56%	34%	10%	69%	15%	15%
MAT 108	12%	44%	44%	28%	41%	31%
MAT 120	41%	35%	24%	56%	35%	9%
MAT 140	39%	33%	28%	59%	18%	23%
MAT 152	31%	38%	31%	38%	23%	38%
Total Averages	38%	36%	25%	54%	27%	19%

Tables D through H display further breakdowns of the student data. Each table shows the grade distribution for each mathematics course and for each SAT-Q score. The purpose of this breakdown was primarily to see if there were any clear patterns in student profiles when individual SAT-Q scores were analyzed in each mathematics 100-level course. It appears that in each course, the pattern of those passing is less than 50% except for MAT 105 which shows a higher passing rate than in the other courses.

In conclusion, the purpose of this analysis study was to determine whether the current SAT-Q cut-off should be raised from 480 to a higher score. The results clearly confirm that a high percentage of students with SAT-Q scores from 480 to 550 are having difficulty passing their first mathematics 100-level course. Although, students with SAT-Q scores on the higher end (520-550) appear to have a better chance of success or receiving a passing grade than students with SAT-Q scores on the lower end (480-510).

Additionally, the results confirmed that students taking the MAT 105 course are more likely to pass than if they choose one of the other mathematics courses as their first course. Therefore, there may need to be some discussion among the mathematics faculty about which mathematics 100-level courses are the best choices for students who have borderline cut-off scores in meeting the mathematics proficiency requirement. The findings of this study should be followed by further discussion and follow-up analyses in order to establish the most appropriate SAT-Q cut-off score.

TABLE D: Course = MAT 105 (N=122)

SATQ SCORES	480 N=22	490 N=19	500 N=13	510 N=16	520 N=19	530 N=8	540 N=11	550 N=14
Grades	N	N	N	N	N	N	N	N
A	1	0	2	2	1	1	3	2
B	4	6	4	4	4	2	4	2
C	9	3	2	2	7	2	2	6
Total Passing	14 (64%)	9 (47%)	8 (62%)	8 (50%)	12 (63%)	5 (63%)	9 (82%)	10 (71%)
D	2	5	1	2	1	0	0	2
F	4	3	4	3	2	1	1	1
Total Failing	6 (27%)	8 (42%)	5 (38%)	5 (31%)	3 (16%)	1 (13%)	1 (9%)	3 (21%)
I	0	0	0	0	1	0	0	0
L	1	0	0	0	1	1	0	0
W	1	2	0	3	2	1	1	1
Total Other	2 (9%)	2 (11%)	0 (0%)	3 (19%)	4 (21%)	2 (25%)	1 (9%)	1 (7%)

TABLE E: Course = MAT 108 (N=82)

SATQ scores	480 N=7	490 N=14	500 N=8	510 N=21	520 N=13	530 N=15	540 N=3	550 N=1
Grades	N	N	N	N	N	N	N	N
A	0	1	1	1	0	1	0	0
B	0	1	0	1	1	0	0	0
C	0	0	0	1	2	2	2	1
Total Passing	0 (0%)	2 (14%)	1 (13%)	3 (14%)	3 (23%)	3 (20%)	2 (67%)	1 (100%)
D	3	4	1	2	2	0	0	0
F	1	3	2	6	5	6	0	0
Total Failing	4 (57%)	7 (50%)	3 (38%)	8 (38%)	7 (54%)	6 (40%)	0 (0%)	0 (0%)
I	0	0	0	0	0	0	0	0
L	1	2	2	3	2	1	0	0
W	2	3	2	7	1	5	1	0
Total Other	3 (43%)	5 (36%)	4 (50%)	10 (48%)	3 (23%)	6 (40%)	1 (33%)	0 (0%)

TABLE F: Course = 120 (N=122)

SATQ scores	480 N=17	490 N=20	500 N=14	510 N=17	520 N=21	530 N=10	540 N=10	550 N=13
Grades	N	N	N	N	N	N	N	N
A	1	2	1	0	0	0	1	1
B	5	3	1	5	4	3	3	3
C	1	3	3	3	7	3	1	4
Total Passing	7 (41%)	8 (40%)	5 (36%)	8 (47%)	11 (52%)	6 (60%)	5 (50%)	8 (62%)
D	3	3	2	3	1	3	1	2
F	1	8	1	3	8	1	2	1
Total Failing	4 (24%)	11 (55%)	3 (21%)	6 (35%)	9 (43%)	4 (40%)	3 (30%)	3 (23%)
I	1	1	2	0	0	0	0	0
L	0	0	0	0	1	0	0	0
W	5	0	4	3	0	0	2	2
Total Other	6 (35%)	1 (5%)	6 (43%)	3 (18%)	1 (5%)	0 (0%)	2 (20%)	2 (15%)

TABLE G: Course = 140 (N=40)

SATQ scores	480 N=6	490 N=2	500 N=4	510 N=6	520 N=10	530 N=4	540 N=3	550 N=5
Grades	N	N	N	N	N	N	N	N
A	0	0	0	1	1	0	0	0
B	2	0	1	0	5	0	2	1
C	1	0	1	1	2	1	0	1
Total Passing	3 (50%)	0 (0%)	2 (50%)	2 (50%)	8 (80%)	1 (25%)	2 (67%)	2 (40%)
D	0	0	1	0	0	1	0	1
F	1	0	1	3	1	0	0	1
Total Failing	1 (17%)	0 (0%)	2 (50%)	3 (50%)	1 (10%)	1 (25%)	0 (0%)	2 (40%)
I	0	0	0	0	0	0	0	0
L	0	1	0	0	0	1	0	0
W	2	1	0	1	1	1	1	1
Total Other	2 (33%)	2 (100%)	0 (0%)	1 (17%)	1 (10%)	2 (50%)	1 (33%)	1 (20%)

TABLE H: Course = 152 (N=29)

SATQ scores	480 N=2	490 N=3	500 N=6	510 N=5	520 N=6	530 N=1	540 N=2	550 N=4
Grades	N	N	N	N	N	N	N	N
A	0	0	0	0	0	0	0	0
B	0	0	1	1	0	0	0	1
C	1	1	1	0	1	0	1	2
Total Passing	1 (50%)	1 (33%)	2 (33%)	1 (20%)	1 (17%)	0 (0%)	1 (50%)	3 (75%)
D	1	0	1	0	0	0	0	0
F	0	1	1	2	2	0	0	1
Total Failing	1 (50%)	1 (33%)	2 (33%)	2 (40%)	2 (33%)	0 (0%)	0 (0%)	1 (25%)
I	0	0	0	0	0	0	0	0
L	0	0	0	0	0	0	0	0
W	0	1	2	2	3	1	1	0
Total Other	0 (0%)	1 (33%)	2 (33%)	2 (40%)	3 (50%)	1 (100%)	1 (50%)	0 (0%)