

Math Assessment Validation Fall 2005

Disproportionate Impact

The categories examined were gender, ethnicity and age.

Gender

There is evidence of disproportionate impact for Gender. Women are more likely than men to be placed in the lower levels of the math classes.

Gender

		Math 112	Ma 123a	Ma 123b	Ma 123c	Algebra	Trig	Total
Male	N	183	124	154	145	15	34	655
	%	27.94	18.93	23.51	22.14	2.29	5.19	
Female	N	373	220	153	108	23	31	908
	%	41.08	24.23	16.85	11.89	2.53	3.41	

Age

Excluding the greater than 54 years old with only 7 cases, there is evidence of disproportionate impact by age. Students who are older than 24 are more likely to be placed in the lower levels of math than students who are younger than 25.

Age

		Math 112	Ma 123a	Ma 123b	Ma 123c	Algebra	Trig	Total
<20	N	265	189	194	172	29	55	904
	%	29.31	20.91	21.46	19.03	3.21	6.08	
20-24	N	122	73	57	43	2	4	301
	%	40.53	24.25	18.94	14.29	0.66	1.33	
25-34	N	92	50	32	24	3	4	205
	%	44.88	24.39	15.61	11.71	1.46	1.95	
35-54	N	73	30	23	14	4	2	146
	%	50.00	20.55	15.75	9.59	2.74	1.37	
>54	N	4	2	1	0	0	0	7
	%	57.14	28.57	14.29	0.00	0.00	0.00	

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Ethnicity

There was evidence of disproportionate impact by ethnicity. White and Asian students are more likely to be placed in higher levels of math than their African-American and Hispanic peers.

Ethnicity

		Math 112	Ma 123a	Ma 123b	Ma 123c	Algebra	Trig	Total
Asian	N	58	50	67	67	14	26	282
	%	20.57	17.73	23.76	23.76	4.96	9.22	
Af-Am	N	110	39	31	35	2	3	220
	%	50.00	17.73	14.09	15.91	0.91	1.36	
Hispanic	N	302	159	134	93	11	18	717
	%	42.12	22.18	18.69	12.97	1.53	2.51	
White	N	57	60	56	38	9	11	231
	%	24.68	25.97	24.24	16.45	3.90	4.76	
Other, Unknown	N	29	36	19	20	2	7	113
	%	25.66	31.86	16.81	17.70	1.77	6.19	

Based on these results, the following should be done:

- Review the publisher's information regarding cultural bias.
- Encourage women and older students to use the "fear of math" workshops offered by the college
- Ensure that counselors and faculty at the college's feeder high schools are aware of the skills required to succeed in the college's math classes.

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Cut Scores

Instructor Rating

As shown below, none of the instructors' rating were met the state requirement that 75% of the students be judged as correctly placed.

Placed

		Math 112	Math 123a	Math 123b	Math 123c
Too High	N	43	39	12	38
	%	29.05	48.75	23.08	41.30
Correct	N	95	37	36	52
	%	64.19	46.25	69.23	56.52
Too Low	N	10	4	4	2
	%	6.76	3.31	4.35	1.37
Total		148	80	52	92

Success in Course

The second empirical measure for cut scores is student success. As shown in the tables below, none of the placements meet the 75% criterion required by the state. This is true even when the "W's" are eliminated.

Grade

		Math 112	Math 123a	Math 123b	Math 123c
Passed	N	64	39	38	44
	%	47.76	37.86	39.58	53.66
Failed	N	34	36	42	25
	%	25.37	34.95	43.75	30.49
W	N	36	28	16	13
	%	26.87	27.18	16.67	15.85
Total		134	103	96	82

Grade w/o W

		Math 112	Math 123a	Math 123b	Math 123c
Passed	N	64	39	38	44
	%	65.31	52.00	47.50	63.77
Failed	N	34	36	42	25
	%	34.69	48.00	52.50	36.23
Total		98	75	80	69

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To improve the accuracy of the placement, the following should be considered:

- Math faculty should ensure that they have a set of common expectations on the content of the math courses.
- Adjust the Cut Scores as follows:

COMPASS ALGEBRA TEST

Score	Placement
$71 \leq AS$	Coll Algebra
37 $40 \leq AS < 71$	Math 123C
1 $29 \leq AS < 40$ 37	Math 123B
$1 \leq AS < 29$	Math 123A

COMPASS PREALGEBRA TEST

Score	Placement
83 $76 \leq PAS$	Math 123B
$36 \leq PAS < 76$ 83	Math 123A
1 $17 \leq PAS < 36$	Math 112
$PAS < 17$	LS 10

Revalidate the test after this is done.