Fall 2006 MATH COURSE SUCCESS RATES COMPARISON AMONG REPEAT PATTERNS

Research Question: Is there a difference in the success rates of students who take a math course for the first time, versus those who repeat the course a second or a third time?

Study framework: Students who enrolled in any of these MATH courses (MATH50, 51, 51A, 51B, 61, 71, 71A, 71B, 100, 110, 120, 130, 140, 150, 160, 180) in fall 2006 and received a valid grade (A, B, C, D, F, CR, NC, I, W) are included in this study. With this cohort, a search was conducted to look into cohort students' prior course history that matched the math course enrolled in fall 2006 to determine the number of times this math course has been taken. Based on the number of times the fall 2006 enrolled math course was taken, the cohort was divided into three groups. Those who took the math course for the first time in fall 2006 are placed in the "No Repeat" group while those took the course second time are placed in the "First Repeat" group, and those the third or more times are in the "Multiple Repeats" group.

Results

While majority of students in these fall 2006 math courses were taking them for the first time, MATH51B, MATH71B, and MATH51have the highest percents of 2nd attempt students (first repeat) with 31.6%, 25.0%, 22.6%, respectively. MATH150, MATH71B, and MATH51 have the highest percents of multiple attempt students (multiple repeats) with 10.8%, 8.3%, and 7.0%, respectively.

FALL 2006 MATH COURSE COMPLETERS BY REPEAT PATTERN								
	NO REPEAT		FIRST REPEAT		MULTIPLE REPEATS		TOTAL	
COURSE	#	%	#	%	#	%	#	%
MATH50	1091	80.0%	220	16.1%	53	3.9%	1364	100.0%
MATH51	902	70.4%	290	22.6%	90	7.0%	1282	100.0%
MATH51A	174	87.0%	21	10.5%	5	2.5%	200	100.0%
MATH51B	49	64.5%	24	31.6%	3	4.0%	76	100.0%
MATH61	57	78.1%	13	17.8%	3	4.1%	73	100.0%
MATH71	1009	79.5%	198	15.6%	62	4.9%	1269	100.0%
MATH71A	262	91.3%	19	6.6%	6	2.1%	287	100.0%
MATH71B	56	66.7%	21	25.0%	7	8.3%	84	100.0%
MATH100	67	85.9%	9	11.5%	2	2.6%	78	100.0%
MATH110	680	76.8%	149	16.8%	56	6.3%	885	100.0%
MATH120	25	100.0%	0	0.0%	0	0.0%	25	100.0%
MATH130	464	79.9%	89	15.3%	28	4.8%	581	100.0%
MATH140	103	79.2%	21	16.2%	6	4.6%	130	100.0%
MATH150	174	69.9%	48	19.3%	27	10.8%	249	100.0%
MATH160	155	75.2%	37	18.0%	14	6.8%	206	100.0%
MATH180	215	78.5%	44	16.1%	15	5.5%	274	100.0%
Grand Total	5483	77.6%	1203	17.0%	377	5.3%	7063	100.00%

The following table shows the MATH course success rates by course and by course completers' repeat pattern. The overall success rate for all Fall 2006 target MATH courses in this study is 54.4%. The average pass rate in these math courses is 56.1% for first attempt students, 51.2% for 2nd attempt students, and 39.6% for multiple attempt students. For "No Repeat" (first attempt) students, MATH140, MATH51A, MATH51, and MATH130 have the lowest pass rates, all below 50%. For 2nd attempt students, MATH140, MATH51A, and MATH71B have the lowest pass rates, all below 45%. For the total group in this study, MATH51A, 51,130, 140, 150 have the lowest pass rates among all target MATH courses. Due to the small number in some cells, the corresponding success rates appeared to range widely; therefore, one should be cautious on making any interpretation with these rates, especially at the individual course level. A trend appears on the success rates among the three repeat pattern groups of the overall target math courses that the higher the number of repeats the lower the success rates.

SUCCESS RATES OF FALL 2006 MATH COURSE COMPLETERS BY REPEAT PATTERN											
	No Repeat			First Repeat			Multiple Repeats			Grand Total		
COURSE	Completed	Passed	Success Rate	Completed	Passed	Success Rate	Completed	Passed	Success Rate	Completed	Passed	Success Rate
MATH50	1091	684	62.7%	220	111	50.5%	53	23	43.4%	1364	818	60.0%
MATH51	902	427	47.3%	290	134	46.2%	90	37	41.1%	1282	598	46.6%
MATH51A	174	75	43.1%	21	9	42.9%	5	4	80.0%	200	88	44.0%
MATH51B	49	28	57.1%	24	15	62.5%	3	1	33.3%	76	44	57.9%
MATH61	57	37	64.9%	13	8	61.5%	3	1	33.3%	73	46	63.0%
MATH71	1009	541	53.6%	198	107	54.0%	62	20	32.3%	1269	668	52.6%
MATH71A	262	166	63.4%	19	9	47.4%	6	5	83.3%	287	180	62.7%
MATH71B	56	31	55.4%	21	9	42.9%	7	6	85.7%	84	46	54.8%
MATH100	67	51	76.1%	9	5	55.6%	2	0	0.0%	78	56	71.8%
MATH110	680	428	62.9%	149	86	57.7%	56	26	46.4%	885	540	61.0%
MATH120	25	16	64.0%	---	---	---	---	---	---	25	16	64.0%
MATH130	464	224	48.3%	89	45	50.6%	28	11	39.3%	581	280	48.2%
MATH140	103	44	42.7%	21	8	38.1%	6	2	33.3%	130	54	41.5%
MATH150	174	89	51.1%	48	24	50.0%	27	10	37.0%	249	123	49.4%
MATH160	155	103	66.5%	37	24	64.9%	14	7	50.0%	206	134	65.0%
MATH180	215	127	59.1%	44	20	45.5%	15	4	26.7%	274	151	55.1%
Grand Total	5483	3071	56.0%	1203	614	51.0%	377	157	41.6%	7063	3842	54.4%

REPEAT VS. SUCCESS CROSSTABULATION			Success		Total
			Passed	Not Passed	
Repeat	3071	Count	2412	2412	5483
	56.0%	% within Repeat	44.0%	44.0%	100.0%
	614	Count	589	589	1203
	51.0%	% within Repeat	49.0%	49.0%	100.0%
	157	Count	220	220	377
	41.6%	% within Repeat	58.4%	58.4%	100.0%
Total		Count	3842	3221	3221
		% within Repeat	54.4%	45.6%	45.6%

A Chi-Square test shows the success difference among these three repeat pattern groups is significant (X = 35.930, p < .001).