Analysis of Student Success in Basic Skills Courses for Math 83 Boot Camp Students

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Background

The goal of this study was to investigate the potential benefits of Math 83 Boot Camp on subsequent performance in basic skills math courses. Students who took Math Boot Camp and enrolled in a basic skills math course (Math 20, 30, or 100) were compared to their peers in basic skills math courses who did not enroll in Math Boot Camp.

Methodology

Students who completed the Math Boot Camp and then subsequently enrolled in a basic skills math course were identified through course records in the LRCCD PeopleSoft SQL database. The grades of these students in *first* subsequent attempts at a basic skills math course were collected along with the students' demographic and course information (age, ethnicity, gender, course number, and professor ID). The same data were then collected for students who took the *same* basic skills math *classes* as the Boot Camp students but did not previously take the Math Boot Camp. This group served as the comparison group in the analyses. Data were analyzed with logistic regressions.

Overview of Findings

Students who took Math Boot Camp had a 62.0% success rate in their first attempt at a basic skills math course compared to 57.9% for those who did not. This difference was not statistically significant. However, when controlling for the students' ethnicity, age, and course number/professor the difference between Boot Camp/Non-Boot Camp students was statistically significant. This suggests that students who take Math Boot Camp perform better than students with the same ethnicity, age, and course/professor who do not. Moreover, the effect of Boot Camp/Non-Boot Camp was larger after controlling for instructor.

Implications of Findings

These findings provide *very tentative* evidence that Math Boot Camp improves a student's odds of success in basic skills math courses.

Limitations

The sample of Math Boot Camp students was small (N = 129). Therefore, further replications will be required to confirm the findings reported here. Moreover, the difference between Math Boot Camp/Non-Math Boot Camp students was only significant when controlling for age, gender, ethnicity, and course/professor. The complexity of this statistical model may have increased the probability of a false statistical conclusion. Moreover, data should have been analyzed with hierarchical (nested) logistic models, but the low study sample size made estimation inaccurate/inconsistent. Finally, students who are Native American could not be included in the study due to very low sample sizes.

Analyses

Table 1 presents a demographic breakdown of the Boot Camp and Non-Boot Camp students. There were 129 students in the Boot Camp group, and 1,728 in the Non-Boot Camp group.

Table 1. *Demographic breakdown by Boot Camp group.*

	Boot Camp		Non-Boot Camp	
Student Demographics	**N**	**%**	**N**	**%**
Gender				
Female	87	67.4%	1,069	61.9%
Male	38	30.5%	636	36.8%
Unknown	4	3.1%	23	1.3%
Ethnicity				
African American	50	38.7%	391	22.6%
Asian/Pacific Islander	12	9.3%	376	21.8%
Hispanic/Latino	32	24.8%	465	26.9%
Multi-Race/Unknown/Other	12	9.3%	129	7.5%
White	23	17.8%	367	21.2%
Age				
Average Age		30.5		27.4
Total	**129**		**1,728**	

Note. Unfortunately the small sample size of Native American students (N = 19) would have rendered statistical conclusions invalid.

Technical Specifications and Description. A generalized binomial regression model was used to predict whether or not a student was successful within a basic skills math course. When Boot Camp status (Boot Camp/Non-Boot Camp) was entered into this regression equation alone, it did not significantly predict student performance, $\Delta\chi^2(1) = 0.83$, *ns.* However, demographic differences between groups may have obscured the effect of Math Boot camp. For example, if the Boot Camp group contains a different student population than the Non-Boot Camp group, then differences in success between these groups can be accounted for by Math Boot camp *and* demographic differences. It is therefore more ideal to compare students who are from the same demographic group. In another binomial regression, ethnicity, age, and course/instructor were entered in addition to Boot Camp status. Gender was not included in the equation because it did not significantly predict student success in basic skills math. Boot Camp status was a significant predictor within this equation, $\Delta\chi^2(1) = 5.46$, $p < .05$. This means that a student in Boot Camp performed better in basic skills math classes than a student with the same ethnicity, age, and course/instructor who did not enroll in Boot Camp. It should also be noted that the projected effect of Boot Camp/Non-Boot Camp was larger after controlling for instructor.