ARC 035 Online Pilot: Comparisons between Spring 2016 and Spring 2017

This memo compares demographics and outcomes of students taking ARC 035 in spring 2017, when ARC 035 was offered fully and only online for the first time, to spring 2016, when ARC 035 was offered in the traditional in person format. Key observations include:

- The profiles of students enrolled in spring 2016 and spring 2017 are similar.
- The overall average scores for ARC 035 are very similar for spring 2016 and 2017.
- Within the group of students who took ARC 035 in spring 2017, there are no significant differences when students are grouped in three different ways that may proxy for math preparation or confidence in their ability to college level math.

In this memo comparisons are made between ARC 035 students in spring 2016 and spring 2017 because the mix of students enrolled varies from quarter to quarter, with most STEM students taking ARC 035 in summer and fall (so that they can move as quickly as possible into math heavy curriculum) and students from the arts, humanities and social sciences (who have fewer, and less time sensitive, required math intensive courses) in winter and spring.

Table 1: ARC 035 Student Demographics, Spring 2016 versus Spring 2017

	Spring 2016		Spring 2017	
Academic Preparation	**Average**	**N**	**Average**	**N**
High School GPA	3.52	40	3.56	68
SAT Verbal	495.00	38	473.23	65
SAT Math	459.21	38	472.00	65
SAT Writing	496.84	38	479.38	65
College	**Percent**	**N**	**Percent**	**N**
BCoE	-------	--	1.39	1
CHASS	100.00	42	98.61	71
Class Level	**Percent**	**N**	**Percent**	**N**
Freshman	59.52	25	81.94	59
Sophomore	26.19	11	12.50	9
Junior	14.29	6	5.56	4
Academic Characteristics	**Average**	**N**	**Average**	**N**
Cumulative GPA	2.73	42	2.67	72
Cumulative Units	51.18	42	42.00	72
First Generation Status	**Percent**	**N**	**Percent**	**N**
First Generation	78.57	33	70.83	51
Non-First Generation	21.43	9	29.17	21
Gender	**Percent**	**N**	**Percent**	**N**
Women	69.05	29	70.42	50
Men	30.95	13	29.58	21

Demographic comparisons find that students who took ARC 035 in spring of 2017 are very similar to the group who took ARC 035 in spring of 2016. While SAT Math scores are about ten points lower, there are no statistically significant differences between the two groups in

terms of their academic preparation and cumulative GPA. Although not shown, within the groups of CHASS students there are also a fair number of pre-business majors in the spring 2017 group (20.83%) while pre-business majors comprise only 7.14% of the spring 2016 group.[1]

Figure 1: Breakdown by ARC 035 Final Score, by Term

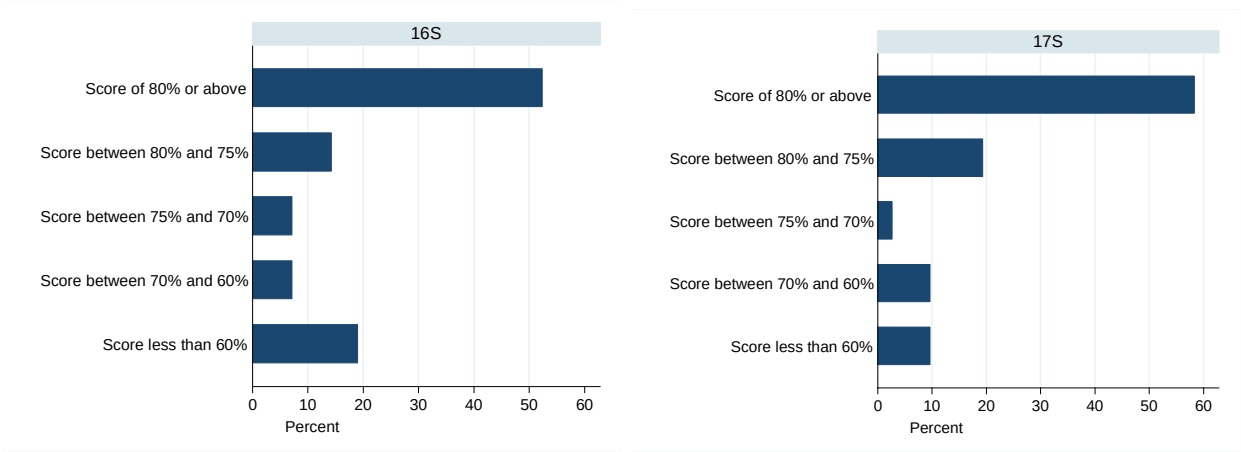

Table 2: Mean Course Grades for ARC 035 for Various Groups with Significance Testing, Standard Errors in Parentheses

	Spring 2016		Spring 2017	
	Course Score	**N**	**Course Score**	**N**
Overall	0.75 (0.02)	42	0.76 (0.02)	72
First Generation Status	**Course Score**	**N**	**Course Score**	**N**
First Generation	0.78* (0.02)	33	0.75 (0.03)	51
Non-First Generation	0.68* (0.07)	9	0.79 (0.04)	21
Gender	**Course Score**	**N**	**Course Score**	**N**
Women	0.76 (0.02)	29	0.77 (0.03)	50
Men	0.74 (0.05)	13	0.74 (0.05)	21
SAT Math Score	**Course Score**	**N**	**Course Score**	**N**
Above Average SAT Math	0.78 (0.03)	25	0.74 (0.04)	36
Average or Below SAT Math	0.71 (0.03)	17	0.78 (0.02)	36

* Indicates statistical significance at $p < 0.05$

[1] Analyses below were replicated without the prebusiness student and results were substantively identical.

Figure 1 shows the distribution of students' final scores in ARC 035 broken down into bands that line up with recent, but changing, requirements for passing ARC 035. The majority of students in both springs scored above 75%. A slightly higher percentage of students scored above 80% in the spring 2017 group compared with spring 2016.

Within the spring 2017 group, there are no significant score difference between first generation and non-first generation students, between men and women and between those who scored above and below average on the SAT Math exam. (Some of these differences are significant for the spring 2016 group however.) This suggests moving ARC 035 online does not disproportionally disadvantage those students who may be less prepared for college level math, or less confident in their ability to do college level math.