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Math & English Drops in Light of AB705: Fall Term Trends

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COLLEGE OF THE CANYONS

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Introduction & Background

Effective fall 2019, the Math and English departments implemented changes in placement and course offerings in compliance with AB-705[1]. With proposed changes associated with AB 1705, which is an extension of AB 705, the office of institutional research, planning and institutional effectiveness conducted analyses on student drop rates before census. Specifically the following research question was examined:

> How do the proportion of students who drop courses in the disciplines of Math & English change in light of AB 705 implementation in Fall 2019?

Method

Data were obtained from enrollment files (320) for 5 fall terms 2017- 2021 (2017FA Pre-AB705) Math Disjunctive; 2018FA (Pre-AB705) English Disjunctive; 2019FA (AB705); 2020FA (Post AB705 + COVID19); 2021FA (Post AB705+ post COVID19).

With AB705, one concern raised is that students may drop courses due to their perception of low preparedness. To assess this hypothesis, students dropping a course *after* the start of the course was used for the primary metric.[2] Students who drop a course on the first day of the course are included in the category of 'drops after start date'. Additional data on drops *before* course start date are provided toward the end.

Course sections are limited to Math and English sections that were full-term classes (approx.16-week), offered in the five fall semesters of 2017-2021, and are either entry level transfer courses (Math-100, 102,103,111 130, 140 and Engl-101) or below-transfer courses in either discipline. Students in below-transfer courses were included to account for the shift in student populations that were enrolling in below-transfer level courses prior to AB 705 and had access to transfer-level courses starting in fall 2019.

The Ns in the charts vary because each analysis uses a unique population for each term. Drop rates in math are calculated out of students who had at least 1 enrollment in a Math course. Drops in English are out of students who had at least 1 enrollment in an English course. Finally, drops in math & English are among students who had at least 1 enrollment record in both Math and English.

The categories for drops are as follows: '*Dropped at least one course*' indicates a student who had a drop in their enrollment record for that discipline. This is the cumulative total of the other two categories (Dropped all and Dropped some). '*Dropped all courses*' indicates that the student dropped all of the Math/English courses that they enrolled in, in other words the number of drops was equal to the number of their enrollments in the discipline. '*Dropped some courses*' indicates that the student had a drop in their enrollment record, but stayed enrolled in the discipline through another course. For instance, a student may have enrolled in MATH-058 and MATH-075 and dropped only one of the two.

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[1] AB 705 is a bill signed by the Governor on October 13, 2017 that took effect on January 1, 2018. The bill requires that a community college district or college maximize the probability that a student will enter and complete transfer-level coursework in English and math within a one year timeframe.

[2] Drops are limited to those occurring before the census date and after the start date for the course (reg_s = 'D' 'Dropped after start of course').

Results

Overall, during a 5-year time period, the pattern for the proportion of students dropping courses pre- and post AB 705 indicates that there was a modest increase in fall 2019, the first term of implementation. After this first-term, the rates have appeared to trend toward pre-AB705, baseline rates.

Math Drops before Census, and *After* Start Date

First, among students who enrolled in at least one Math course, the percentage who dropped at least one course was 9% in 2017 and 2018, with an increase to 13% in the first term that AB705 was implemented (2019). Post 2019, the rate has started to trend toward previously expected rates (10% in 2020 and 2021, each).

Figure 1.Percentage of students who enrolled in Math and dropped courses after start date, before census (5 fall terms)
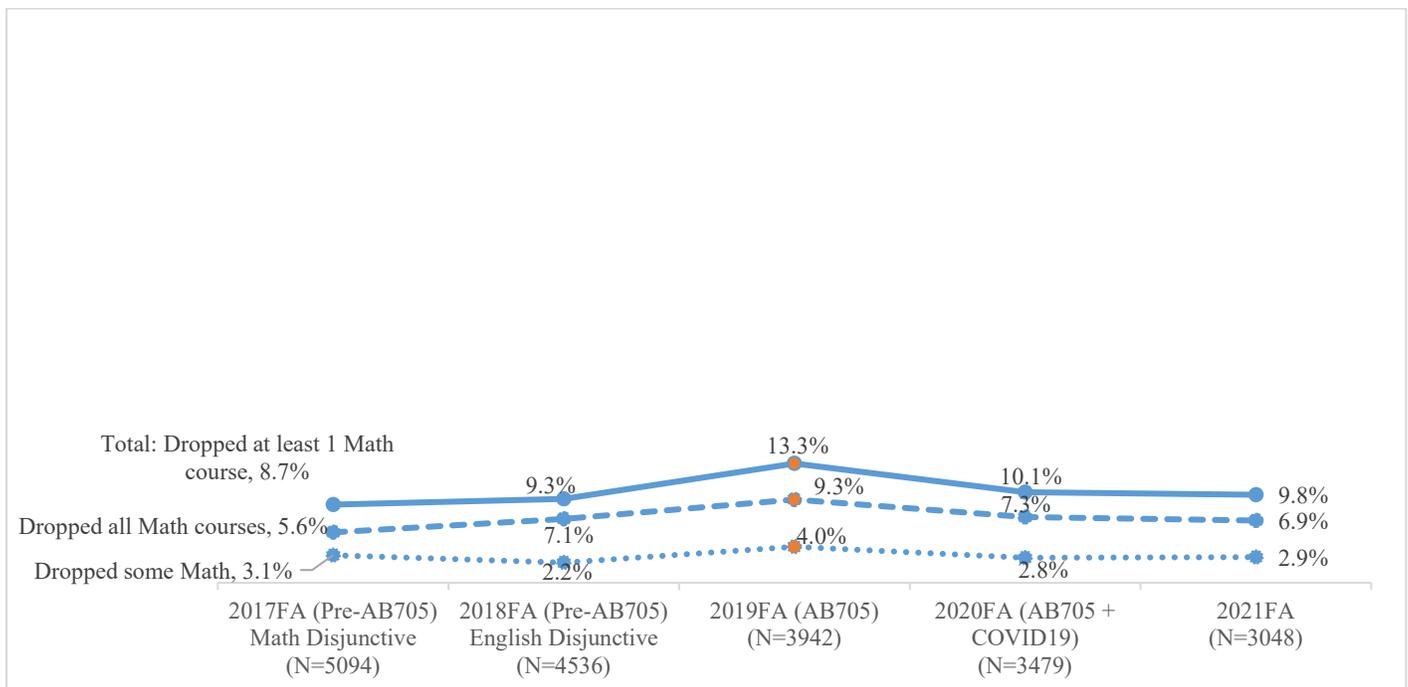
Math STEM vs. S/LAM Drop Rates before Census, and *After* Start Date

To further disaggregate drops in Math, Science, Technology, Engineering and Math (STEM) course drop rates were compared to Statistics and Liberal Arts Math (S/LAM) course drop rates. STEM courses included the following courses: MATH-058, 060, 070, 083, 102, 092, 103 and 093. S/LAM courses included MATH-075, 100, 111, 130, 140 and 090.

The proportion of students dropping at least one STEM math course is overall higher than the proportion of students dropping S/LAM courses. With AB705 implementation in fall 2019, this proportion for STEM drops increased by 8 percentage points (80 percent increase), whereas the proportion of students dropping S/LAM courses increased by 3 percentage points (43 percent increase). Part of this spike in STEM drops can be attributed to 2-levels below-transfer courses (MATH-058, 060). Post AB705, drop rates remained higher in STEM in comparison to S/LAM, however, rates started to decline in fall 2020 in both groups.

Figure 2. Percentage of students who enrolled in STEM vs. S/LAM and dropped courses after start date, before census (5 fall terms)
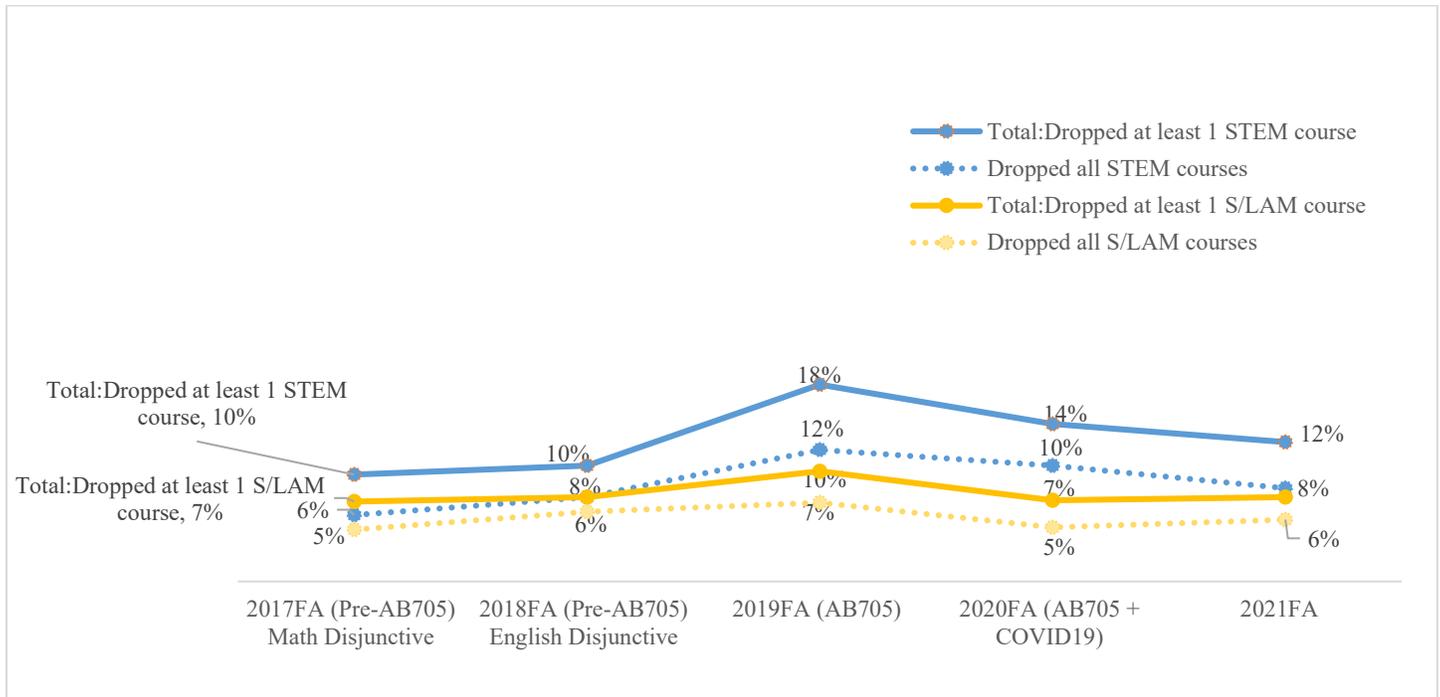

Table 1 STEM vs. S/LAM Drop rates before census, after course start date (5 fall terms).

	STEM				S/LAM			
	Total students enrolled in STEM (N)	Total: Dropped at least 1 STEM course	Dropped some STEM	Dropped all STEM courses	Total students enrolled in S/LAM(N)	Total: Dropped at least 1 S/LAM course	Dropped some S/LAM	Dropped all S/LAM courses
2017FA (Pre-AB705) Math Disjunctive	3382	9.5%	3.5%	5.9%	1792	7.1%	2.5%	4.6%
2018FA (Pre-AB705) English Disjunctive	2700	10.3%	2.8%	7.5%	1588	7.5%	1.3%	6.2%
2019FA (AB705)	1667	17.5%	5.8%	11.7%	2388	9.8%	2.8%	7.0%
2020FA (post AB705 + COVID19)	1443	14.0%	3.7%	10.3%	2131	7.2 %	2.4%	4.8%
2021FA (post AB705 + post COVID19)	1318	12.4%	4.1%	8.3%	1823	7.5%	1.9%	5.5%

When STEM and S/LAM courses were limited to transfer-level only, the results were similar and shared comparable trends as when below-transfer courses were included. In both cases the 2021 rates were approximately the same as the rates in Fall 2017.

*Table 2. Proportion of students dropping Transfer-level STEM vs. S/LAM courses (5 fall terms)*

	STEM Dropped at least 1 course	Total Enrolled in STEM Transfer Level	**S/LAM** Dropped at least 1 course	Total Enrolled in S/LAM Transfer Level
2017FA	9%	710	8%	1354
2018FA	8%	546	7%	1182
2019FA	17%	874	10%	2269
2020FA	11%	781	7%	2011
2021FA	10%	720	7%	1795

*excludes students enrolled in below-transfer courses

English Drop Rates before Census, and *After* Start Date

With regard to English, the percentage of students dropping at least one English course was 7% in 2017, and slightly increased 2 percentage points in 2019 to 9% during the first AB705 implementation term, stabilizing at 8% in the subsequent terms (9% in 2020 and 8% in 2021). (Figure 2 provides details).

Figure 3. Percentage of students who enrolled in English and dropped courses after start date, before census (5 fall terms)
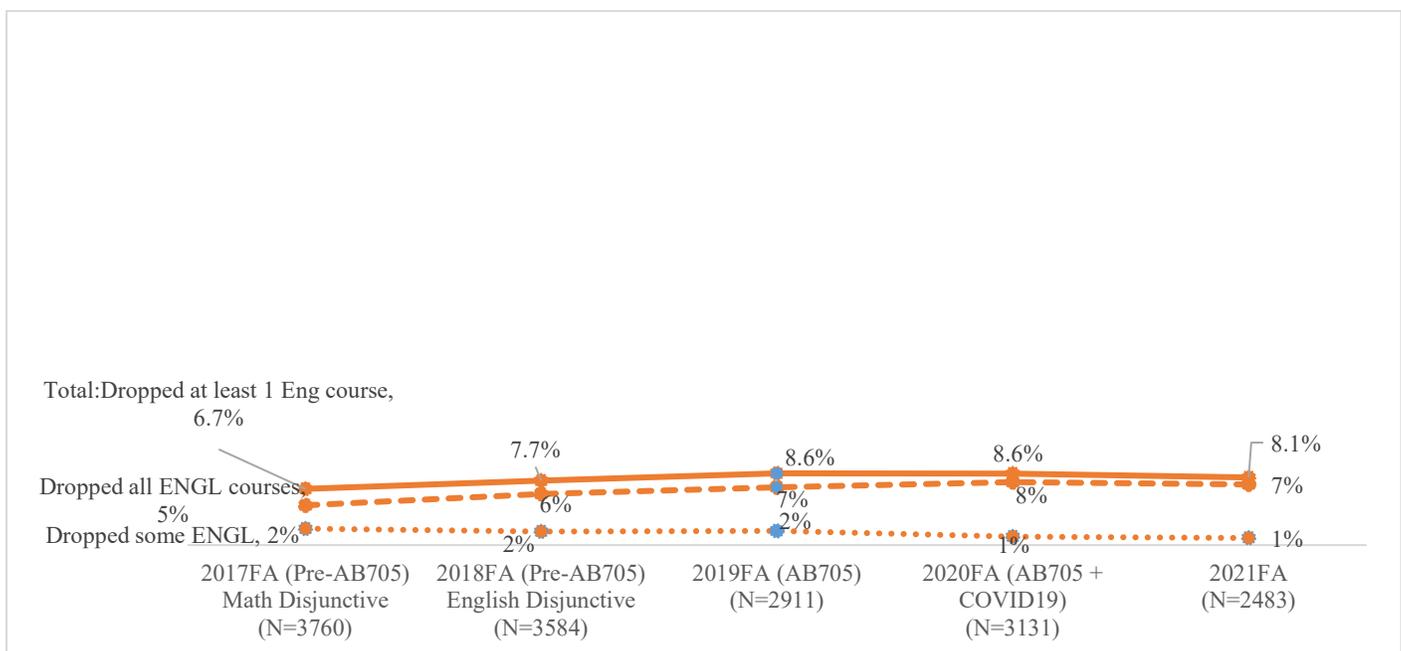
Both, English & Math Drop Rates before Census, and *After* Start Date

Among students who enrolled in both Math & English courses, the percentage who dropped at least one course was 13% in 2017 with an increase in the term when AB705 was implemented (18% in 2019). Post 2019, the rate has started to trend toward previously expected rates (13% in 2020 and 2021, respectively). These rates are higher than the analyses separating Math and English partly due to smaller sample sizes of students who enroll in both disciplines in the fall term. (Figure 3 provides details)

Figure 4. Percentage of students enrolled in both Math & English and dropped courses after start date, before census (5 fall terms)
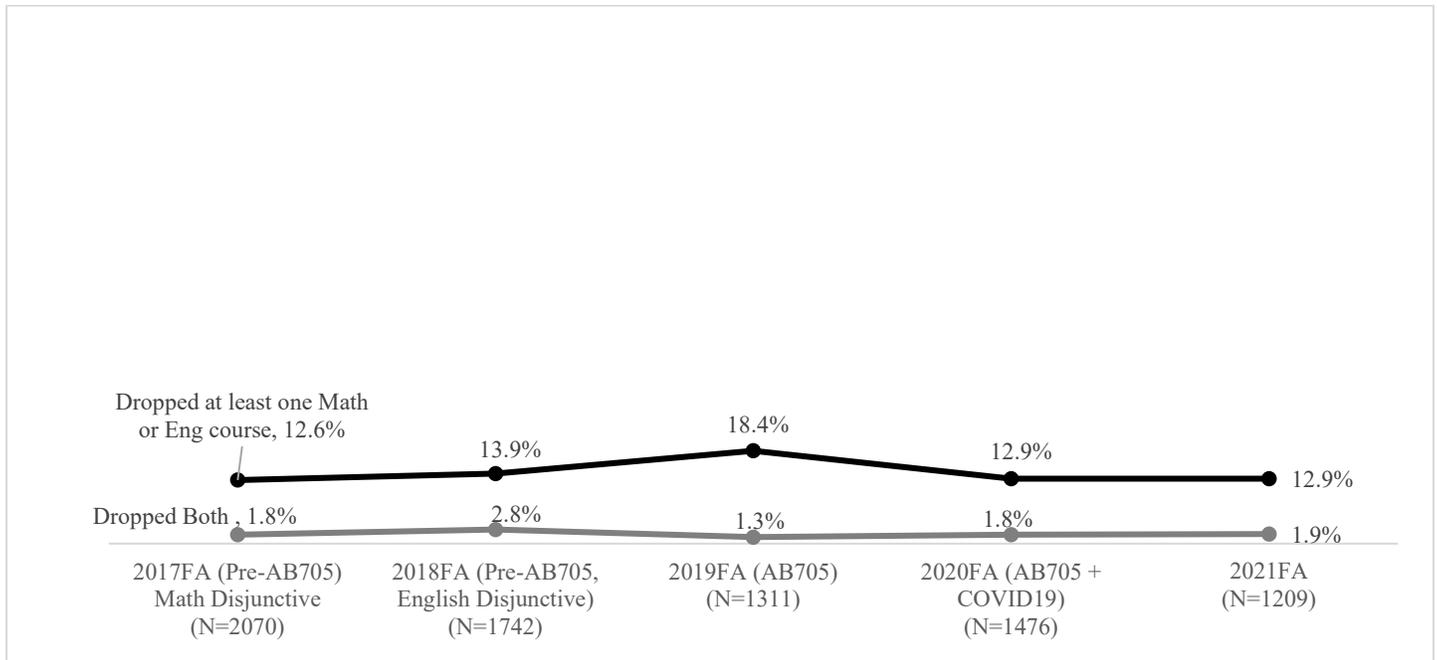
Drop Rates before Census, and *Before* Start Date

The types of drops included in the analysis above were limited to those that were prior to census date and after the start of a course. Additional disaggregation of the trend for drops that occurred prior to the start of the course (regs ' X' 'Drops prior to start of course') is examined in this section. The results (Table 1) indicated that in general a higher proportion of students drop Math & English courses *prior* to the start of the course in comparison to after the start date and before census date.

In the first AB705 implementation term, fall 2019, both disciplines respectively saw a slight increase in the proportion of students dropping a course *prior* to the start of the course in comparison to the preceding term, 2018 (19% vs. 15% for English, and 22% vs. 17% in Math). This change was a smaller increase in comparison to the baseline year (2017). After the initial implementation term, rates of students dropping prior to the start of the course declined (see Table 1).

Table 3. Drops rates before, and after course start date among students enrolled in Math or English (5 fall terms)

	ENGLISH				MATH			
	Total students enrolled in English (N)	Drops **before** course start date	Drops **after** course start date	Total Drops before census	Total students enrolled in Math (N)	Drops **before** course start date	Drops **after** course start date	Total Drops before census
2017FA (Pre-AB705) Math Disjunctive	3760	17.7%	6.7%	24.4%	5094	18.7%	8.7%	27.4%
2018FA (Pre-AB705) English Disjunctive	3584	14.5%	7.7%	22.2%	4236	16.9%	9.3%	26.2%
2019FA (AB705)	2911	18.8%	8.6%	27.4%	3942	22.0%	13.3%	35.2%
2020FA (Post AB705 + COVID19)	3131	11.0%	8.5%	19.5%	3479	15.5%	10.1%	25.6%
2021FA (Post AB705+ post COVID19)	2483	14.7%	8.1%	22.8%	3048	20.1%	9.8%	29.9%

For students who were enrolled in both disciplines, the pattern was similar with most drops occurring prior to the start of the course. Whereas 14% dropped courses in both disciplines prior to the start date in 2019, only 1% did so after the start of the course. Similarly, 28% dropped courses in at least one subject prior to the start date, in comparison to 18% who did so after the start of the course. For all 5 years, approximately 1-2% of students enrolled in at least one course in both disciplines, dropped all Math and English courses.

Table 4. Drop rate before, and after course start date among students enrolled in both Math & English (5 fall terms)

	Dropped at least one course in Both Math *and* English			Dropped at least one course in Math *or* Eng course		
	Drops **before** course start date	Drops **after** course start date	Total Drops before census	Drops **before** course start date	Drops **after** course start date	Total Drops before census
2017FA (Pre-AB705) Math Disjunctive (N=2131)	11.8%	1.8%	13.6%	26.8%	12.6%	39.4%
2018FA (Pre-AB705, English Disjunctive) (N=1785)	8.3%	2.8%	11.1%	21.3%	13.9%	35.2%
2019FA (AB705) (N=1385)	13.7%	1.3%	15.0%	28.4%	18.4%	46.8%
2020FA (AB705 + COVID19) (N=1544)	7.3%	1.8%	9.1%	20.1%	12.9%	33.0%
2021FA (Post AB705+ post COVID19) (N=1278)	8.4%	1.9%	10.3%	26.6%	12.9%	39.5%

Summary Findings

Overall, proportion of students dropping is highest among students enrolling in both subjects, followed by those enrolled in Math, and then English. Additionally, drops before the start date, are also higher in comparison to drops after start of the course. Particularly high rates of drops are present among students who enroll in both math and English in the fall term in comparison to those who enroll in one discipline at a time.

In light of AB705, increases in the proportion of students with drops were higher in the first implementation term, and then stabilized back to pre-AB705 and baseline years. The impact related to AB 705 in fall 2019 was more pronounced for Math in comparison to English when separately assessing each discipline.

Recommendations

Upon review of the results on the impact of AB705 on student drop rates in Math and English, the following recommendations should be taken into consideration:

- Examine additional data/information on why students drop Math and/or English courses at a higher rate prior to the start of the class than during the first two weeks of the semester (before census).

- Explore overall retention efforts especially for students who enroll in both disciplines, and drop courses in one area at substantially higher rates.

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