THE GENDER DISPARITY OF BUSINESS EDUCATION ENROLLMENT BETWEEN THE REGULAR AND SPECIAL SEMESTERS

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ABSTRACT

In contrast to the national trend, the business education enrollment in the U.S. universities is male-dominated. This study investigates the gender disparity between student enrollments for the regular (Spring/Fall) and special (Winter/Summer) semesters for the two required business core courses from 2018 to 2024. Our findings indicate that the general male-dominated enrollment pattern in business education holds for the regular semesters but it disappears from the special semesters.

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Keywords: *gender disparity, male-dominated, higher education, business education*

INTRODUCTION

Historically, the undergraduate enrollment among young people in the U.S. universities has been higher for male students. According to Goldin et al. (2006), this trend has been reversed after the 1980s and the number of female undergraduate students surpassed the number of male students. The recent studies at Pew Research Center (2021) and Fry (2023) confirm that the number of men pursuing college is historically low standing at 44% of the college students in 2023. Furthermore, this trend in undergraduate education may extend to the all-higher education levels. For example, the American Enterprise Institute (2021) states that "Women Earned the Majority of Doctoral Degrees in 2020 for the 12th Straight Year."

Today, despite the reversal from male to female-dominated undergraduate enrollments among young people in the U.S., the gender disparity in business education still stays male-dominated and it does not follow the national trend. For example, a recent survey by the AACSB (2021) from 354 business schools shows that 59% of the undergraduate students in business education is male.

The California State University (CSU) with its 23 campuses is considered one of the largest institutions in higher education in the U.S. The California State University (2023)

enrollment demographics states that 56.4% of its student body were females (256,200) in contrast to its 43.6% of students as males (198,440). In addition, Sonoma State University (SSU) is one of the 23 campuses of California State University. The "Facts" stated on the Sonoma State University (2024) website shows a gender distribution of 62% (3,638 students) of females and 38% (2,229 students) of males. However, according to Datawheel (2024), despite this trend, Sonoma State University (SSU) awarded 265 degrees (57.36%) to men in General Business Administration and Management fields in comparison to the 197 females (42.64%) in 2022. The male to total enrollment ratio at SSU is consistent with the findings from the AACSB (2021), Harvard Business School (2021) Clinton et. al (2023) and Trapnell et. al (2023) stating that business education is one of the male-dominated study fields in the U.S.

The male-dominated U.S. trend in business education might even extend to international level. For example, a survey by Hunt and Song (2013) for the Canadian business schools shows that the most business majors such as accounting, economics and management science, entrepreneurship, finance, and general management have a higher male to total enrollment ratio except in human resources management and marketing.

Several theories are suggested to explain the enrollment disparity in higher education. For example, Buchmann et al. (2025) explore gender differences in learner characteristics, positing that women tend to have higher levels of academic achievement and motivation compared to men, leading to higher enrollment rates among women. In addition, Buchmann et al. believe in the effects of institutional factors on the gender disparity. Similarly, Severiens and ten Dam (2012) claim that societal expectations and gender norms can influence enrollment patterns. Furthermore, Severiens and ten Dam stress the economic factors, particularly financial considerations such as student loan debt, as playing a role in the gender disparity.

DATA AND METHODOLOGY

In this study, the male to total student enrollment ratios for two courses (BUS 320 and BUS 370) at the business school of Sonoma State University (SSU) is analyzed for a period of 2018 to 2024. These are required core courses for all business students regardless of their sub-business fields. As stated earlier, the male to total enrollment ratio at the business school is approximately 57% of males and 43% of females. Therefore, on the average, the male to total enrollment ratios for these two core business courses are expected to reflect a male-dominated classroom pattern

In this study, the male to total enrollment ratios for the two classes (BUS 320 and BUS 370) are compared for the special (Winter/Summer) and regular (Spring/Fall) semesters. The motivation of this research was to investigate whether there is any gender disparity in the enrollments of special and regular semesters. Why? To our knowledge, there has not been any research comparing these two teaching semesters whether the male-dominated enrollment pattern in business classes persists. The difference between the special (Winter/Summer) and the regular (Spring/Fall) courses at Sonoma State University are:

1. *The special courses have shorter periods (2 to 4 weeks) and they are taught asynchronously online.*
2. *The regular courses have longer periods (16 weeks) with face-to-face meetings.*

Can there be gender disparity because of having online classes or short semesters? Do online or shorter semesters attract students with certain gender traits? Or, does gender affect organizational skills of certain students who are likely to choose courses in special semesters?

Tables 1 and 2 provide male to total enrollment ratios for the seven courses (BUS 320) from the special (Winter/Summer) semesters between 2019 and 2024. The winter semesters are approximately 2-weeks long and asynchronous online and the summer classes are 4-weeks long and also asynchronous online. Additionally, the male-to-total enrollment [M/(M+F)] ratio, female-to-total enrollment [F/(M+F)] ratio, and male, female, total enrollment numbers are shown. Further, the last columns of these tables (M > F = 1) indicate whether a class has a higher male enrollment: It takes a value of 1 when the male enrollment in the class is higher than 50%.

According to Table 1, there were 3 out of 7 courses with a higher male to total enrollment ratios for the special semesters of BUS 320. Also, the average male enrollment ratio in BUS 320 class was 49%. This is well below the expected average ratio of 57% for the business school of Sonoma State University and it is the opposite of the expected trend.

Table 1
Male-to-Total Enrollment [M/(M+F)] Ratios for BUS 320 Classes During the Special (Winter/Summer) Semesters*.**.***

SEMESTERS	MALE %	FEMALE %	MALE #	FEMALE #	TOTAL #	M > F = 1
SU19	35%	65%	8	15	23	0
SU20	42%	58%	20	28	48	0
SU21	50%	50%	14	14	28	0
SU22	57%	43%	13	10	23	1
SU23	62%	38%	38	23	61	1
WI24	51%	49%	21	20	41	1
SU24	48%	52%	22	24	46	0
Ave. 320	**49%**	**51%**	**136**	**134**	**270**	**3/7**
Ave. BUSINESS	**57%**	**43%**				

*BUS 320 course is called "Business Data Analysis and Interpretation."

**The winter semesters are approximately 2-weeks asynchronous online classes and the summer classes are 4-weeks asynchronous online classes.

*** Source: Datawheel (2024): Ave. BUSINESS ratio is obtained based on the business degrees awarded at Sonoma State University in 2022.

Further, Table 2 provides the male enrollment ratios from 11 of the BUS 320 courses offered during the regular (Spring/Fall) semesters between 2019 and 2024. The teaching mode of the fall and spring semesters are face-to-face (except pandemic years in 2020-21) and the Spring/Fall semesters are about 16 week long.

Table 2
Male-to-Total Enrollment [M/(M+F)] Ratios for BUS 320 Classes During the Regular (Spring/Fall) Semesters*,**,***

SEMESTERS	MALE (%)	FEMALE (%)	MALE#	FEMALE#	TOTAL#	M > F = 1
FA18	47%	53%	17	19	36	0
SP19	59%	41%	22	15	37	1
FA19.1	78%	22%	29	8	37	1
FA19.2	65%	35%	24	13	37	1
SP20.1	62%	38%	23	14	37	1
SP20.2	67%	33%	24	12	36	1
FA20	55%	45%	22	18	40	1
SP21	52%	48%	26	24	50	1
FA21.1	65%	35%	26	14	40	1
FA21.2	70%	30%	28	12	40	1
SP22	54%	46%	27	23	50	1
Ave. 320	**61%**	**39%**	**268**	**172**	**440**	**10/11**
Ave. BUSINESS	**57%**	**43%**				

*BUS 320 course is called "Business Data Analysis and Interpretation." The Regular (Spring/Fall) semesters are approximately 16-weeks long with face-to-face modality (except the Covid pandemic years of Fall 2020 and Spring 2021.

** Source: Datawheel (2024): Ave. BUSINESS ratio is obtained based on the business degrees awarded at Sonoma State University in 2022.

***Several semesters have 2 sections of the BUS 320 course. For example, FA19.1 is the first section of BUS 320 during the Fall 2019. Similarly, FA19.2 indicates the second section offered during the same semester.

According to Table 2, there are 10 out of 11 courses with a higher male enrollment. The average of the male-to-total enrollment ratios in BUS 320 classes during the fall and spring semesters was 61%. This result is slightly higher than the overall male student enrollment ratio observed in business education (57%) of Sonoma State University. However, this result is consistent with the general trend of male-dominated business education.

Therefore, having only 49% of male-to-total enrollment ratio (Table 1) in the special semester is a significant contrast to having 61% of male-to-total enrollment ratio (Table 2) in regular semesters.

In order to test whether there is a statistical difference between the male-to-total enrollment ratios for BUS 320 classes during the special (Winter/Summer) and regular (Spring/Fall) semesters, an ANOVA Single Factor test is applied to two groups. Group 1: The male-to-total enrollment ratios from the special courses. Group 2: The male-to-total enrollment ratios from the regular courses.

$$H_0 = \bar{X}_{SPECIAL} - \bar{X}_{REGULAR} = 0$$
$$H_1 = \bar{X}_{SPECIAL} - \bar{X}_{REGULAR} \neq 0$$

H_0 (Null hypothesis) claims that the differences of sample averages for the male-to-total enrollment ratios in both groups (Special versus Regular) are equal to zero. That means there is no difference for the average male-to-total enrollment ratios for both groups. And, the alternative hypothesis, claims otherwise: there is difference for the average male-to-total enrollment ratios for both groups.

Table 3 provides the details of the F-test statistics. According to the ANOVA estimations, F-statistics value (7.77) is significantly greater than the F-critical value (4.49), and therefore we reject the null hypothesis at 5% level to conclude that the averages of the male-to-total enrollment ratios for two groups (special and regular) are not equal. Thus, H_0 (null hypothesis) is rejected indicating that the averages of two groups are statistically dissimilar.

Table 3
ANOVA Single Factor for Two Groups: Sample Averages of the Male-to-Total Enrollment Ratios for the BUS 320 Classes Taught During the Special (Winter/Summer) and Regular (Spring/Fall) Semesters

Groups	Count	Sum	Average	Variance		
Special	7	3.443116956	0.491873851	0.008271771	7	
Regular	11	6.747537538	0.613412503	0.008043264	11	
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.063189811	1	0.063189811	7.773424357	0.013160741	4.493998478
Within Groups	0.130063267	16	0.008128954			
Total	0.193253078	17				

Tables 4 and 5 provide the male-to-total enrollment ratios for another required core course (BUS 370) during the special (Winter/Summer) and regular (Spring/Fall) semesters. Also, the male-to-total enrollment [M/(M+F)] ratio, female-to-total enrollment [F/(M+F)] ratio, and male, female, total enrollment numbers are shown. Further, the last columns of these tables (M > F = 1) indicate whether a class has a higher male enrollment: It takes a value of 1 when the male enrollment in the class is higher than 50%.

Table 4
Male-to-Total Enrollment [M/(M+F)] Ratios for BUS 370 Classes During the Special (Winter/Summer) Semesters*·**·***

SEMESTERS	MALE (%)	FEMALE (%)	MALE#	FEMALE#	TOTAL#	M > F = 1
WI18	50%	50%	16	16	32	0
SU18	58%	42%	18	13	31	1
WI19	49%	51%	19	20	39	0
SU19.1	47%	53%	15	17	32	0
SU19.2	55%	45%	17	14	31	1
WI20	52%	48%	14	13	27	1
SU20.1	50%	50%	25	25	50	0
SU20.2	77%	23%	20	6	26	1
SU21.1	60%	40%	15	10	25	1
SU21.2	23%	77%	3	10	13	0
WI22	47%	53%	7	8	15	0
SU22	63%	37%	17	10	27	1
WI23	71%	29%	17	7	24	1
SU23	50%	50%	12	12	24	0
WI24	31%	69%	5	11	16	0
SU24	35%	65%	13	24	37	0
Ave. 370	**51%**	**49%**	**233**	**216**	**449**	**7/16**
Ave. BUSINESS	**57%**	**43%**				

*BUS 370 course is called "Introduction to Managerial Finance." The winter semesters are approximately 2-weeks long and asynchronous online and the summer semesters are 4-weeks long and asynchronous online.

** Source: Datawheel (2024): Ave. BUSINESS ratio is obtained based on the business degrees awarded at Sonoma State University in 2022.

***Several semesters have 2 sections of BUS 370 being offered during the same semester. For example, SU19.1 is the first section of BUS 320 during the SU 2019. Similarly, SU19.2 indicates the second section offered during the same semester.

According to Table 4, there were 7 out of 16 courses offered during the Winter/Summer periods when the male to total enrollment ratios were higher than 50%. In addition, the average male to total enrollment ratio was 51% and it is below the expected business school average of 57% of the male-dominated enrollment pattern.

Further, Table 5 provides data from 40 of BUS 370 courses offered during the Spring/Fall semesters. The 33 courses out of 40 total had a male to total enrollment ratio above 50%. Additionally, the average male to total enrollment ratio for all classes was 57% identical to the business school average. Thus, the regular semester enrollment pattern is consistent with the general trend of the male-dominated business education.

Table 5
Male-to-Total Enrollment [M/(M+F)] Ratios for BUS 370 Classes During the Regular (Spring/Fall) Semesters*.**.***

SEMESTERS	MALE%	FEMALE%	MALE#	FEMALE#	TOTAL#	M > F = 1
SP18.1	50%	50%	27	27	54	0
SP18.2	63%	37%	38	22	60	1
SP18.3	65%	35%	30	16	46	1
SP18.4	58%	42%	21	15	36	1
FA18.1	64%	36%	41	23	64	1
FA18.2	60%	40%	21	14	35	1
FA18.3	59%	41%	20	14	34	1
SP19.1	47%	53%	33	37	70	0
SP19.2	54%	46%	26	22	48	1
SP19.3	59%	41%	20	14	34	1
FA19.1	58%	42%	25	18	43	1
FA19.2	23%	77%	3	10	13	0
FA19.3	58%	42%	25	18	43	1
SP20.1	60%	40%	40	27	67	1
SP20.2	59%	41%	22	15	37	1
SP20.3	52%	48%	23	21	44	1
FA20.1	50%	50%	28	28	56	0
FA20.2	73%	27%	24	9	33	1
FA20.3	48%	52%	11	12	23	0
SP21.1	52%	48%	26	24	50	1
SP21.2	57%	43%	12	9	21	1
SP21.3	53%	48%	21	19	40	1
FA21.1	54%	46%	37	31	68	1
FA21.2	69%	31%	27	12	39	1
FA21.3	53%	48%	21	19	40	1
SP22.1	56%	44%	56	44	100	1
SP22.2	53%	47%	30	27	57	1
SP22.3	72%	28%	21	8	29	1
FA22.1	51%	49%	22	21	43	1
FA22.2	60%	40%	25	17	42	1
FA22.3	64%	36%	27	15	42	1
SP23.1	60%	40%	25	17	42	1
SP23.2	44%	56%	22	28	50	0
SP23.3	64%	36%	25	14	39	1
FA23.1	65%	35%	28	15	43	1
FA23.2	72%	28%	31	12	43	1
FA23.3	48%	52%	20	22	42	0
SP24.1	60%	40%	24	16	40	1
SP24.2	65%	35%	24	13	37	1
SP24.3	53%	47%	16	14	30	1
Ave. 370	**57%**	**43%**	**978**	**732**	**1710**	**33/40**
Ave. BUSINESS	**57%**	**43%**				

*BUS 370 course is called "Introduction to Managerial Finance." The Regular (Spring/Fall) semesters are approximately 16-weeks long with face-to-face modality (except the Covid pandemic years of Fall 2020 and Spring 2021.

** Source: Datawheel (2024): Ave. BUSINESS ratio is obtained based on the business degrees awarded at Sonoma State University in 2022.

***Every semester has 2 to 4 sections of BUS 370 during the same semester. For example, SP18.1 is the first section of BUS 370 during the Spring 2018. Similarly, SP18.2 indicates the second section of the course being offered during the same semester, and so on.

In order to test whether there is a statistical difference between the male-to-total enrollment ratios for BUS 370 classes during the special (Winter/Summer) and regular (Spring/Fall) semesters, an ANOVA Single Factor test is applied to two groups. Group 1: The male-to-total enrollment ratios from the special courses. Group 2: The male-to-total enrollment ratios from the regular courses.

$$H_0 = \bar{X}_{SPECIAL} - \bar{X}_{REGULAR} = 0$$
$$H_1 = \bar{X}_{SPECIAL} - \bar{X}_{REGULAR} \neq 0$$

H_0 (Null hypothesis) claims that the differences of sample averages for the male-to-total enrollment ratios in both groups (Special versus Regular) are equal to zero. That means there is no difference for the average male-to-total enrollment ratios for both groups. And, the alternative hypothesis, claims otherwise: there is difference for the average male-to-total enrollment ratios for both groups.

Table 6
ANOVA Single Factor for Two Groups: Sample Averages of the Male to total enrollment Ratios for the BUS 370 Classes Taught During the Winter/Summer and Spring/Fall Semesters

Groups	Count	Sum	Average	Variance		
Regular	40	22.85702172	0.571425543	0.008109466		
Special	16	8.171961245	0.510747578	0.018801431		
Source of	SS	df	MS	F	P-value	F crit
Between Groups	0.042078	1	0.042078	3.79783	0.056522	4.019541
Within Groups	0.598291	54	0.011079			
Total	0.640369	55				

Table 6 provides the details of the F-test statistics calculated According to the ANOVA estimations, F-statistics value (3.80) is slightly below the F-critical value (4.02), and therefore we accept the null hypothesis at α = .05 critical value to conclude that the averages of the male to total enrollment ratios for two groups (the Winter/Summer and Spring/Fall classes) are equal. Thus, H_0 (null hypothesis) is accepted indicating that the averages of two groups are statistically similar. However, this result is relatively weak. The null hypothesis could be rejected at α = .06 or α = .10 levels.

Where do these results leave us? Could the gender of faculty members cause gender disparity in student enrollment? According to AACSB (2021), 58% of the doctoral students and 66% of the business faculty in the U.S. were males. In this study, all 3 faculty members teaching BUS 320 and BUS 370 courses were males. However, the same faculty members taught both in the special and regular semesters. Therefore, the student gender preference for the faculty

members would not have affected the disparity observed between the special and regular semesters in this study.

If the implications of this study are confirmed and female student enrollments at the special (Winter/Summer) classes are higher, what should we conclude from this finding? Is there a gender disparity for the modality of the courses (face-to-face or asynchronous)? Or, is there a preference for students for shorter periods of classes? Or, is it an outcome of more fundamental reasons such as academic confidence, claimed by Sander and de la Fuente (2020), or conscientiousness, claimed by Verbree at al. (2023)? Do traits like confidence or conscientiousness affect modality or length of semesters? Could these results be the result of small sample bias? The findings of this study produced more questions than answers. Therefore, future research should explore other business core courses to find out if the male-dominated gender disparity stays the same between special and regular semesters.

CONCLUSIONS

Despite there has been a sea of change in undergraduate enrollment over many years to achieve a high level of female participation, the male student enrollment in business education in the U.S. is considerably higher. This study analyzes two core business courses at a small university, Sonoma State University, and finds that the male-dominated gender trend in business education is relatively weak or non-existent for the special (Winter/Summer) courses in comparison to the regular (Spring/Fall) courses. This result is rather surprising and it could be an anomaly. Or, it could be a sign of gender preference of students towards the length and/or the modality of the courses. Since this is the first paper in the literature investigating this anomaly, there is a need for future research to investigate the gender disparity for the enrollments of other business core courses.

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