Transitioning to Increased Online Instruction in a Large Public University

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DATA FELLOWS
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Research Questions

- Are there significant differences in course grades and SPOT scores for students in online classes versus face-to-face classes?
- Are there significant differences in outcomes when considering demographic factors, minority status, and Pell-eligibility?

Introduction

Motivation

- Examine the efficacy of online instruction in the post-COVID environment, weighing flexibility and convenience against quality concerns.
- Equity concerns: relating student success and perceptions of online instruction to student demographics, minority status and Pell-eligibility
- Achieve a better understanding of the success in undergraduate online instruction in the CSULB context.

Expectations

- We suspect that overall outcomes for online instruction are worse than for face-to-face instruction.
- When broken down by demographics, minority and Pell-eligible students will have poorer learning outcomes and satisfaction.
- Gain a better understanding of the challenge of online instruction for faculty and students to improve student advising, curricular development, and faculty professional development.

Methods

Data:
SSD 2.0, SPOT, EAB for Fall 2022 and Spring 2023

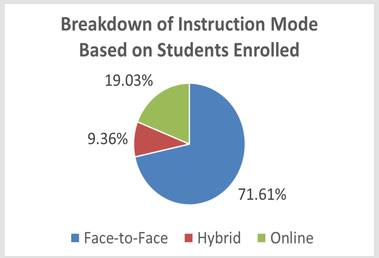
Variables:
Grades, grade categories (ABC versus DWF), URM/NURM, male/female, class size, mode (online, hybrid, face-to-face, CGPA, earned credits, class level (FTFY, sophomore, junior, senior, graduate), course prefix.

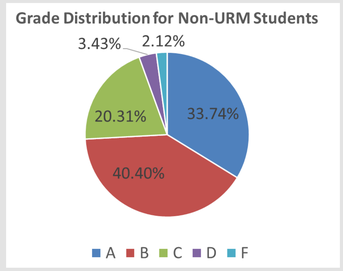
Level of analysis:
Student – all students taking COB classes in Fall 2022 and Spring 2023

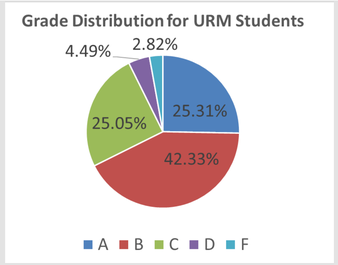
Methods:

- Chi-square correlation
- Logistic regression (ABC vs DWF)
- OLS regressions (determinants of grade, determinants of average SPOT)
- Textual analysis of student feedback: word clouds

Results







	Instruction Mode			
Grade	Face-to-Face	Hybrid	Online	Total
ABC	24,540	3314	6,744	34,598
	90.80	93.8	93.89	91.67
DWF	2487	219	439	3,145
	9.20	6.20	6.11	8.33
Total	27,027	3533	7,183	37,743
	100	100	100	100

Pearson chi2(2) = 94.1865 Pr = 0.000

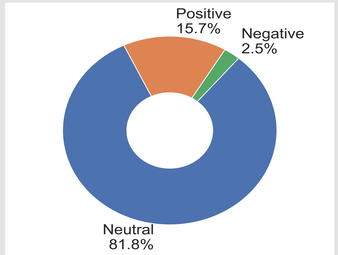
Logistic: DV = ABC vs DFW

	Final Grade (ABC vs DFW)	
Hybrid	-0.0729	(-0.69)
Online	0.1559**	(2.03)
Female	-0.1859***	(-2.74)
URM	-0.2181***	(-2.87)
Class Size	-0.4115***	(-8.20)
Other Controls	Yes	
Pseudo R-squared	0.1726	
N	34435	

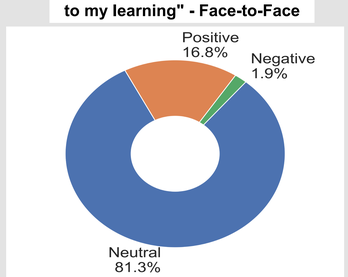
OLS: DV = GPA with interactions

	Final Grade (Coded as 4, 3, 2, 1, 0)	
Hybrid	-0.0284	(-1.07)
Online	0.1078***	(4.76)
Female	-0.0726***	(-4.61)
Gender Other	-0.1966	(-0.66)
URM	-0.0753***	(-4.11)
Hybrid # Female	0.0027	(0.09)
Online # Female	-0.0091	(-0.36)
Online # Other	0.3168	(0.65)
Hybrid # URM	**0.1023*** **	**(3.40)**
Online # URM	**0.0664*** **	**(2.63)**
Cumulative GPA	1.0228***	(21.51)
Class Size	-0.2170***	(-21.30)
Earned Credits	0.0752***	(3.71)
Graduate	0.2008**	(2.47)
Junior	-0.1082	(-1.42)
Senior	-0.0485	(-0.61)
Sophomore	0.0164	(0.22)
Constant	0.1263	(0.77)
Subject Fixed Effects	Yes	
Adjusted R-squared	0.3436	
N	34115	

Tone on "What contributed most to my learning" - Online



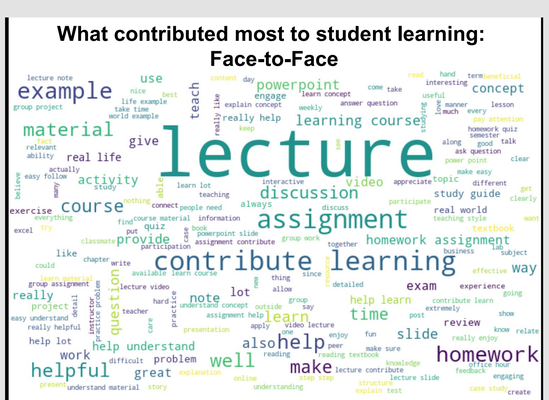
Tone on "What contributed most to my learning" - Face-to-Face



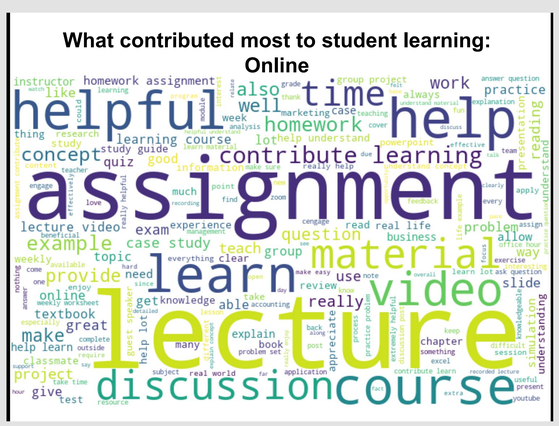
OLS: DV = Average SPOT with interactions

	Average SPOT	
Hybrid	-0.0717	(-1.02)
Online	-0.3696***	(-5.15)
Female	-0.0242	(-0.70)
Gender Other	0.3380	(1.46)
URM	0.0656*	(1.87)
Hybrid # Female	-0.1649*	(-1.84)
Online # Female	0.0566	(0.72)
Hybrid # URM	**0.2315** **	**(2.57)**
Online # URM	-0.0023	(-0.03)
Finalgrade=D	0.1159	(0.67)
Finalgrade=C	0.2054	(1.27)
Finalgrade=B	0.3752**	(2.32)
Finalgrade=A	0.4838***	(2.97)
Cumulative GPA	-0.1278***	(-3.30)
Class Size	-0.0331	(-1.41)
Earned Credits	-0.0547*	(-1.77)
Graduate	0.1936	(1.39)
Junior	0.2964**	(2.13)
Senior	0.3831***	(2.75)
Sophomore	0.2393*	(1.73)
Constant	5.6513***	(20.91)
Subject Fixed Effects	Yes	
R-squared	0.0357	
N	8434	

What contributed most to student learning: Face-to-Face



What contributed most to student learning: Online



Conclusion / Discussion

- Students are more likely to successfully complete an online course (earn A, B or C)
- Female and underrepresented minority students (URM) are less likely to complete a course successfully, compared to their male and non-URM counterparts.
- Larger class size is negatively associated with successful course completion.
- Students in online courses have higher grades than in face-to-face courses. Female and URM students have lower final grades. Larger class size is also negatively associated with student final grades.
- The positive impact of online course delivery on final grades is significantly stronger for URM students compared to non-URM students. URM students seem to benefit more from online delivery mode than do non-URM students.
- Students are less satisfied with online courses than with face-to-face courses. However, URM students are generally more satisfied with hybrid courses than are non-URM students. Class size has no impact on student satisfaction.
- We use the Word Clouds to visually demonstrate some of the differences in student perceptions of course mode. The clouds are based on a textual analysis of student SPOT comments. These clouds show that students in Face-to-Face courses consider lecture more relevant to learning than Online students. Online students place more emphasis on the design and delivery of assignments.

Implications for Action

Our main findings demonstrate that there are differences in performance outcomes related to EDI measures and mode of instruction. In practice:

- Course evaluators should be sensitive to differences in student SPOT interpretations relative to course mode.
- Further study into the reasons that URM students perform better in Online modes than non-URM students is necessary, as this finding was unexpected.

Next Steps / Future Directions

In future studies:

- Our model can be expanded to examine additional terms, years, and programs outside of the College of Business.
- Additional data, particularly Pell Eligibility can be added to augment the study.
- Future models can incorporate graduate programs and delineate between them.