Tracking the Impacts of First Term Experience

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UMGC and PACE 111

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History

- Founded in 1947, UMGC has maintained a singular focus on the needs of adult and military students for whom a traditional education is impractical or impossible

- In 1949, answered U.S. Department of Defense (DoD) call to teach American troops stationed in post-WWII Europe; in 1956, in Asia; in 2005, in the Middle East

- Taught in war zones including Vietnam, Kosovo, Iraq, and Afghanistan

- Today, UMGC operates on U.S. military installations in more than 20 countries under three DoD contracts: Europe, Asia, and Middle East

- In 1970, became independently accredited

- Among first universities in U.S. and the world to develop and offer degrees fully online

- Today, UMGC is America's largest online public university

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Institutional Data

- Today, almost 86 percent of UMGC enrollments are online and more than 95 percent are either online or in a hybrid format

- FY2019 total enrollments: 91,385

- In FY2019, 13,527 degrees and certificates awarded

- In FY2019, 342,629 online course enrollments worldwide

More than
140 Locations
Worldwide

Australia	Korea
Bahrain	Kuwait
Belgium	Netherlands
Diego Garcia	Okinawa
Djibouti	Portugal
Egypt	Qatar
Germany	Singapore
Greece	Spain
Guam	Turkey
Italy	United Arab Emirates
Japan, Mainland	United Kingdom
Jordan	United States

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A New First Term Experience

- Built around theories of learning and persistence
- High engagement between faculty and students
- Focus on understanding the resources available
- Focus on career exploration
- Groups students in meta-majors
- Complementary new faculty training course
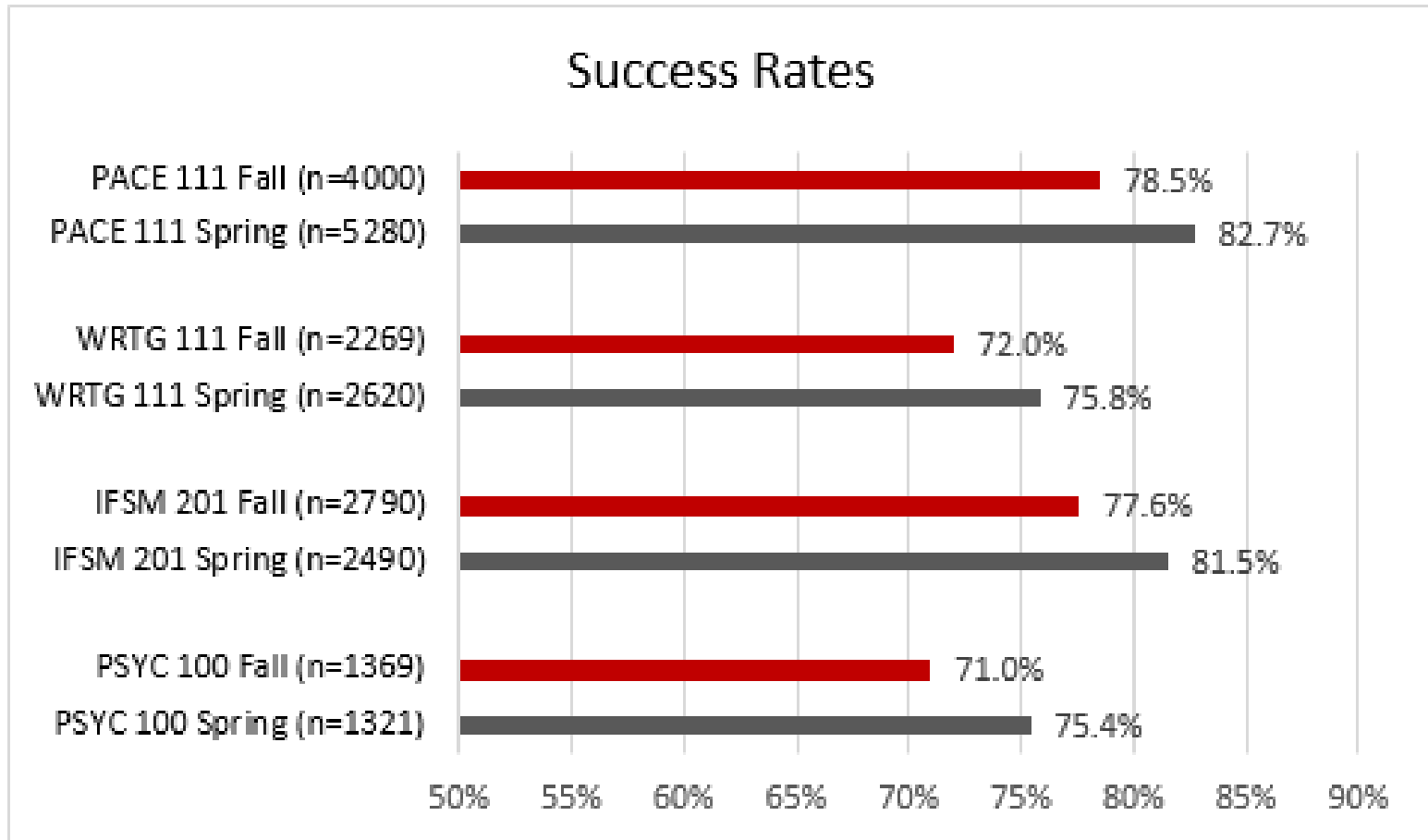 - Mentorship and high faculty presence

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Program and Career Exploration 111

- PACE 111 Learning Goals
  - Have improved academic readiness
  - Have developed a growth mindset
  - Practice self-reflection to set and maintain personal academic and career goals
  - Feel confident they belong at the university and can succeed
  - Feel connected and significant to the university, faculty, and other students
  - Understand the requirements of their chosen degree programs and connect with the career paths they hope to pursue.

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Faculty Student Interaction

- Students have two (virtual) face to face meetings with faculty
  - Discuss the course material
  - Discuss career goals
  - Discuss any issues or worries related to online learning
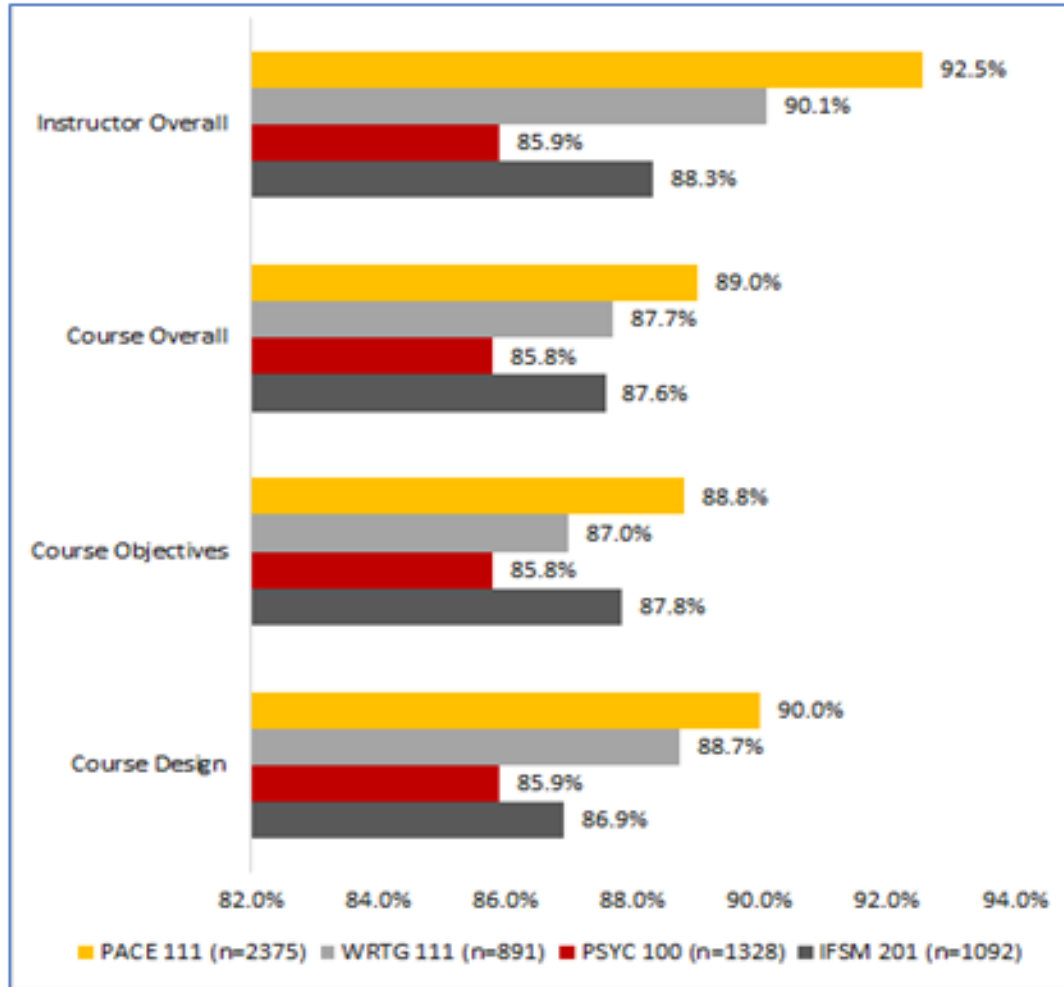 - Discuss any issues with school-work-life balance

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PACE 111 Success Rates

Success Rates

Course	Success Rate
PACE 111 Fall (n=4000)	78.5%
PACE 111 Spring (n=5280)	82.7%
WRTG 111 Fall (n=2269)	72.0%
WRTG 111 Spring (n=2620)	75.8%
IFSM 201 Fall (n=2790)	77.6%
IFSM 201 Spring (n=2490)	81.5%
PSYC 100 Fall (n=1369)	71.0%
PSYC 100 Spring (n=1321)	75.4%

Data shown are for Fall 2019 and Spring 2020

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Course Evaluation

Data shown are for Fall 2019

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Preparedness and Confidence

Data shown are for Fall 2019
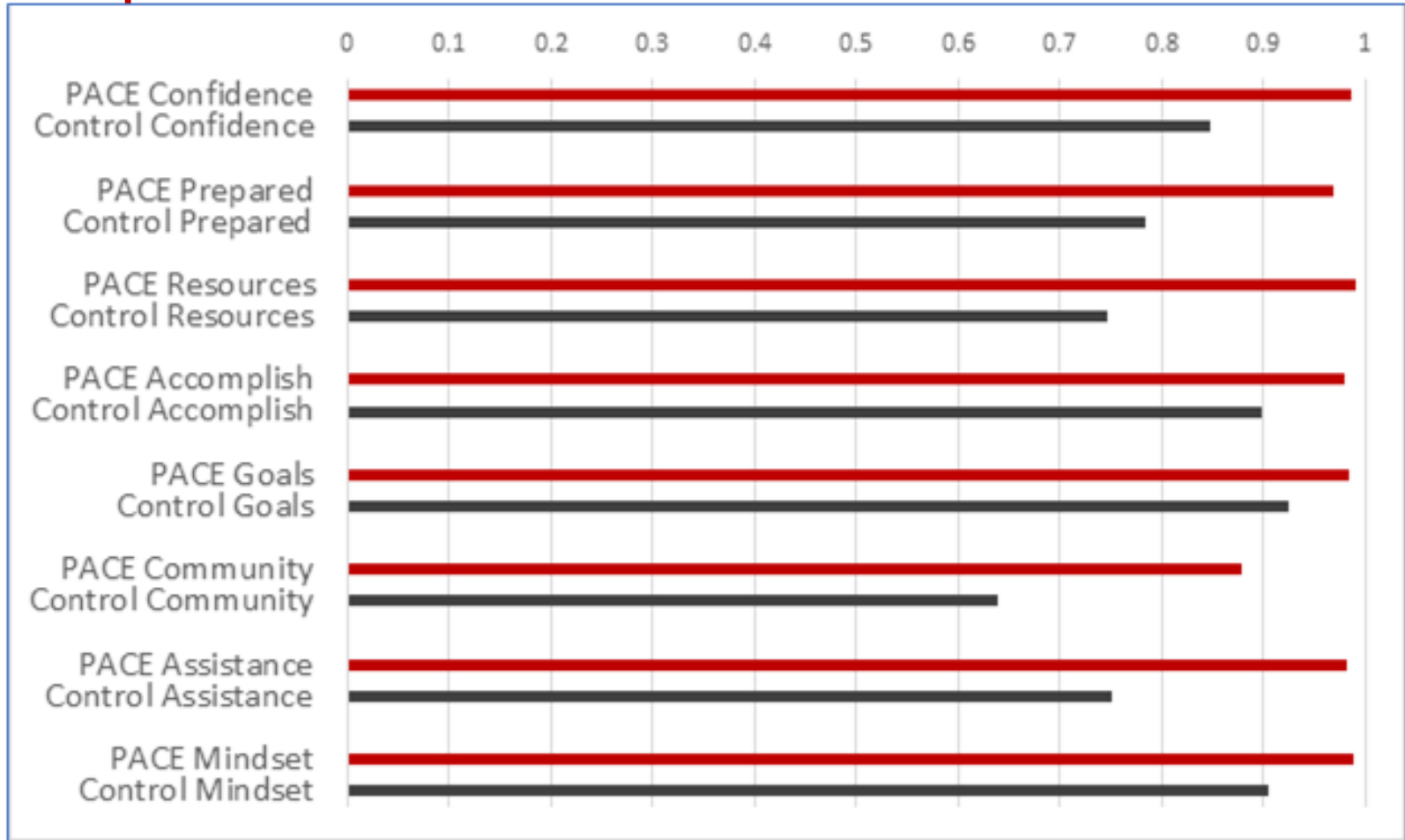
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Do the effects persist over time?

- Are students who have taken PACE more likely to contact their instructors in subsequent courses?

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Research Design

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Research questions

- Did students who completed the PACE First Term Experience (FTE) course contact the instructor more often in subsequent courses than students who did not?

- What are the motivating factors for contacting the instructor?

- Hypothesis
  - Null Hypothesis: Students who completed the FTE course contacted the instructor more often than students who did not
  - Alternative Hypothesis: Students who completed the FTE course did not contact the instructor more often than students who did not

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- Method used to test the hypothesis
  - Questionnaire : the standard End-of-Course Evaluation Survey with additional questions:

    - Quantitative single response questions

"When I think about my own engagement in this course, I contacted the instructor _X_ times during the course."

Responses Choices (select one)
X= 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, or More than 10

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- Qualitative open-ended questions
  - 'What would cause you to contact faculty during a course?'
  - 'What topics if any did you contact the faculty about during this course?'
  - 'What prevented you from contacting the faculty during this course?'

- Control Students Data Points:
  - GPA
  - Course credit data
  - Semester course completion rate
  - Student Demographic data (age, race, and gender)

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Sample and Data Collection

13528 Fall 2019 students identified as potential participants in the study

- Treatment group: 4073 students new to UMGC and who took PACE (FTE) in fall 2019
- Control group: 9455 students new to UMGC but who did not take PACE (FTE) in fall 2019

In spring 2020, 3055 students from the study group and 4614 students from the control group were sent the survey with the additional questions in each class they were taking.

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Data Collection and Response Rates

Number of surveys sent in spring 2020	All FTE Students	FTE Students New to UMGC Fall 2019	Students New to UMGC Fall 2019 (Not FTE)
Number of surveys sent	8760	7265	10045

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Data Collection and Response Rates

Spring 2020 Questionnaire Response rates	All FTE Students	FTE Students New to UMGC Fall 2019	Students New to UMGC Fall 2019 (Not FTE)	All New to UMGC Fall 2019
Overall Standard Course Evaluation Survey Responses	44.16%	44.31%	38.20%	40.76%
What would cause you to contact faculty during a course?	28.29%	28.52%	24.19%	26.01%
What topics if any did you contact the faculty about during this course?	26.51%	26.69%	22.48%	24.25%
What prevented you from contacting the faculty during this course?	25.59%	25.75%	21.45%	23.26%

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Statistical Analysis Plan

- Quantitative Statistical Analysis
    - Comparative statistical analysis of central tendency between responses of the New to UMGC FTE group and responses of the New to UMGC (no FTE) control group to the question about the number of times the student contacted the instructor.

- Qualitative Statistical Analysis
    - Thematic analysis using different tools (BTA, the text analytics module from Blue, SPSS text Analytics for surveys and Topic Model) for the 3 open-ended-questions responses (FTE vs NoFTE groups)

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Making It Happen In Blue

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Blue Project Setup

- Private Survey

- Flexible Confidentiality

- Automatic Update for:
  - Subject (Course)
  - Student Form Fill Out
  - Teacher Report Viewing

- Data is loaded Daily from our Data Warehouse

- Courses and Relationship Data Sources are populated in the project when the course has reached 65% using filters

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Additional Demographics

	A	B	C	D	E	F	G	H
1	OriginalID	FullEmail	FirstName	LastName	Blue_Role	opridName	pace_course_first_terms	new_to_umgc_terms
2	Student1	************	John	Student	3	Student1.John.Student	2205	2125
3	Student2	************	Student	Sample	3	Student2.Student.Sample	2198	2198
4	Student3	************	Anon	Ymous	3	Student3.Anon.Ymous	2202	2202
5	Student4	************	John	Doe	3	Student4.John.Doe	2198	2198
6								

- Added to the User Data Source
  - Pace_Course_First_Terms
  - New_to_UMGC_Terms

  These were added to target students that met certain requirements since they were not all in the same classes

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Additional Questions

- 3 Hidden Questions were added to the Course Evaluation
  - What would cause you to contact faculty during a course?
  - What topics if any did you contact the faculty about during the course?
  - What prevented you from contacting the faculty during the course?

- These were triggered when the student had 2198 (Fall 2019) in either of the User demographic

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Difficulties

- Adding additional demographics to previous term for reporting purposes
- Flexible confidentiality
  - Adding the Student demographics for reporting and exporting of data
  - Identifying the students for reporting
  - Bringing in additional information and matching it with students
    - Age
    - Gender
    - Grade
    - Career GPA
    - Total Career Credits
    - Course Completion Rate

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Reporting Issues

- Reporting was done using a Group By report for Pace_Course_First_Terms: 2198* for both Fall 2019 and Spring 2020

- Could not use Project Mapping to compare data in 1 report

- Work Arounds
    - Run an identical report for each term to compare values for the common questions
    - Export data for more in-depth analysis

*Fall 2019

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Blue BTA Limitations

- We needed to run 2 reports to view the data for the Spring 2020 term.
- The first was a Group by Pace_Course_First_Terms and the only value which reports were generated for was 2198 (Fall 2019).
- The second was a Group by New_to_UMGC_Terms and the only value which reports were generated for was 2198 (Fall 2019).
- We were unable to create reports that were based on the New_to_UMGC_Terms and excluded students that also had a Pace_Course_First_Terms value of 2198 (Fall 2019).

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Results

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Analysis

- **DV:** number of times student reports contacting instructor for a course

- **IV:** whether student has taken or is taking their first PACE course

- **Standard OLS model with controls for:** demographics, credits, GPA, course completion rate
  - Standard errors clustered by student

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Analysis: OLS results

	Dependent variable:
	# times r contacted instructor
PACE	0.152***
	(0.031)
cumulative GPA	0.077***
	(0.015)
cumulative credit	−0.201***
	(0.011)
course completion rate	−0.018
	(0.012)
student age	0.264***
	(0.011)
female	0.074***
	(0.023)
Constant	3.589***
	(0.017)
Observations	94,962
Log Likelihood	−218,275.200
Akaike Inf. Crit.	436,568.500
Bayesian Inf. Crit.	436,653.600
Note:	*p<0.1; **p<0.05; ***p<0.01

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Analysis: all course evals

Reflecting on my overall experience...
- I accomplished my goals for taking this course.
- the knowledge/skills I gained are relevant for my career.
- I knew what was expected of me.

The instructor for this course...
- helped me to understand the course content.
- provided effective feedback that helped me improve.
- was available and responsive.

The learning environment was one in which...
- I learned what I needed to successfully master the course objectives.
- diverse opinions, perspectives, and backgrounds were valued.
- expectations for the quality of my work were high.

The readings, assignments, instructional materials, and other course content...
- gave me a chance to apply what I learned.
- helped me achieve the course outcomes.
- were well organized and easy to navigate.

When I think about my own engagement in this course...
- I contacted the instructor _____ times during the course.
- I spent _____ hours per week on average on coursework outside of class.
- I read _____ of the assigned course materials.

-0.75   -0.50   -0.25   0.00   0.25

marginal effect of PACE

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Issues

- Students are self-selecting into PACE courses
- The decision to take the class probably reflects some underlying differences in student characteristics/behavior that may confound analysis

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Student comparison
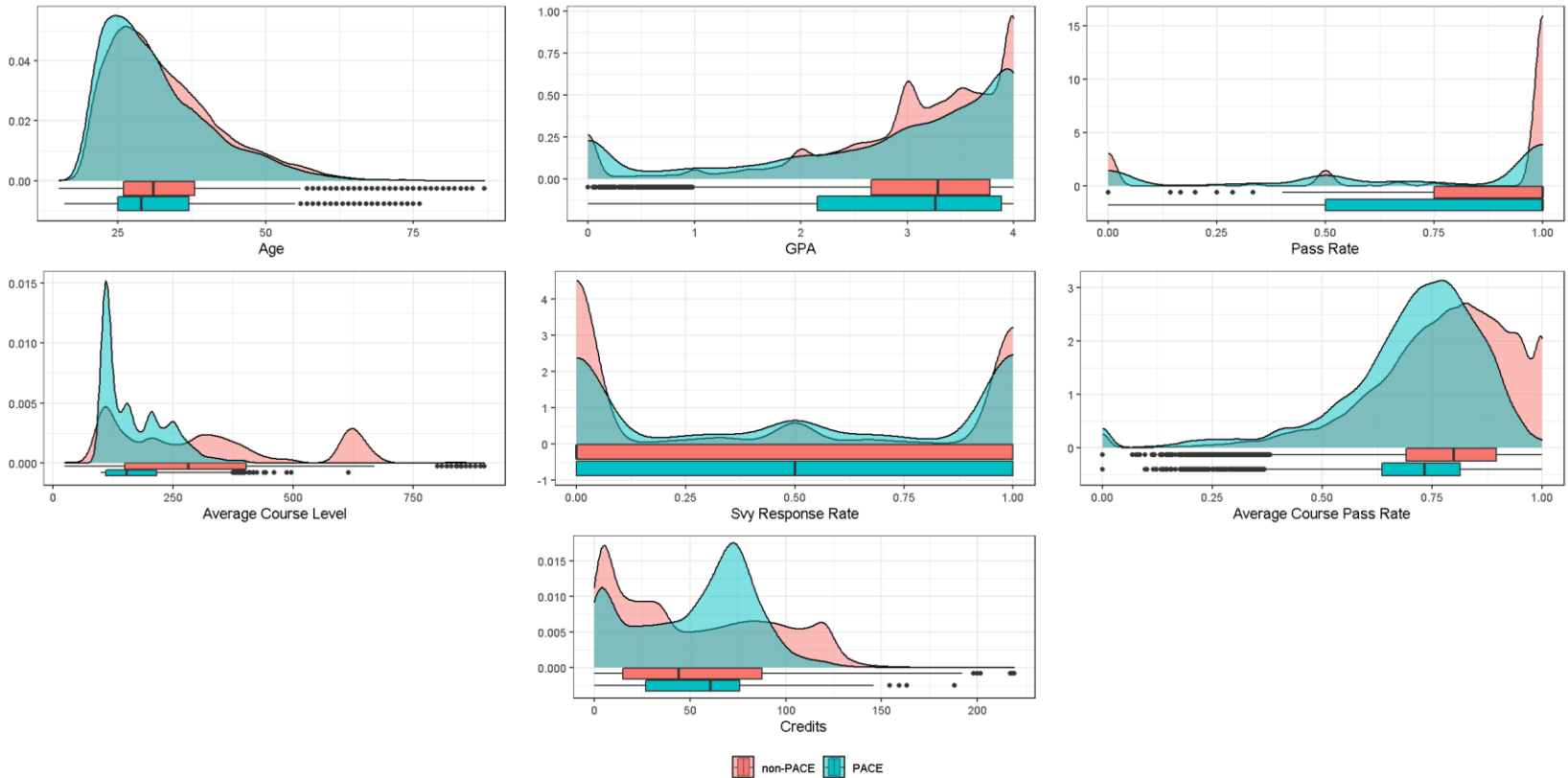
Hypothetical students

Student 1 (PACE)

- Recent high school graduate
- Minimal transfer credit
- Unsure about which courses to take

Student 2 (non-PACE)

- 2 years since high school
- Transfer student
- Confident about coursework

NB: thought experiment not based on actual data

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Hypothetical students

Fall 2019 — Spring 2020 — Term
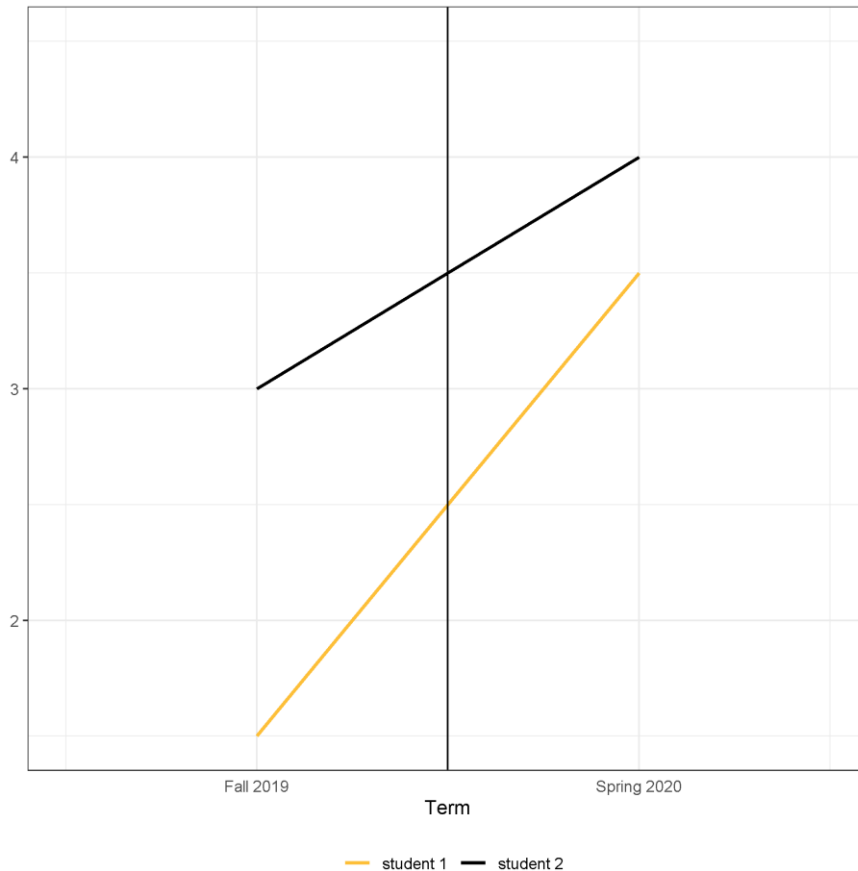
student 1 — student 2

Students will differ on both:

- Initial responses
- Trajectory of responses across semesters

NB: thought experiment not based on actual data

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Analysis

- Confounding addressed by combining two methods
  - Account for constant differences using Difference-in-differences model (DiD)
  - Account for differences in trajectory using coursened exact matching (King 2012)

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DiD model

- Limit analysis to students who:
  - Started at UMGC on or before Fall 2019
  - Took PACE in Spring 2020 (treatment group) OR
  - Did not take PACE by that point (control group)
- Compare trends for students who take PACE to students who don't

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DiD model assumptions

Approximates a randomized experiment if:

- 1.Intervention is not assigned based on outcome in pre-treatment stage

- 2. Composition of treatment and control groups are stable in both time periods.

- 3. Treatment and control groups would have parallel trend lines without intervention.

  - 3 is the most difficult assumption to meet, and is likely violated here.

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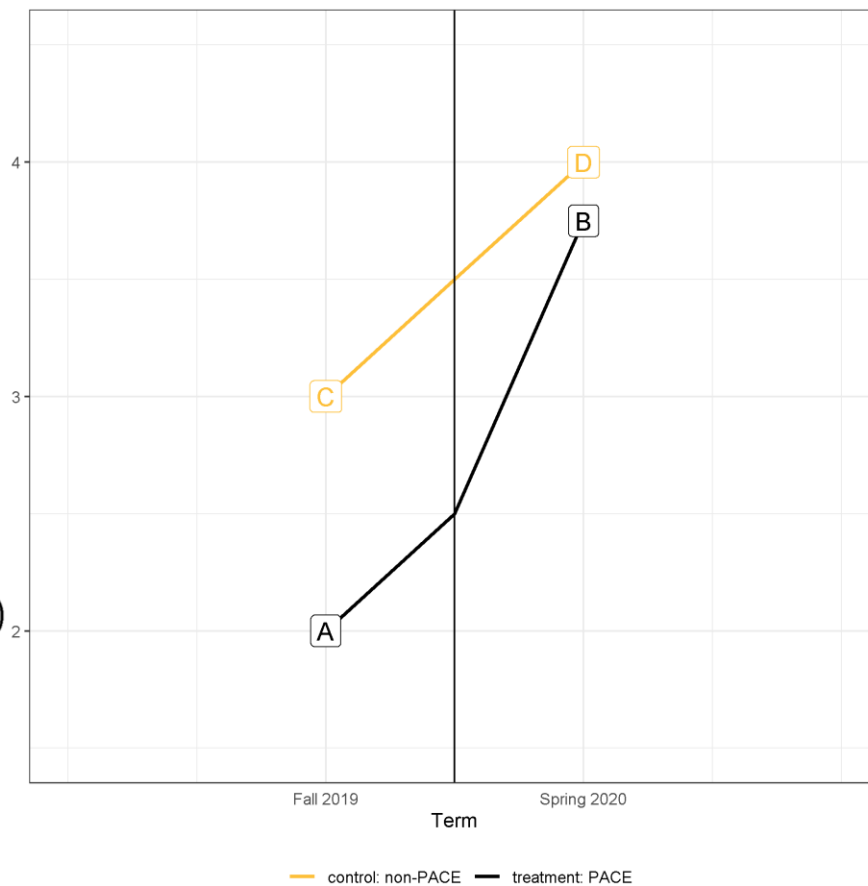
DiD model

	Fall 2019	Spring 2020
PACE	A	B
non-PACE 2020	C	D

$$\text{difference at t0} = C - A$$

$$\text{difference at t1} = B - D$$

$$\text{Difference in Differences} = (C - A) - (B - D)$$

DiD model

	Fall 2019	Spring 2020
PACE	A	B
non-PACE 2020	C	D

$$\text{difference at t0} = C - A$$
$$\text{difference at t1} = B - D$$
$$\text{Difference in Differences} = (C - A) - (B - D)$$

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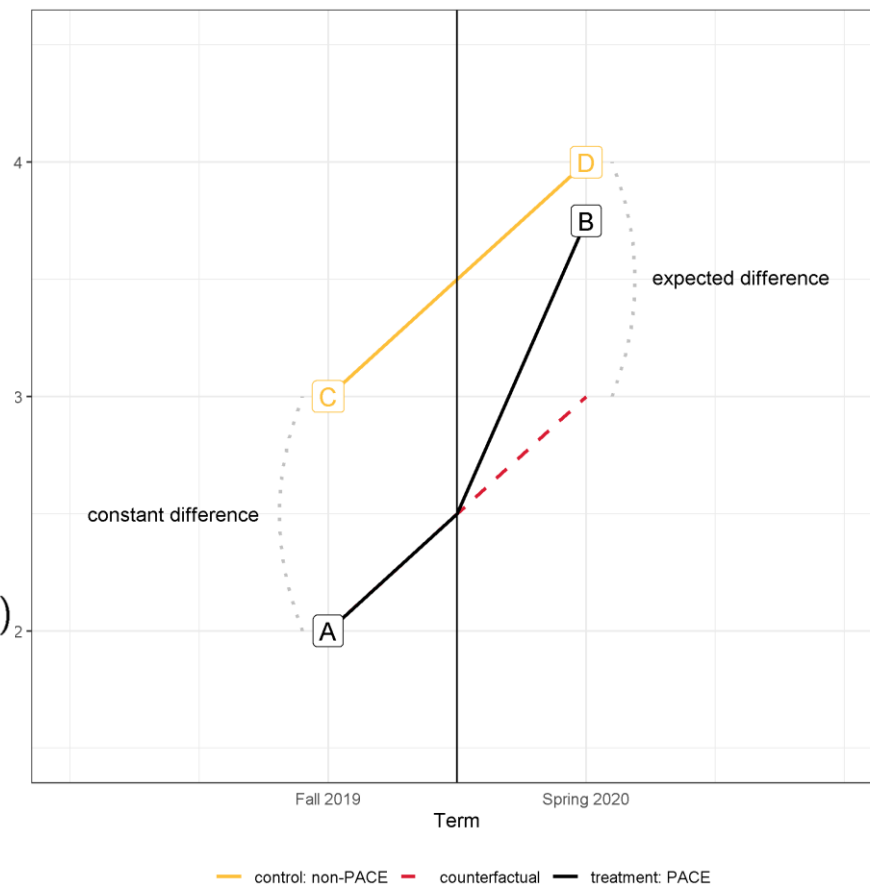
DiD model

$$Y_i = \alpha + \beta T_i + \gamma S_i + \delta(T_i \cdot S_i) + ...\varepsilon_i$$

T = treatment group indicator

S = time period indicator

β = difference between treatment and control groups

γ = common time trend for both groups

δ = difference in difference estimate

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Coarsened Exact Matching

- Same goals as propensity score matching: create treatment and control groups that are "balanced" on covariates.
  - Approximates block randomization rather than full randomization
- Matched students should have similar trajectories

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CEM process

- Temporarily "coarsen" pre-treatment characteristics (e.g: use deciles of student age, or replace numeric GPA with a letter grade)

- "Exactly" match based on coursened dataset

- Weight observations and conduct analysis using un-coarsened data

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Analysis

- 3,384 observations (of 1,011 students) remain after filtering and matching

- IV of interest is now the interaction between semester and whether a student takes PACE in Spring 2020

- Same controls for demographics and student characteristics used in initial model

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Regression results

	Dependent variable:
	# times r contacted instructor
PACE * Spring 2020	0.435**
	(0.212)
PACE	−0.034
	(0.137)
Spring 2020	0.405***
	(0.121)
cumulative GPA	−0.011
	(0.126)
cumulative credit	−0.003*
	(0.002)
student age	0.009
	(0.008)
female	−0.055
	(0.113)
cohort	−0.009
	(0.031)
Constant	0.391
	(0.562)
Observations	3,384
Log Likelihood	−1,830.658
Akaike Inf. Crit.	3,685.316
Bayesian Inf. Crit.	3,743.234
Note:	*p<0.1; **p<0.05; ***p<0.01

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Regression results

Regression results
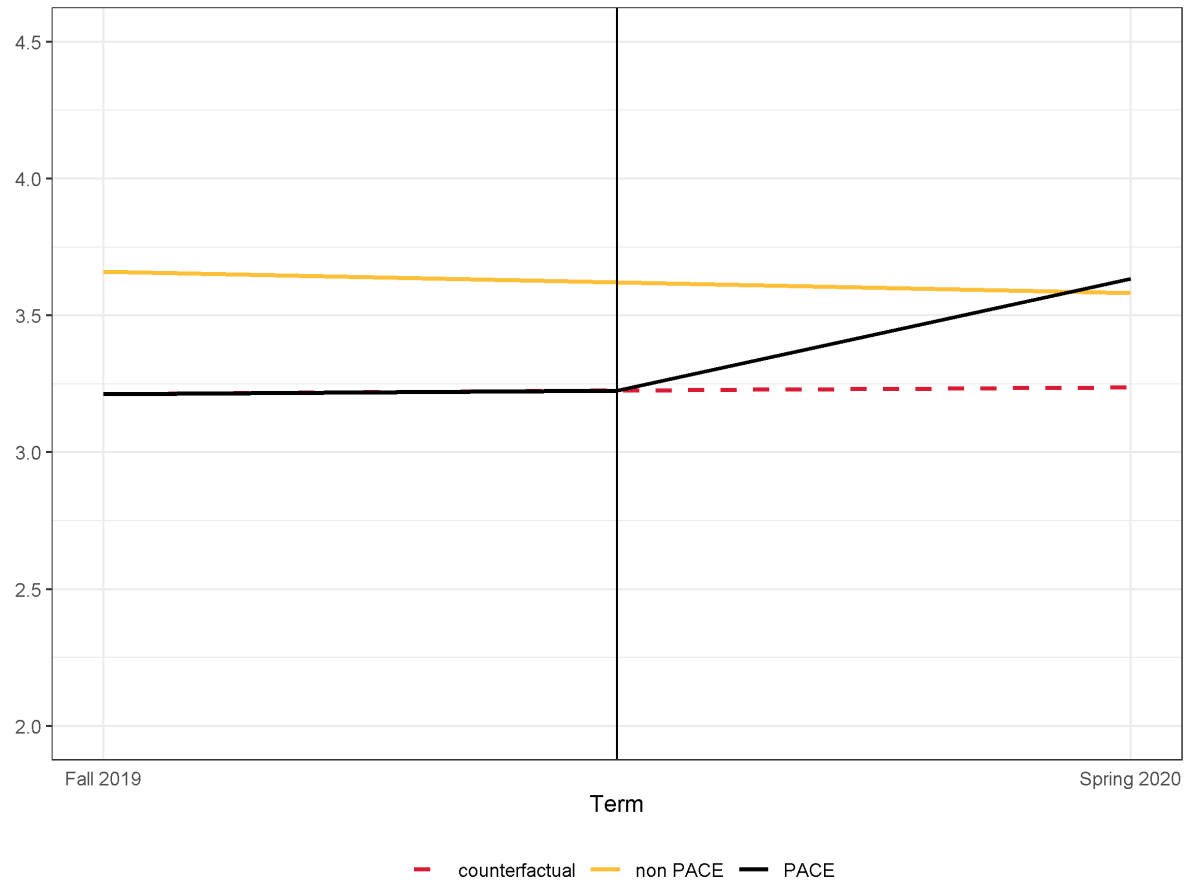
Next steps

- Further improving matching using additional demographic data

- Continue tracking students through 2020 to see if effects persist

- Comparing multiple methods for qualitative responses

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Qualitative Analysis Results

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Blue BTA Text Analytics

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BTA Analysis for Q1

Pace Students (Spring 2020)

New To UMGC Students (Spring 2020)

PA Q1 - What would cause you to contact faculty during a course?
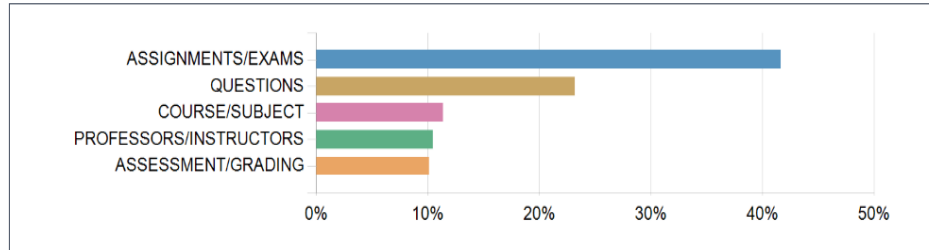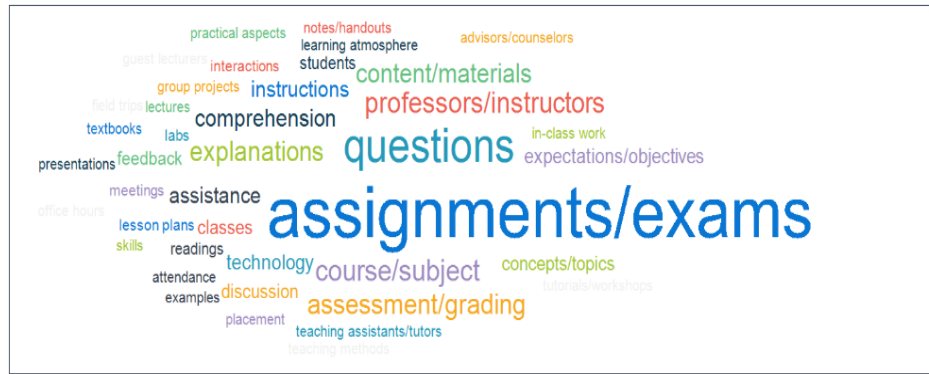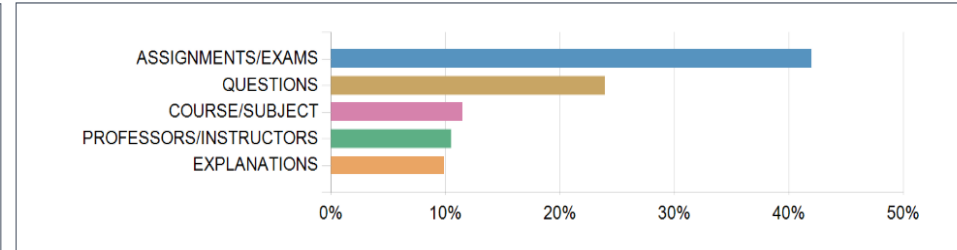
Elements mentioned [No. of comments]	Overall [2477]
ASSIGNMENTS/EXAMS	41.62 %
QUESTIONS	23.21 %
COURSE/SUBJECT	11.38 %
PROFESSORS/INSTRUCTORS	10.46 %
ASSESSMENT/GRADING	10.09 %

PA Q1 - What would cause you to contact faculty during a course?

Elements mentioned [No. of comments]	Overall [4513]
ASSIGNMENTS/EXAMS	42.01 %
QUESTIONS	23.95 %
COURSE/SUBJECT	11.48 %
PROFESSORS/INSTRUCTORS	10.53 %
EXPLANATIONS	9.86 %

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BTA Analysis for Q2

Pace Students (Spring 2020)

PA Q2 - What topics if any did you contact the faculty about during this course?
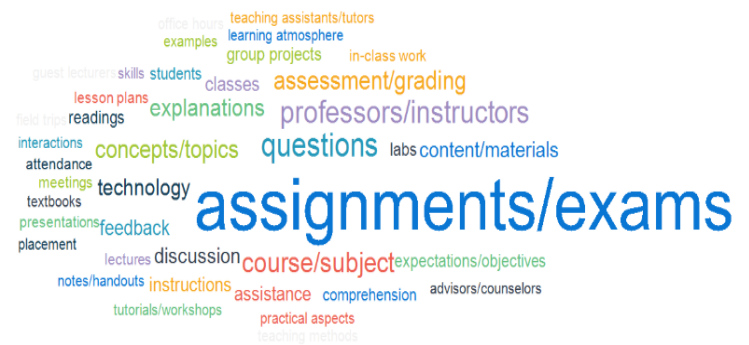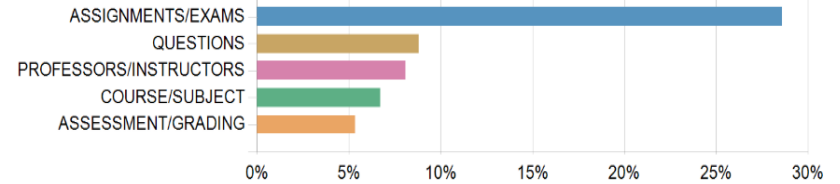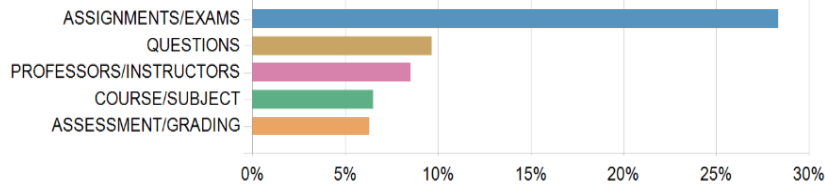
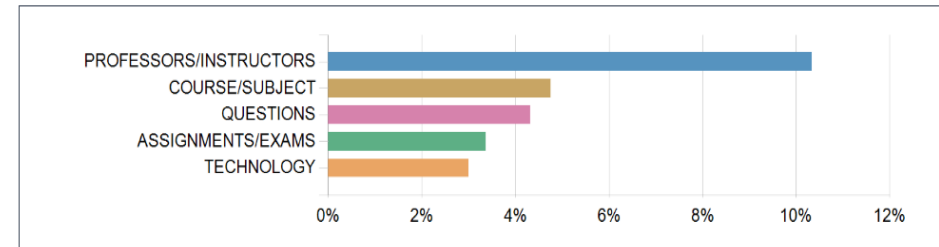| Elements mentioned [No. of comments]	Overall [2319]
ASSIGNMENTS/EXAMS	28.33 %
QUESTIONS	9.66 %
PROFESSORS/INSTRUCTORS	8.54 %
COURSE/SUBJECT	6.51 %
ASSESSMENT/GRADING	6.30 %

New To UMGC Students (Spring 2020)

PA Q2 - What topics if any did you contact the faculty about during this course?

Elements mentioned [No. of comments]	Overall [4204]
ASSIGNMENTS/EXAMS	28.59 %
QUESTIONS	8.80 %
PROFESSORS/INSTRUCTORS	8.09 %
COURSE/SUBJECT	6.71 %
ASSESSMENT/GRADING	5.33 %

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BTA Analysis for Q3

Pace Students (Spring 2020)

New To UMGC Students (Spring 2020)

PA Q3 - What prevented you from contacting the faculty during this course?

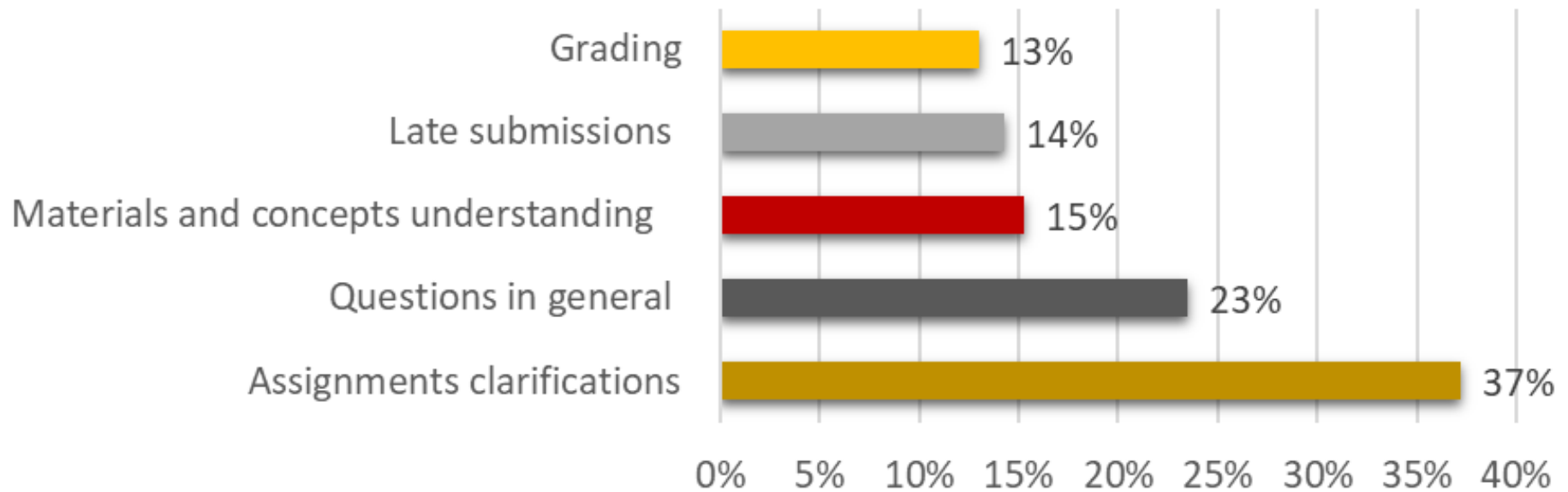**PA Q3 - What prevented you from contacting the faculty during this course?**
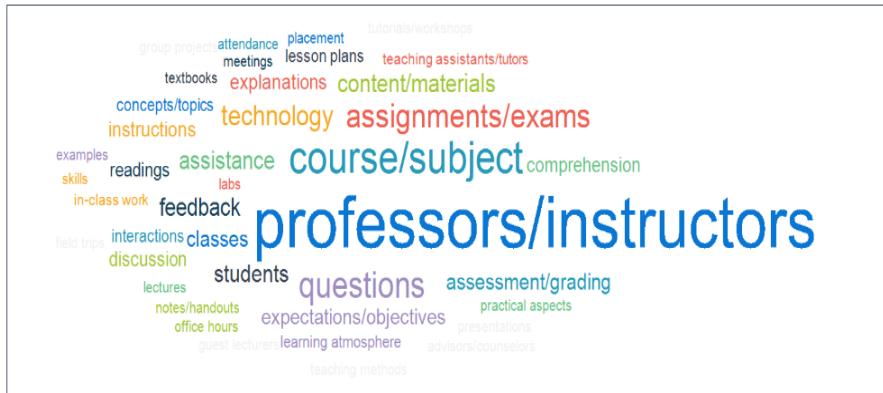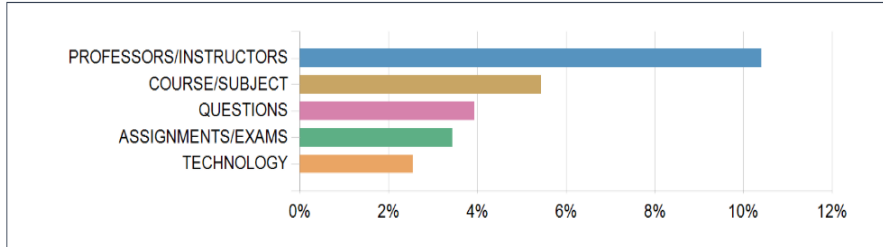
Elements mentioned [No. of comments]	Overall [2239]
PROFESSORS/INSTRUCTORS	10.41 %
COURSE/SUBJECT	5.45 %
QUESTIONS	3.93 %
ASSIGNMENTS/EXAMS	3.44 %
TECHNOLOGY	2.55 %

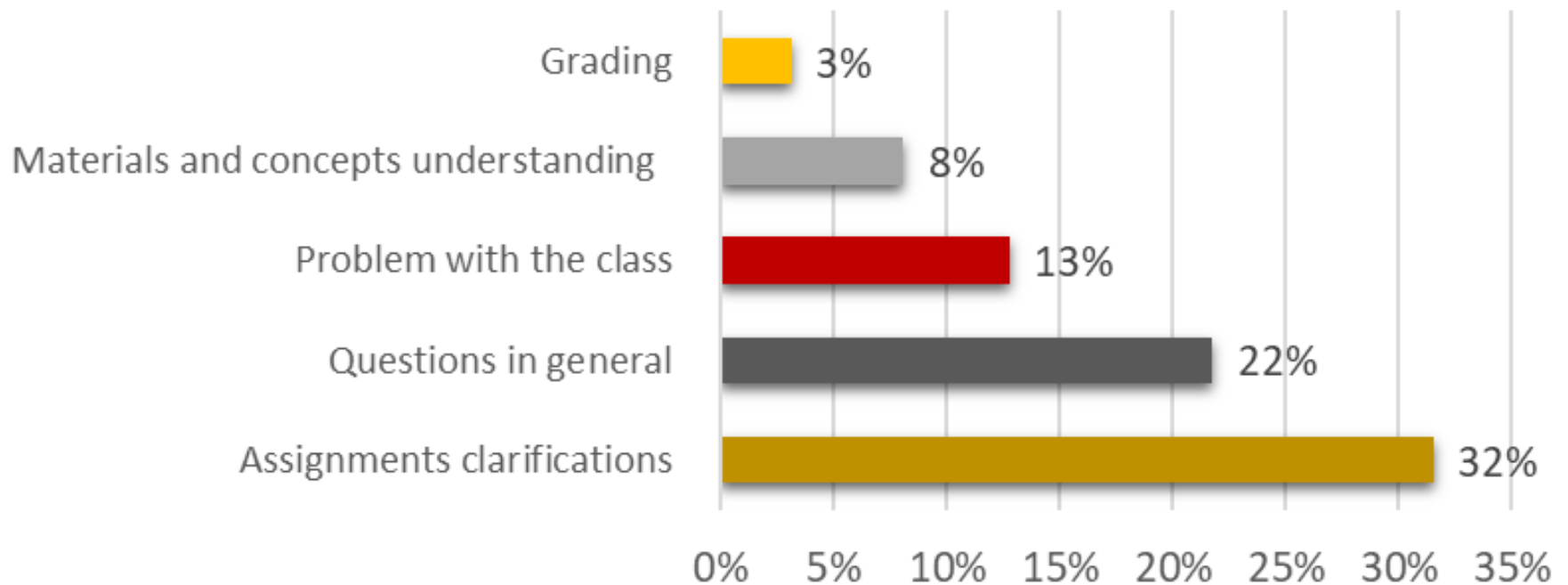| Elements mentioned [No. of comments]	Overall [4032]
PROFESSORS/INSTRUCTORS	10.34 %
COURSE/SUBJECT	4.76 %
QUESTIONS	4.32 %
ASSIGNMENTS/EXAMS	3.37 %
TECHNOLOGY	3.00 %

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SPSS Text Analytics

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Q1: What would cause you to contact faculty during a course-PACE 2198 N=2350

- Grading: 13%
- Late submissions: 14%
- Materials and concepts understanding: 15%
- Questions in general: 23%
- Assignments clarifications: 37%

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Q1: What would cause you to contact faculty during a course-NonPACE 2198
N=1733

Category	Percentage
Grading	3%
Materials and concepts understanding	8%
Problem with the class	13%
Questions in general	22%
Assignments clarifications	32%

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Q2: What topics if any did you contact the faculty about during this course—PACE 2198 N=2400

Topic	Percentage
Grades	2%
Exams	2%
Paper	4%
Assignments	17%
N/A	34%
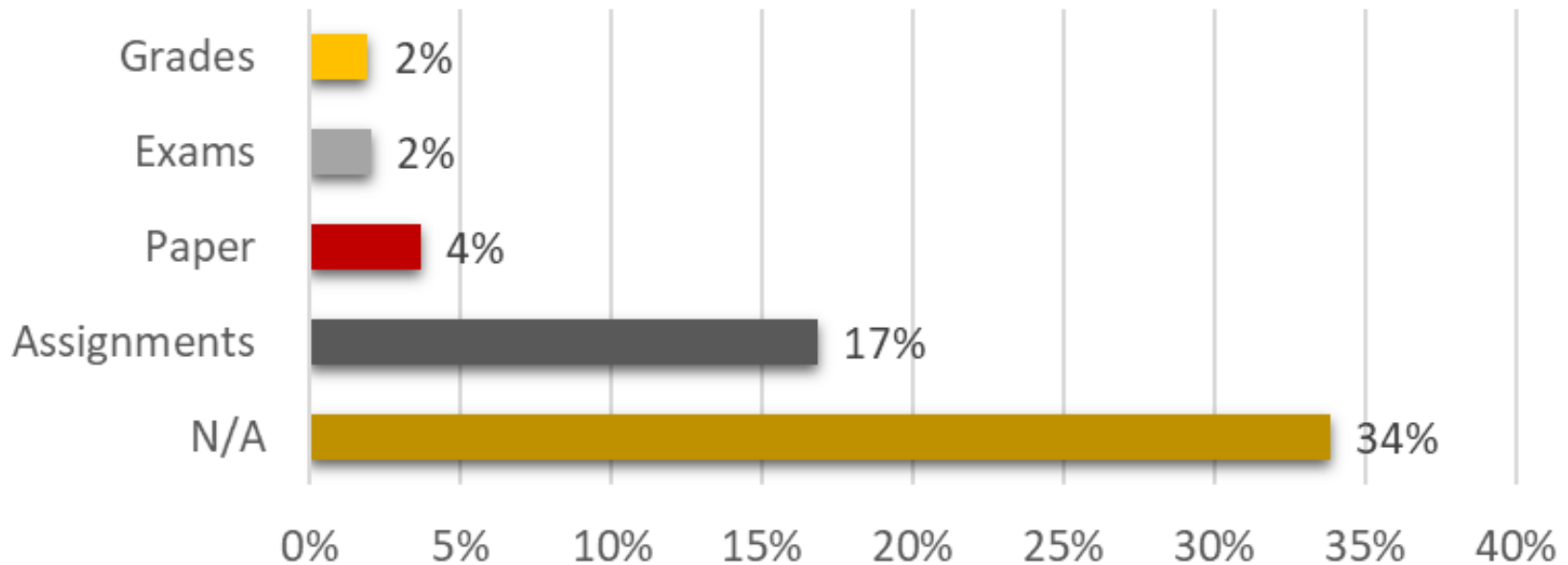
Q2: What topics if any did you contact the faculty about during this course-NoPACE New 2198 N=1695
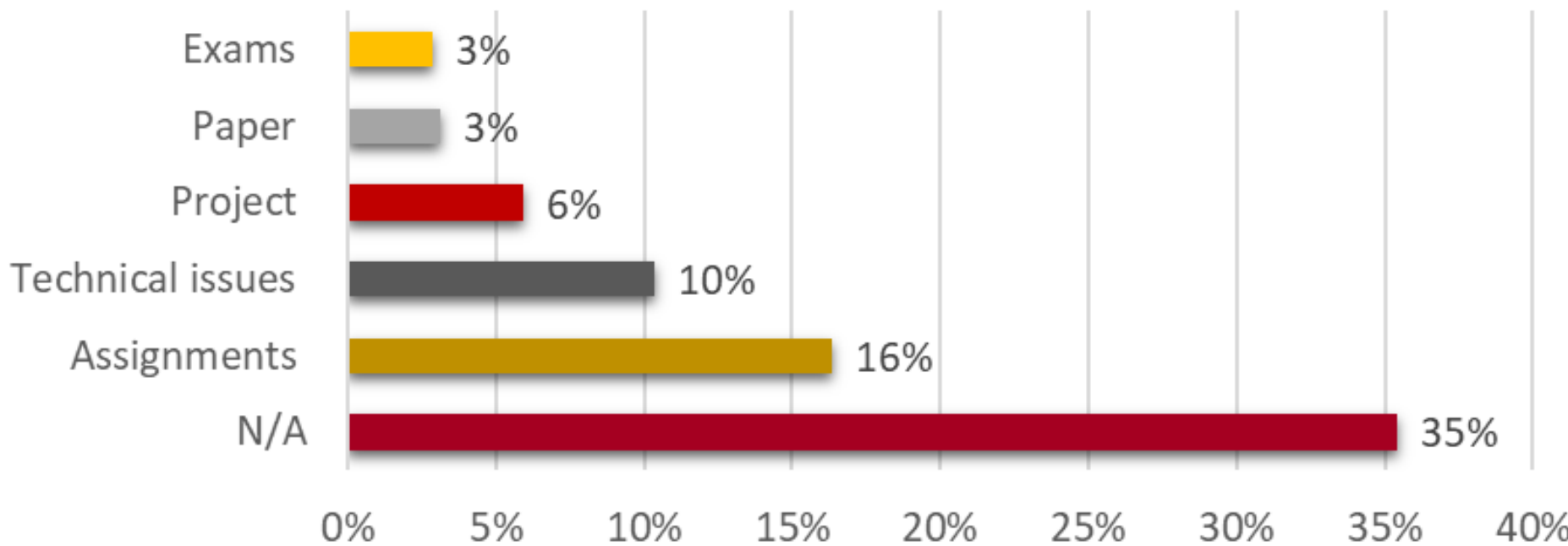
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Q3: What prevented you from contacting the faculty during this course—PACE 2198 N=2404

- Lack of or poor communication — 1%
- Lack of time — 1%
- Students Self consciousness — 1%
- Professor dismissive attitude — 2%
- N/A or Nothing — 76%

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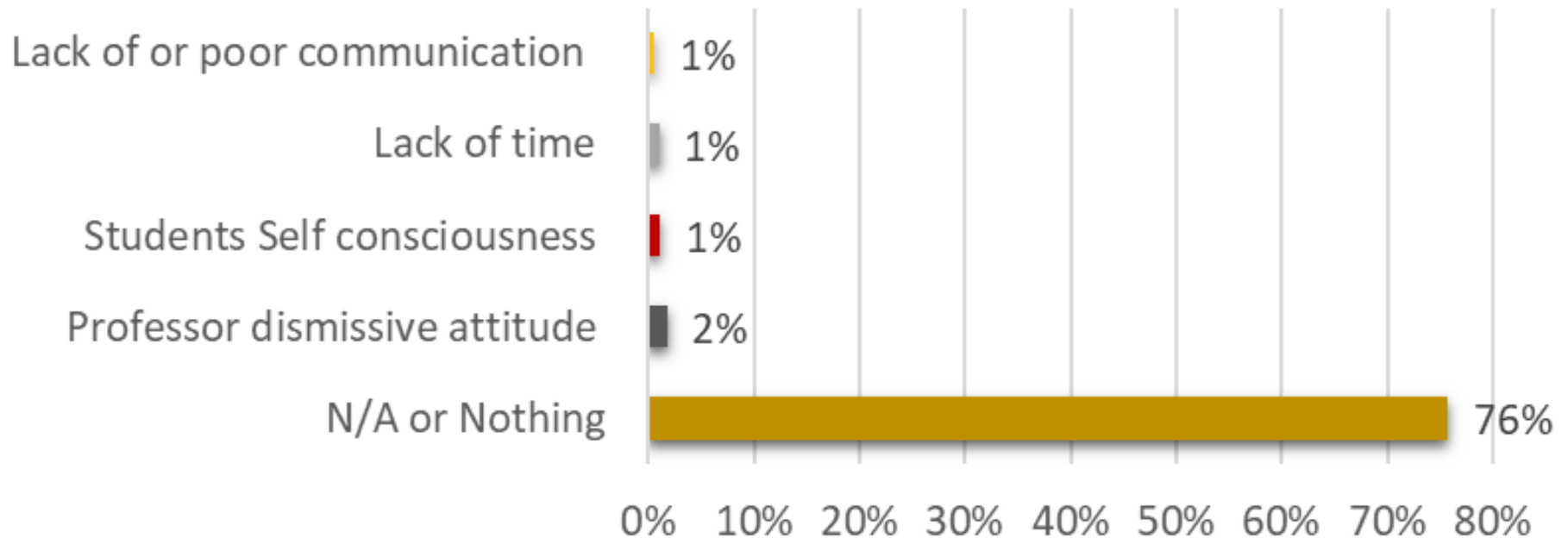
Q3: What prevented you from contacting the faculty during this course—NoPACE 2198 N=1733

Lack of or poor communication	1%
Lack of time	1%
Delay in email responses	1%
Professor negative attitude or unresponsiveness	5%
N/A or Nothing	78%

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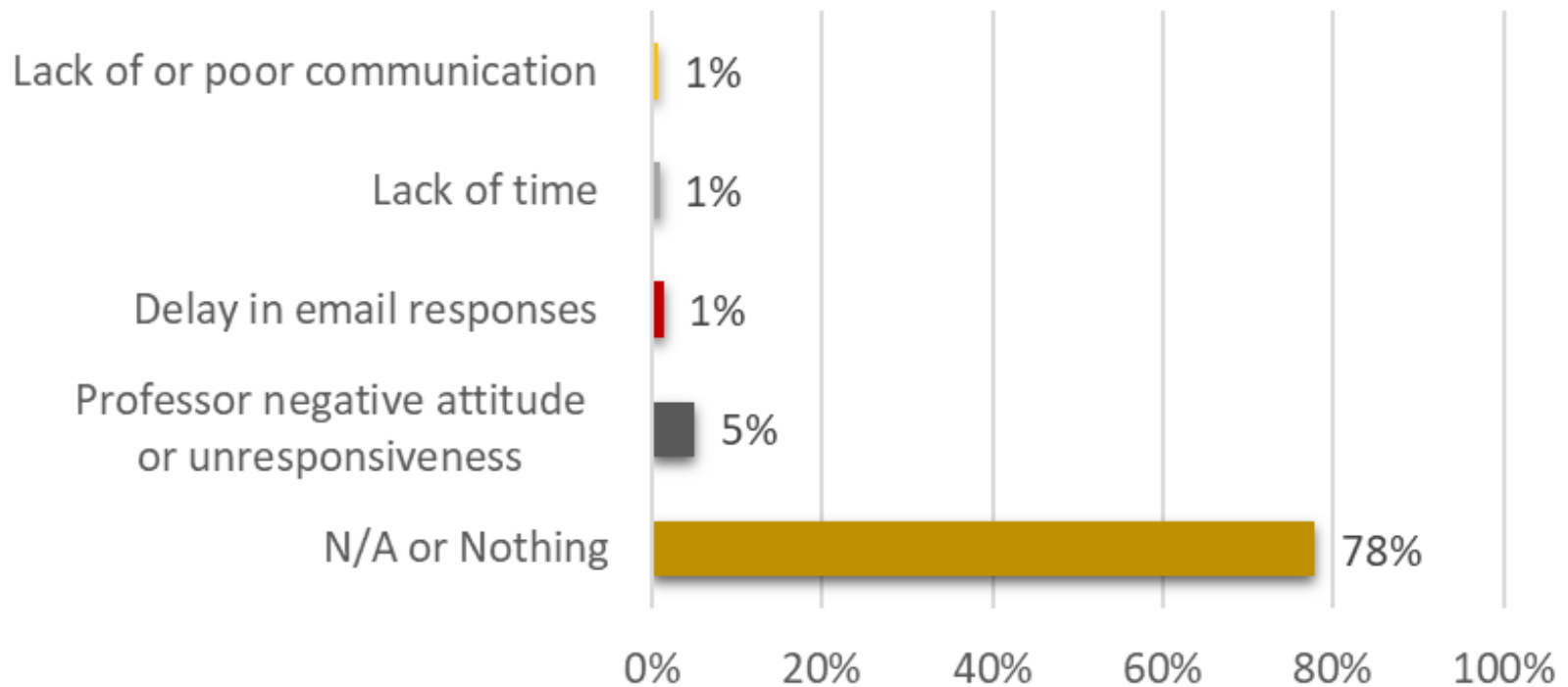
Topic Models

Text analysis

- Texts were cleaned and lemmatized using the Stanford CORE-NLP program

- Analyses were conducted using a biterm topic model (variation on normal LDA designed for short texts)

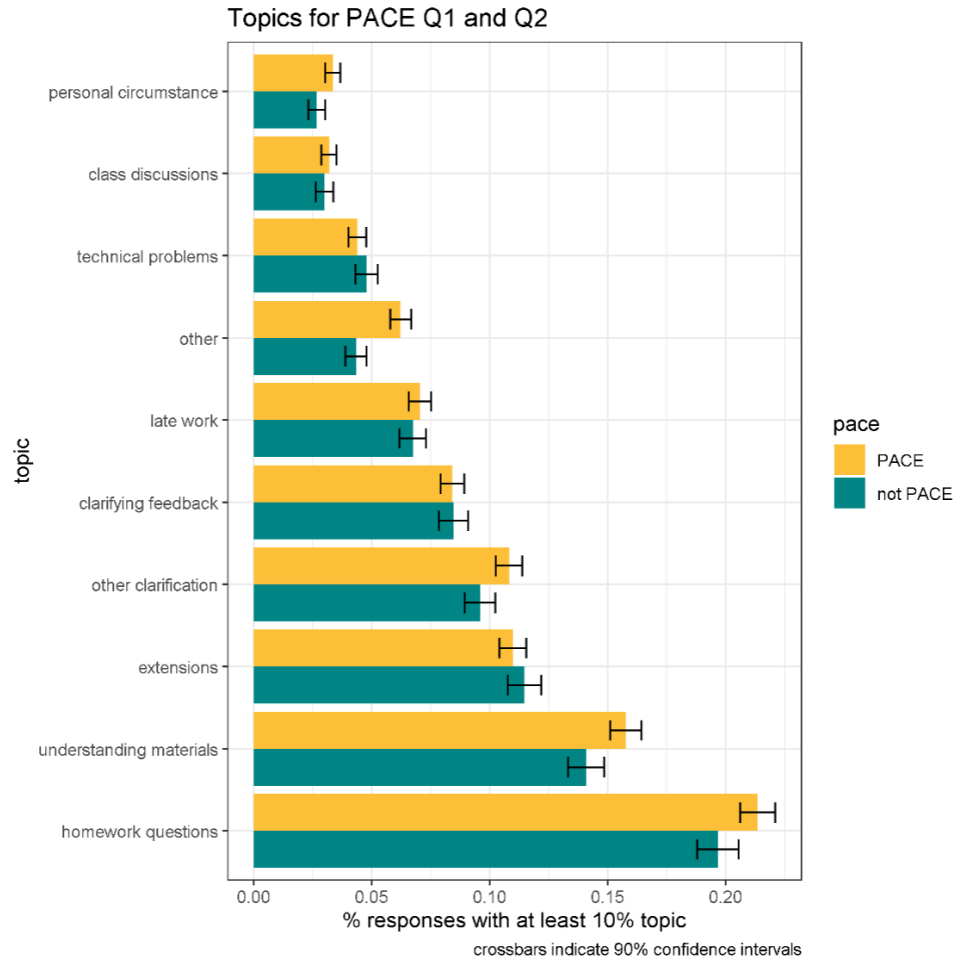- Because of lower response rates, it was not possible to effectively match on pre-treatment characteristics

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Text analysis

- **PACE Q1** "What would cause you to contact faculty during this course?"

- **PACE Q2** "What topics did you contact faculty about during this course?"
  - Q1 and Q2 generated similar responses and so were combined for the following analyses

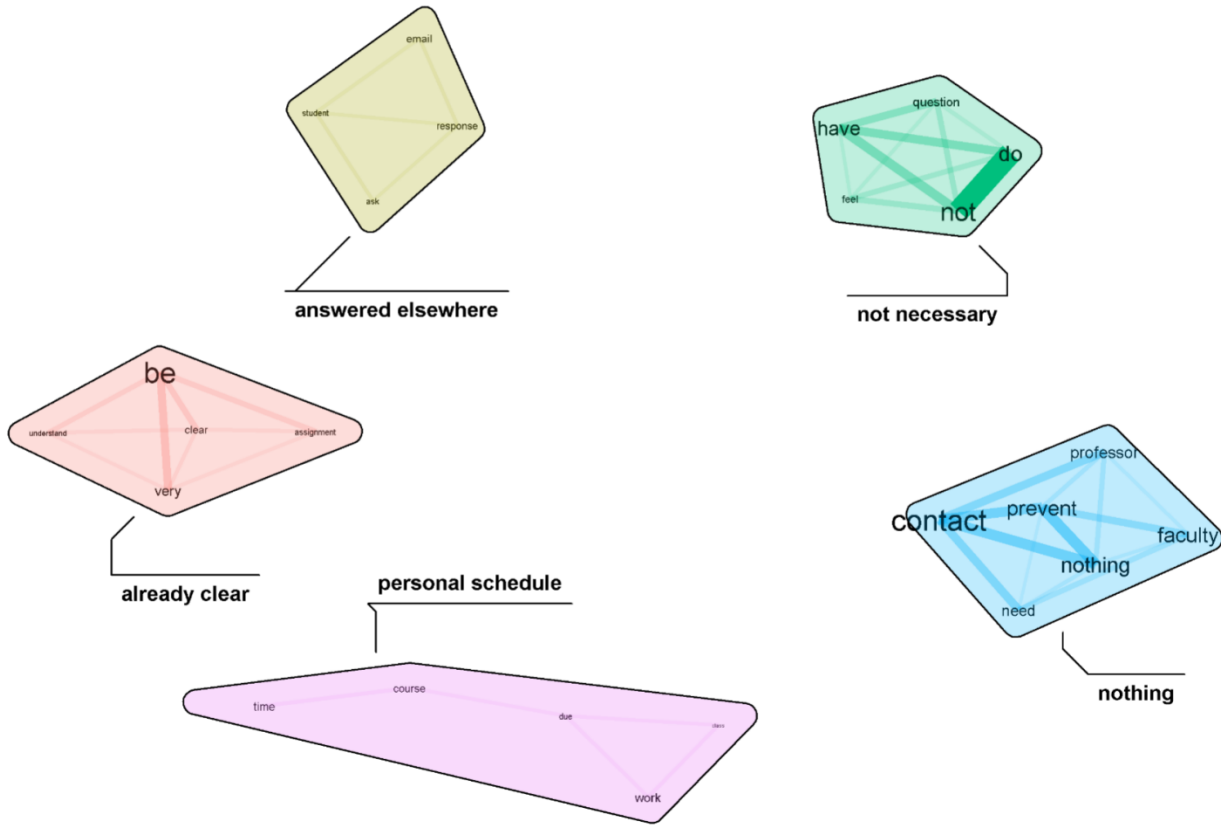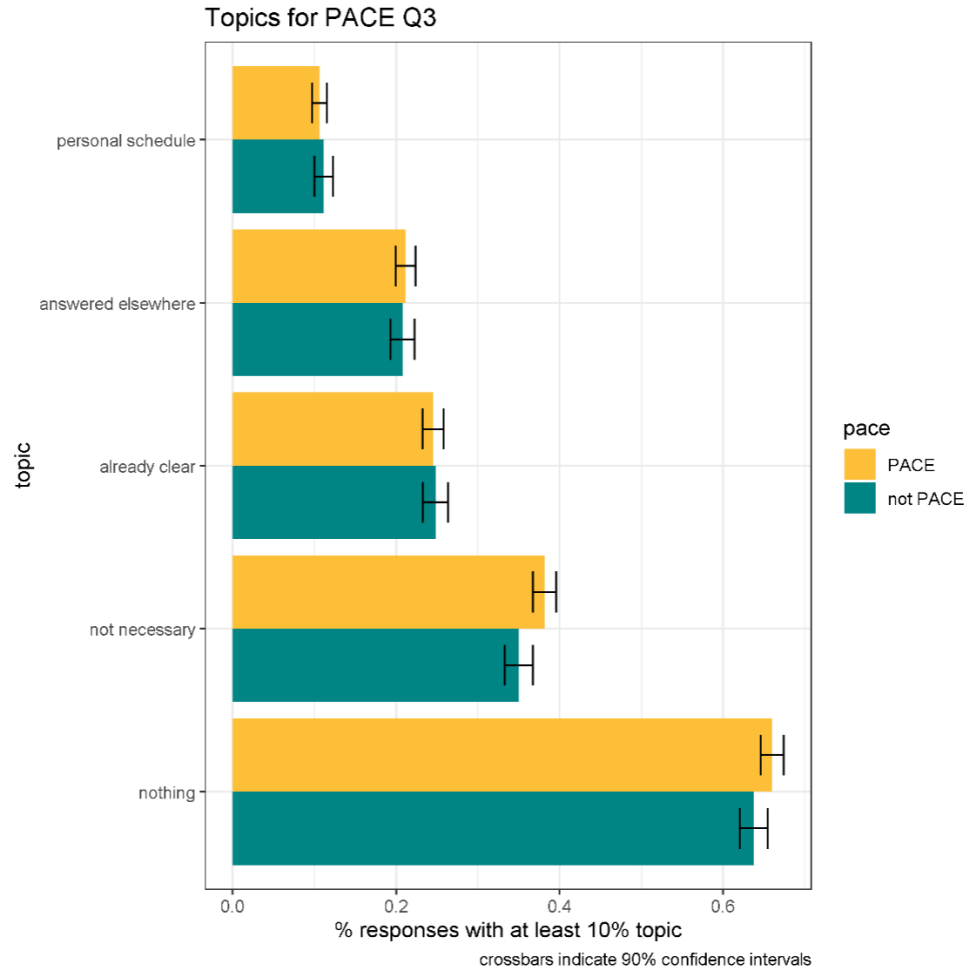- **PACE Q3** "What prevented you from contacting faculty during this course?"

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Topics from Q1 & Q2

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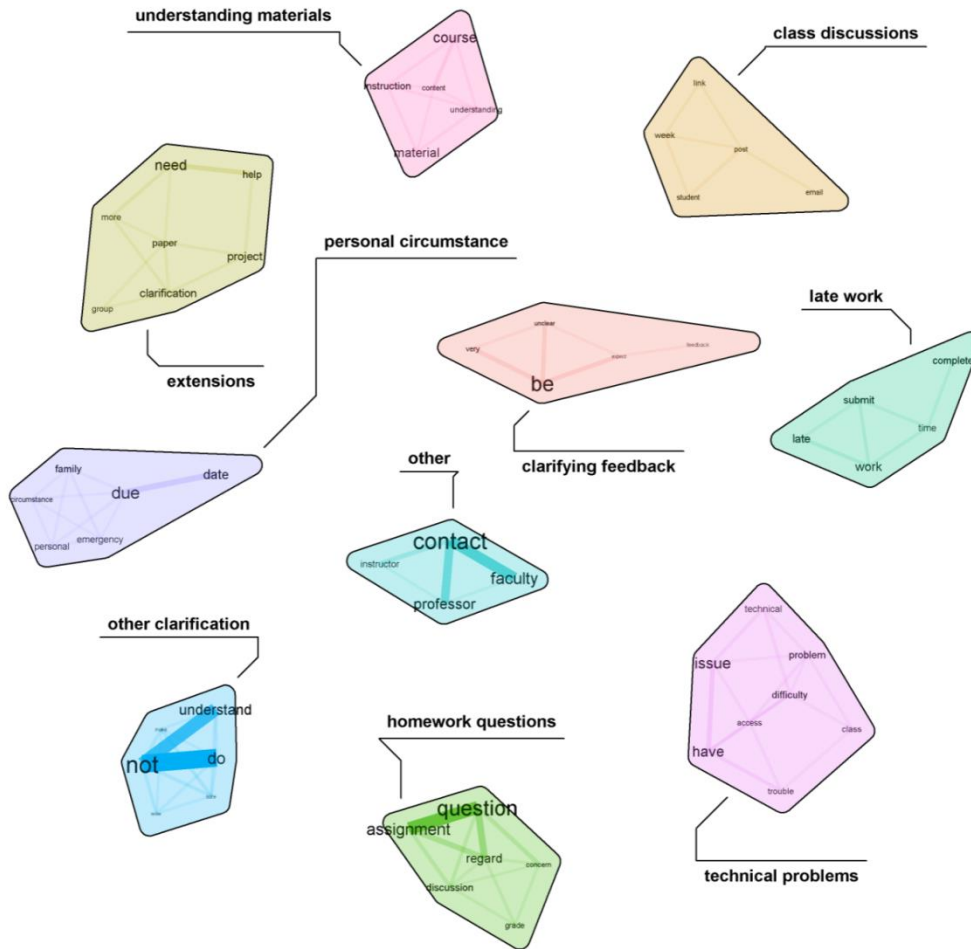
Topics from Q1 & Q2

Topics for PACE Q1 and Q2

crossbars indicate 90% confidence intervals

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Topics from Q3

66

Topics from Q3

Topics for PACE Q3

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Thematic Analysis of open-ended questions

Using SPSS Text Analytics

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Appendix

Blue Project settings

Definition Details
- ☑ Subject (Course)   ☑ Automatic Update
- ☑ Secondary Subject (Teacher)   ☐ Allow secondary subject optional

Groups
- ☑ Level 1 (RV)   ☐ Automatic Update
- ☑ Level 2 (RV)   ☐ Automatic Update
- ☑ Level 3 (RV)   ☐ Automatic Update
- ☑ Level 4 (RV)   ☐ Automatic Update
- ☑ Level 5 (RV)   ☐ Automatic Update
- ☑ Level 6 (RV)   ☐ Automatic Update
- ☑ Level 7 (RV)   ☐ Automatic Update
- ☑ Student FO (FO)   ☑ Automatic Update
- ☑ Instructor Report View (RV)   ☑ Automatic Update
- ☑ Instructor Response Rate (RV)   ☑ Automatic Update
- ☑ Admin Response Rate (SV)   ☑ Automatic Update

Project Audience
- ⦿ Private   ○ Public

Confidentiality
- ☑ Make this project confidential
  - ⦿ Flexible confidentiality
  - ○ Anonymization
  - ○ Strict confidentiality

Field Synchronization
- ☑ Copy Field Management synchronization settings

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Appendix (Question Settings)

Appendix (Question triggers)