their college curriculum. Students are also required to fulfill upper-division GE B6 Science/Math, which has an explicit expectation of advanced quantitative reasoning skills. Transfer students are presumed to be ready to step into upper-division Area B6 and upper-division major-level courses which may emphasize mathematics and quantitative skills.

METHODS

The University gathered the most current available data from several relevant sources (Table 1). Additionally,

the Quantitative Reasoning ILO (e.g., analysis methods appropriate to types of data in each discipline), each graduate program was asked to develop program-specific rubrics for assessing the Quantitative Reasoning ILO. Each participating program identified one or more graduate courses in which the ILO was to be assessed, and the instructor of the course was asked to develop an assignment that could be effectively used for assessment purposes. Individual programs decided how many samples they would gather in each

student engagement and experiences include content related to quantitative reasoning. The survey data presents student responses by first generation status and self-reported previous grade levels.

RESULTS

Pilot Assessment of GE A2 (First-year Composition)
Refer to the *General Education Assessment of Student Learning Area B4 Quantitative Reasoning* report which will be posted on the GE Assessment website.

Assessment of ILO Quantitative Reasoning at Graduation for Undergraduates 2019- 2020
Special note about academic assessment data: Comprehensive excel workbooks with results from undergraduate senior level work academic assessments completed in 2019-2020 for the ILOs of Quantitative Reasoning and Critical Thinking have been provided by Institutional Effectiveness and Research to college Associate Deans with the understanding that any data shared would be based on prior agreements about sharing academic assessment information. Only data that cannot identify a single course section or faculty member can be distributed. Additionally faculty who had their course assessed can receive the data that shows their course compared to others without identifier data and may use their own data as they see appropriate (e.g. program review, course improvement).

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Faculty Feedback Highlights for Quantitative Reasoning

Complete comments from twelve (12) faculty who aligned an undergraduate senior level assignment to the ILO of Quantitative Reasoning and also completed the end-of-term faculty survey on patterns, the process, and the rubric are here. While there were a variety of points raised, similar to faculty feedback for critical thinking,one theme related to faculty and student transition to remote learning as a result of COVID-19. In addition, a few themes included:

Student Strengths

- Persisting, despite challenges posed to transitioning to remote learning and COVID-19. “Overall I am impressed that they appeared to understand as much as they did, despite the lack of lab practice…” “I think most of the students made a good attempt at this project which was a little demanding.”
- Representation/Visualization:” The use of Excel was helpful to the students for visualization.”

Student Areas For Improvement

assessment as faculty change roles, clearly written and accessible instructions, and access to past results. In particular,one program asked for advice as to how to turn assessment results into actionable items.

Student Center For Academic Achievement (SCAA)
SCAA hires between 15-20 tutors per year to support a minimum of 21 mathematics and statistics courses and five software systems used in these courses such as SPSS and minitab. Supplemental Instruction (SI) supports between 30-45 courses per year depending on the availability of student assistants. All of the 30-45 courses have an aspect that requires quantitative reasoning and range from accounting to kinesiology. In SI, one SI Leader is embedded in a course with a faculty member, and meets with the faculty member once per week, and holds sessions two to three times per week to ensure students understand the material covered in the course.

Student Life at CSUEB During a Pandemic Survey Findings: Carl Stempel, Sociology
While data analysis is ongoing, our most important findings thus far highlight students' high levels of both difficulty concentrating on school work and psychological distress, unequal access to basic study conditions for online classes by race and social class, and the importance for student success of perceived support from professors, peer and academic advisors, and psychological counselors.

Over 4/5 of students (82%) reported that after Covid-19 hit they found it harder to focus on schoolwork, with over 2/3 of these reporting that it was "a lot harder." Difficulty concentrating on schoolwork strongly influenced school performance (R^2 = .29), and psychological distress (measured by PHQ-9, a nine item depression screener) strongly influenced difficulty concentrating (. We also found that significant numbers of

    - Fifty-four percent of students from low income families (34% of our sample) disagreed that they had a quiet place to study.
- Over 4/5 of students (82%) reported that after Covid-19 hit they found it harder to focus on schoolwork, with over 2/3 of these reporting that it was “a lot harder.”
- Difficulty concentrating on schoolwork (5-item index) was strongly associated with school performance (3-item index) (R^2 = .29).
- Psychological distress (PHQ-9, 9-item depression screener) was strongly associated with difficulty concentrating on schoolwork (R^2 = .31).
- Using the PHQ-9’s established cut points, 49% of CSUEB students scored in the moderate depression range or higher. This compares to 9% for U.S. adults, 30% among undergraduate students pre-Covid, and 41% among seven universities the American College Health Association surveyed between March and May, 2020.
- Sixty-five percent of students agreed that they could reach out for help from their professors if they were struggling academically
- Perceived professor support was strongly associated with students’ academic performance (beta = .30 in bivariate regression with both variables scaled 0 to 1.0).
- Latinx students were 2.2 times more likely than white students (22% to 10%) to disagree that they could reach out for help from their professors. Middle Eastern (17%), African American (15%), and Asian American (15%) students were also more likely than white students to disagree that they seek help from professors.

Here is a related pre-print of an article under review for publication: *Examining the Impact of COVID-19 related disruptions, dislocations, and stressors on the academic performance of undergraduates at a diverse public university.*

National Survey of Student Engagement (NSSE) 2017

Institutional Effectiveness and Research administered the NSSE to first-year and senior-level undergraduate students in the spring of 2017. CSUEB student responses to quantitative reasoning-related NSSE questions demonstrate that our student population engages with quantitative reasoning concepts and skills at levels generally in line with comparison institutions (see NSSE Summary). The results from the NSSE show growth in all areas of quantitative reasoning understanding and skills from first-year to senior-level students (see NSSE detailed results by student level).

Beginning College Survey of Student Engagement (BCSSE) Institutional Reports 2019

Institutional Effectiveness and Research administered the BCSSE to incoming first-year and incoming transfer students in 2019. CSUEB student responses to BCSSE questions show lower levels of self-reported preparedness in quantitative reasoning from both first-year and transfer-level first generation students (see BCSSE summary). In addition, first-year students who identify as first generation and who self-reported grades of B+ or lower disclose less frequent previous experiences with quantitative reasoning concepts (see BCSSE

COLLEGE DISCUSSIONS

Role of ILO Subcommittee

The ILO Subcommittee will review calibration results and faculty feedback in order to recommend potential changes to the ILO Quantitative Reasoning Rubric and the ILO Assessment process.

College/Unit Discussions

Led by associate deans, each college/unit will decide their own approach to reviewing results and conducting discussions generally following the schedules outlined in ILO Long Term Assessment Plan and EEC Communication Plan focused on discussions in fall of 2020 and implementation in Spring 2021. This includes reviewing those results that add meaning to their discussions about student performance in critical thinking.