Research and Policy Brief

Undergraduate Student Performance by Course Modality: Online versus Face-to-Face
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This analysis examines the differences in student course performance in online and face-to-face courses for students who took a mix of course types in Spring 2022. The key outcomes explored are course GPA[1], average percent of As earned, average percent of passing grades earned (C or better), and average percent of DFW grades earned. Differences between online and face-to-face outcomes are examined by various student characteristics (race/ethnicity, gender, first generation status, Pell receipt, high school GPA, degree level, student level, and residency status). Methods include descriptive analysis and paired t-tests.

Data Considerations

This analysis uses student-course data for undergraduate[2] students who enrolled in at least one online course and at least one face-to-face course in Spring 2022. Students who only took face to face courses, or only took online courses are excluded. It is important to note that online courses are those where 95 percent or more of the content is delivered via internet, and for this analysis, exclude eCore courses. It is also important to note that this analysis does not compare outcomes in the same courses, like the Undergraduate Course Outcomes by Modality analysis. Rather this analysis focuses on differences in performance at the student level for students who choose to take both types of courses.

Summary of Findings

Undergraduate students enrolled in a mixed schedule of courses in Spring 2022 took more face-to-face courses on average compared to online courses (3 face-to-face, compared to 1.7 online). Looking at the results from the system-wide descriptive analysis, students tend to perform better in their online courses compared to face-to-face courses. In many cases, this holds up across student characteristics (discussed in more detail below). Similar patterns are observed across institutions and sectors, with a few exceptions. For instance, students at state colleges tend to perform better in face-to-face courses compared to online courses. Sector and institution summaries are provided at the end of this document.

Descriptive Analysis

Across race/ethnicity categories average course GPA, average percent of As earned, and average pass rate is greater for online courses compared to face-to-face courses, with the exception of native Hawaiian and American Indian. The differences in outcomes between online and face-to-face courses is relatively modest. For example, differences in average pass rate ranges from 0 to 9 percentage points.

Similarly, online course performance is greater than face-to-face course performance across gender, first generation status, and Pell receipt, though differences in outcomes remains small.

When looking at course performance by modality and high school GPA, different patterns arise. Students with high school GPA between 2.0 and 3.0 tend to perform better in face-to-face courses compared to online courses in terms of average course GPA and average pass rate. However, students

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[1] Online Course GPA = (4*number of As earned in online courses + 3*number of Bs earned in online courses + 2*number of Cs earned in online courses + 1*number of Ds earned in online courses)/Total number of online courses. The same calculation is done for a Face-to-Face Course GPA among a student's face-to-face courses.
[2] Student level < 60

with high school GPA greater than 3.0 tend to perform better in online courses compared to face-to-face courses.

Across degree level, certificate-seeking students tend to perform better in face-to-face courses compared to online courses; associate degree seekers perform similarly in online and face-to-face courses; and bachelor's degree seekers tend to perform better in online courses compared to face-to-face courses.

Across student level, freshmen, sophomores, juniors, and seniors all perform better in online courses compared to face-to-face courses (with the exception of the average percent of passing grades earned among freshmen). Dual Enrollment students, however, tend to perform better in face-to-face courses compared to online courses.

Looking at residency status, both in-state and out-of-state students perform better in online courses relative to face-to-face courses; however, there is a slightly greater difference in outcomes for out-of-state students.

Paired T-Tests

The paired t-test allows us to compare outcomes in online and face-to-face courses among students in the same category and determine whether the difference in outcomes is statistically significant. The paired t-test results are consistent with the descriptive results discussed above. For nearly all outcomes across all student characteristics, paired t-test results show better performance in online courses compared to face-to-face courses, with a few exceptions (e.g., course GPA and pass rate for dual enrollment students, pass rate for certificate-seeking students).

Significant differences arise for most outcomes across student characteristics. However, it is important to note that while differences in outcomes between online and face-to-face courses may be statistically significant, the magnitude of the difference may not be practically meaningful. For example, the average percent of passing grades earned across all students is statistically significantly higher for online courses than face-to-face courses ($p < 0.001$), but the difference between the two is only one percentage point (80 percent for online courses compared to 79 percent for face-to-face courses).

Explanation of Nuances

There are some important caveats to explain regarding this student course performance analysis and the course outcomes analysis, both of which examine differences between online and face-to-face course outcomes. The course outcomes analysis, as a reminder, compares course level outcomes for the same course (e.g., MATH 1111) taught online and face-to-face for the top eight undergraduate courses with the highest online enrollment in Spring 2022. The results from that analysis showed that for many courses, there was no statistical difference in the performance of students across the two modalities, although there are instances when online outperformed face-to-face and vice versa. Patterns vary by course subject and institution. In contrast, in the student level analysis the results indicate performance in online courses is better than face-to-face. There are a few distinguishing features between the two analyses which should be kept in mind while comparing and contrasting the results.

Different Student Populations

In the course-level analysis, data consists of students who take a mixed schedule (online + F2F), only online courses, and only face-to-face courses. Moving to the student-level analysis, we only focus on students who take a mix of courses. It is not necessarily surprising to find different outcomes and patterns when we look at a subset of the original population. Moreover, students who take only online courses are likely different from those who choose to take a mix of courses. Students choosing a mixed schedule may be strategic in which courses they take online, such as those they feel comfortable or confident in. Enrollment in online course sections also depends on which courses are offered online at the institution.

<u>Different Course Population</u>

The student-level analysis is limited to the courses taken by students choosing a mixed schedule, and may include course only offered online, whereas the course-level analysis is limited to the courses offered both online and face-to-face formats in the same academic term. The table below shows the courses with the greatest enrollment by modality in both the student-level analysis and course-level analysis. There is some overlap between the courses in this student-level analysis and the course-analysis (e.g. POLS 1101, ENGL 1102). It is important to keep in mind that the same course is not being compared in the student-level analysis. For an individual student, the courses taken in a semester likely differ from one another by subject area, and course performance is likely influenced by the intentional choice of which course/subject to take online. As shown in Table 1, among those taking a mixed schedule, there are two math and two accounting courses in the top 8 face-to-face courses and none of these subjects in the top 8 online courses.

Table 1

Student-Level Analysis		Course-Level Analysis
Top 8 Online Courses	Top 8 Face-to-Face Courses	Top 8 Online and Face-to-Face Courses
POLS 1101	ENGL 1102	POLS 1101
ENGL 1102	POLS 1101	ENGL 1102
PSYC 1101	ENGL 1101	PSYC 1101
GSU 1000	MATH 1111	ENGL 1101
HIST 2110	ACCT 2101	SOCI 1101
ECON 2106	MATH 1401	MATH 1401
ENGL 1101	PSYC 1101	

Georgia Institute of Technology
Students perform substantially better in online courses compared to face-to-face courses, regardless of student characteristics. For example, average pass rate for bachelor's degree seekers in online courses is 94% compared to only 70% in face-to-face courses.

Georgia State University
Student course performance tends to follow the same trends observed at the system level.

University of Georgia
Students tend to perform better in online courses compared to face-to-face courses. For example, bachelor's degree seekers have an average course GPA of 3.5 in online courses compared to 2.9 in face-to-face courses and freshmen have an average course GPA of 3.5 in online courses compared to 3.0 in face-to-face courses.

<u>Comprehensive Universities</u>
Student course performance tends to follow the same trends observed at the system level.

Georgia Southern University
Students tend to perform evenly in online and face-to-face courses, but in a few instances, students perform marginally better in face-to-face courses compared to online courses. For example, males, first-generation students, and freshmen each have slightly higher average pass rates in face-to-face courses compared to online courses.

Kennesaw State University
Students tend to perform evenly in online and face-to-face courses. One slight difference is that freshmen, sophomores, and juniors each have marginally higher average pass rates in face-to-face courses compared to online courses.

University of West Georgia
Student course performance tends to follow the same trends observed at the system level, but in a few instances, students perform marginally better in face-to-face courses compared to online courses. For example, females, bachelor's degree seekers, juniors and seniors each have slightly higher pass rates in face-to-face courses compared to online courses.

Valdosta State University
Student course performance tends to follow the same trends observed at the system level, but in a few instances, students perform marginally better in face-to-face courses compared to online courses. For example, freshmen and sophomores have slightly higher average pass rates in face-to-face courses compared to online courses.

<u>State Universities</u>
Students perform similarly in online and face-to-face courses.

Albany State University
Students tend to perform slightly better in face-to-face courses compared to online courses. For example, regardless of gender, first-generation and Pell status, or student level, students have higher average pass rates in face-to-face courses compared to online courses. Differences range from 3 to 5 percentage points.

Clayton State University
Students perform similarly in online and face-to-face courses.

Columbus State University
Student course performance tends to follow the same trends observed at the system level.

Fort Valley State University
Students perform substantially better in online courses compared to face-to-face courses. For

Gordon State College
Student performance in online and face-to-face courses is fairly even, but in a few instances, students perform slightly better in face-to-face courses compared to online courses. For example, bachelor's degree seekers have a higher average course GPA in face-to-face courses compared to online courses (2.9 vs. 2.7, respectively).

South Georgia State College
Student performance in online and face-to-face courses for the most part is fairly even; however, students tend to perform slightly better in face-to-face courses compared to online courses.