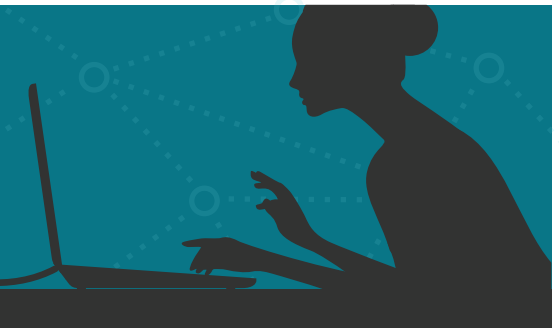
APPENDIX P

UNC ONLINE LEARNING



12% OF ALL CREDIT HOURS AT UNC INSTITUTIONS ARE OFFERED ONLINE.

1,770 ONLINE COURSES AND **OVER 380** FULLY ONLINE PROGRAMS.

1 IN 4 TENURE OR TENURE-TRACK FACULTY TEACH ONLINE.

UNC ONLINE PROCTORING NETWORK FINALIZED OVER **33,000 APPOINTMENTS** FOR MORE THAN **9,500 STUDENTS** IN OVER **800 COURSES.**

94,101 STUDENTS OR **2 IN 5** UNDERGRAD AND GRAD STUDENTS TAKING AT LEAST ONE ONLINE COURSE.

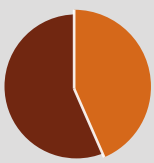
20% GRAD STUDENTS EXCLUSIVELY TAKING ONLINE COURSES.

6% UNDERGRAD STUDENTS EXCLUSIVELY TAKING ONLINE COURSES.

A HIGHER PERCENTAGE OF FEMALES TAKE AT LEAST ONE ONLINE COURSE (62%) AND ENROLL EXCLUSIVELY IN ONLINE COURSES (53%).

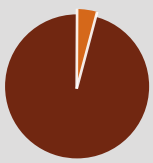
	18-24 YEAR OLDS	25+ YEAR OLDS
EXCLUSIVELY TAKING FACE-TO-FACE COURSES.	64%	29%
EXCLUSIVELY TAKING ONLINE COURSES.	2%	23%
TAKING AT LEAST ONE ONLINE COURSE.	34%	49%

51% PART-TIME STUDENTS ENROLLED **IN AT LEAST ONE ONLINE COURSE.**



35% FULL-TIME STUDENTS ENROLLED **IN AT LEAST ONE ONLINE COURSE**.

34% PART-TIME STUDENTS ENROLLED **EXCLUSIVELY IN ONLINE COURSES.**



2% FULL-TIME STUDENTS ENROLLED **EXCLUSIVELY IN ONLINE COURSES**.

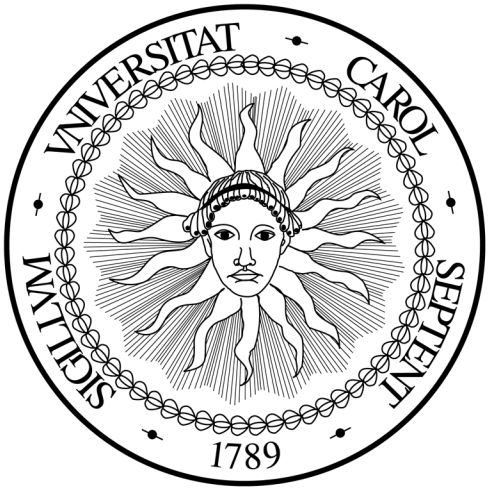
For more information, visit:

ONLINE.NORTHCAROLINA.EDU PROGRAMS.NORTHCAROLINA.EDU COURSES.NORTHCAROLINA.EDU

The University of North Carolina

Online Learning Report

2015



The University of North Carolina
General Administration

October 2015

Executive Summary

Delivering course content through online courses is a popular mode of delivery for University of North Carolina (UNC) students. The following are included in this report as key measures in UNC online learning.

Enrollment. Two in five, or approximately 40%, of all UNC students take at least one online course, which is nearly a 20% increase over the past five years. Approximately 12% of total credit hours taught at UNC institutions are delivered online, up from 9.5% in 2009-10.

Enrollment by Level. Graduate students represent a higher proportion of students exclusively taking online courses when compared to undergraduates: 20% to 6%, respectively.

Enrollment by Sex, Race, and Age.

- A higher percentage of females (62%) take at least one online course.
- Generally, the racial/ethnic composition of online enrollment mirrors face-to-face enrollments, with slightly more Black/African Americans taking online courses.
- Over half of students age 25 and older take at least one online course, compared to approximately one-third of students 18-24 years old.

Enrollment by Full-Time and Part-Time Status. Online courses are important for part-time students. When examining the total student population, over half of part-time students are enrolled in at least one online course compared to only a third of full-time students. More strikingly, over one-third of part-time students are enrolled exclusively in online courses compared to just 2% of full-time students.

Faculty. Approximately one in four, or 22%, of UNC faculty taught at least one online course and approximately 5% taught exclusively online.

Course Outcomes. Consistent with national data, the withdrawal, D, and F (WDF) rates are higher in UNC's online courses when compared to similar face-to-face courses. This varies by academic discipline with 11 disciplines having higher predicted WDF rates in online courses over the two academic years reviewed in this report (2012-13 and 2013-14).

Academic Integrity. The UNC Online Proctoring Network coordinated nearly 34,000 appointments for more than 9,500 students in over 800 courses.

Fully Online Programs. Over 380 fully online programs/certificates are currently offered.

Online Learning

UNC institutions are making progress in expanding educational opportunities to meet the needs and interests of students. Through a variety of campus-led efforts and the overhaul of UNC Online (online.northcarolina.edu), a greater number of students are enrolling in online courses and programs. The University offers 383 online degree and certificate programs (programs.northcarolina.edu) and UNC Online currently lists 1,770 online courses for the Spring 2015 semester (see courses.northcarolina.edu).

It is important to delineate the variety of online offerings and how students access them. Some students supplement traditional campus-based schedules with a handful of online courses,[1] while others enroll in entirely online programs and never visit campus. While students increasingly chart their own paths to completion, there are four broad student types that reflect the predominant course-taking patterns and these categories are used throughout this report:

1. Face-to-Face Students: Students who took 100% of their classes through face-to-face instruction.[2]

2. Partially Online Students: Students who took at least one online class, but less than 50% of their classes online.

3. Mostly Online Students: Students who took 50% or more of their classes through online instruction.

4. Online Only Students: Students who took 100% of their classes through online delivery methods.

Please note that the figures presented in this report are for academic year 2013-14, unless otherwise noted. Thus, when students are classified in terms of the percentage of online courses they enroll in, it is just for this one academic year. For example, in Figure 1, 9% of students exclusively took online courses but they could have taken face-to-face courses in a previous academic year.

---

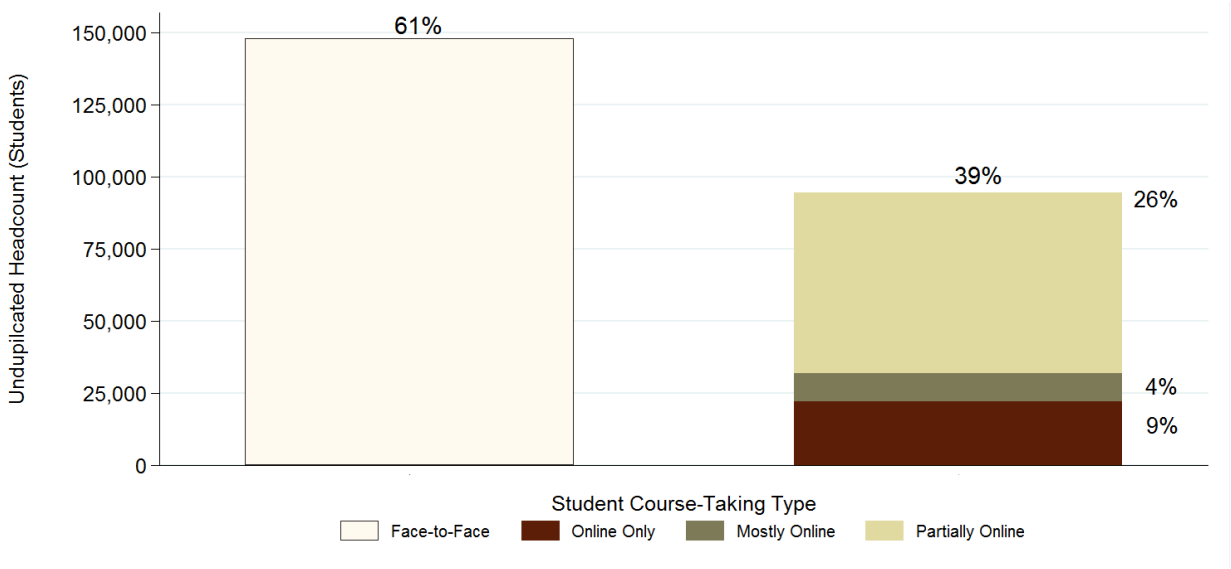
1 An online course is defined as a course with instruction delivered online that does not have dedicated physical space and meeting times. Further, hybrid courses where more than 50% of the instruction is delivered online are classified as online.

2 Note that site-based distance education (DE) courses offered through face-to-face instruction are included in this category. This population is very small. These 5,567 DE students make up 2% of the entire student population and 3% of the Face-to-Face category. Also included in the Face-to-Face category is a small group of 318 students (0.1% overall and 0.2% of the Face-to-Face category) who took a majority of their courses through alternate methods of delivery such as DVD or two-way video, but took at least one face-to-face course and no online courses. Excluded from this report altogether is an even smaller group of 43 students (0.01% overall) who only took alternate methods of delivery such as DVD or two-way video.

Online Learning: Overall Enrollment

In the 2013-14 academic year,[3] 39%, or over 94,000, of the total UNC student population[4] took at least one online course, with 9%, or over 22,000, exclusively taking online courses. Figure 1 shows the percentage of students taking these different courses during the 2013-14 academic year.

Figure 1: *Unduplicated Overall Student Headcount by Course-Taking Type, Academic Year 2013-14*



source: UNC-GA IRA/UNCAPPA. Fall Enrollment

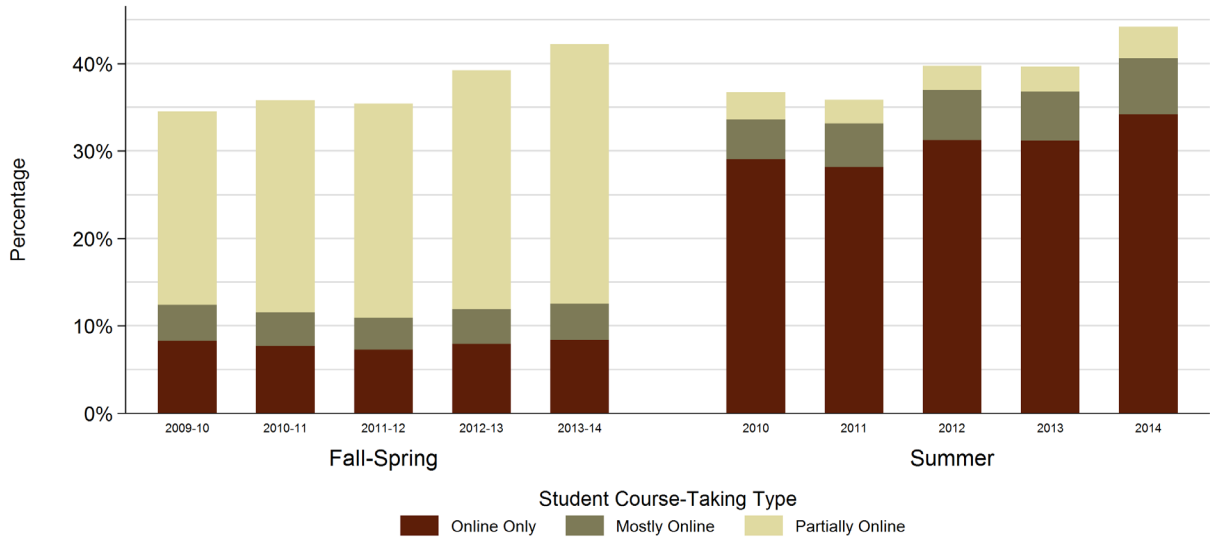
The percentage of students taking at least one online course increased from 34% to 39% over the past five years. Enrollments in online courses in Fall/Spring semesters remained relatively stable during this time, while Summer enrollments in online courses increased from 37% to 44%. Figure 2 shows enrollment by course-taking type over the past five years.

Though the percentage of students enrolling in at least one online course is significant, the proportion of overall credit hours taught via online methods is only 12.2% (up from 10% in 2012-13). The percentage of course sections taught online is 9.2% (up from 8.2% in 2012-13). Full details of the percentage of credits and courses taught online is found in Appendix A.

3 The 2013-14 school year includes Summer II 2013, Fall 2013, Spring 2014, and Summer I 2014.

4 This includes undergraduate and graduate students who are degree and non-degree seeking.

Figure 2: *Percentage of All Students by Course-Taking Type, Academic Years 2009-10 through 2013-14*

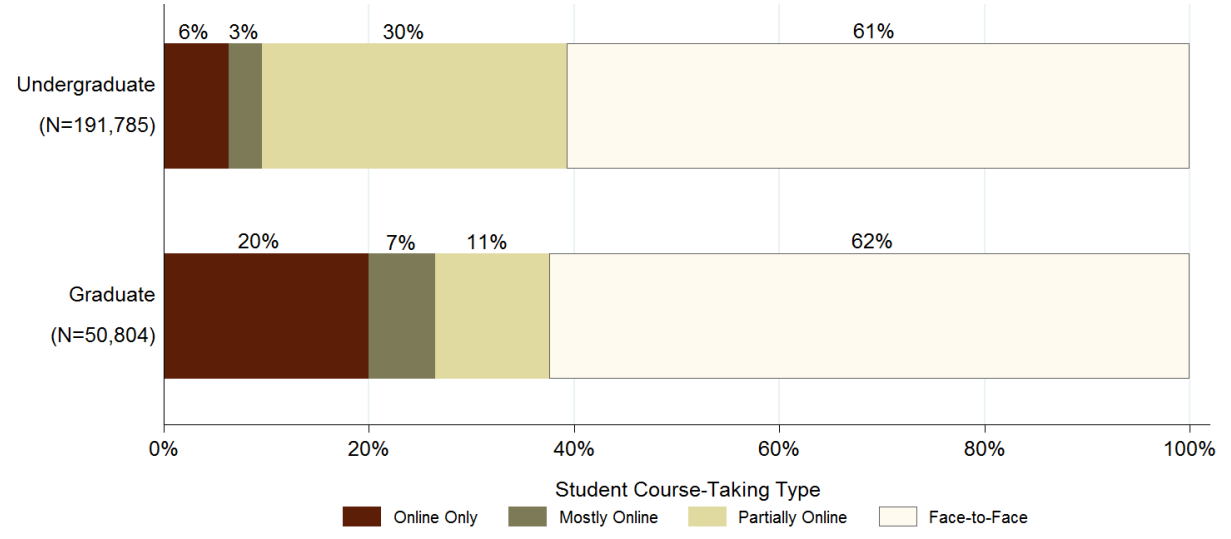


Source: UNC-GA IRA/UNCAPPA. Fall Enrollment

Online Learning: Undergraduate and Graduate Enrollment

In the 2013-14 academic year, 39% of undergraduate students and 38% of graduate students enrolled in at least one online course. Graduate students represented a higher proportion of students exclusively taking online courses: 20% of graduate students were fully online compared to only 6% of undergraduates. Figure 3 displays these percentages of courses by degree level.

Figure 3: *Percentage of Undergraduate and Graduate Students by Course-Taking Type, Academic Year 2013-14*



Source: UNC-GA IRA/UNCAPPA. Fall Enrollment

Online Learning: Sex and Race/Ethnicity

Following local and national trends, more female students are enrolling in online courses at UNC institutions. Compared to their overall percentage of the student population (57%), females disproportionately account for more of those enrolled in at least one online course (62%).

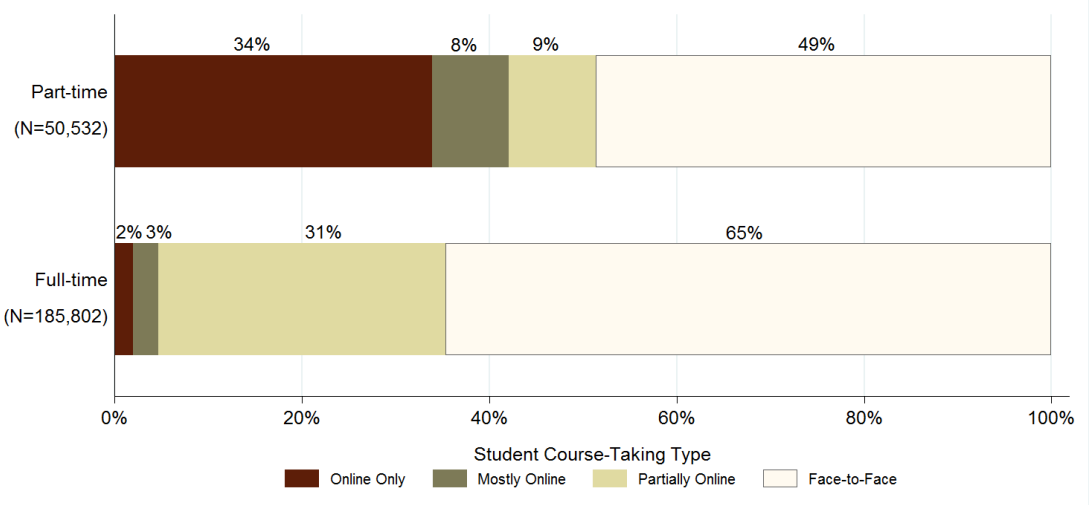
By and large, the racial/ethnic composition of online enrollments mirrored face-to-face enrollments with a few exceptions:

- Black/African American students represented a higher proportion of at least one online course-takers over exclusively face-to-face students: 24% compared to 22% at the undergraduate level and 17% compared to 13% at the graduate level.
- International graduate students represented a lower proportion of at least one online course-takers (5%) versus face-to-face only students (17%).

Online Learning: Full-Time and Part-Time Students

Online courses serve the needs of part-time students. As illustrated in Figure 4, when examining the total student population,[5] 51% of part-time students enrolled in at least one online course compared to only 35% of full-time students. More strikingly, 34% of part-time students enrolled exclusively in online courses compared to just 2% of full-time students. When disaggregated by undergraduate and graduate type, the same pattern holds.

Figure 4: *Percentage of All University Students by Course-Taking Types and Enrollment Status, Academic Year 2013-14*



Source: UNC-GA IRA/UNCAPPA. Fall Enrollment

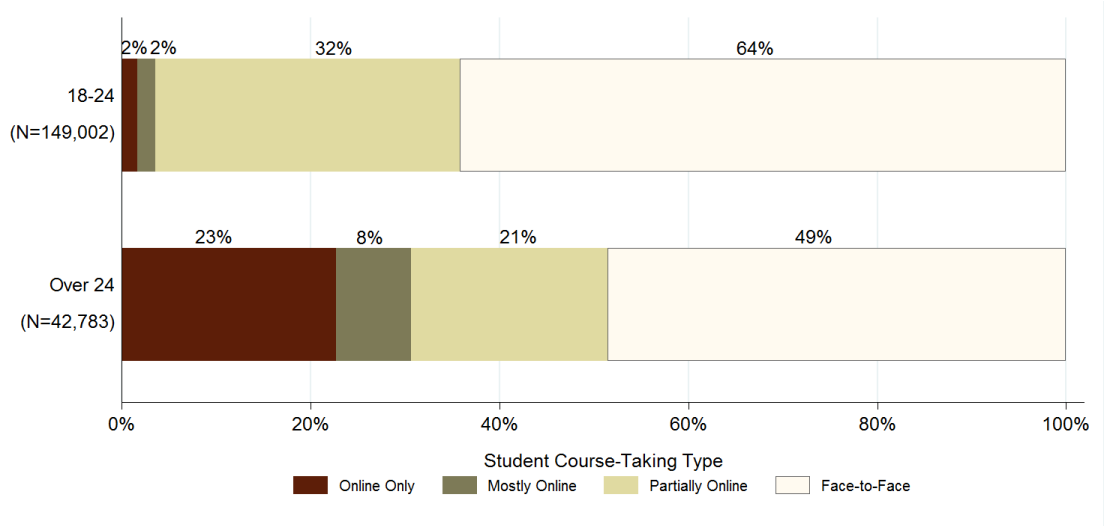
5 Full/Part-time status for this analysis is determined by the student's status during the Fall 2013 semester. Part-time is defined as fewer than 12 student credit hours. For this reason, Summer-only students (6,255 students or 3% of the total student population) are excluded from the Full/Part-time student analysis.

The data indicate that online course-taking is now an essential educational option for part-time students, supporting the notion that online courses serve a population balancing competing priorities and seeking the flexibility that online courses offer.

Online Learning: Age of Students

Online courses are important for older, non-traditional aged undergraduate students.[6] Over half (51%) of non-traditional aged students took at least one online course compared to only a third (36%) of 18-24 year old students. Moreover, 23% of older students took exclusively online courses compared to only 2% of the 18-24 year old student population. Figure 5 on the following page displays these percentages of courses by age of student.

Figure 5: *Percentage of Undergraduate Students: Traditional Age vs. Non-Traditional Age by Course-Taking Type, Academic Year 2013-14*



Source: UNC-GA IRA/UNCAPPA. Fall Enrollment

Online Teaching: Characteristics of the Faculty

For this report, faculty were divided into the same groupings as the students: all online, mostly online, partially online, and face-to-face. Twenty-two percent of all faculty taught at least one online course while over 75% of all faculty taught exclusively face-to-face. These percentages were similar for tenure/tenure track professors and were consistent over the two academic years of 2012-13 and 2013-14. For all faculty, female professors tended to teach at least one online course at a higher rate than male professors, 26% to 19%. For full results of the faculty data, see Appendix B.

6 The age range for traditional aged students is defined by the National Center for Education Statistics to be 18 to 24 years. Excluded from this analysis are 80 students for whom we do not have a record of birthday.

Ensuring Academic Quality - UNC Online Proctoring Network

The UNC Online Proctoring Network (proctors.northcarolina.edu) enhances the academic integrity of online courses in the UNC system by providing students with an easily accessible pool of qualified proctors. The network helps online students find approved proctors for their exam efficiently, helps faculty members assign proctored exams to students with little overhead, and allows online programs to maintain high standards of academic integrity at low cost. The proctoring service also impacts student success:

- Proctored exams help to ensure that the students enrolled in online courses are the same students doing the work.
- Proctored exams help to ensure that all students enrolled in an online course adhere to the same testing requirements.
- Proctored exams give faculty members more options to evaluate online students' knowledge.
- Faculty members can create closed book, closed note, closed internet exams.

The UNC Online Proctoring Network standardizes and streamlines the proctoring process for faculty members, students, and proctors by incorporating automated features. Faculty members provide exam details, students schedule appointments, and proctors download exam information, all online on one website. Students' appointment and exam information are sent to proctors and the UNC Online Proctoring Network site sends automated emails to guide users through the exam process. The UNC Online proctoring site offers students, faculty, proctors, and programs everything they need to provide a uniform and consistent proctoring experience.

For the 2014-2015 academic year, the UNC Online Proctoring Network coordinated 33,990 appointments for 9,746 students in 829 courses. These numbers represent a 7.2% increase in appointments and 14.3% increase in students over the previous academic year. The following 10 UNC institutions participate in the UNC Online Proctoring Network:

- Appalachian State University
- East Carolina University
- Elizabeth City State University
- Fayetteville State University
- North Carolina Central University
- UNC Greensboro
- UNC Pembroke
- UNC Wilmington
- Western Carolina University
- Winston-Salem State University

The Proctoring Network offers three proctoring options:

1. Web-based proctoring for online exams through a partnership with ProctorU, which is fully integrated into the UNC Online Proctoring Network. Web-based proctoring provides students with maximum flexibility when scheduling exam appointments. The lowest-possible rates were negotiated for UNC students.

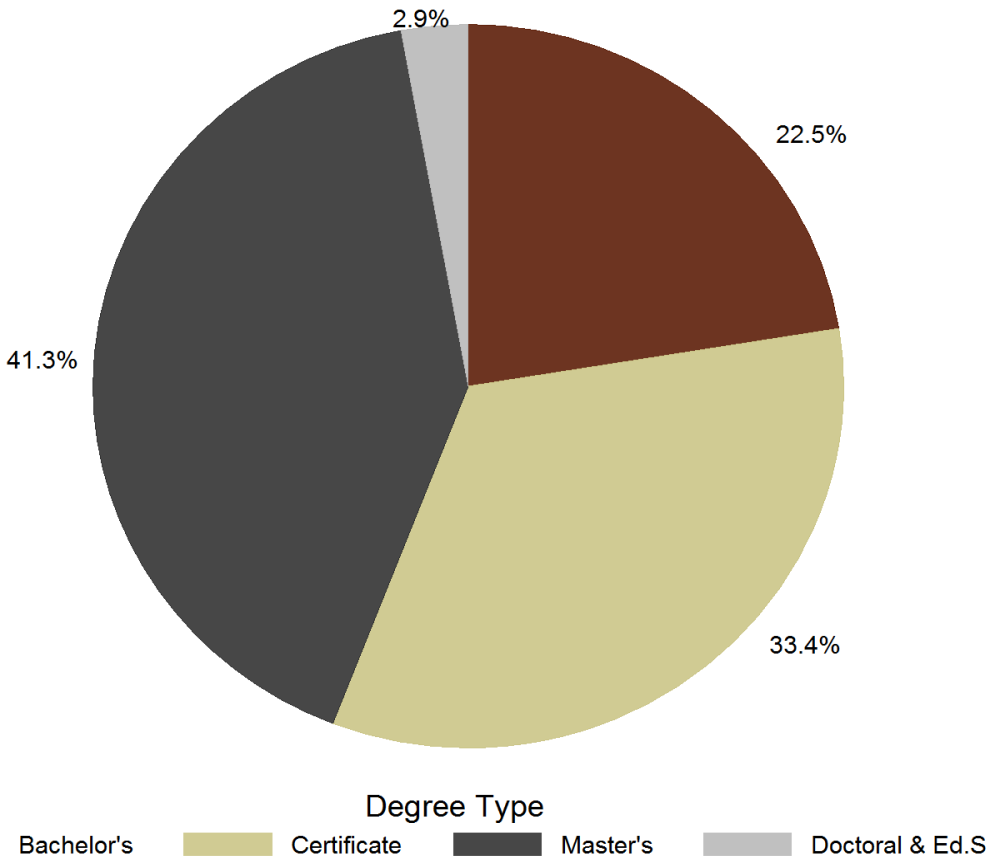
2. Campus-based proctoring on 10 of the 16 UNC campuses.

3. Off-site proctoring (at a public library or other institutions and independent proctors) in North Carolina, across the country, and around the world.

Fully Online Academic Programs

UNC offers 383 fully online programs: 86 Bachelor's, 128 Certificate, 158 Master's, and 11 doctoral programs. The number offered by each institution varies, with 2 institutions (ECU and NCSU) accounting for 169 programs, or 43.7%, of the total. See Appendix C for details on the number of program offered by each campus.

Figure 6: *Fully Online Academic Programs, 2014-15*



Source: UNC-GA IRA/UNCAPPA. E:Fully Online Programs

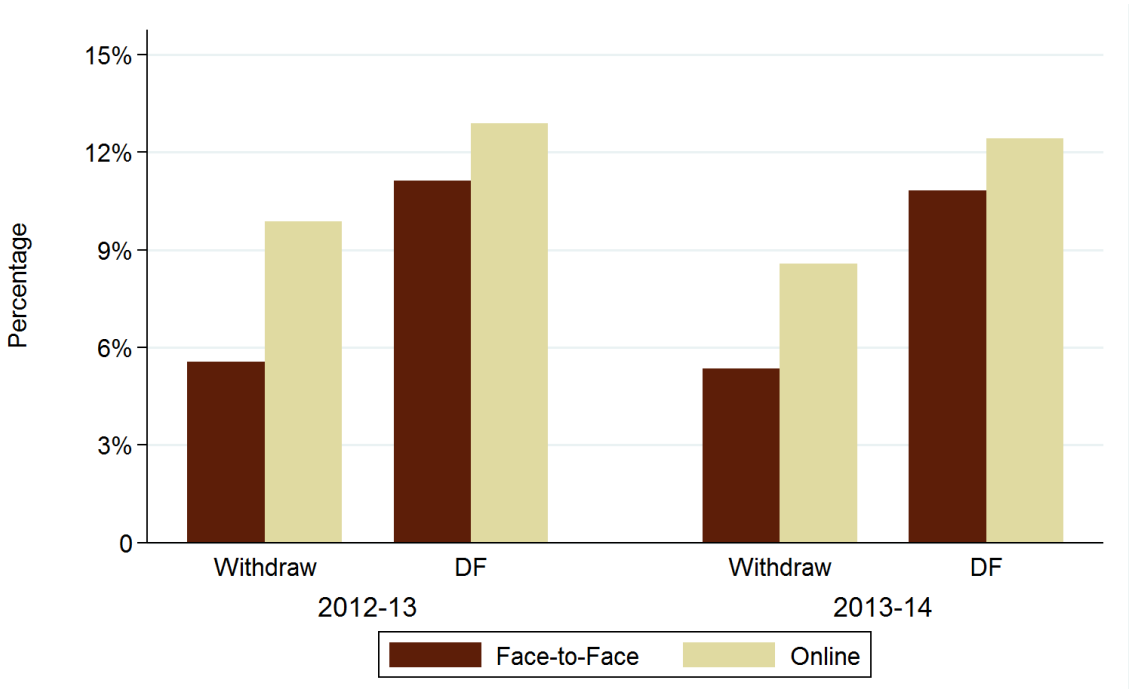
Analysis of Course Outcomes

Many of UNC's online efforts are new and a definitive evaluation of their outcomes is premature. Despite this, evaluating learning outcomes in online education provides useful insight for future planning purposes. The data that are examined for this analysis cover undergraduates for the 2012-13 and 2013-14 academic years, excluding summers. The analysis is presented in two sections. The first section descriptively presents the course outcomes of students in online and face-to-face courses. The second section uses a statistical technique to predict student success after controlling for other relevant characteristics.

Descriptive Course Outcomes

A commonly used metric to understand student success in a course is the percentage of students who withdraw or receive a D or F as a final grade. Figure 7 shows the percentage of all undergraduate course enrollments that were withdrawals and those that earned a D or F (WDF). The withdrawal rate for online courses is consistently higher by approximately 3 to 4 percentage points when compared to face-to-face courses. This holds across both academic years. Although the online D or F rate is also higher when compared to the face-to-face rate for both years, the two are closer, separated by approximately 1.5 percentage points.

Figure 7: *Percent of Course Enrollments that were withdrawals and those that earned a D or F by year and Mode of Delivery, 2012-13 and 2013-14*



Source: UNC-GA IRA/UNCAPPA. E: Year System and Report Pictures

Predicting Course Outcomes

To go beyond a simple WDF rate, UNC-GA's Academic Planning and Policy Analysis Division used a statistical technique that allows the analysis of relationships between different sets of variables and the WDF rate. To create a meaningful comparison group, the sample only examined ***courses offered both online and face-to-face***.[7] The sample covers approximately 50% of all online sections and 60% of the total online headcount. For further details, see Appendix D: Technical Notes.

The analysis shows that across UNC institutions, students who enrolled in online courses performed poorer, on average, than students in face-to-face courses. Specifically, the probability of receiving a WDF for freshmen in online courses is approximately 32% compared to approximately 20% for face-to-face courses, a difference of 12 percentage points. The probability of receiving a WDF for upperclassmen in online courses is approximately 20% compared to approximately 16% for face-to-face courses, a difference of 4 percentage points. Notice that the differences for the two academic years are consistent in terms of direction and magnitude, which increases confidence in their reliability.[8] The results are presented in Figure 8 on the following page.

It is worth noting that although students enrolled in online courses have a higher likelihood of earning a WDF, a non-trivial percentage of students in face-to-face courses also received WDF's. Specifically, freshmen have a face-to-face WDF rate of about 20% and upperclassmen have a face-to-face WDF rate of about 16%. The higher rate associated with being a freshmen is not surprising as many freshmen do not return to become upperclassmen.

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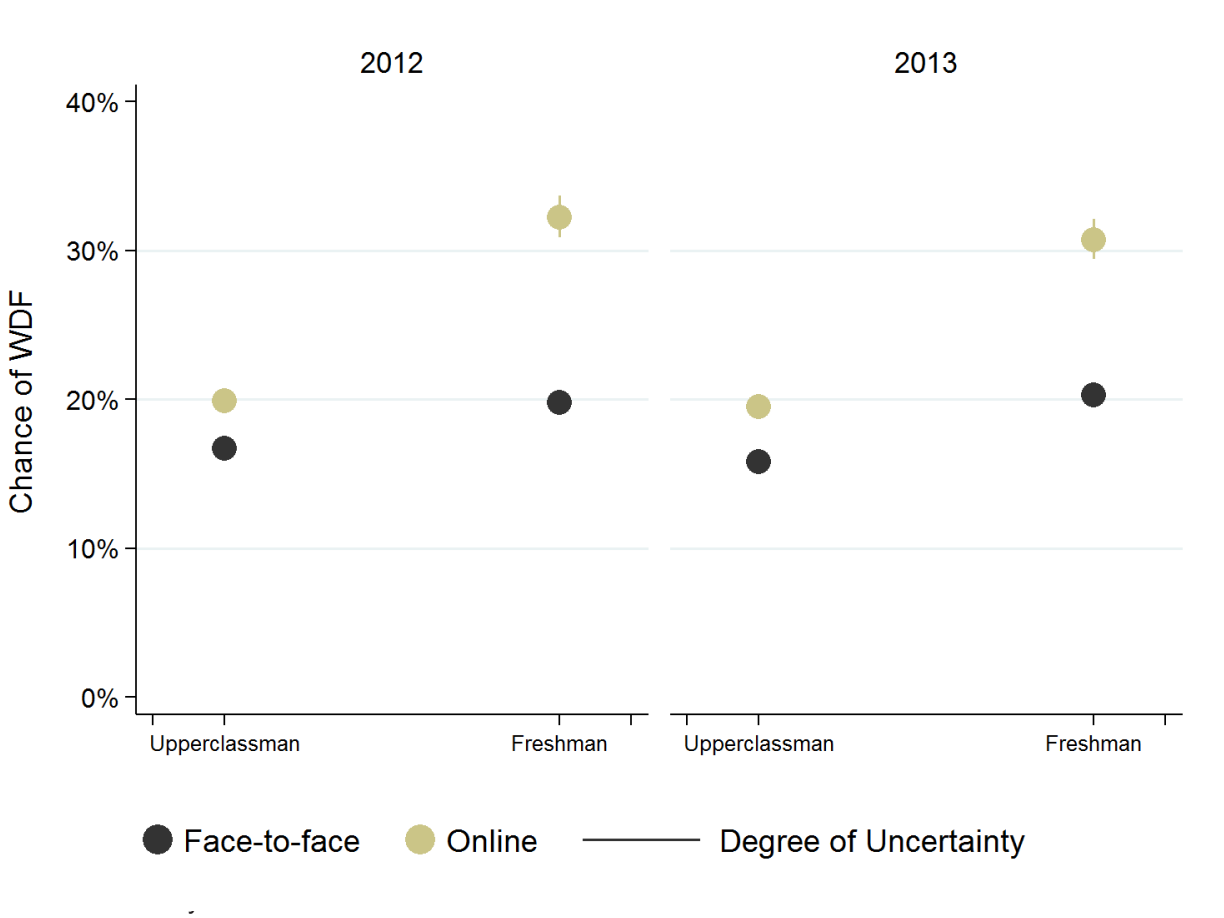
7 Note that in addition to the matched nature of the courses, this analysis is only for fall and spring semesters as summer terms are not included in the analysis that follows. That is why these numbers do not match the earlier descriptive numbers in the report and show a lower percentage of online students.

8 The research on online education is still in its infancy as noted by the US Department of Education. Thus, there are conflicting findings in the literature as to the effect of enrolling in online courses. For example, there are published studies that report students in online courses are more likely to complete a course than students in face-to-face courses. However, the results we present here are in-line with other reported findings. For example, a 2014 study based on data from over 265,000 California Community College students found that students were about 11% to 14% less likely to successfully complete an online course as compared to a similar face-to-face course (Johnson & Mejia, http://www.ppic.org/main/publication.asp?i=1096).

Figure 8: *Predicted Chance of Earning a Withdrawal or grade of "D" or "F" (WDF) by Mode of Delivery, 2012-13 and 2013-14*



Source: UNC-GA IRA/UNCAPPA. Predicted wdf

Freshmen in Online Courses

As demonstrated above, freshmen perform less well in online courses when compared to face-to-face courses. The more detailed analysis by discipline suggests that the difference was not universal across disciplines. The following nine academic disciplines (of the 28 included in this analysis) had a higher WDF rate for freshmen taking online courses in 2013-14: Communication and Journalism; Education; English Language and Literature; Biological and Biomedical Sciences; Mathematics and Statistics; Philosophy and Religious Studies; Psychology; Social Sciences; and Business. Institutions may want to pay special attention to these specific disciplines and consider ways to improve freshmen student outcomes.

Examination of Online and Face-To-Face by Academic Field

At the system level, there are a sufficient number of cases that allow for the examination of online and face-to-face success rates by academic field.[9] Figure 9 presents data for the 2013-14 academic year and is interpreted as follows.

The figure is the result of a regression analysis that allows the "effect" of being in an online course to vary across academic field of study. To present these findings, predictions were generated over simulated data that account for the other control variables in the model. The black markers represent face-to-face predictions and the gold markers represent online predictions. The circles are the predicted values and the lines of uncertainty that extend out of the circles represent the 95% confidence intervals that surround the mean, or average. When the confidence intervals overlap, one cannot statistically determine the difference of online versus face-to-face mode of delivery; thus, there is no difference. Where there is a gap, there is a difference in the mode of delivery.

For example, in Figure 9, for academic field "Agriculture", the lines of uncertainty overlap so there is no statistical difference between online and face-to-face sections in that field. However, in the field of "Engineering", there is a statistical difference between online and face-to-face delivery with students enrolled in online Engineering courses having a higher predicted probability of earning a WDF grade when compared to similar students in face-to-face courses. There are 16 shaded fields where there is a higher probability of a student earning a WDF in online courses.

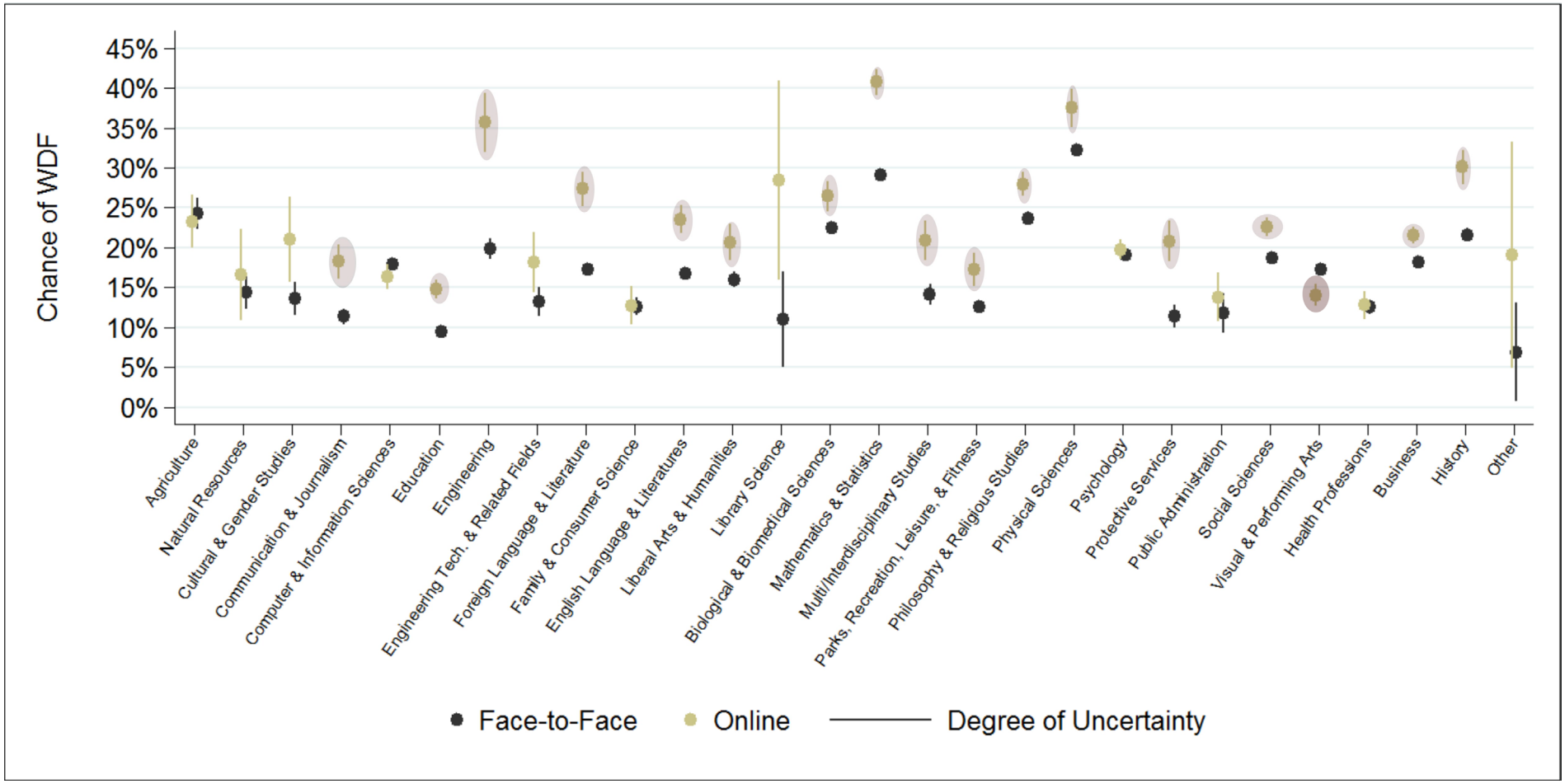
The following 11 fields had higher online WDF rates for ***both*** academic years (2012-13 and 2013-14):

- Biology and Biomedical Sciences
- Business, Management, Marketing, and Related Support Services
- Education
- English language and literature/letters
- Foreign Languages, Literatures, and Linguistics
- History
- Homeland Security, Law Enforcement, Fire fighting and Related Protective Services
- Mathematics and Statistics
- Multi/Interdisciplinary Studies
- Parks, Recreation, Leisure, and Fitness Studies
- Social Sciences

Since it can be difficult to determine if there is gap, full results across both academic years are presented in table format in Appendix D: Technical Notes.

9 Academic field is determined by using the Department of Education's 2 digit CIP code.

Figure 9: *Predicted Chance of an Undergraduate earning a WDF by mode of delivery and CIP, 2013-14*



Summary of Analysis

- Sample: Only courses offered both online and face to face are included in the analysis. This sample includes approximately 50% of all online courses and 60% of the total unduplicated headcount.
- Statistical Significance: 16 of the 28 fields show statistically significant differences between online and face-to face-delivery, with all but one (Visual and Performing Arts) showing a higher chance of earning a WDF for students in online courses. Shaded areas indicate statistically significant differences.
- Control Variables: Sex, race, whether student received a Pell grant, high school GPA, course load, and percent of courses online.

Limitations

There are limitations to any analysis and this is no exception. First, these results are not causal, as students self-select into specific courses with a specific method of delivery for myriad reasons. Control variables were employed to control for variables that have been shown previously to be related with student success (e.g., pell status, race, high school gpa, etc). It could not be determined, however, how much of the effect reported here is due to student self-selection and how much is due to the "true" difference in mode of delivery. Related to this point, it was not possible to control for all student factors that could influence the outcome. For example, previous research demonstrates that a student's parental education level and non-cognitive abilities can influence a student's success. This information was not available for this analysis and neither were other potentially relevant control variables.

For the overall analysis there is a large sample, which increases confidence in our estimates. However, when disaggregated by academic field and student levels, the sample sizes shrink. Attempting to analyze the data for each of the 16 constituent institutions at the academic field level causes many of the sample sizes to become prohibitively small. Therefore, attempts to provide institutional-level data by discipline is challenging and prone to error given the small sample sizes.

The external validity of the study is low for two main reasons. First, IPEDS definitions for variables such as distance learning are not used. Second, results are not transferable to other contexts. Thus, other institutions or states may perform a similar analysis and obtain different results.

Finally, the courses included in the analysis are disproportionately lower-level courses. Since a greater number of lower-level courses are offered, there are more acceptable matches between like classes that are offered both online and face-to-face. Thus, this analysis speaks specifically to the courses in this matched sample and one should be hesitant to extrapolate results to all online courses.

Conclusion and Next Steps

This report discusses online courses and programs across UNC, emphasizing that high-quality online courses, robust faculty development, and online student support will form the core of UNC's online learning strategy. UNC commits to closing or eliminating the achievement gap between online students and traditional face-to-face students over the next five years. All efforts will be grounded in research, focused on what is learned from data analytics and other reporting measures.

The following future efforts represent an iterative incorporation of lessons learned daily and require close partnerships with multiple units. For example, the first two are being led by UNC-GA's division of Academic Affairs in close collaboration with the division of Technology-Based Learning and Innovation (TBLI) and the following two led by TBLI with substantial input from Academic Affairs.

1. **Research.** Additional analyses will focus on students' course-taking patterns over time, impact of taking online courses on students' time-to-degree, and identification of particularly successful online courses to share best practices.

2. **Deeper insights.** Predictive analytics have the potential to strengthen student success by identifying at-risk students and targeting advising, pedagogy, content delivery, and other support systems toward those students most in need. Online students are particularly vulnerable to many of the risks common to higher education and they can benefit from analytical tools whose inputs are based in frequency of interactions with learning technologies. On July 29, 2015, UNC-GA Academic Affairs with TLBI convened over 60 campus stakeholders, including all the provosts, for vendor presentations and to develop a system-wide strategy in predictive analytics. UNC is proceeding with follow-up plans that include multi-level capacity assessments at universities, meetings with campuses, and the development of pilots for summer 2016.

3. **Quality rubrics and peer review.** Quality Matters (QM) is a non-profit spin-off of the University of Maryland that publishes rubrics for evaluating online courses and curriculum for preparing faculty to be effective online instructors. UNC joined Quality Matters (QM) as a state system in January 2015, reducing costs for the 11 campuses (as well as 7 NC community colleges) that were already participating, and tapping into new resources for raising the quality of online and blended courses. QM is one example of the suite of tools UNC will use to inspire discussion around effective online teaching and learning, with renewed focus toward improving outcomes for students taking online courses offered across the system.

4. **Faculty development.** In 2014, the i3@UNC program pioneered system-wide support for online course development and faculty development. In 2015, i3@UNC was expanded to include blended courses and was opened to all faculty (tenure, tenure-track, and adjuncts). The success of i3@UNC underscored the great demand for high-quality faculty support. In 2016, the program will be expanded further with additional training and support, will include a larger group of faculty fellows, and will be hosted by Winston-Salem State University.

5. **Stronger relationships.** Student relationships matter. New research shows when students are able to make connections with one another and with faculty members, their academic performance improves. On-campus students have many opportunities to build these ties, but online students have fewer options. UNC is exploring new Learner Relationship Management (LRM) systems to enable peer learning and support networks among online students who do not benefit from campus-based student success efforts.

6. **Richer content.** UNC is seeking grant funding to invest in high-quality, shared instructional resources in digital and print formats. The proposal is to raise standards of content and assessment through a collaborative faculty-centered approach in courses that are widely taught and commonly have high WDF rates. The plan is to begin with the general education mathematics and statistics sequences, with a project called UNC Math Commons. One of the goals is to reduce costs for students by disintermediating textbook publishers and sharing open educational resources (OER) among all institutions under Creative Commons licenses. The goal is to launch UNC Math Commons in partnership with UNC Press in 2016.

7. **Self-diagnostics.** UNC is working to prepare students for online coursework by developing modules that familiarize students with the technologies and skills required to succeed in an online learning environment. One example in this area was the recent deployment by UNCG of “Ready to Learn” and “Ready to Teach” modules for first-time online students and faculty. Addressing student and faculty readiness in an online environment is a specific strategy aimed at improving the quality of online instruction and ensuring student preparedness for online success.

This report shows how online course offerings and student enrollments in these courses have increased over time. For many students, online courses remain an important way to access the University’s opportunity. For some students, the option to enroll in online courses is not competing against face-to-face courses, but is providing access to higher education when it may have otherwise been out of reach. UNC continues to improve quality and ensure that online courses are held to the same standards and produce the same positive outcomes as face-to-face programs.

APPENDIX A

PERCENTAGE OF CREDITS OFFERED ONLINE, 2013-14

	Total		Undergraduate		Graduate	
Institution	Online	Face-to-Face	Online	Face-to-Face	Online	Face-to-Face
ASU	6.5%	93.5%	5.0%	95.0%	26.6%	73.4%
ECU	20.4	79.6	16.6	83.4	42.0	58.1
ECSU	22.4	77.6	22.3	77.7	25.5	74.5
FSU	20.7	79.3	20.7	79.3	20.9	79.1
NCAT	7.9	92.1	6.3	93.7	21.0	79.0
NCCU	14.9	85.1	14.3	85.7	17.6	82.4
NCSU	13.0	87.0	12.6	87.4	14.6	85.4
UNCA	0.8	99.2	0.8	99.2	0.0	100.0
UNC-CH	3.8	96.2	2.1	97.9	7.2	92.8
UNCC	9.5	90.5	8.5	91.5	18.1	81.9
UNCG	17.4	82.6	17.6	82.5	16.6	83.4
UNCP	23.0	77.0	21.7	78.3	36.9	63.1
UNCW	12.7	87.3	11.1	88.9	36.9	63.1
UNCSA	0.0	100.0	0.0	100.0	0.0	100.0
WCU	14.0	86.0	11.1	88.9	36.8	63.2
WSSU	14.1	85.9	14.2	85.8	12.4	87.6
Total	12.2%	87.8%	11.1%	88.9%	18.7%	81.3%

Source: UNC-GA IRA/SCF.z059

APPENDIX B

PERCENTAGE OF FACULTY BY ONLINE TEACHING INTENSITY, 2013-14

The data for faculty matched to individual courses has limitations due to incomplete historical data. Thus, the table presented below should be interpreted with caution.

	2012-13				2013-14			
	Face-to-Face	Partially Online	Mostly Online	All Online	Face-to-Face	Partially Online	Mostly Online	All Online
All	79.5%	10.3%	5.5%	4.7%	77.9%	11.1%	6.1%	4.9%
Male	83.1	9.9	4.7	2.3	81.0	11.0	5.5	2.6
Female	75.4	12.7	6.7	5.1	74.1	13.4	7.0	5.5
Tenure/Tenure Track	76.6	14.5	6.5	2.4	74.8	15.3	7.3	2.5
Other*	82.5	5.8	4.5	7.1	81.4	6.5	4.6	7.6

* “Other” includes all faculty that are not tenure/tenure track. This includes Instructor, Lecturer, Other, and faculty that had a missing value for Academic Rank.

Source: UNC-GA IRA/E/Faculty course

APPENDIX C

NUMBER OF FULLY ONLINE PROGRAMS, 2014-15

	Bachelors	Certificate	Masters	Doctoral	Total
ASU	8	7	6	2	23
ECU	20	39	34	3	96
FSU	6	0	2	0	8
NCAT	6	2	5	1	14
NCCU	8	0	6	0	14
NCSU	1	30	42	0	73
UNC-CH	1	8	11	2	22
UNCC	5	12	14	0	31
UNCG	7	18	11	3	39
UNCP	5	0	3	0	8
UNCW	6	0	8	0	14
WCU	8	11	14	0	33
WSSU	5	1	2	0	8
Total	86	128	158	11	383

Source: UNC-GA IRA/E/API/Fully Online

APPENDIX D

TECHNICAL NOTES

Details on the process for the analysis are as follows. Undergraduate courses within each institution and given semester were identified that offered both face-to-face and online, with summer enrollments and high school students excluded. This allowed a focus on the effect of mode of delivery of the courses. To further focus the evaluation, it was decided to look at the outcome of WDF, which is consistent with UNC-GA's previous project to identify and redesign courses with a high preponderance of D's and F's. Further, the coding of D or F corrects for institutional differences in grading scales, with W being a withdrawal after the census date (no movement prior to census date is captured).

Beyond mode of delivery, past research shows that outcomes vary across discipline and field and are effected by many student level characteristics. To account for the former, variables were interacted for online with variables for field/discipline, as measured by the 2 digit CIP code of the courses. Additionally, other variables found in the social science literature are included that are related to student success. The other variables included are: sex, underrepresented minority status (defined as not white or Asian), age, Pell grant status (as a proxy for low-income), high school GPA (as a proxy for academic ability), course load, and the percentage of courses a student was taking online. Our model included these covariates and utilized a logit link function.

$$\Pr(Y_i = 1) = \beta_0 + \beta_1(high\ school\ GPA_i) + \beta_2(pell\ grant_i) + \beta_3(female_i) + \beta_4(race) + \beta_5(course\ load_i) + \beta_6(percent\ courses\ online_i) + \beta_7(online\ student_i) + \beta_8(online_i) \beta_j(field_{ij}) + \beta_k(online_i * field_{ij})$$

The equation for the model that included the freshmen interaction is:

$$\Pr(Y_i = 1) = \beta_0 + \beta_1(high\ school\ GPA_i) + \beta_2(pell\ grant_i) + \beta_3(female_i) + \beta_4(race) + \beta_5(course\ load_i) + \beta_6(percent\ of\ courses\ online_i) + \beta_7(online\ student_i) + \beta_8(online_i) + \beta_9(freshman_i) + \beta_{10}(online_i * freshman_i) + \beta_j(field_{ij}) + \beta_k(online_i * field_{ij}) + \beta_l(freshman_i * field_{ij}) + \beta_m(online_i * freshman_i * field_{ij})$$

Where Yi is the outcome of interest, β are the covariates in the model, k indexes

the field, and the last elements represent the interaction terms. Because the models use Maximum Likelihood Estimation (MLE) and interactions, the predicted probabilities and their associated 95% confidence intervals are calculated through simulating all possible combinations of variables in the model. These simulations are run holding all non-interacted variables at their sample.

The table below displays descriptive statistics of the sample used in the analysis. The table displays the means or percentages for each variable. This sample was used and included the covariates mentioned above to examine the WDF rate of courses that were offered both face-to-face and online. For the system level, this was done both in aggregate and by 2 digit CIP code. The sample means of the covariates by year are:

Variable	2012-13	2013-14
Female	56.3%	57.7%
Underrepresented Minority	34.9%	35.5%
Average Age	22.3	22.3
Less than age 24	81.9%	81.9%
Received a Pell Grant	37.4%	39.0%
High School GPA	3.67	3.65
Course Load	14.9	14.9
Online Courses	9.9%	10.7%

The following table displays the 28 academic fields that had courses contained in the analysis. An "X" denotes a statistically significant ($p<.05$) higher predicted probability of earning a WDF in an online course during that academic year. An "*" denotes a statistically significant lower predicted probability of earning a WDF in an online course during that academic year.

	2012-13	2013-14
Agriculture		
Natural Resources		
Cultural and Gender Studies	x	
Communication and Journalism		x
Computer and Information Sciences		
Education	x	x
Engineering	x	x
Engineering Tech and Related Fields		
Foreign Language and Literature	x	x
Family and Consumer Science		
English Language and Literature	x	x
Liberal Arts and Humanities		x
Library Sciences		
Biological and Medical Sciences	x	x
Mathematics and Statistics	x	x
Multi/Interdisciplinary Studies	x	x
Parks, Recreation, Leisure and Fitness	x	x
Philosophy and Religious Studies		x
Physical Sciences		x
Psychology		
Protective Services	x	x
Public Administration		
Social Sciences	x	x
Visual and Performing Arts		*
Health Professions		
Business	x	x
History	x	x
Other		
TOTAL	13	16

The following table displays the 28 academic fields that had courses contained in the analysis during the 2013-14 academic year broken out by W and DF. An "X" denotes a statistically significant ($p<.05$) higher predicted probability of earning a WDF in an online course. An "*" denotes a statistically significant lower predicted probability of earning a W or DF in an online course. This suggests that course withdraws are a driver of the overall WDF findings.

	W	DF	WDF
Agriculture			
Natural Resources			
Cultural and Gender Studies			
Communication and Journalism	x	x	x
Computer and Information Sciences	x	*	
Education	x	x	x
Engineering	x		x
Engineering Tech and Related Fields	x		
Foreign Language and Literature	x	x	x
Family and Consumer Science			
English Language and Literature	x		x
Liberal Arts and Humanities	x		x
Library Sciences			
Biological and Medical Sciences	x		x
Mathematics and Statistics	x	x	x
Multi/Interdisciplinary Studies	x	x	x
Parks, Recreation, Leisure and Fitness	x		x
Philosophy and Religious Studies	x		x
Physical Sciences	x		x
Psychology	x		
Protective Services	x		x
Public Administration			
Social Sciences	x		x
Visual and Performing Arts	x	*	*
Health Professions	x		
Business	x		x
History	x		x
Other	x		
TOTAL	22	5	16

As mentioned in the limitations section above, sample sizes varied by academic discipline. Sample sizes for those academic fields identified in the analysis with a higher WDF rate after the inclusion of control variables for both academic years are displayed below.

Field	Face-to-face Enrollments	Online Enrollments	% of Enrollments Online
Education	15,960	8,187	33.9
Foreign Language	12,202	2,314	15.9
English	23,437	4,435	15.9
Biology	19,432	3,767	16.2
Math and Statistics	42,913	4,401	9.3
Interdisciplinary	4,694	1,892	28.7
Parks, Recreation, Leisure, and Fitness	18,657	5,164	21.7
Protective Services	3,749	2,028	35.1
Social Sciences	32,561	7,481	18.7
Business	47,099	12,412	20.9
History	13,494	2,645	16.4