TRANSFORMATIONAL CHANGE IN RESPONSE TO THE COVID-19 PANDEMIC

Technical Report (December 2021)

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EFFECTIVENESS & INNOVATION

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Executive Summary

In March 2020, the Wake Technical Community College employee community unified and responded to the global COVID-19 pandemic with unprecedented and swift changes in operations. The following report details the ways the college's operations transformed, the changes in student and employee perceptions and attitudes, as well as changes in student success rates[1], withdrawal rates[2], and equity gaps that occurred during that time. Detailed in the report, key findings from year one of the research study are summarized here and can be used to advance student success going forward.

- **Key College Challenges** to overcome to transition to fully online service delivery:
  - (a) Using new systems for making appointments
  - (b) Using video conferencing platforms for meetings and classes
  - (c) Quickly scaling up online service delivery to meet the demand
  - (d) Converting seated courses to fully online in a matter of two weeks, but especially hard for the health sciences, trades, and Workforce Continuing Education
  - (e) Engaging students in courses that converted from seated to online, as engagement was perceived to have dropped
  - (f) Significantly expanded workload for faculty following the transition to online instruction (due to rapid course redesigns, increased communication with students and expanded number of sections to teach in lab and clinical courses) and associated mental and physical toll
  - (g) Faculty, staff, and students experienced similar and numerous challenges when working and learning during the pandemic: abrupt and ongoing challenges with childcare, managing virtual learning for their children, changes in work schedules, financial issues, lack of motivation, and increased stress and anxiety, overall.

- **Key College Solutions/Changes** to prevent attrition and reduce COVID-19 impacts on student access and success:

[1] Success Rate: Percentage of A, B, C, S, and P grades out of all grades including withdrawals but excluding AU, X, SR, and NA.
[2] Withdrawal Rate: Percentage of W, WP, WE (special COVID-19 withdrawal grade), and WF grades out of all grades excluding AU, X, SR, and NA.

(a) **Laptops:** Providing laptops to students who did not have computer access (either via the free laptop distribution or loaning laptops through the college libraries)
(b) **Gift cards:** Providing grocery store gift cards for students in need of food assistance
(c) **Expanded hours of virtual service availability** (e.g., tutoring, academic advising, financial aid advising, etc.) to meet the needs of students who work or have other obligations during typical work hours (Monday-Friday, 9am-5pm)
(d) **One-stop Answer Center and coordinated academic and non-academic support services** (Student Experience Program) that streamlined answers to student questions and referrals to specific supports/services
(e) **More flexible course attendance policies**
(f) **More flexible course due dates and late work policies**
(g) **Different course assessments:** different assignments, quizzes, or tests than originally planned
(h) **Increased communication with students:** frequency of contact with students changed, and tended to increase, due to virtual office hours and more widespread use of messaging via Microsoft Teams
(i) **Increased use of MS Teams and videos in courses.**

- **Key College Shifts in Attitudes:**
  (a) **Technology adoption:** The pandemic sped up planned implementation and adoption of new technologies and allowed faculty and staff to experience the benefits of conducting classes and operations online beyond physical campuses.
  (b) **Assumptions about remote instruction:** While faculty experienced in teaching online expressed gratitude about being prepared in advance through EPIC (eLearning Preparedness Initiative across the College) certification, many faculty who had not taught online embraced online learning after the pandemic.
  (c) **"No going back":** As we transition out of the pandemic, the prevalent attitude among faculty and staff is that we have changed for the better, with a desire to keep many of the innovations put into place during the pandemic. Assumptions about online learning, for those who rapidly transitioned, changed toward acceptance and finding benefits.

- **Student Perceptions of Most Helpful Practices:**
  (a) **Top course practices that helped students learn**, especially Black/African American males and females who received Pell Grants:
    - In-person classroom instruction, labs, or other in-person, hands-on learning opportunities
    - Watching videos on course content that were created by students' instructor
    - Attending tutoring sessions with the Individualized Learning Center (ILC)

  (b) **Top course practices that helped students complete their courses,** especially Hispanic/Latinx females (both Pell Grant recipients and non-recipients):
    - Weekly checklists provided by students' instructor
    - Flexible due dates for assignments
    - Flexible attendance policies
    - Flexibility in how students could turn in assignments

  (c) **Top supports that helped students stay enrolled at the college,** especially Black/African American Pell recipients and Black/African American males:
    - Financial assistance (e.g., grants, scholarships, gift cards, etc.) (also particularly helpful for all Pell Grant recipients)
    - Food assistance (e.g., the Nest [college's food bank], grocery store gift cards)
    - Technology assistance (e.g., laptop or tablet access).
- **Course Enrollment**
  (a) Even with the more limited course offerings during the pandemic, there were not drastic declines in overall enrollment (seats) or major shifts in the demographic composition of the course seats when comparing Fall 2020 to Fall 2019 and Spring 2021 to Spring 2019.

  (b) In Fall 2020, nearly all of the demographic proportions by race-ethnicity/gender and race-ethnicity/Pell status remained consistent with Fall 2019; the most notable difference was a two-percentage-point gain for Black/African American Non-Pell students and a two-percentage-point drop for Black/African American Pell students.

  (c) Spring 2021 showed a net loss of male students and Pell recipients, although demographics proportions by race-ethnicity/gender and race-ethnicity/Pell status remained relatively consistent to Spring 2019, overall.

- **Student Course Performance**
  (a) **Courses converted from seated to online in Spring 2020:** Compared to Spring 2019 (and controlling for student characteristics), the one significant change in course success rates was a decrease for Black/African American Pell Grant recipients; a precipitous increase in withdrawal rates occurred across all demographic groups in courses that converted from seated to online delivery, especially for Black/African American males and Black/African American Pell Grant recipients.
  (b) **Online courses in Fall 2020, Spring 2021 (compared to pre-pandemic):** Across all demographic groups, withdrawal rates decreased and success rates increased in online courses.
  (c) **Overall, rather than widening, equity gaps** in performance between most majority and minority subgroups **actually narrowed** in the semesters during the pandemic compared to semesters before the pandemic, particularly between White/Caucasian Pell non-recipients and Black/African American Pell recipients. Notable increases occurred in the success rate gap between White/Caucasian males and Hispanic/Latinx males in Fall 2020 and in the withdrawal rate gap between White/Caucasian males and Black/African American males in Fall 2020, which indicate that there were challenges in meeting the needs of two of our most vulnerable groups of students as the first full academic year during the pandemic began.

Introduction

Enrolling over 40% of first-time freshman in the United States (Shapiro, 2017), community colleges represent an affordable and growing pathway to higher education, jobs, and upward mobility for lower income college students, working adults, and students of color – those who often face the greatest obstacles in higher education attainment (Wyner, 2014). Among them is Wake Tech, one of the largest community colleges in the nation, providing high quality, equitable access to education for over 70,000 students annually in proportions that are more diverse and less wealthy than the general population of Wake County. But similar to national statistics, these students have historically suffered equity gaps, with higher rates of withdrawal and lower rates of success in high enrollment gateway courses, among students of color and federal Pell grant recipients (a proxy for income) as compared to majority students. With the sudden onset of the COVID-19 pandemic in the U.S. in March 2020, and all the college's instruction, academic and student support services, and administrative services making rapid transitions to virtual/online platforms, the college was concerned that equity gaps could have grown even wider. Several factors could have contributed to this widening, including: higher proportions of unemployment among citizens of color and workers without a credential, lower rates of Free Application for Federal Student Aid (FAFSA) renewals, higher proportions of students of color indicating their college plans will be affected by COVID-19, and higher rates of people of color being affected by the virus nationally during the pandemic (Fairfax & Venit, 2020).

As an offset to these negative effects of the pandemic, Wake Tech responded to the crisis also in ways that attempted to mitigate impact on our vulnerable student populations. These included setting-up a virtual one-stop to route students to academic and student supports, changes to withdrawal policies, as well as expansion of Microsoft Teams for virtual instruction. However, there is no prior research associating these strategies with closing or widening of equity gaps within the context of a disruptive change to operations like the COVID-19 pandemic. Therefore, this research project aimed to capture the disruptive changes in policy, instruction and assessment, and academic and student support processes and practice, as well as the associated perceptions of faculty, staff, and students, in order to compare how those changes may or may

not have affected equity gaps at the college. Accordingly, the study was guided by the following overarching research questions:

1. In what ways did the COVID-19 pandemic catalyze transformational change at Wake Tech?
2. How did college stakeholders (students, faculty, staff/administrators) view these changes? How did perspectives compare among stakeholder groups?
3. Is there an association between institutional changes and significantly different success and withdrawal rates compared to prior to COVID-19?
4. Is there an association between institutional changes and widened or narrowed equity gaps in student success and withdrawal rates, particularly for students of color and those with low incomes?

Theoretical Framework and Key Literature

While many institutions offer helpful suggestions, strategies, and audits designed to mitigate equity gaps during the COVID-19 disruption (Fairfax & Venit, 2020), few, if any, of these strategies are grounded in empirical research pointing to high-impact, effective practices that help the access and retention of low-income and students of color in a time of crisis. Therefore, a theoretical framework grounded in change theory was most appropriate for conducting this research and understanding the changes and their effects on students during COVID-19. This study of disruptive changes that have occurred during, and in response to, the COVID-19 pandemic uses Kezar's (2013) theoretical framework for how colleges change, a framework also used by researchers at the Community College Research Center at the Teachers College of Columbia University to study changes in student supports and technology within the context of advising reforms (Kalamkarian, Karp, & Ganga, 2017).

According to the framework, there are three foci in any major change event: structural, process, and attitudinal. Structural changes include the "what" of change, such as changes from face-to-face to online instruction as well as changes to withdrawal policies. Examples of process changes include the "how" of change, including how admissions processes occur, how advisors advise students, and the practices used by instructors to teach students. Attitudinal changes involve how people feel about and perceive the change and relate to culture and values. While structure and

process changes can be considered first-order changes that are technically easier to accomplish, second-order change that transforms an institution, and changes outcomes for students (either for better or worse) involves these changes plus the deep underlying assumptions of the people involved in the change. In Kezar's (2013) description, transformational change is "so substantial that it alters the operating systems, underlying values, and culture of an organization or system" (p. 62). These changes might be observed in the relationships between faculty and students or abandonment of resistance to change and old arguments of what is and is not possible (Kezar, 2013), such as what is and is not possible in online learning environments, virtual service delivery, and maintaining college operations remotely.

Following the closure of physical campuses in the middle of the Spring 2020 semester, numerous experts predicted some of the dramatic effects the coronavirus pandemic would have on the learning environments and operations of higher education institutions. Dans (2020) posed that the pandemic had "unleased a revolution in education" that would require major adaptations and alterations in how teachers orient themselves and their teaching in online environments. To be effective in their teaching in this new learning environment, Dans (2020) stated, teachers would also have to be open to participating in training, learning new tools, and modifying their courses and the ways they evaluate student learning (also, Busta, 2020). As Resnik et al. (2020) and others (e.g., Blankenstein et al., 2020) have noted, to support and sustain the expansion of online or blended learning environments and virtual service delivery would also require significant investment in educational infrastructure and support from institutional leaders.

Numerous studies involving higher education institutions have documented the pandemic's toll on students' ability to continue in their studies and perform well in their courses (e.g., Aucejo et al., 2020; Belfield & Brock, 2021; CCCSE, 2021; Chugani & Houtrow, 2020; Goldrick-Rab, 2020; Hope Center, 2020; Jankowski, 2020; Li et al., 2020; Means et al., 2020; Seaman & Johnson, 2021). Following the COVID-19 outbreak in the U.S., a number of university-based research teams and research centers administered nationwide surveys of undergraduate students, including The Hope Center's #RealCollege During the Pandemic (Goldrick-Rab et al., 2020) (N=38,602) and the Center's annual #RealCollege Survey (Hope Center, 2020) (N=195,000), the Community College Research Center (2020) (N=100,000+), the Center for Community College

Student Engagement (2020) (N=5,193), Aucejo et al. (2020) (N=1,500), and Means et al., (2020) (N=1,008).

Overall, the national surveys of institutions, faculty, and students in higher education provide a broad view of the institutional and course-level changes made in response to the COVID-19 pandemic, as well as trends in students' experiences and challenges faced during this time. Less is known, however, about how such changes impacted students' experiences and, ultimately, their ability to complete and do well in their courses. Moreover, there have not been systematic studies published that offer in-depth perspectives from students, faculty, staff, and administrators at the same institution to compare experiences and perspectives among multiple stakeholder groups. Ultimately, this study of a large public two-year institution addresses these gaps in the research thus far, and offers a case study in how changes made in response to COVID-19 have initiated transformative change in the ways an institution offers and delivers instruction, support services, and proactive outreach.

Data and Methods

This study employed a parallel, mixed-methods convergent design (Creswell & Plano, 2018; Tashakkori & Teddlie, 2010) where both qualitative and quantitative data were collected and analyzed independently and then compared to gain a more complete understanding of how sudden changes in instruction and services due to COVID-19 may have affected equity gaps at the college. Qualitative data collection and analysis were conducted via focus groups, interviews, and open-ended survey questions in a phenomenological approach, where a common meaning is gleaned from several participants based on their lived experiences, practices and attitudes during the transition of the COVID-19 pandemic (Creswell & Poth, 2018). Quantitative data analysis included descriptive statistics of survey responses and course enrollment, as well as conducting a quasi-experimental study using Propensity Score Matching (PSM) statistical techniques to assess the impact of COVID-19. Using administrative data sets from Spring 2019, Fall 2019, Spring 2020, Fall 2020, and Spring 2021, success and retention were disaggregated by gender, race-ethnicity, and Pell Grant status, with like characteristics on all other variables, and compared. Finally, the qualitative and quantitative data were compared to determine the extent to which the data "converge, diverge, relate to each other and/or produce a more complete understanding"

(Creswell & Plano Clark, 2018). (For more details on the study's data, methods, and instruments, see appendices.)

Findings

Structural Changes

Following initial meetings with staff and administrators in April 2020 to gather and document major institutional changes, one-on-one interviews were conducted with a total of 16 high level administrators and staff from across the college between February 19, 2021 and March 3, 2021. Interview questions aimed to gather perspectives on the structural, process, and attitudinal changes made at the college in response to the COVID-19 pandemic, including which changes were more difficult or easier to implement, whether and how specific changes aligned with the college's strategic priority areas of equitable access and equitable outcomes, and which changes the administrators and staff would like for the college to continue or discontinue as it "nudges toward normalcy".

Transitioning Seated to Online Instruction

Transitioning seated courses to fully online delivery in Spring 2020 posed more challenges for some programs and courses than others that already had many online course offerings and instructors who were EPIC certified.[3] Programs in the college's Workforce Continuing Education division, Health Sciences Department, and trades (e.g., welding, pastry and culinary arts, and cosmetology) did not have many offerings for online delivery prior to the pandemic. Converting labs in the health sciences and trades from in-person, hands-on learning to virtual instruction and simulation proved challenging for many, and near impossible for some. To ensure students were able to complete their lab requirements, a few solutions were implemented. For some, lab kits were sent to students' homes to conduct the exercises while guided virtually by the instructor. In cases which required the use of lab equipment on campus, students were allowed to complete the rest of their coursework, take a temporary Incomplete for the course,

[3] The college's eLearning Preparedness Initiative across the College (EPIC) involves 30 hours of professional development in online teaching and learning. All instructors who teach online at the college must complete EPIC30; however, this requirement was temporarily waived in the immediate transition from seated to online instruction in Spring 2020. In the Spring and Summer of 2020, a total of 250 additional instructors completed EPIC30.

and then use the campus labs in the summer to complete their lab requirements once safety procedures and social distancing measures were in place. Capacity constraints on in-person labs also meant that, in some cases, instructors were teaching the same lab session many more times than they would have normally to ensure that every student had the ability to complete their course and/or certifications.

In the college's Workforce Continuing Education programs, the Learning Management System (LMS) posed particular challenges for converting to online instruction. While the college's for-credit programs have a Blackboard shell built in for their courses, these did not exist at the time for courses in non-degree programs, which used Moodle. For students in these courses to continue learning online, Blackboard shells had to be created quickly and instructors—many of whom were adjunct instructors who had never previously taught online—had to be trained on how to use them, as well as Microsoft Teams, to communicate with their students, create and post course content, and develop online assessments. Similarly, many instructors in for-credit trades programs had never taught online previously and found the adjustment particularly challenging, some choosing to retire at the end of the semester, earlier than they had planned.

While the for-credit trades programs were able to hold classes and labs in-person in Fall 2020 and online offerings were not pursued, programs in Workforce Continuing Education continued to offer courses with online delivery through the 2020-2021 Academic Year. As of Spring 2021, the WCE division had tripled the number of courses offered online compared to Spring 2020.

Virtual Service Delivery

A major aspect of the transition to an online/virtual environment in Spring 2020 involved the delivery of student support services. Services that had been primarily delivered in person, such as academic and financial advising, tutoring, counseling, and many others, all had to move online once campuses closed due to the pandemic. As college administrators recalled in their interviews, transitioning these services involved a great deal of logistical maneuvering and rethinking of how supports can be delivered to students. As an administrator noted:

> *"I do think on the support services side there was a lot of rethinking that had to go in. So, you know, how do you do the ILC? How do you do the Nest [food assistance]? How do*

you do the appointments for counseling and advising? Those kind of things. So I think there are probably a little more had to go in place there just because we were more used to an environment that was not as virtual in those areas."

In both instructional and non-academic support areas, staff and administrators mentioned three major obstacles faced in the transition to online service delivery:

(a) getting students used to the new system for making appointments,

(b) getting both students and staff members familiar and comfortable with using video conferencing platforms for meetings, and

(c) scaling up online service delivery to meet the demand.

Prior to the pandemic, students could typically access many services on a drop-in basis without an appointment required. Once services went primarily online, though, appointments via an online booking system were required for all online and the limited in-person sessions available. In the initial shift, as staff and administrators recalled, it was sometimes challenging managing students' expectations about appointment availability or lack thereof, as well as ensuring that students were aware about the online services available. Some students and staff members were also unaccustomed to meeting via online conferencing platforms and had to overcome technological challenges in getting up to speed with using the platforms for meetings. Staff and administrators in both the instructional and non-academic support areas noted the efforts made in virtual meetings to try to mimic an in-person experience to the extent possible, which required some additional training and expectation-setting with staff members to ensure that certain protocols were followed, such as always having their camera on during a session.

Because some areas, like the Individualized Learning Center (ILC), had already been offering some synchronous and asynchronous online tutoring sessions, the infrastructure was in place for them to make the transition; still, they faced challenges in scaling up the services to meet demand, like hiring additional tutors and making schedule adjustments to staff the additional hours services were being offered. Departments in Enrollment and Student Services, including Advising and Financial Aid, had also been piloting some virtual service delivery during Spring 2020, but the speed at which they had to take those pilots up to scale was accelerated significantly by the pandemic.

"I think about back before COVID, our services were primarily 80%, if you will, in person, and then 20% [virtual services]...and so to essentially scale pilots of that size in two weeks time, you know, is not an easy task. And so things like the technology platform, you know, we had really just begun to get our feet wet with Teams, and none of us were super, super familiar or comfortable with navigating that environment right out of the gate."

Part of scaling up the virtual services also entailed ensuring that all staff members had the necessary equipment and access to reliable high-speed internet connectivity at home, which proved to be an obstacle in the initial transition. In addition, some roles in Enrollment and Student Services had to be repurposed quickly—for example, some staff members who would have normally been working in Student Activities, which were largely paused in the immediate transition, were reassigned to help staff the Answer Center—which brought logistical challenges, but allowed for some of the new virtual services to be taken to scale rapidly.

Process Changes

Equitable Access and Equitable Outcomes (Institutional Level)

When asked whether specific changes were made that they believed aligned the college's strategic priority areas of equitable access and equitable outcomes, staff and administrators across the college mentioned several key factors, including:

- Providing laptops to students who did not have computer access (either via the free laptop distribution or loaning laptops through the college libraries)
- Providing grocery store gift cards for students in need of food assistance
- Expanding hours of virtual service availability (e.g., tutoring, academic advising, financial aid advising, etc.) to meet the needs of students who work or have other obligations during typical work hours (Monday-Friday, 9am-5pm)
- Creating the one-stop Answer Center for students to have a direct line of contact to help questions answered and be routed to specific supports/services
- Implementing the Student Experience Program to provide coordinated support services to faculty and students in the college's highest enrolled English and math gateway courses.

As many noted, the ability to distribute free laptops to students who needed them stands out as a major achievement in terms of addressing equity issues among students. Once the transition to fully online instruction took place, it became evident that technology access would be a major barrier for some students in being able to continue in their courses. To address this issue, the college's Student Services division partnered with the College Foundation, as well as the Finance Office, to acquire as many laptops as possible as quickly as possible—receiving first a donation of 250, a second donation of 500, and then purchasing an additional 1,000 for free distribution and 100 for library loaners. Without this support and being about to offer the resources, the results could have been "devastating":

> *"…the fact that we've gotten lots of technology support, because had we not gotten the assistance with being able to provide laptops, can you imagine the number of students who would just be left out of the equation? Because I can. [If] the only option I had was to teach, is to learn online, but I don't have the resources to do it? So had we not been able to provide laptops, you know, that would be devastating. So that's been a huge thing for us and able to provide for that equitable access for those who don't have the resources."*

Several administrators also pointed out the importance of continuing laptop distribution to some extent going forward and exploring options for helping students gain internet access. Even with the increased availability of laptops provided by the college, and some Wi-Fi hotspots that were available on loan from the libraries, a major barrier remained for some students, particularly areas low on the economic health index, due to the lack of ability to pay for reliable and highspeed internet connectivity.

Course Level

Similar to the national survey studies mentioned, the majority of faculty survey respondents (N: 159) who transitioned from seated to fully online instruction in Spring 2020 reported making changes to attendance policies (74%), due dates for assignments (71%), late work policies (67%), and course assessments (e.g., different assignments, quizzes, or tests than originally planned) (65%). For most, their ways of contacting and communicating with students also changed. Over half (59%) reported that their frequency of contact with students changed, and

tended to increase, due to their offering virtual office hours a more widespread use of messaging via Microsoft Teams.

In the faculty focus groups, several commented on the positive effects of greater utilization of MS Teams necessitated by the transition, noting the greater flexibility and options for students to watch recorded lectures and to revisit the recordings when studying for assignments and tests. Some also observed an upswing in participation among some students who tended to "fade into the background" in their seated class. Instead, the virtual modality made them more comfortable to speak up and engage in the discussion during synchronous class sessions.

Attitudinal Changes

Staff and Administrator Perspectives

In addition to institutional and process-related changes, staff and administrators were also asked about their observations on attitudes that have changed in response to the pandemic. Many gave recognition of the frustration, exhaustion, stress, and fatigue they observed among their colleagues, particularly among faculty. As mentioned, the transition to online instruction proved to be a major challenge—not only with overcoming technical hurdles involved, but also because they did not consider teaching online as part of the job they were hired to do. An administrator described this view of some:

> *"…they weren't hired to teach online, didn't want to teach online, didn't want to get EPIC certified, wasn't part of their contract to become EPIC certified to ever teach online. And that's the way they interpreted their duties. So there were resignations as a result of that."*

More commonly, though, staff and administrators spoke with pride of their colleagues' ability to adapt and openness to innovate in response to the pandemic. Several noted that they observed perspectives shift among some faculty who had previously thought that they could not teach their subject matter online. While there was initial discomfort with the transition, administrators observed that some instructors viewed the necessity of shifting to online instruction as an opportunity to enhance their courses and try out different approaches to teaching that they would not have ventured into otherwise.

"You know, it's like anything, there are people that are always going to roll with it, right? Do whatever it takes to get the job done, realizing that eventually it'll come to an end and they'll be better for it, they'll be stronger for it, they'll be smarter for it. And they'll have learned new ways to do things with their classes. They've increased their skill sets, they've learned how to service their students in a different capacity, and maybe established a different type of repertoire with their colleagues and their students."

At the same time, staff and administrators interviewed recalled sensing appreciation among their colleagues for the college's leadership during the pandemic and for the way that key service areas, like Information Technology Services (ITS) and Human Resources and Campus Safety, implemented processes that allowed for operations to continue in ways that protected the college community. They also observed how their colleagues' and their own perspectives on the uses of technology shifted during this time. Where virtual delivery of instruction and services, and remote working in general, had seemed years away for the institution, the pandemic sped up implementation of plans that were in the works and allowed for administrators to see how areas across the college could operate beyond physical campuses.

"…we've really been working very hard to change the attitudes about what technology can be used for, and how it can actually change the model of what we're trying to deliver to the student. There's a term in my industry called 'digital transformation'. And I see this as an opportunity for us to take the technology that we're using now and utilize it to change the way we do business as an institution going forward."

Faculty Perspectives

Faculty who transitioned from seated to fully online instruction were also asked about changes they noticed in attitudes, feelings, and beliefs regarding teaching and learning – both for themselves and among their colleagues. The most prominent theme in their open-ended responses was that they observed and experienced positive effects from having to make the transition. Several noted that they enjoyed the challenge that the shift brought on and that it necessitated changes that ultimately made their course better.

"I really enjoyed teaching online and that was not at all what I was expecting. I help [sic] [kept] the regular lectures during the times we usually met. I thought it was great to be able to record the sessions. Students who could not join us could easily catch up on the missed content. I also remained in a teams meeting for the lab times and students

could work while connected to the meeting. Many actually liked to work that way. Most of the meetings were quiet but students were able to ask questions immediately as they worked on their lab projects. I spent less time on the road, more time working with my students, and overall was very happy with my students' results."

"My attitude to online instruction has changed to more positive. I thought it had more limitations than what could be done face to face. But in fact, it removes limitations of set times in class; removes limitations of what material I can share; allows for more variety of labs- even though virtual or simulated. It is sad that students cannot manipulate actual equipment though. The feeling of fear of getting the teaching wrong because it's online subsided quickly as students became partners in fixing errors. Even though the workload has increased dramatically, I am able to be much more productive w/ asynchronous delivery than I ever was being 'live'."

"Before this experience, I was certain that teaching online was not compatible with my teaching style and preferences. However, now I have discovered that, as an introvert, teaching online has preserved a lot of the energy expended in the classroom, tutoring center, and office. As such, I am able to be more present, energized, and help students even more."

Similarly, several faculty in focus groups indicated that their assumptions about remote work and instruction had been challenged by the pandemic. Rather than instructors needing to be in the classroom for instruction 100% of the time, the pandemic made it evident to them that remote instruction can be done. Some faculty noted that they have seen how technology can allow them to do to various elements of their role online rather than in-person, such as virtual office hours, which can ultimately save them time.

At the same time, other prominent themes in survey responses and faculty focus groups highlighted how the transition impacted connection, engagement, and motivation for faculty and students. As Fox et al. (2020) found in their faculty survey, many faculty noted disengagement as a major challenge, describing their belief that students were less engaged and less motivated after

the transition and that they also felt disconnected from their students in teaching. The following responses from the faculty surveys offer examples:

> *"I was less engaged and more stressed because of it. I did not feel the connection with my students, and I felt ill-equipped to help students who struggled with online learning."*

> *"I think there was a general feeling that we are now disconnected with our students. When it was incumbent upon the students to reach out to us during office hours rather than asking questions during class or lab, many students disappeared…It was less obvious that we are making a difference. One colleague described it as 'the fun is gone'. The fun of being with a student when they are successful. The fun of seeing students grasp a concept. The fun of feeling positive energy in the classroom. The fun of sharing with colleagues. After we switched, it was all putting out fires."*

The vast majority (86%) of the faculty survey respondents reported that the number of hours they worked a day increased, on average, following the transition to online instruction and this increase workload came with a great emotional and physical toll. Changes they observed in themselves, their colleagues, and students were increased feelings of exhaustion, frustration, stress, drain, overwhelm, and anxiety.

> *"I became much more of an understanding, forgiving, and patient person. I also became very stressed and frustrated. I would work for hours, often late into the night to produce videos for students. I would also be available during the work day to answer questions, and still students would see me logged in late at night when I was working to ask me questions that they would have learned if they had just watched the video."*

> *"Concern that I am not doing enough to convey what they (students) need, that normally I do not have in a seated. Limited ways of communicating. I think I conveyed something in a video, and some students really resent watching videos. The time spent in thinking up ways to convey Lab materials due to the limitations (extreme)."*

Like faculty respondents in national surveys (cite), faculty at Wake Tech who had experience teaching online prior to the pandemic tended to report that the transition did not come with as many challenges for them as they observed with their colleagues. Some were already teaching

online a section of the same previously seated course and were able to quickly add content to their Blackboard course shells following the transition. Nearly all who were already certified or master certified in the college's professional development program for online instruction, eLearning Preparedness Initiative across the College (EPIC), indicated that the training had benefitted them in making the transition.

> *"This would have been far more stressful and there would have been much more of a learning curve for me had I not taken epic 30. But behind me, I think it benefited my students. If I have been stressed out about not knowing how to do something in Blackboard that stress may have been conveyed to my students. They needed to know that someone with knowledge and experience was at the reins here."*

> *"My transition to online required that I spend more time preparing for and adapting my classes, but I didn't really have to learn how to do anything. I just had to create more online content for my students. However, my colleagues who had not completed EPIC30 faced a much more challenging transition."*

Almost all who were not certified at the time of the survey were either in progress in the training or planned to start the program before the end of the 2020 Fall semester. Overall, the majority of faculty respondents believed that they had the instructional support (75%) and technological support (74%) needed to transition to fully online instruction mid-semester Spring 2020.

Faculty's perspectives on students' attitudes, feeling, and beliefs regarding teaching and learning after the transition indicated that, while some students certainly struggled with adapting to the online environment and they preferred seated instruction, many were able to adjust to the changes and complete their courses. For some faculty, the transition resulted in focusing even more on their students' needs so that they could best support them in successfully completing their course. Several noted that they believed their students were appreciative of their increased support and leniency with attendance policies and assignment due dates. On the other hand, a vocal minority of the faculty expressed major concern about more widespread cheating in their classes during the pandemic, with students accessing online resources for completing assignments and tests.

Changes to Continue or Discontinue

Staff and Administrator Perspectives

Across all divisions, nearly all staff and administrators who participated in interviews mentioned on at least one, and often more than one, occasion that the way their area had been operating before the pandemic would not be how it operates after the pandemic. The plan, as they expressed, would be that innovations in virtual instruction and service delivery, expanded hours for accessing virtual appointments and supports, and expanded distribution of resources to students in need (e.g., laptops, grocery gift cards) will continue, to the extent funding is available, even when campuses are fully reopened and in-person offerings are also available. In instructional support areas, for example:

> *"I keep telling everyone…when we go back to normal, we're not going back to normal. Everything that we've started, everything that we've been able to create, we want to keep building. And we want to keep going in that direction, so that we have a robust online support system for students, as well as a robust in-person support system for students… …I think now that we know that we can offer the services on a large scale online, and that we can positively impact students success, I don't think we're ever going to go back to the norm in terms of in-person how it used to be."*

Virtual appointment offerings for non-academic support services will also continue, as the expanded service hours and online modality have been found to reduce barriers for students for being able to attend appointments. As several interviewees reported, students have indicated that they appreciate the greater accessibility and have been much more likely to show up for their scheduled virtual appointments compared to those coming to campus for in-person appointments. While the latter typically has around a 60% attendance rate, virtual appointments have had around a 95% rate for students who show up out of all who made appointments.

Many of the staff and administrators interviewed mentioned how they would like for the college to continue to be more responsive and adaptive to students needs than they believed it was prior to the pandemic. Continuing to reach out to students and make it easier for them to get the information they need quickly will be part of the approach to better meet students' needs. To that

end, the Answer Center will continue and outbound calling to students will be adjusted and exist in some fashion.

> *"I think we know that physical phone calls at that scale probably doesn't work. But if we can integrate that with some texting, maybe that creates an avenue for those phone calls that need to happen. I think that's there. For us, the Answer Center is here to stay. And we will continue to evolve what it looks like."*

Being a more responsive and adaptive institution will also entail monitoring how students "vote" with their schedule and class choices, several administrators described. Rather than having set class schedules with a specified number of those delivered in-person, online, or in a hybrid or blended format and rarely changing that set-up from semester to semester, more attention will be given to the choices students are making and waitlists that build up so that the college can offer the number of sections and types of course modalities that meet students' needs and preferences. Ultimately, as an administrator said, these efforts will be continued to "be more student-centered than college-centered." For example:

> *"…looking at the learning issues, and what works for them what works best and then changing presentation models and modalities to best fit the needs of our students. So that's, that's something that I think we need to continue to focus on and to, and to work towards, and to really hear the voice of, of the students and figure out how to best serve them going forward, because, you know, the pandemic will end eventually…I think we can take a lot of lessons learned here and, you know, kind of incorporate them into our toolkit to really move the needle on success."*

Faculty Perspectives

Faculty who participated in focus groups were asked, "Looking to the Fall semester, which adjustments, if any, that you/the College made in the Spring do you plan to continue/discontinue? Do you think that any of these will (or should) become a "new normal" for your classes/the College? Why or why not?" At the course-level, faculty noted that the use of MS Teams can continue in the classroom, as well as with online classes. It can provide the ability for students to "be" in the classroom virtually with other students who are there in person. Several mentioned continuing to use MS Teams for meetings as well, as they believed it helped keep the meetings more efficient and organized and that use of the platform can be continued even when faculty and staff are on campus.

Several faculty pointed to assignment/assessment modifications they made in Spring 2020 that they planned to continue, such as keeping quizzes open book with time limits and having more interactive assignments online. Faculty had also found that videos and other content they created after transitioning online had served them well and could be utilized in their classes going forward. Finally, several mentioned that they plan to keep the flexibility with assignment submission due dates, noting that it changed the focus from whether a student could learn the material by a certain date within the course to whether the student could learn the material by the time they completed the course. On the other hand, other faculty members noted that flexibility in assignment submission due dates is one change that they did NOT plan to keep after Spring 2020. Some noted that they believed students took advantage of the flexibility extended to them and that, going forward, they need to be held accountable for meeting deadlines.

At the institutional level, faculty mentioned they would like for the college to continue offering expanded hours for students to access support services. Some also found that being able to offer synchronous online courses provided a good "middle ground" for some students and they would like to continue those offerings. Last, a common desire from faculty was to continue having the flexibility to work from home instead of coming to campus.

Student Perspectives and Experiences

At the end of the Fall 2020 semester, all students in degree and non-degree programs were asked to complete a survey regarding their experiences as a student during the COVID-19 pandemic. A total of 1,800 students responded and, after removing submissions from students under 18, the N totaled 1,708. To gather students' perspectives on the helpfulness of specific changes and supports at the institution and course levels, the survey asked three key questions about their ability to learn course material, complete their courses, and stay enrolled at the college.

The items included in each question were informed by the faculty survey administered in Summer 2020, in which faculty were asked about the modifications and additional supports they provided in their classes, as well as by conversations with student services and instructional support administrators soon after the transition (late Spring 2020). For each item provided, they were asked to rank how helpful it was for them on the following scale: 1=Not helpful at all, 2=Somewhat helpful, 3=Very helpful, 4=Extremely helpful, N/A (did not experience). Overall,

on average, students identified each item listed as being at least "somewhat helpful," and most as being either "very helpful" or "extremely helpful".

Learning

Overall, the following three instructional practices ranked the highest (weighted average) for **helping students learning course material**:

1. In-person classroom instruction, labs, or other in-person, hands-on learning opportunities
2. Watching videos on course content that were created by students' instructor
3. Attending tutoring sessions with the Individualized Learning Center (ILC)

Since it is of particular interest to understand how changes and support offering may have affected Black/African American and Hispanic/Latinx students and students from low-income households (Pell Grant recipient as a proxy), the figures below provide the overall weighted average per items for all respondents (N; 1,708), as well as for students in specific demographic groups. For nearly all items instructional practices listed, Black/African American males and females, particularly those who received Pell Grants, ranked them higher on average, in terms of helpfulness in learning course material compared to other groups and the weighted average for all respondents. Hispanic/Latinx students who did not receive Pell Grants also found the instructional practices particularly helpful. As Figure 2 shows, when comparing among race and gender, Black/African males and females also found the instructions practices particularly

helpful compared to other groups and the weighted average for all respondents.

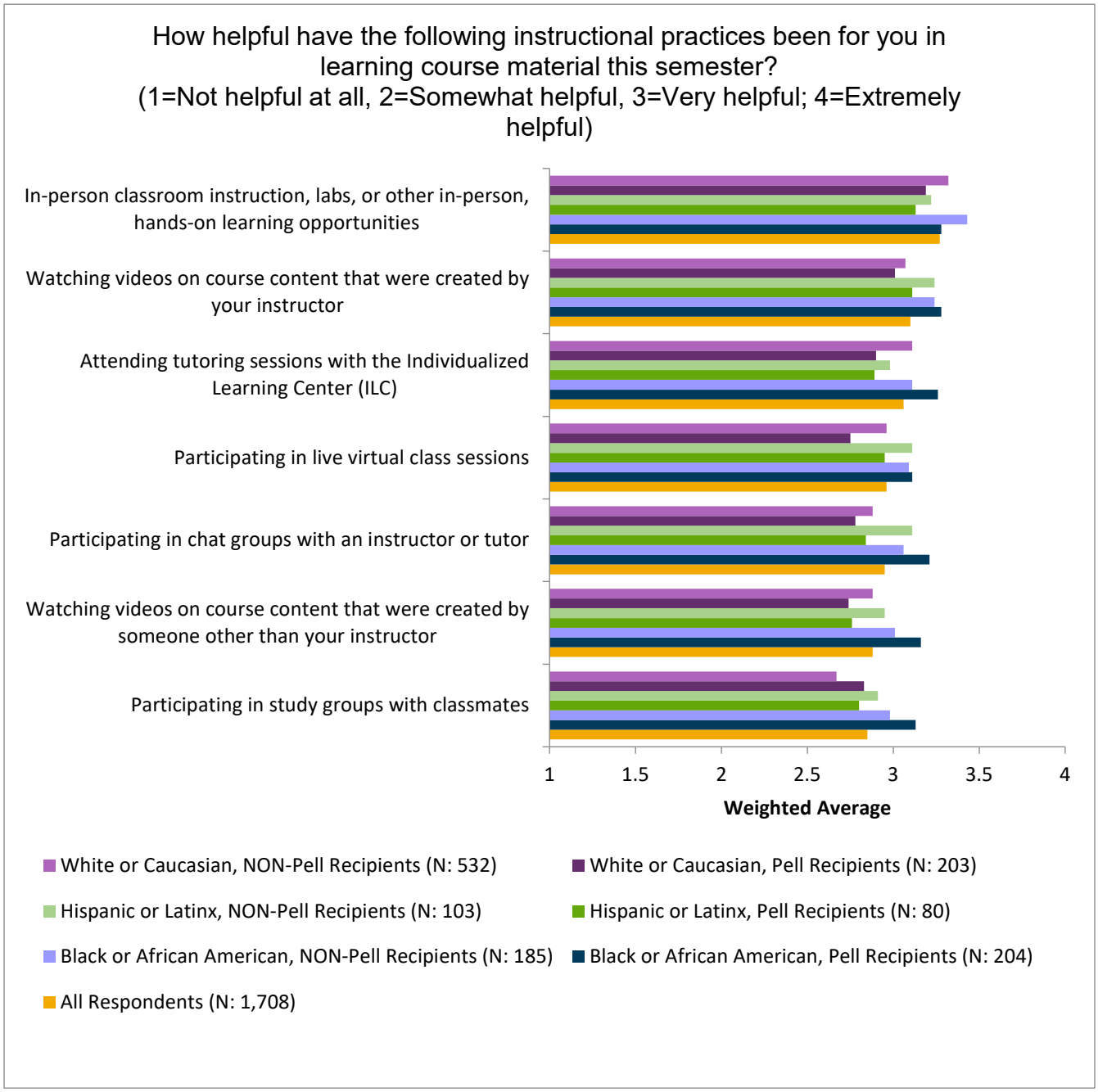

Figure 1: Students' perspectives on helpfulness of instructional practices in learning course material, by race-ethnicity/Pell.

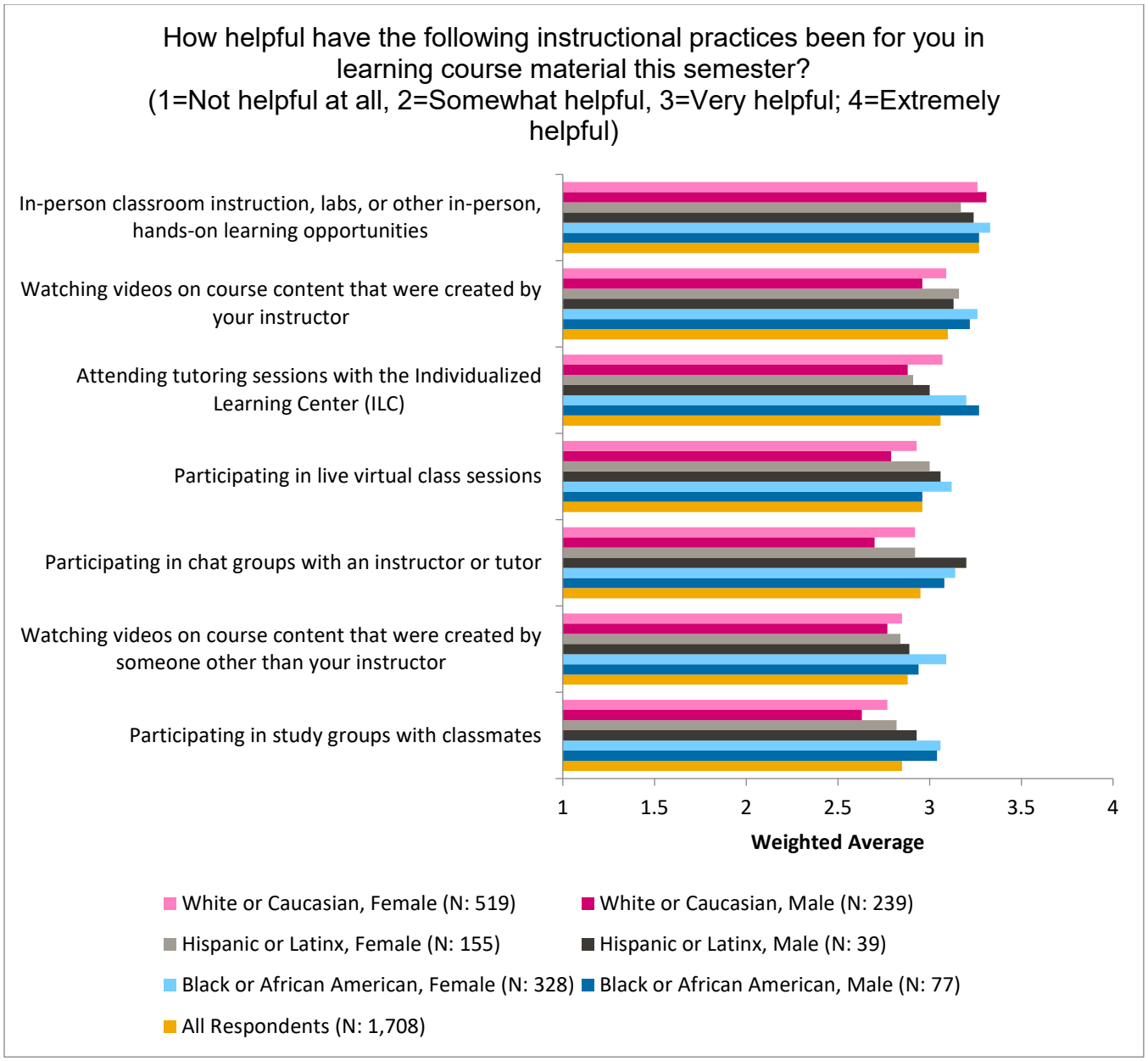

Figure 2: Students' perspectives on helpfulness of instructional practices in learning course material, by race-ethnicity/gender.

In follow-up responses, some students commented on how useful they found it when instructors created videos or had recordings of the class lecture that they could watch multiple times to learn course content:

> *"My teacher of listening and speaking made videos, that was very helpful because I could watch the videos many times."*

"I found the virtual class recordings to be immensely helpful, and felt I learned more than if I had actually been attending an in-person class since I could stop and rewind as needed and take the time to really absorb and apply what I learned."

Students were also asked about challenges they may have experienced in accessing or participating in the any of the items above. Most notably, slow or unreliable internet connectivity presented challenges in watching videos and participating in virtual meetings. Some students also reported that limited service hours (i.e., lack of availability in the evenings or weekends) had presented challenges with accessing tutoring services, particularly for those who work during typical work hours and days. Others simply did not think online or virtual instruction worked for their learning style:

"I am not a virtual learner. I could have done better if allowed it be in person."

"The biggest challenge was because of my learning style I do not learn well from reading books or websites. I learn from teachers lectures and in class exercises. This semester had neither of those."

Completion

Overall, the following four practices or supports ranked the highest (weighted average) for **helping students complete their courses** (items 3 and 4 scored the same):

1. Weekly checklists provided by students' instructor
2. Flexible due dates for assignments
3. Flexible attendance policies
4. Flexibility in how students could turn in assignments

For these items, the weighted averages for Black/African American Pell Grant recipients and Hispanic/Latinx students were more similar to the weighted averages for all respondents than the instructional practices. However, Hispanic/Latinx students, both those who received Pell Grants and those who did not, ranked several items higher than White students and the weighted average for all respondents, including flexibility in due dates and ways to turn in assignments. Black/African American and Hispanic/Latinx students, particularly those who received Pell Grants, also ranked eLearning support and staying connected with other Wake Tech students higher in terms of helping them complete their courses than the other groups. As Figure 4 shows below, females in each of these three racial-ethnic groups and Black/African American males

ranked most of these supports higher in terms of helpfulness in completing their courses compared to White/Caucasian and Hispanic/Latinx males.

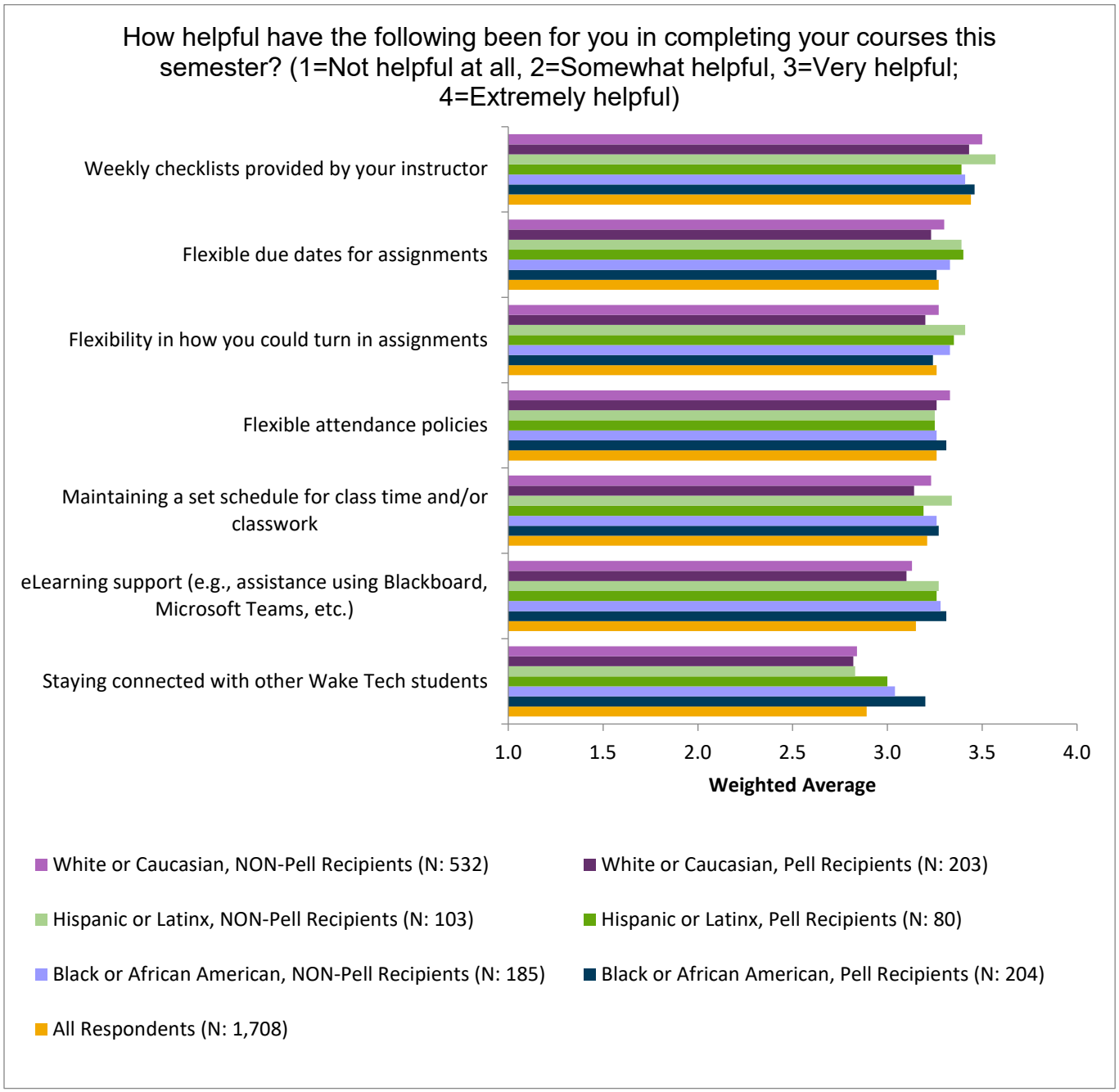

Figure 3: Students' perspectives on helpfulness of supports in completing courses, by race-ethnicity/Pell.

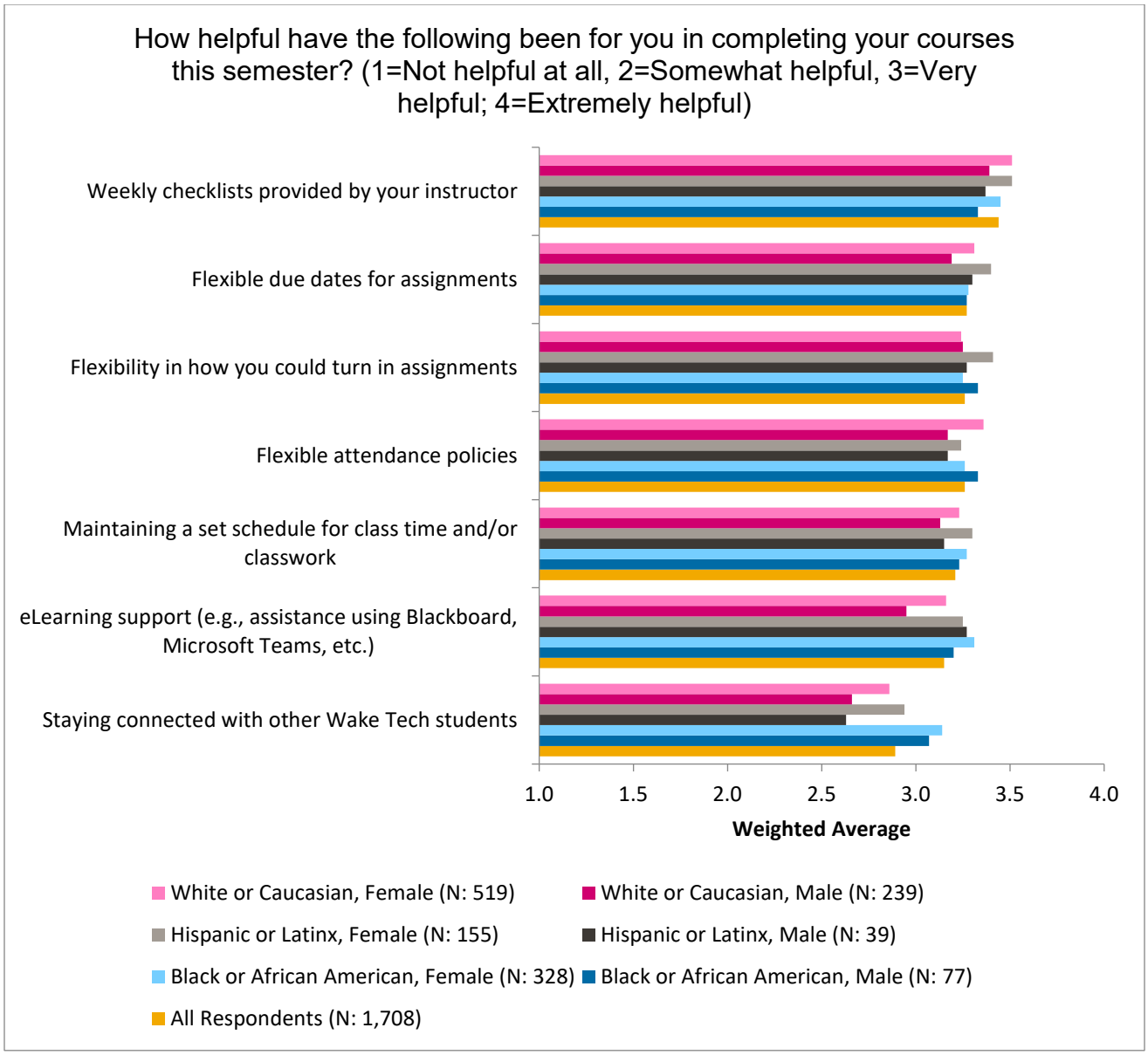

Figure 4: Students' perspectives on helpfulness of supports in completing courses, by race-ethnicity/gender.

In the responses to a follow-up open-ended question asking whether students experienced challenges in accessing or participating in the any of the items above, the most prominent challenge related to the *inflexibility* that students experienced during the pandemic. Numerous students wrote that they had not experienced any flexibility in assignment due dates, submissions, or attendance and indicated that they believed the strict course policies negatively impacted their grades and, in some cases, their ability to stay in a course. Some also noted that

flexibility would have been particularly appreciated during this time in which they were managing multiple responsibilities at home.

> *"None of my classes had flexible due dates, a weekly check list, or a flexible attendance and I missed a few days and assignments due to that."*

> *"I missed a[n] assignment due date by an hour, and another by 9 hours, resulting in a 0 for both. I had to drop the course. Due to I have five kids home remote learning were I play teacher, tutor, cook and counselor."*

> *"I had many personal challenges this semester. I am working from home full-time, I have a kindergartner doing online school. My grades hurt this semester because I simply couldn't meet assignment due dates. I hope my classes had flexible due dates so that I could work on my own pace to complete them all without hurting my grades."*

In response to this question about challenges, some students replied instead with appreciation for the flexibility and support they experienced. For example:

> *"Flexible attendance policies and due dates have been extremely helpful during my learning this semester…Keeping in touch with other students has helped tremendously as well, as we seemed to hold each other accountable. I appreciate the ways student communication was supported and encouraged this semester through discussion boards, group project, and Microsoft Teams meetings."*

> *"No challenges. I really feel like this has been my best semester in my 7 year college career. Having the flexibility of when to do school work and how to turn in assignments was great. I also saw that my classes were offered in a more structured format for learners who need that structure (TEAMS meeting or Google meets on certain days of the week). I think Covid is really going to change higher education for the better because this catered so much to my needs when it comes to how I learn."*

Retention

Overall, the following three supports ranked the highest (weighted average) for **helping students stay enrolled** at the college:

1. Financial assistance (e.g., grants, scholarships, gift cards, etc.)

2. Food assistance (e.g., the Nest [college's food bank], grocery store gift cards)
3. Technology assistance (e.g., laptop or tablet access)

For nearly all of the supports listed, Black/African American Pell Grant recipients and Black/African males ranked them higher than other groups in terms of their helpfulness in staying enrolled at the college. As Figures 5 and 6 indicate below, Black/African American Pell Grant recipients and Black/African males—as well as White/Caucasian non-Pell Grant recipients—ranked food assistance and housing assistance particularly high. All students in these three major racial-ethnic categories who received Pell Grants also indicated that they found financial assistance to be particularly helpful for being able to stay enrolled.

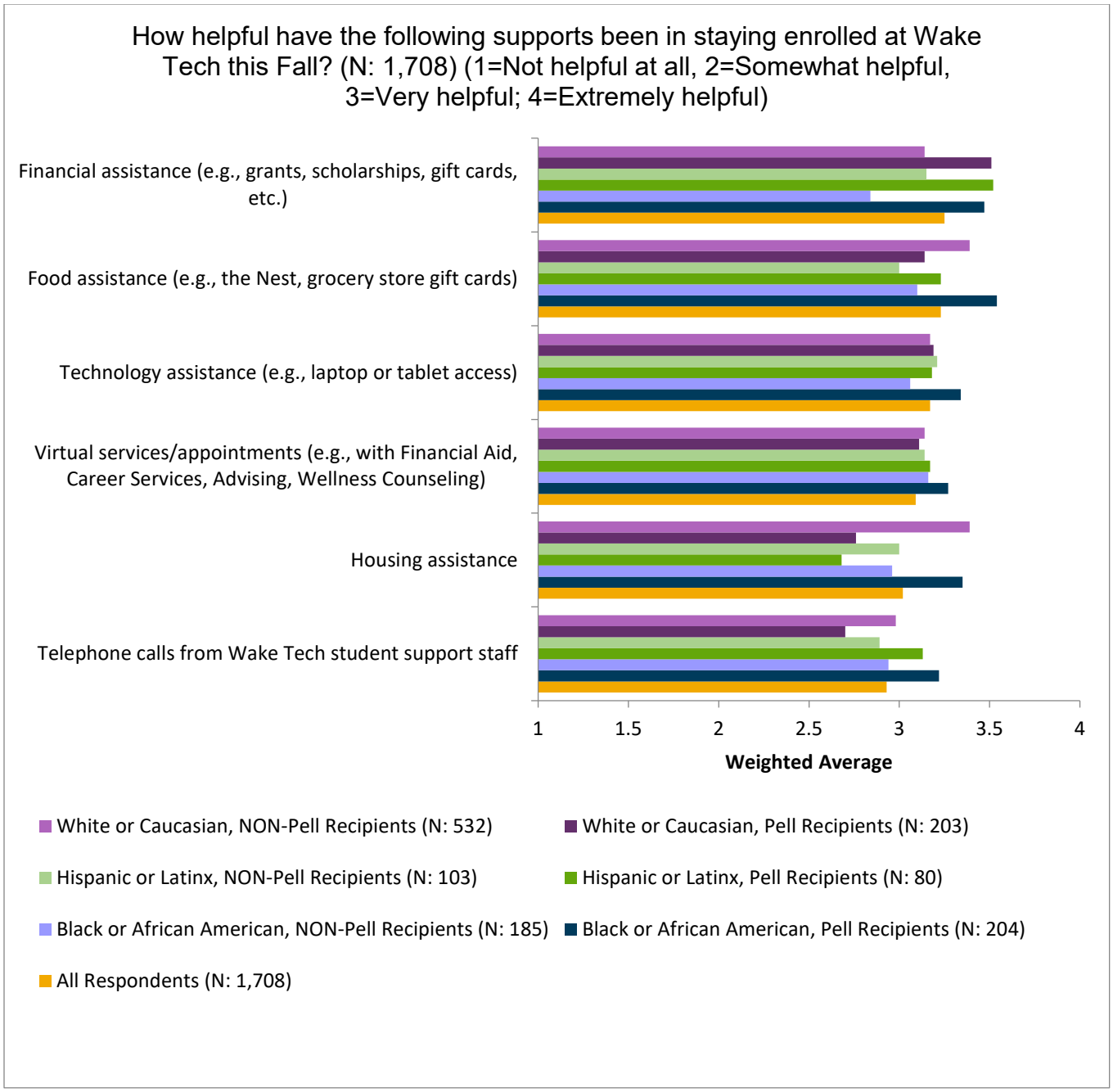

Figure 5: Students' perspectives on helpfulness of supports in staying enrolled, by race-ethnicity/Pell.

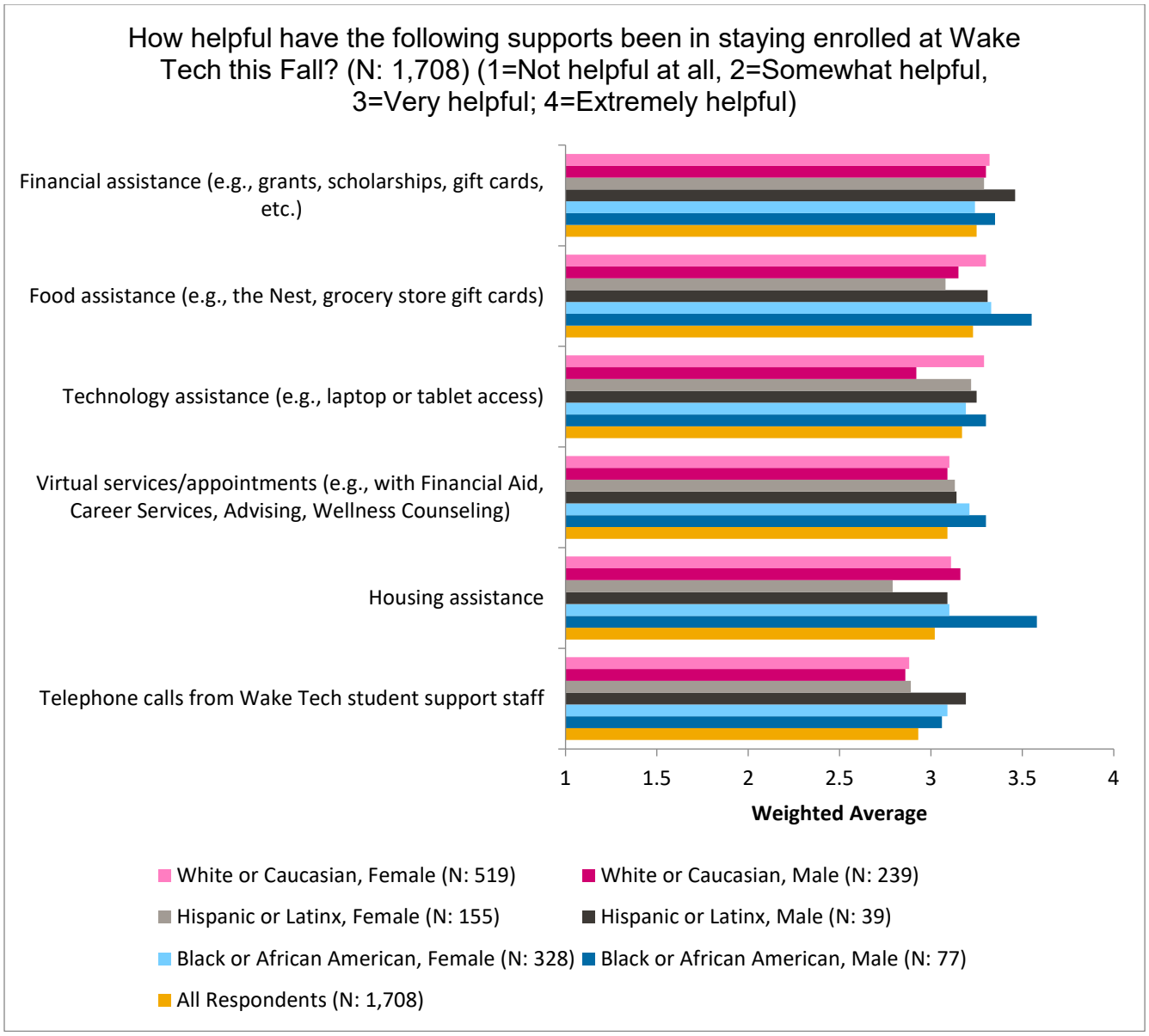

Figure 6: Students' perspectives on helpfulness of supports in staying enrolled, by race-ethnicity/gender.

Most notably, the greatest challenge students reported in accessing the supports mentioned above was lack of knowledge that they were available.

> *"I would have loved to have known about sources for housing and food assistance? I didn't know that was a thing."*

> *"Technology assistance, food assistance, housing assistance was never available to me because I am just finding out during this survey that you all offer it."*

"The support phone calls would have been helpful. I did not know that was available."

In one-on-one interviews, several students also mentioned how much they appreciated the calls from college staff to check in. For example, an 18-year-old Black male student said:

> *"I remember two or three times somebody called me...from week to week, just to check up on me. And that was, that was really shocking for me, like, somebody just call me and say, 'Are you ok? How's your classes going?' and stuff, just general questions. I was really grateful for that, you know, it was a good feeling for someone to check on…what's going on."*

In both the open-ended survey responses and in one-on-one interviews, students reported the challenges they faced during the pandemic in very similar ways to how faculty had observed them to be. The most cited challenges involved their personal circumstances and different or increased responsibilities during the pandemic, such as childcare, managing virtual learning for their children, changes in work schedules, financial issues, lack of motivation and increased stress and anxiety, overall. Many noted that they missed social interaction with their peers and instructors and would have much preferred to have taken in-person classes and had hands-on learning experiences.

> *"Having socialization with other people and my teachers. I miss learning in person. It's how most of us learn best. Online does not cut it."*

> *"Hard to learn online and having the lack of interactions with other students makes learning the material hard."*

> *"I do not learn online well at all. I have never taken an online class on purpose, so that is very different for me."*

However, one of the most prominent themes was also how students saw themselves as adaptable to the challenging circumstances and found that they were able to learn through different modalities than they may have originally expected when they signed up for courses.

"Having to take all my courses online. It was a challenge, but I was forced to adapt."

"Gained the experience and flexibility with online learning. I never thought I'd be accustomed to virtual learning and was completely against it. For the health of the community and myself I forced myself to change."

"I've had to adjust how I learn to make sure I do well in online classes."

"This was my first time doing online learning. It was challenging, especially when I started going back to work, but our teacher was helpful and flexible with assignments. I've got a much better understanding of online learning now."

"I have become more flexible in how I learn. Before the pandemic, I was a student that could only learn strictly in a classroom, but my professors have helped to make an experience where I can benefit from the online learning as well."

Course Enrollment

To visualize the pandemic's potential impact on students' ability to access the college, descriptive statistics of overall course (seats) enrollment pre-pandemic and during the pandemic are provided in the charts below. As the figures show below, overall enrollment fell just slightly in Fall 2020 compared to Fall 2019 (by 957 seats), as well as in Spring 2021 compared to Spring 2019 (by 1,343 seats). In Fall 2020, nearly all of the demographic proportions by race-ethnicity/gender and race-ethnicity/Pell status remained consistent with Fall 2019, with the most notable difference being the two-percentage-point drop for Black/African American Pell students. Compared to Spring 2019, Spring 2021 shows a one-percentage-point net loss of male students and two-percentage-point loss of Pell recipients, although demographics proportions by race-ethnicity/gender and race-ethnicity/Pell status remained relatively consistent, overall.[4]

[4] While the Chi-square test indicates that differences between Fall 2019 and Fall 2020 were significant for some of the demographic categories shown, the effect sizes for some of these categories are too small (<0.01) which indicates very small association if there is any.

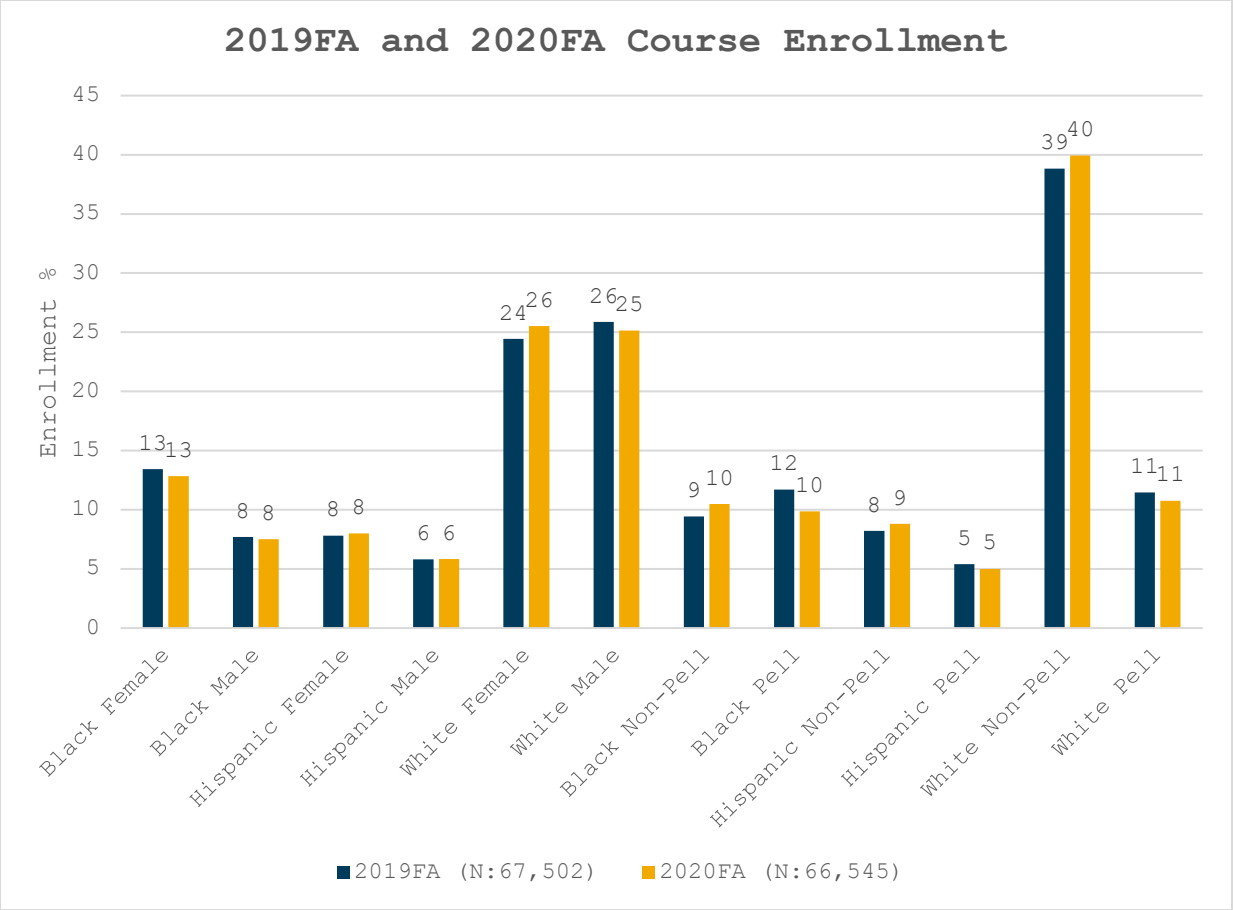

Figure 7: 2019FA and 2020FA course enrollment, by race-ethnicity/gender and race-ethnicity/Pell.

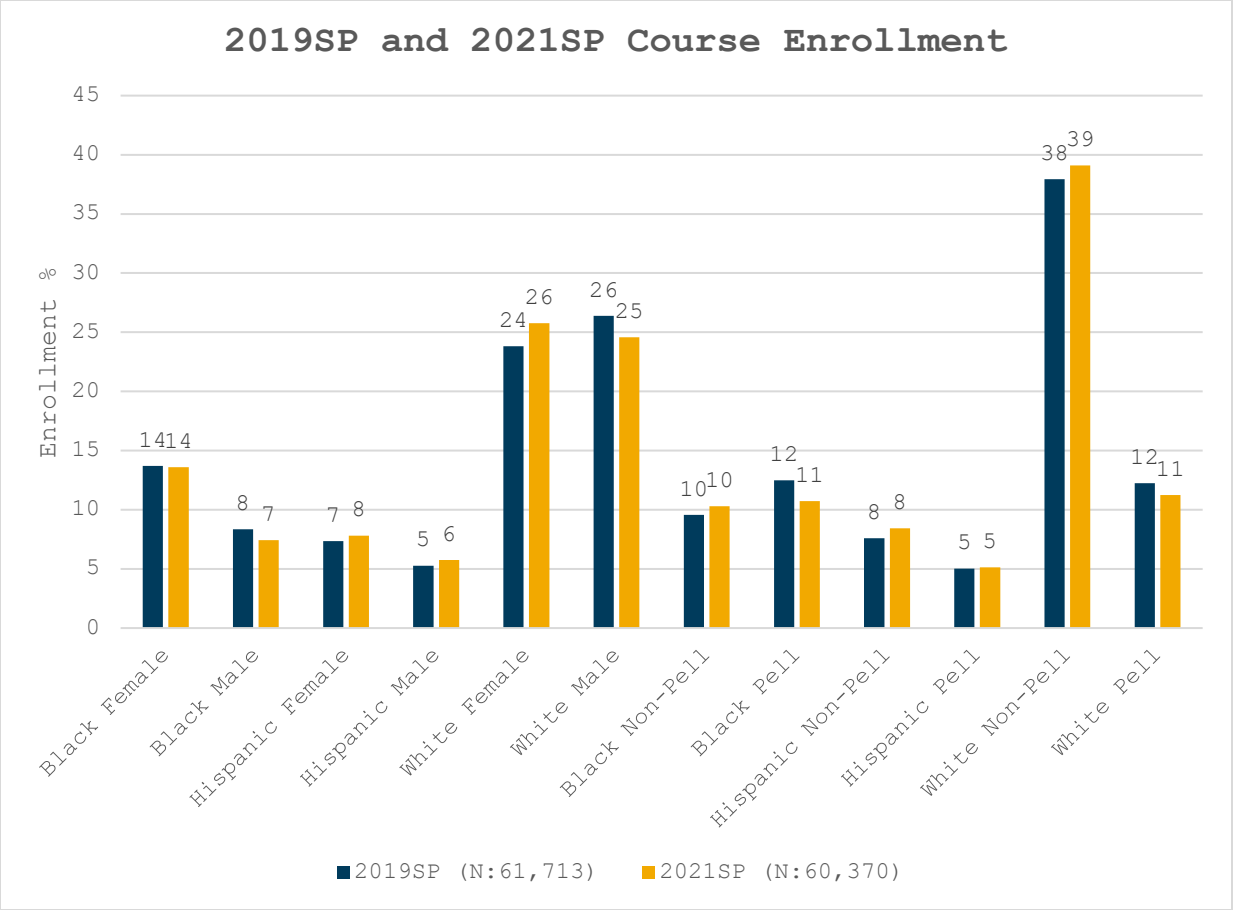

Figure 8: 2019SP and 2021SP course enrollment by demographics, by race-ethnicity/gender and race-ethnicity/Pell.

Overall, even with the more limited course offerings during the pandemic, there were not drastic declines in overall enrollment (seats) or major shifts in the demographic composition of the course seats. With in-person classes resuming in Fall 2021, these enrollment statistics will continue to be monitored to identify potential impacts from the pandemic.

Student Success and Retention

Several sets of Propensity Score Matching (PSM) analysis were conducted to examine the initial effect of converting seated courses to online instruction in March of the Spring 2020 semester, as well as the effects of changes in response to COVID-19 as online instruction continued through Fall 2020 and Spring 2021. Charts below show the results of these analyses for the overall student population and by gender, race-ethnicity, and Pell Grant status.

Spring 2019 Seated to Spring 2020 Converted (Seated to Online)

After matching for like characteristics, just one statistically significant change in success rates occurred between seated course seats in Spring 2019, prior to the pandemic, and Spring 2020, after all seated courses were converted to online delivery. The one statistically significant difference was a four-percentage-point decrease in the success rate for Black/African American Pell Grant recipients.

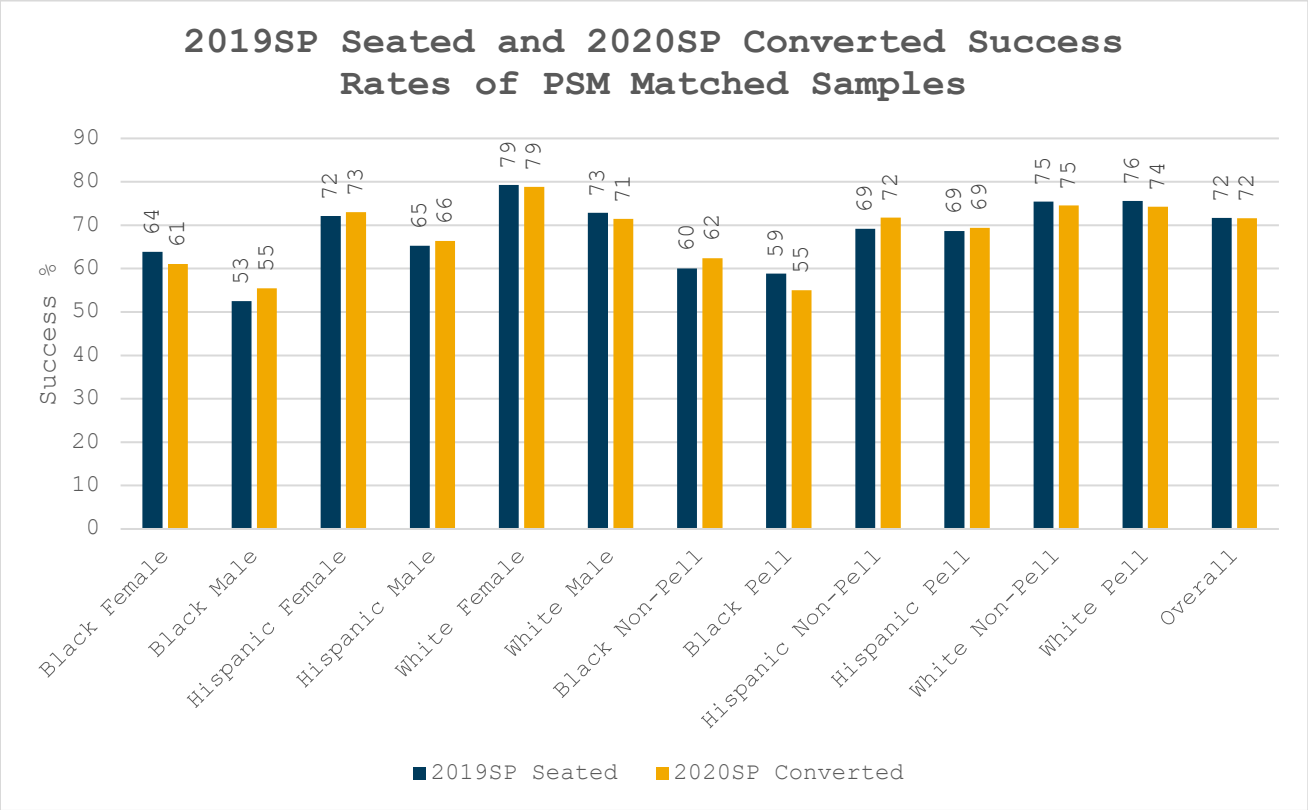

Figure 9: 2019SP seated and 2020SP converted success rates of PSM matched samples.

Across genders, racial-ethnic groups, and Pell status, withdrawal rates significantly increased from Spring 2019 to Spring 2020 following the conversion of seated courses to online delivery. The increase in withdrawal rates was greater for males than females, greater for Black/African American students than Hispanic/Latinx or White students, and greater for Pell Grant recipients than for students who did not receive Pell. Like in Spring 2019, withdrawal rates in Spring 2020 were highest for Black/African American males and Black/African Pell Grant recipients, overall.

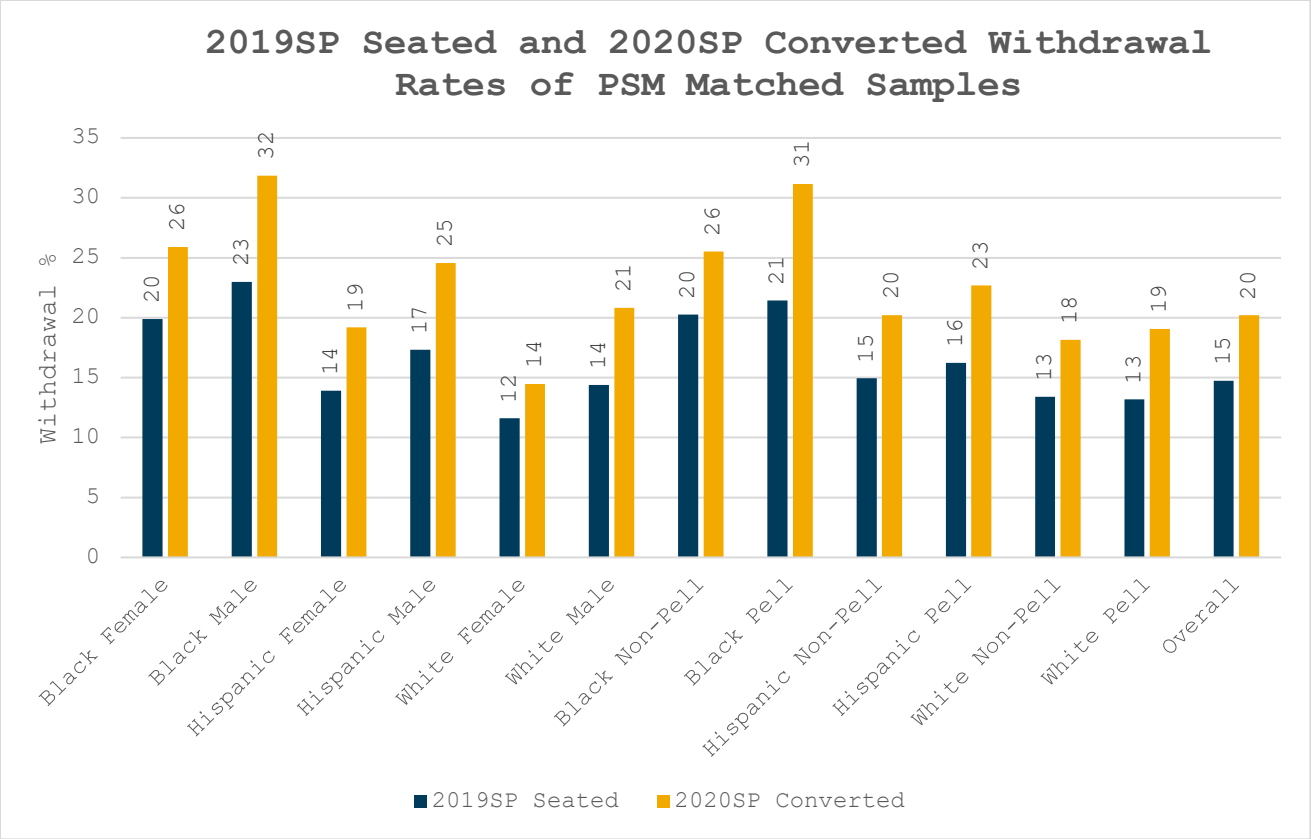

Figure 10: 2019SP seated and 2020SP converted withdrawal rates of PSM matched samples.

Fall 2019 Online vs Fall 2020 Online

Compared to the success rate for online courses in Fall 2019, prior to the pandemic, the success rate for online courses in Fall 2020 increased significantly overall and across genders, racial-ethnic groups, and Pell Grant status, except for Hispanic/Latinx males and Hispanic/Latinx students who did not receive Pell. The withdrawal rate decreased significantly overall and for students of each major racial-ethnic group who received Pell Grants, Black/African American females, Black/African American students who did not receive Pell Grants, and White/Caucasian males and females.

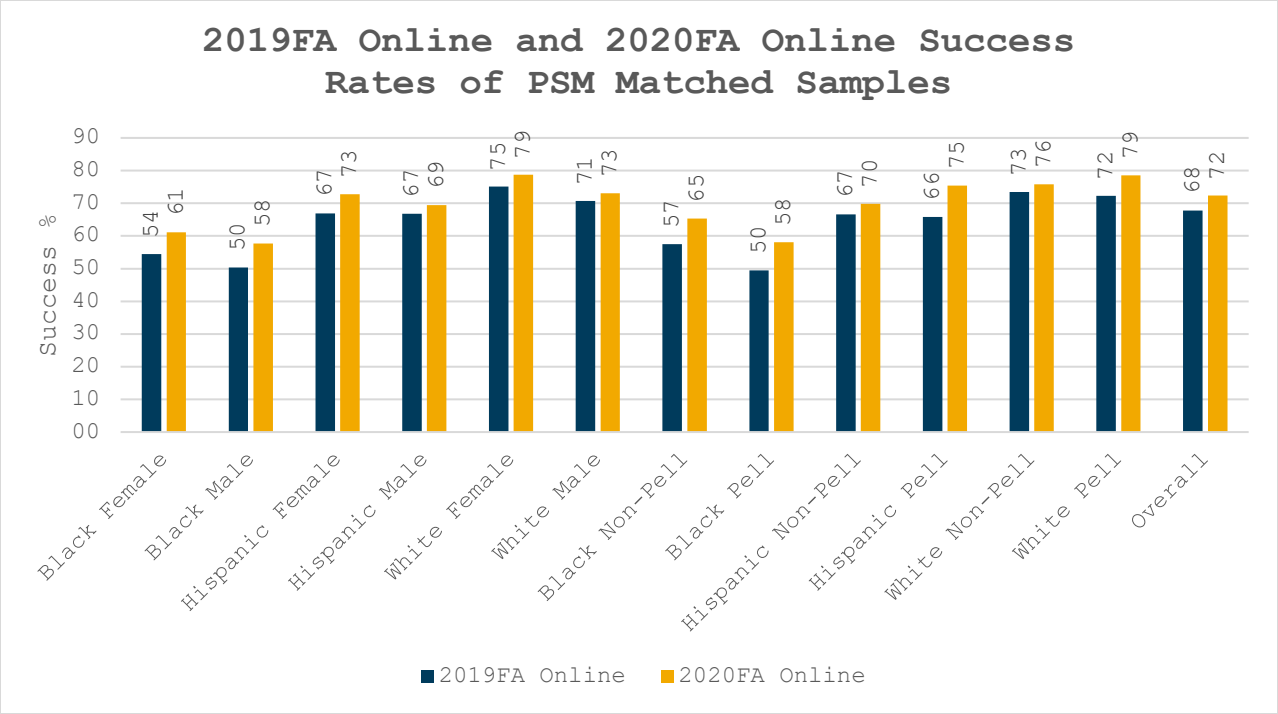

Figure 11: 2019FA online and 2020FA online success rates of PSM matched samples.

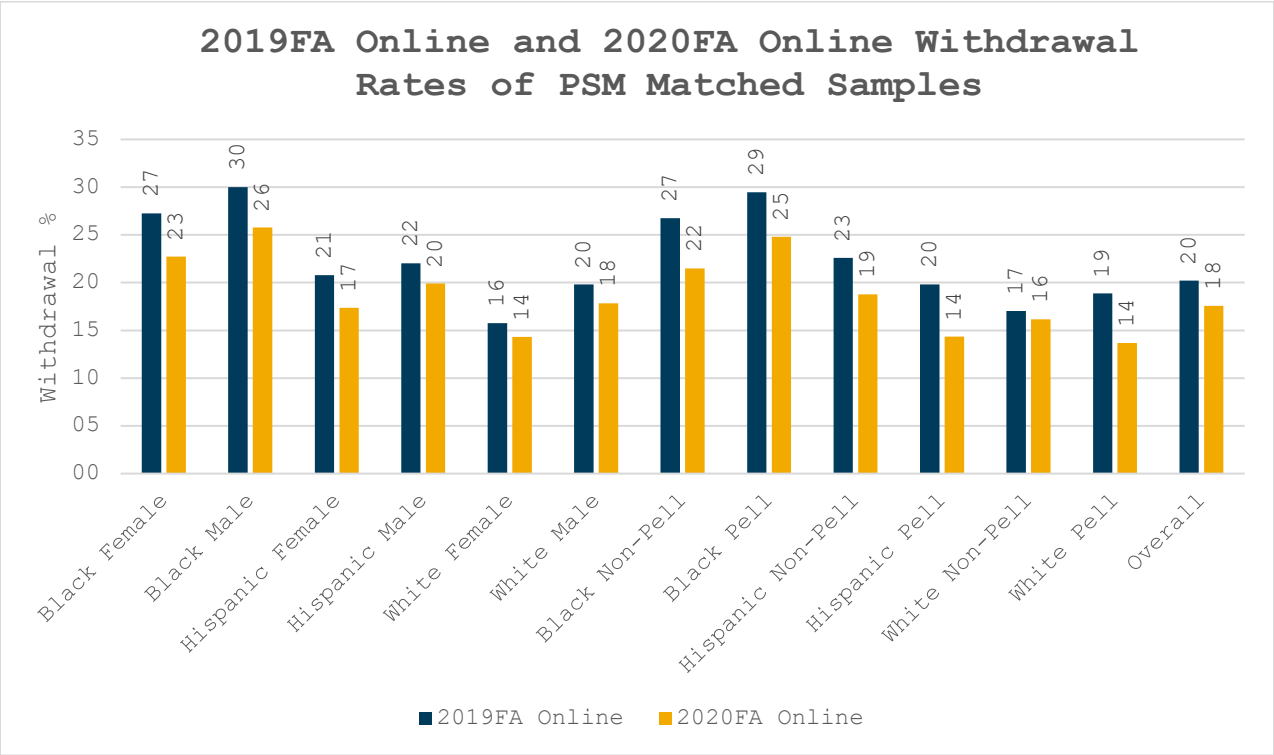

Figure 12: 2019FA online and 2020FA online withdrawal rates of PSM matched samples.

Spring 2019 Online vs Spring 2021 Online

Compared to the success rate for online courses in Spring 2019, prior to the pandemic, the success rate for online courses in Spring 2021 increased significantly overall and for Black/African males and Pell Grant recipients, White/Caucasian females and males (Pell Grant recipients and non-recipients), and Hispanic/Latinx students who did not receive Pell. The withdrawal rate decreased significantly overall and for Black/African males and Pell Grant recipients, Hispanic/Latinx students who did and did not receive Pell, White/Caucasian males and White/Caucasian students who did not receive Pell.

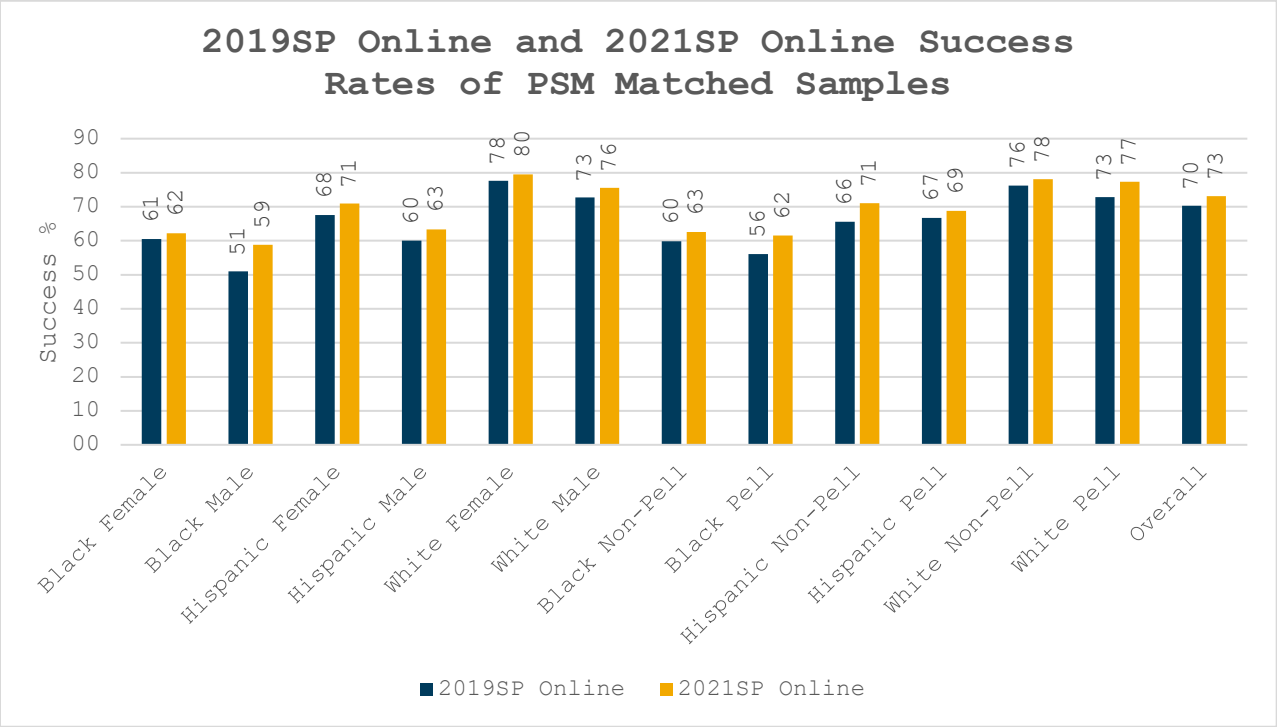

Figure 13: 2019SP online and 2021SP online success rates of PSM matched samples.

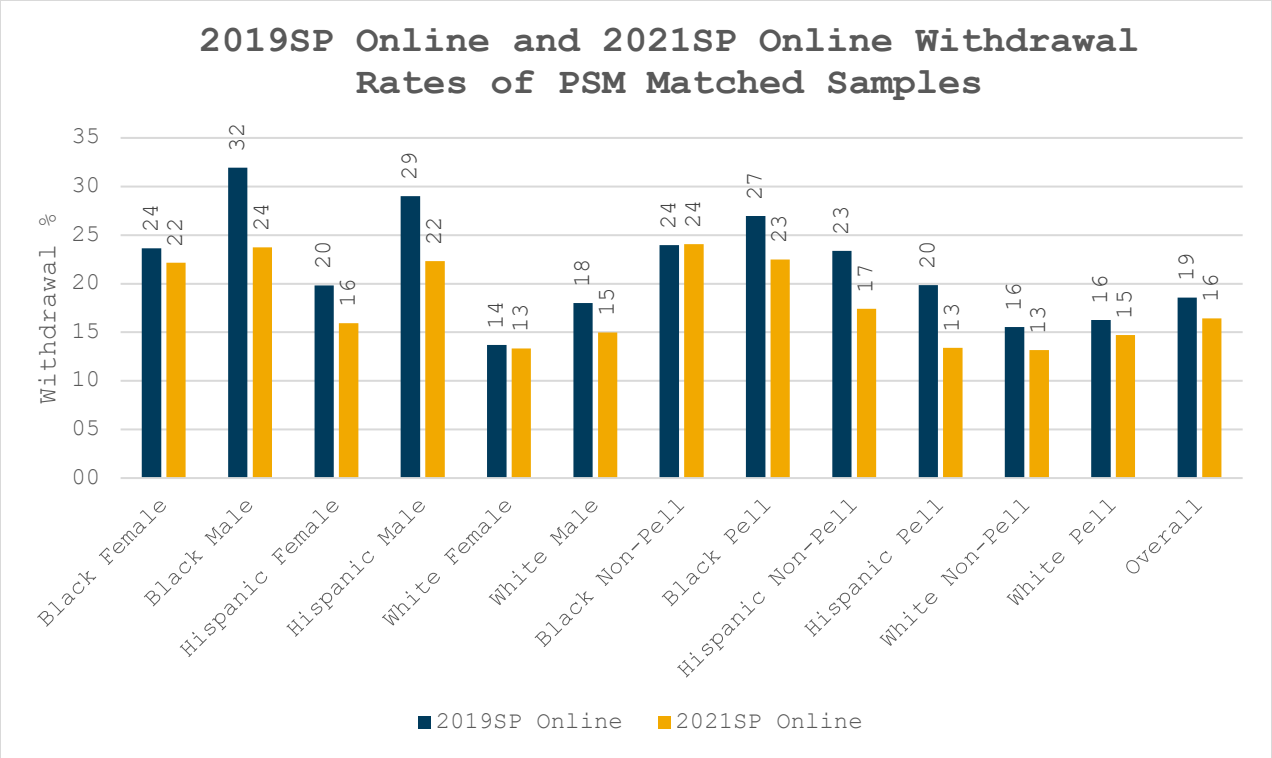

Figure 14: 2019SP online and 2021SP online withdrawal rates of PSM matched samples.

Equity Gaps

To assess whether the changes made in response to COVID-19 have an association with widening or narrowing of equity gaps in retention and success rates for low-income students and students of color at Wake Tech, additional PSM analyses were conducted to compare gaps for the following subgroups:

1. White/Caucasian males and Black/African American males
2. White/Caucasian females and Black/African American females
3. White/Caucasian males and Hispanic/Latinx males
4. White/Caucasian females and Hispanic/Latinx females
5. White/Caucasian Pell non-recipients and White/Caucasian Pell recipients
6. White/Caucasian Pell non-recipients and Black/African American Pell recipients
7. White/Caucasian Pell non-recipients and Hispanic/Latinx Pell recipients

The charts below show the gaps in success and withdrawal rates (and whether the differences are statistically significant) for the control (Fall 2019, Spring 2019) compared to the treatment (Fall 2020, Spring 2021) groups.

Disaggregating by race-ethnicity and gender, as shown in Figure 15 below, indicates a decrease in the success rate gap in Fall 2020 for most of the subgroups, particularly between White/Caucasian Pell non-recipients and Black/African American Pell recipients. Notable increases in the success rate gap occurred between (a) White/Caucasian males and Hispanic/Latinx males and (b) White/Caucasian Pell non-recipients and Hispanic/Latinx Pell recipients.

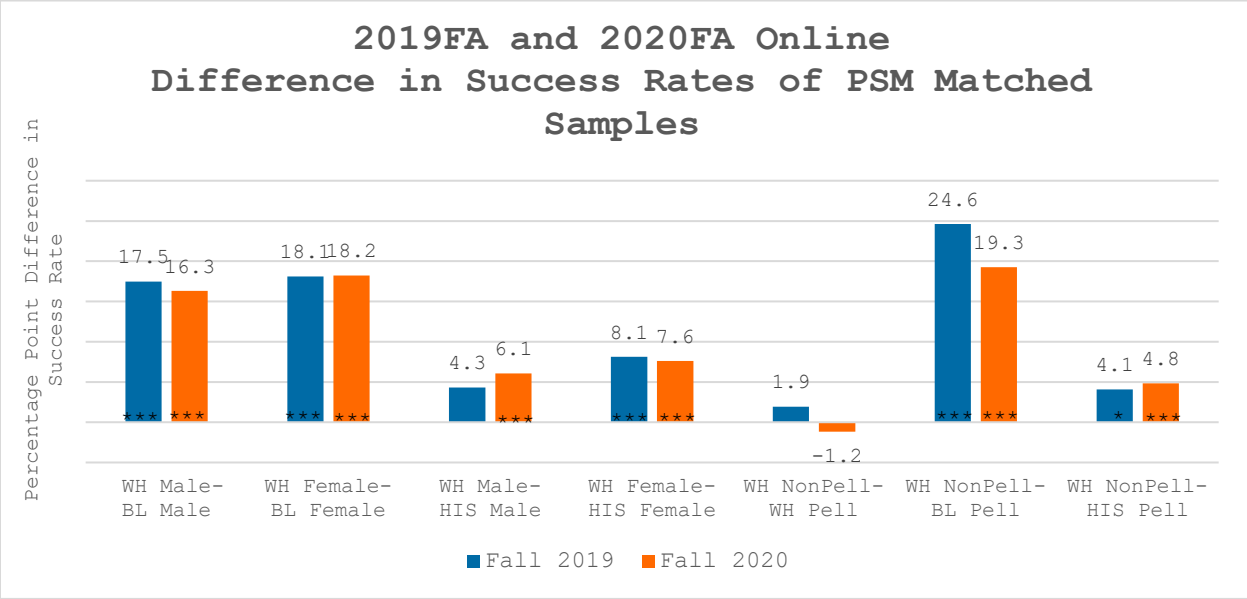

Figure 15: 2019FA online and 2020FA online difference in success rates of PSM matched samples, by race-ethnicity/gender and race-ethnicity/Pell status.

Figure 16 indicates below indicates a decrease in the withdrawal rate gap in Fall 2020 for most of the subgroups, particularly between White/Caucasian Pell non-recipients and Black/African American Pell recipients. Notable increases in the withdrawal rate gap occurred between (a) White/Caucasian males and Black/African American males and (b) White/Caucasian males and Hispanic/Latinx males.

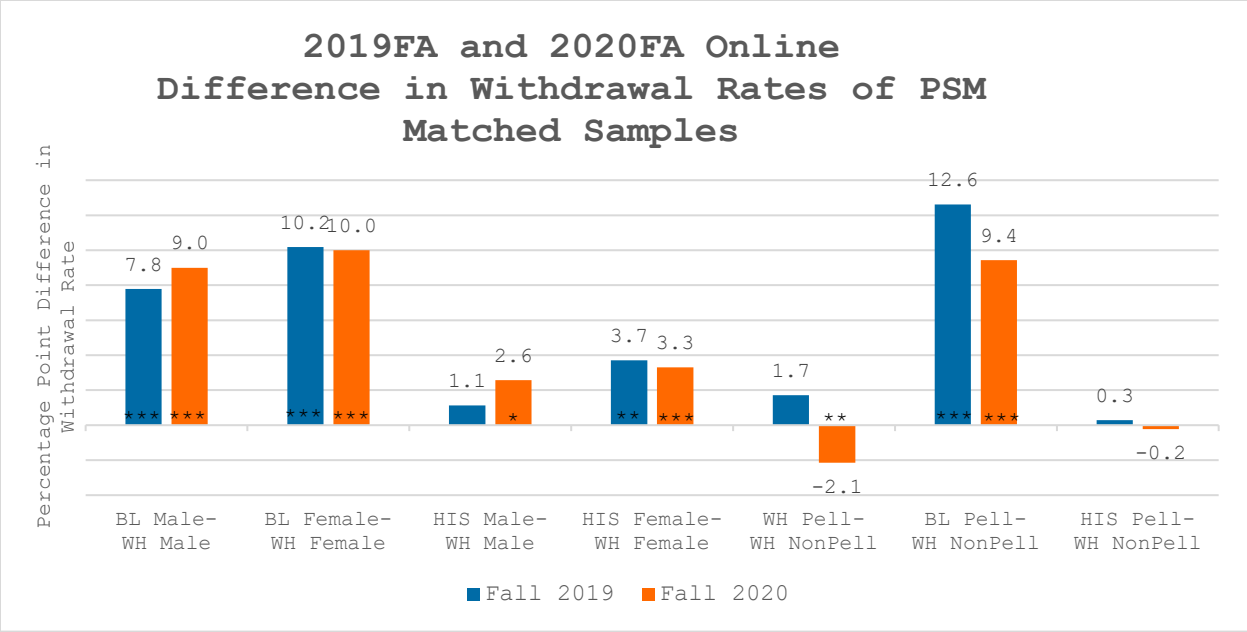

Figure 16: 2019FA online and 2020FA online difference in withdrawal rates of PSM matched samples, by race-ethnicity/gender and race-ethnicity/Pell status.

When comparing Spring 2019 and Spring 2021, as Figures 17 and 18 show below, the gaps in success rates decreased for all subgroups except for between (a) White/Caucasian males and Black/African American males and (b) White/Caucasian Pell non-recipients and White/Caucasian Pell recipients. The gaps in withdrawal rates decreased for all subgroups.

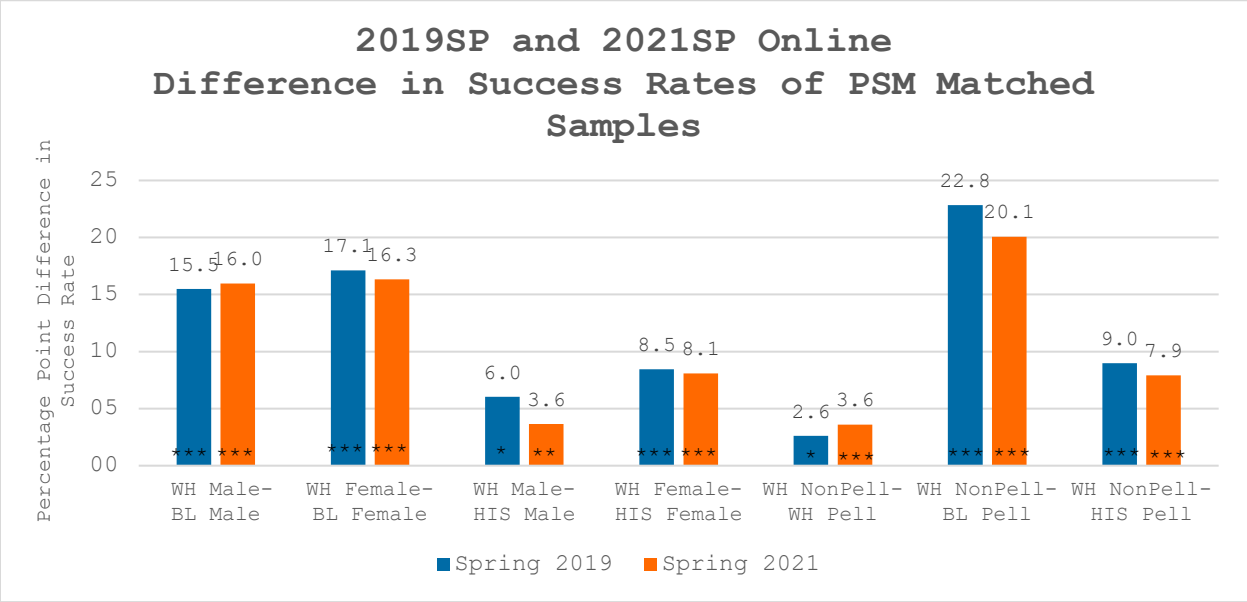

Figure 177: 2019SP online and 2021SP online difference in success rates of PSM matched samples, by race-ethnicity/gender and race-ethnicity/Pell status.

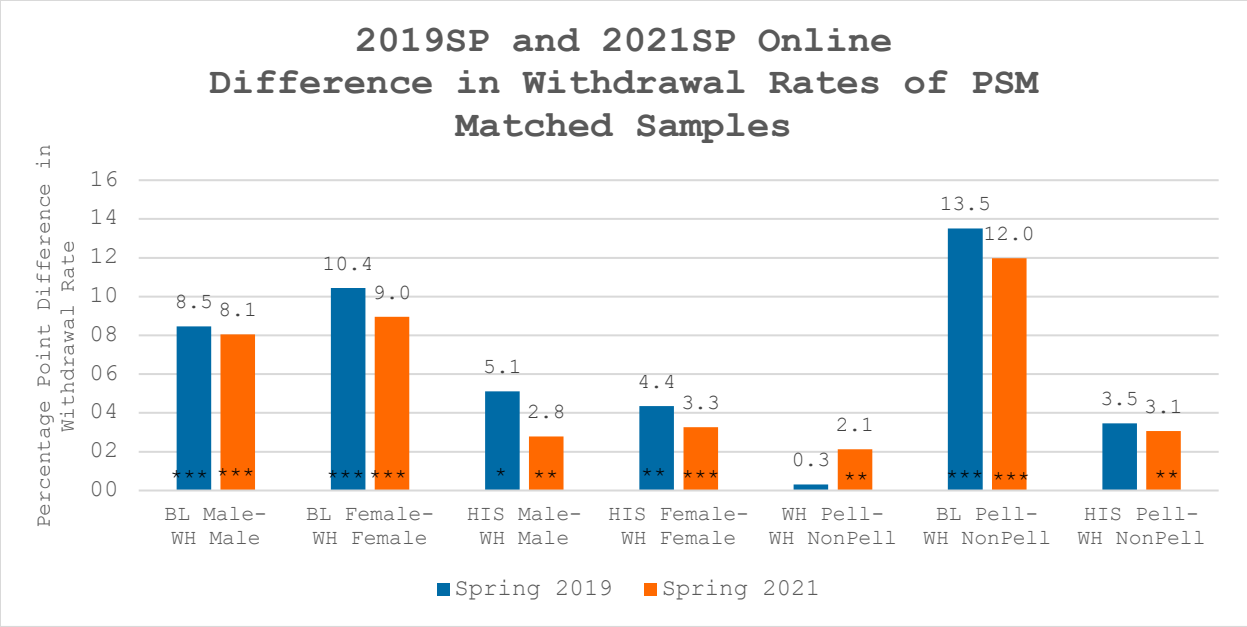

Figure 188: 2019SP online and 2021SP online difference in withdrawal rates of PSM matched samples, by race-ethnicity/gender and race-ethnicity/Pell status.

Discussion and Conclusion

In what ways did the COVID-19 pandemic catalyze transformational change at Wake Tech?

Findings from the qualitative data gathered from faculty, staff, and administrators provide insights into the numerous and varied ways that the COVID-19 pandemic catalyzed transformational change at Wake Tech. Major structural changes were implemented in response to the pandemic in March 2020, including rapidly transitioning all seated courses to online instruction and offering virtual delivery of support services and resources to the extent possible. Many processes for delivering services and resources to students also had to be modified or developed in order to meet students' needs, including technological, instructional, food insecurity, advising, and others that may have presented barriers to continuing their studies. At the course-level, nearly all faculty who transitioned from seated to online made adjustments to some or multiple aspects of their instruction, assessment, or course policies. Attitudinal shifts also occurred, whether involving a greater sense of compassion and understanding for students' struggles, a newfound appreciation for working remotely and virtually, more positive perspectives among faculty about their ability to teach effectively in an online environment, or, for others, heightened aversion to online or virtual instruction.

How did college stakeholders (students, faculty, staff/administrators) view these changes? How did perspectives compare among stakeholder groups?

Overall, among staff and administrators, major changes made in response to COVID-19 were viewed positively and as necessary adjustments to address the unprecedented challenges brought on by the health crisis. Many expressed pride in the way that the college expanded and modified its support services delivery for students and created multiple avenues for students to receive the information, technology, and other resources they needed. In particular, they viewed the laptop and gift card distribution, expansion of service hours, and one-stop Answer Center as directed efforts for reducing barriers for minority and low-income students. Many indicated that these efforts aimed to address the college's strategic priority areas of equitable access and equitable outcomes, and they believed many students were able to stay in their courses at Wake Tech because these services and resources were made available to them.

Staff, administrators, and faculty acknowledged the additional strain on college personnel during the pandemic, as most reported that they were aware of the challenges they and their colleagues faced in the immediate shift to online instruction and working from home. For faculty who had not taught online previously, the rapid transition came with numerous difficulties and some found the prospects of another semester out of the physical classroom to be untenable. Many noted that their students who did not have access to reliable internet or a computer at home struggled greatly and some completely disengaged from their coursework. Others, however, described how some students seemed to thrive in the virtual environment and that some who had struggled in the immediate transition were able to overcome the initial challenges they faced and complete the semester. Ultimately, faculty, staff, and administrators saw many factors contributing to students' ability to succeed despite the disruption caused by the pandemic, including the students' perseverance, instructors' dedication to supporting their students and providing varied instructional materials, offering students leniency in attendance and assignments, and various supports and services that the college offered.

Likewise, students credited many of these same factors in making it possible for them to stay enrolled and complete their coursework during the pandemic. The most frequently cited

challenge they faced in being able to complete their courses related to the lack of flexibility they experienced during the pandemic. Results from the Fall 2020 student survey indicated that, compared to the average response among all respondents, students who identified as Black/African American and received a Pell Grant tended to find instructional practices that their instructors implemented to be particularly helpful for them in learning course material. Additionally, compared to the average response among all respondents, Black/African American Pell Grant recipients and Hispanic/Latinx Pell Grant recipients tended to find supports from the college to be particularly helpful for them in staying enrolled.

Is there an association between institutional changes and significantly different success and withdrawal rates compared to prior to COVID-19?

Results from the Propensity Score Matching analyses indicate that, while the immediate transition to a fully online/virtual environment in Spring 2020 is associated with a statistically significant increase in withdrawals for all student groups compared to Spring 2019, the success rates did not decrease significantly. These findings are in alignment with key points from the qualitative data, which indicated that more students withdrew during this abrupt transition, but that the many institutional and course-level changes put in place and resources available may have helped maintain similar levels of student performance. Following the initial disruption, subsequent semesters during the pandemic showed statistically significant increases in success rates and statistically significant decreases in withdrawal rates across nearly all groups of students (by gender, race-ethnicity, and Pell status) compared to prior to the pandemic.

While there are numerous factors that could have contributed to higher success rates during the pandemic, feedback from students, particularly minority and low-income students, indicated that they believed institutional and course-level practices and additional supports were helpful in their ability to learn course material, complete their course(s), and stay enrolled at Wake Tech.

Is there an association between institutional changes and widened or narrowed equity gaps in student retention and success rates, particularly for students of color and those with low incomes?

Importantly, additional PSM analyses show that, rather than widening, equity gaps in performance between most majority and minority subgroups actually narrowed in the semesters during the pandemic compared to semesters before the pandemic, particularly between White/Caucasian Pell non-recipients and Black/African American Pell recipients. Notable increases occurred in the success rate gap between White/Caucasian males and Hispanic/Latinx males in Fall 2020 and in the withdrawal rate gap between White/Caucasian males and Black/African American males in Fall 2020, which indicate that there were challenges in meeting the needs of two of our most vulnerable groups of students as the first full academic year during the pandemic began.

As evident in the qualitative feedback from students, faculty, staff, and administrators alike, there was consensus in the belief that necessary changes were made and additional supports and resources were provided in an intentional effort to circumvent the pandemic's potential impact on access and outcomes for the college's most vulnerable students. Findings from the statistical analyses offer an early indicator that these efforts helped to mitigate the impact on equitable access and equitable outcomes for the students who were enrolled at Wake Tech during the pandemic. With plans for many of the major developments implemented during the pandemic, such as virtual service delivery, expanded service hours, and high-flex classrooms, to continue past the pandemic and indefinitely, it will be important to continue to monitor changes in equity gaps. Should these changes and innovations—as well as attitudes that embrace student-centered approaches to instruction and service delivery—continue to be associated with narrowing equity gaps, it will become clearer the extent to which responses to the COVID-19 pandemic ultimately resulted in transformational change at the college.

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Appendix A: Data and Methods Detailed

Qualitative Data Collection and Analysis

To understand the experiences and perspectives of the three major groups of interest in this study—students, faculty, and staff at the college—multiple methods of qualitative data collections were employed. Qualitative data collection instruments included administrator/staff interviews (N: 16), a faculty survey (N:159), faculty focus groups (N: 7), a student survey (N: 1,708), and student interviews (N: 18).

Staff and Administrator Interviews: Between February 19, 2021 and March 3, 2021, one-on-one interviews were conducted with a total of 16 high level administrators and staff from across the college. Interview questions aimed to gather perspectives on the structural, process, and attitudinal changes made at the college in response to the COVID-19 pandemic. See Appendix B for a sample copy of the interview questions for staff and administrators.

Faculty Survey: To focus specifically on changes that were made in courses that made rapid transitions from seated to online in March 2020, only instructors who taught courses that transitioned were sent an email from the VP of Curriculum Education Services to participate in the survey. Because many of these faculty also taught courses delivered online already, the changes they made may not have been limited to the courses they taught that had been fully seated. The survey opened in May 2020 and closed on August 31, 2020. In total, 159 faculty out of 667 email recipients responded to the survey, for a response rate of 23.8%. See Appendix C for a sample copy of the faculty survey questions.

Faculty Focus Groups: As a supplement to the faculty survey findings, seven focus groups were conducted with faculty who transitioned from seated to online instruction in Spring 2020. See Appendix D for a copy of the faculty focus group questions.

Student Survey: To gather feedback from students and investigate this research question, the research team distributed a survey at the end of the Fall 2020 semester to all enrolled students. The survey opened on December 14, 2020 and closed on December 21, 2020. Students who completed the survey were eligible to be entered into a raffle to be one of 30 students to receive a $20 Visa gift card. Compared to previously administered college-wide surveys, this incentive greatly increased the number of responses received, totaling 1,708 after all responses from

students under age 18 were removed. See Appendix E for a copy of the student survey questions and Appendix F for demographics of the student survey respondents.

Student Interviews: Interview participants were identified through convenience and purposive sampling procedures. To gather perspectives from students with various backgrounds, interests, and life circumstances, invitations to participate in the interviews were emailed to multiple student lists, including those involved in Work-Study, Student Government Association, college organizations, clubs, and the Minority Male Mentoring Program. Each student who participated in the interviews was offered a $20 Visa gift card to compensate them for their time. See Appendix G for a copy of the student interview questions and Appendix H for demographics of the student interview respondents.

All interview and focus group participants agreed to the terms of a Confidentiality Agreement and Consent Form detailing the study protocols and their rights as a participant. Data collected during the interviews and focus groups contained no identifiable markers. No quotes, demographic, nor other qualitative data were attributed to a specific individual. In reporting on the data collected, no identifying information was associated with specific individuals' responses. The records from this project were stored securely and kept confidential. All study procedures were approved by the College's Institutional Review Board.

All interviews were recorded and transcribed; in faculty focus groups, a notetaker was present during the sessions to document responses. Transcripts and notes were uploaded to qualitative analysis software to manage the data and assist with coding and creating memos and notes. The transcripts and notes were first explored together in the software to quickly extract the most common topics, phrases, and key words to form the basis of an initial codebook, organized by the theoretical framework and interview protocol. After coding several transcripts, the research team met to review the transcripts and codes and made changes to the codebook based on this work. During a second coding cycle, the team coded all the transcripts, met again to add or merge codes based on the collaborative insights, and organized the codes into categories related to the theoretical framework. The codes were analyzed to determine what the participants did, what they experienced, and how they experienced it regarding what changed before and after COVID-19 transitions, and these data were used to aggregate the codes into themes and provide a textural and structural description of the "essence" of the experiences (Creswell & Poth, 2018).

Quantitative Data Collection and Analysis

In addition to quantitative data collected through the faculty and student surveys, administrative data sets from the Spring 2019, Fall 2019, Spring 2020, Fall 2020, and Spring 2021 semesters were downloaded from the college's student information system (Ellucian Colleague). The data included demographic variables (i.e., gender, race, age), socioeconomic variables (i.e., Pell recipient status), academic variables (i.e., High School and college GPA), enrollment, and course performance variables (success or withdrawal status). After the data was cleaned and validated using SAS 9.4, descriptive statistics were reported for these variables, and then, for course performance variables, inferential statistical analysis were performed using Propensity Score Matching (PSM) techniques (a quasi-experimental statistical method) (Guo & Fraser, 2015).

In this study, several covariates, including student demographic, socioeconomic, and academic variables were used in calculating the propensity scores of the cases in both, control (Spring 2019, Fall 2019) and treatment (Spring 2020, Fall 2020, Spring 2021) groups. After an iterative covariate balancing process, once a desired covariate balance was achieved, logistical regression analysis was performed to compare success and withdrawal rates prior to COVID-19 and after major changes were made in response to COVID-19. Three sets of analyses were conducted:

1) Spring 2019 seated success/withdrawal rates compared to Spring 2020 converted (seated to online) success/withdrawal rates
2) Fall 2019 online success/withdrawal rates compared to Fall 2020 online success/withdrawal rates
3) Spring 2019 online success/withdrawal rates compared to Spring 2021 online success/withdrawal rates

Results were disaggregated by race-ethnicity, gender, and Pell Grant status. To assess whether the changes made in response to COVID-19 have an association with widening or narrowing of equity gaps in retention and success rates for low-income students and students of color at Wake Tech, additional PSM analyses were conducted to compare gaps for the following subgroups: White/Caucasian and Black/African American students, White and Hispanic/Latinx, and Pell Grant recipients/non-recipients.

Comparison of the Two Sets of Results

After each data set was analyzed, the quantitative results were compared with the qualitative results to identify the ways they aligned or contrasted with one another. The insights gleaned from comparing the two data sets were synthesized to interpret the extent to which the interview and focus group data and the PSM data converge, diverge, or relate to each other in some other way, and the specific ways they provide a more complete understanding of the changes that were made during the COVID-19 crises and what net effect those changes may or may not have had on low-income students and students who identified as Black/African American or Hispanic/Latinx.

Appendix B: Staff and Administrator Interview Questions (Sample)

Recall the high-level changes that were documented soon after the transition to an online/virtual environmental in March 2020. Note these high-level changes made that are most relevant for the interviewee's specific division (each interview protocol individualized).

1. Were there major obstacles in implementing these (or other) major changes and how were those obstacles overcome (or not)?
    a. Were some changes easier to implement? Which ones and how so?
2. How do you perceive the impacts these changes have had on the college's ability to meet students' needs during the pandemic?
3. Are there any specific changes that were made that you think have addressed our strategic priority areas of equitable access and/or equitable outcomes particularly well during the pandemic?
4. How will these changes be continued, discontinued, or adjusted as the college "nudges toward normalcy"?

In addition to these major structural and process changes, there may have been ***attitudinal (values, feelings, perspectives) changes*** *that have occurred since the COVID-19 pandemic began…*

5. Around what major issues, if any, have you seen attitudes or perspectives *change* as the college has responded to COVID-19?
    a. For whom (e.g., faculty, staff, students) have these attitudes or perspectives changed?
6. Are there attitudes that you would have liked to see change in response to COVID-19 that did/have not? Around what major issues do they relate?
7. Are there current or planned efforts to help change attitudes and/or organizational culture around these issues as the college "nudges toward normalcy"?
    a. How can faculty and staff help support these changes?
8. Is there anything else you think is important to share about the changes Wake Tech has or will make in response to the COVID-19 pandemic?

Appendix C: Faculty Survey Questions

Course and Instructional Changes

What major changes were made in your course(s) after transitioning to fully online

instruction in March 2020? (Mark all that apply.)

- Grading changes (e.g., how assessment were weighted).
- Attendance policy changes
- Assignment quantity changes (e.g., frequency or volume of readings or assignments required)
- Assignment content changes (e.g., types of resources students could use to complete assignments)
- Assignment submission changes (e.g., papers typed on phone and sent via email; emailed or
- uploaded to Blackboard; hand-written papers mailed to instructor)
- Assignment due date changes
- Assessment changes (e.g., different assignments, quizzes, tests than originally planned)
- Late work policy changes
- Faculty contact changes (how students could contact you)
- Student contact changes (how you contacted students)
- Faculty-student contact frequency changes
- No changes made.
- Other

2. If you marked "Other", please describe.

3. If you'd like to elaborate on any of the changes noted above, please do so here:

4. Following the transition to online instruction, in what ways, if any, did your working

hours change? (Mark all that apply.)

- Number of hours/day worked increased, on average
- Number of hours/day worked decreased, on average
- Times of work (schedule) changed
- No changes in your working hours
- Other

5. If the number of hours/day you worked increased after the transition to online, around

how many more hours per day did you work? (If your hours did not increase, please mark N/A.)

- 0-1
- 2-3
- 4-5

- 6+
- N/A

6. How did your approach to teaching change due to the transition to fully online instruction in March 2020? (If your approach did not change, please write N/A.)

Changes in Attitudes, Feelings, or Beliefs

7. What changes did you notice in YOUR attitudes, feelings, or beliefs regarding teaching and learning after transitioning to fully online instruction in March 2020? (If you did not notice any changes, please write N/A.)

8. What changes did you notice in your COLLEAGUES' attitudes, feelings, or beliefs regarding teaching and learning after transitioning to fully online instruction in March 2020? (If you did not notice any changes, please write N/A.)

9. What changes did you notice in your STUDENTS' attitudes, feelings, or beliefs regarding teaching and learning after transitioning to fully online instruction in March 2020? (If you did not notice any changes, please write N/A.)

Faculty Training and Support

10. Please mark your level of training in Wake Tech's eLearning Preparedness Initiative across the College (EPIC): (Mark all that apply.)

- I have not started EPIC30.
- I plan to start EPIC30 before the end of the 2020 Fall semester.
- I am in progress in EPIC30.
- I have successfully completed EPIC30.
- I plan to start EPIC Master Certification before the end of the 2020 Fall semester.
- I am in progress in EPIC Master Certification.
- I have successfully completed EPIC Master Certification.
- I am a mentor for EPIC30.

11. If you have completed EPIC30, did you find that the training benefited you during the transition to fully online instruction? Please explain.

12. Overall, do you believe you had the instructional support needed to transition to fully online instruction?

- Yes
- No
- I'm not sure

13. Overall, do you believe you had the technological support needed to transition to fully online instruction? *

- Yes
- No
- I'm not sure

14. Whether related to instruction, technology, or other aspects of daily work and life, what did you find most challenging with the transition to remote working? (If you did not experience any challenges with the transition, please write N/A.)

15. What new/additional kinds of support will you need for the Fall 2020 semester? (If you do not need any new/additional kinds of support, please write N/A.)

Student Support

16. Overall, do you believe students had the technological support needed to transition to fully online learning?

- Yes
- No
- I'm not sure

17. Whether related to instruction, technology, or other aspects of daily work and life, what do you think was most challenging for students with the transition to remote learning?

18. What new/additional kinds of support do you think students will need for the Fall 2020 semester? (If you do not think students need any new/additional kinds of support, please write N/A.)

Follow-up

19. Would you be willing to participate in a virtual focus group to share your perspectives on how course and institutional changes may or may not be meeting students' needs in the wake of the COVID-19 disruption?

- Yes
- No
- Maybe

20. Please provide your email address so that a staff member from College Initiatives and Assessment may contact you about participating in a focus group:

Appendix D: Faculty Focus Group Questions

Challenges and Effects of Changes

1. Thinking back to the changes that you made in your courses, were there particular challenges or obstacles you faced in implementing these kinds changes (or others)?
    a. How were the challenges or obstacles overcome (or not)?
2. Were some changes easier to implement than others?
    a. Which ones and how so?
3. Do you think there were particular **course-level** or **college-wide** changes (or supports) that were made that impacted students' performance and retention positively – meaning, their grades were better and/or they stayed in the course more than they likely would have before the transition to online?
    a. What were those changes (or supports) and why do you think they had those effects?
4. Do you think there were particular **course-level** or **college-wide** changes that were made that impacted students' performance and retention negatively – meaning, their grades were worse and/or they dropped the course more than they likely would have before the transition to online?
    a. What were those changes and why do you think they had those effects?
5. Do you think there were particular challenges that some groups of students faced more so than others?
    a. What were those challenges and what were the general characteristics of the students who faced them?

Continuation or Discontinuation of Adjustments

6. Looking to the Fall semester, which adjustments, if any, that **you** made in the Spring do you plan to continue?
    a. Do you think that any of these will (or should) become a "new normal" for your classes? Why or why not?
7. Which adjustments that **you** made in the Spring do you plan to <u>dis</u>continue?
    a. What are the main reasons why you will <u>not</u> be continuing them?
8. Looking to the Fall semester, which adjustments, if any, that **the College** made in the Spring do you think should continue?
    a. Do you think that any of these will (or should) become a "new normal" for the College? Why or why not?

9. Which adjustments that **the College** made in the Spring do you think should NOT continue?
    a. What are the main reasons why you think they should NOT be continued?
10. Is there anything else you would like to share or elaborate on in terms of your or your students' anticipated needs for the Fall semester?

Attitudinal Changes

In addition to structural and process changes, there were likely ***attitudinal (values, feelings, perspectives) changes*** *that occurred in responding to the COVID-19 disruption.*

11. What existing assumptions or beliefs have been most challenged in the wake of COVID-19? How so?
12. Around what major issues have you seen attitudes or perspectives *change* in the wake of COVID-19?
    a. For whom (e.g., administrators, faculty, staff in specific departments, students) have these attitudes or perspectives changed?
13. Are there attitudes or beliefs that you would have liked to see change in response to COVID-19 that did/have not?
    a. Around what major issues do they relate?
    b. From your perspective, how can college administrators and staff help support these changes?

Appendix E: Student Survey Questions

1. During the COVID-19 pandemic, have you known where to go to find the most up-to-date information about Wake Tech's policies and/or procedures?

- Always
- Usually
- Sometimes
- Rarely
- Never

2. How helpful have the following instructional practices been for you in learning course material this semester? (Extremely helpful Very helpful Somewhat helpful Not helpful at all N/A (did not experience))

Participating in live virtual class sessions

In-person classroom instruction, labs, or other in-person, hands-on learning opportunities

Watching videos on course content that were created by your instructor

Watching videos on course content that were created by someone other than your instructor

Participating in chat groups with an instructor or tutor

Participating in study groups with classmates

Attending tutoring sessions with the

Individualized Learning Center (ILC)

Other (please specify)

3. Did you experience challenges in participating in or accessing any of the above? If so, please describe and let us know how the college could better meet your needs.

4. How helpful have the following been for you in completing your courses this semester? (Extremely helpful Very helpful Somewhat helpful Not helpful at all N/A (did not experience))

Flexible attendance policies

Flexible due dates for assignments

Flexibility in how you could turn in assignments

Weekly checklists provided by your instructor

Maintaining a set schedule for class time and/or classwork

eLearning support (e.g., assistance using Blackboard, Microsoft Teams, etc.)

Staying connected with other Wake Tech students

Other (please specify)

5. Did you experience challenges in participating in or accessing any of the above? If so, please describe and let us know how the college could better meet your needs.

6. How helpful have the following supports been in staying enrolled at Wake Tech this Fall? (Extremely helpful Very helpful Somewhat helpful Not helpful at all N/A (did not experience))

Virtual services/appointments (e.g., with Financial Aid, Career Services, Advising, Wellness Counseling)

Financial assistance (e.g., grants, scholarships, gift cards, etc.)

Technology assistance (e.g., laptop or tablet access)

Housing assistance

Food assistance (e.g., the Nest, grocery store gift cards)

Telephone calls from Wake Tech student support staff

Other (please specify)

7. Did you experience challenges in participating in or accessing any of the above? If so, please describe and let us know how the college could better meet your needs.

If yes, how so?

8. Has your timeframe for graduating from Wake Tech changed due to the COVID-19 pandemic?

- Yes
- No
- I'm not sure

9. What is different for you as a student now than before the COVID-19 pandemic?

10. What else could the college do to help improve your experience as a student at Wake Tech going forward?

Background and Demographic Questions

11. Which of the following describes your enrollment status for Fall 2020? Check all that have applied to you during this semester.

- Full-time credit-seeking (12 or more credit hours)
- Part-time credit-seeking (less than 12 credit hours)
- Enrolled in non-credit course(s)
- No longer enrolled at Wake Tech

12. Which best describes your gender identity?

- Female/Woman
- Male/Man
- Transgender Female/Transgender Woman
- Transgender Male/Transgender Man
- Prefer not to respond
- Another gender identity (please specify)

13. What is your race or ethnicity? (please check all that apply)

- White or Caucasian
- Black or African American
- Hispanic or Latino
- Asian or Asian American
- American Indian or Alaska Native
- Native Hawaiian or other Pacific Islander
- Prefer not to respond
- Other (please specify)

14. In what age range are you currently?

- Under 18
- 18-19
- 20-21
- 22-24
- 25-29
- 30-34
- 35-44
- 45-54
- 55-64
- 65 or over
- Prefer not to respond

15. Do you receive financial aid through the federal Pell Grant program?

- Yes
- No
- I'm not sure
- Prefer not to respond

Appendix F: Student Survey Respondent Demographics

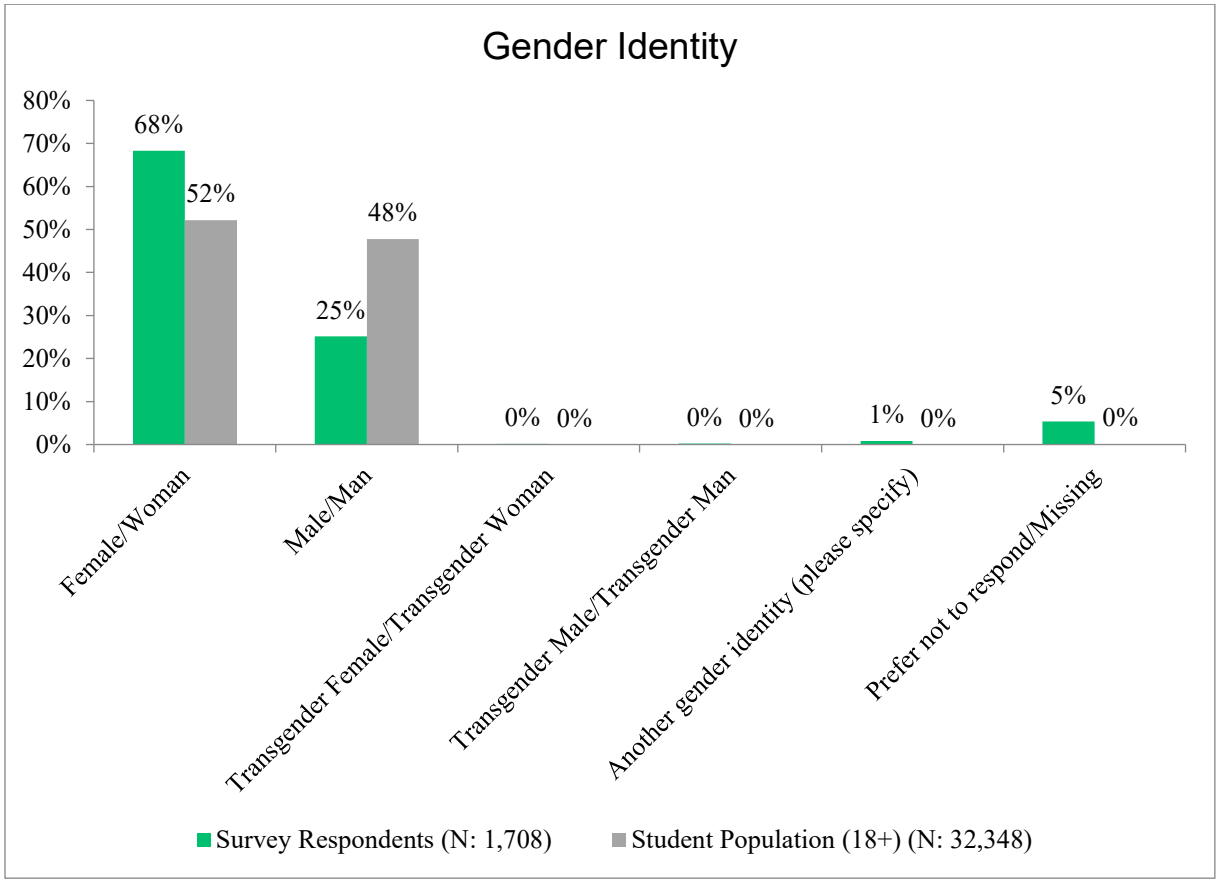

Figure 19: Gender identity of survey respondents compared to student population.

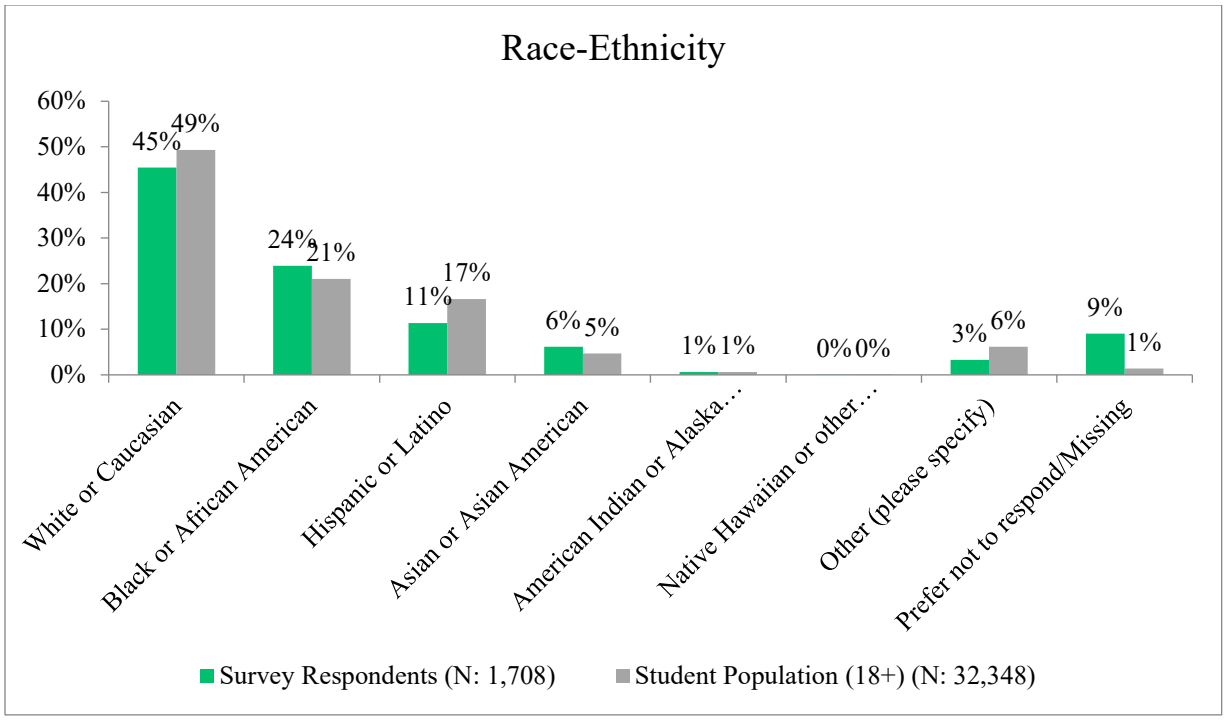

Figure 20: Race-ethnicity of survey respondents compared to student population.

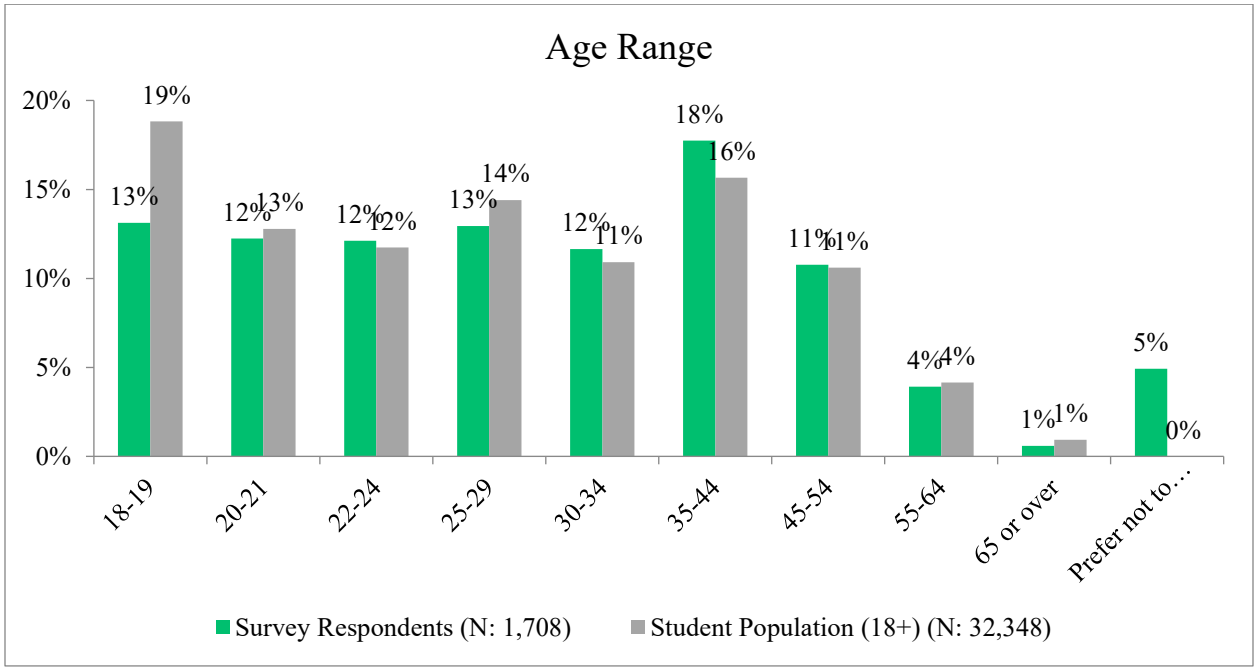

Figure 21: Age range of survey respondents compared to student population (18+).

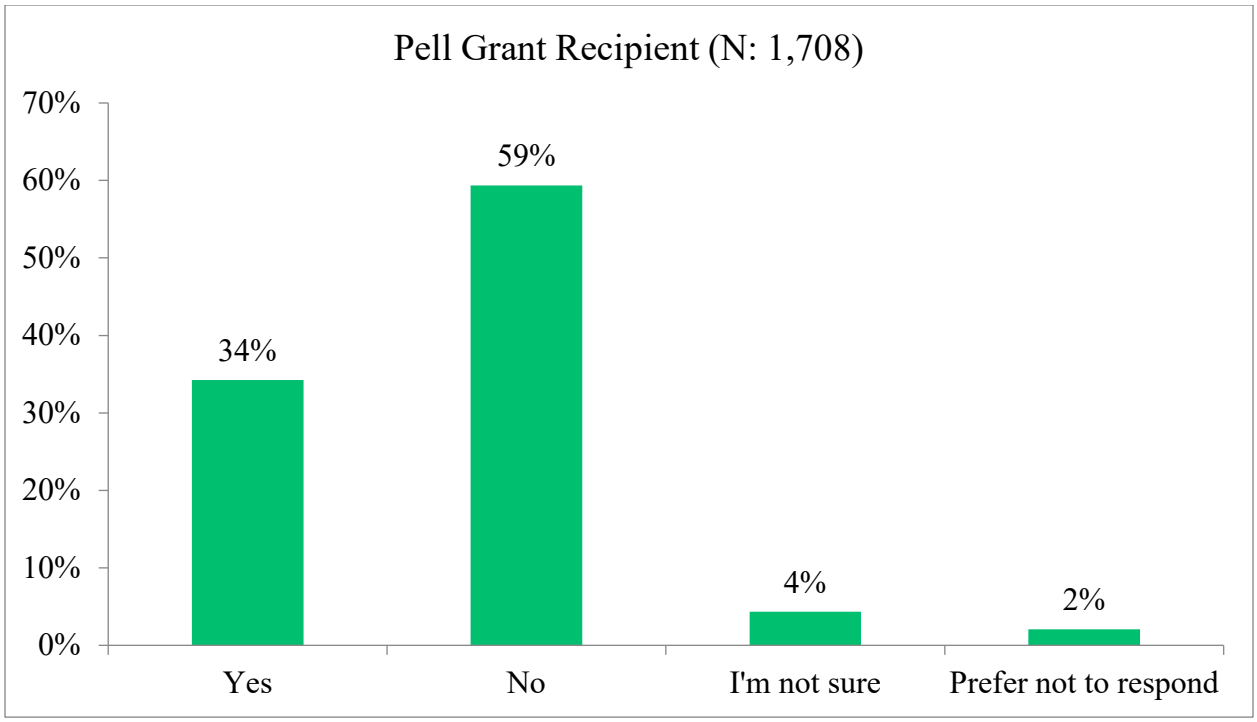

Figure 22: Pell grant status of survey respondents.

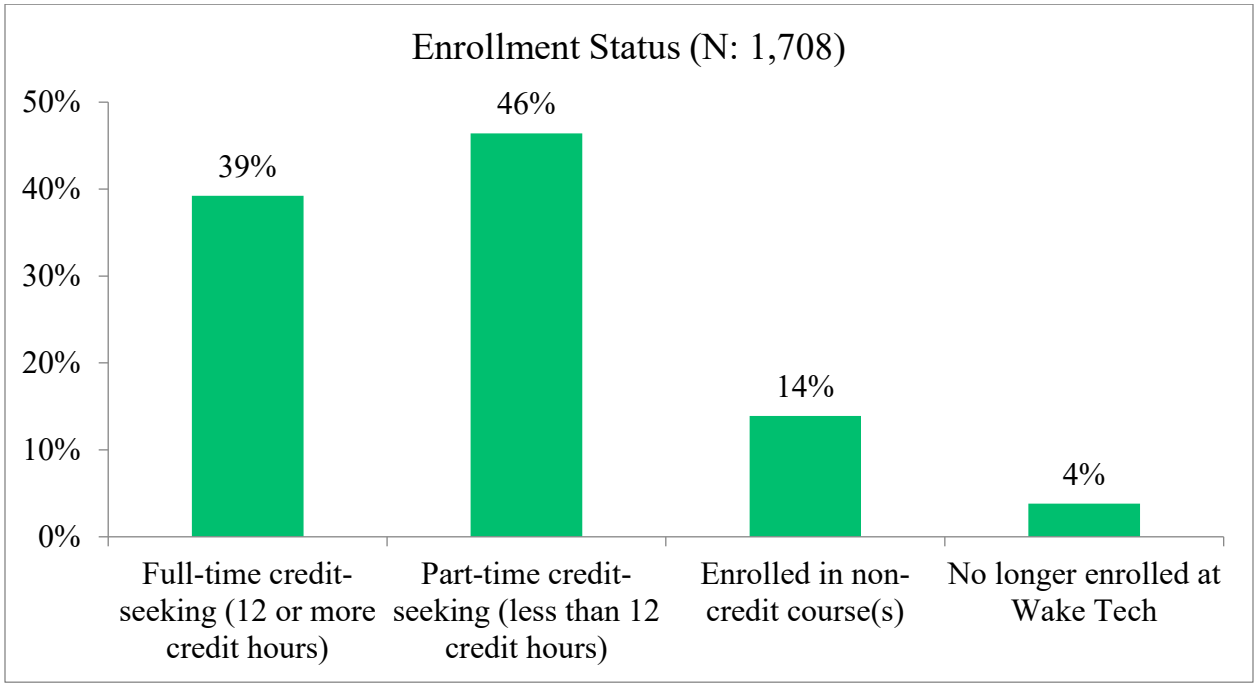

Figure 23: Enrollment status of survey respondents.

Appendix G: Student Interview Questions

1. How did the transition to a completely online or hybrid environment in Spring 2020 impact your experience as a student at Wake Tech?
2. Were there particular challenges that arose that had not been present when your classes were in a seated, face-to-face format on campus?
    a. What were those challenges? (e.g., internet access, no laptop, childcare, work issues, health issues, schedule changes, technical difficulties, etc.)
3. Do you know whether your classmates also experienced these (or other) challenges? Please tell us about what you've heard from your classmates.
4. Were changes made in your course(s) to address these challenges or other challenges your classmates were facing (e.g., flexible attendance policies, different types of assignments and assessments, due date extensions)? Please explain.
    a. If changes were made, how do you think they affected your experience and performance in the course(s)?
    b. Are there other changes that you think could have been made that would have improved your experience, performance, or helped you stay in the course(s)? Please explain.
5. Did you access any support services or resources at the college to help you succeed in your courses?
    a. What kinds of support services did you receive (e.g., tutoring, technological assistance, etc.)?
    b. Do you think receiving those supports impacted your success in your courses, or your ability to stay in your courses?
6. Were there other non-academic supports from the college that you used after transitioning online (e.g. the call center, financial assistance, housing assistance, food assistance)?
    a. If so, how helpful were they to you in being able to continue in your courses and as a student at Wake Tech in general?
7. Are there other supports from the college that you think could have improved your experience as a student at Wake Tech during this COVID-19 crisis, or could improve your experience going forward? Please explain.
8. Is there anything else that you would like to share about your experience or what you think you will need in your educational path at Wake Tech?

Appendix H: Student Interview Respondent Demographics

Table 1: Student Interviewee Demographics

Gender	N	%
Female	11	61%
Male	7	39%
Race-Ethnicity		
Black or African American	10	56%
White or Caucasian	6	33%
Hispanic or Latinx	2	11%
Age Group		
18-19	2	11%
20-21	3	17%
22-24	3	17%
25-29	1	6%
30-34	2	11%
35-44	3	17%
45-54	3	17%
65 or over	1	6%
Pell Grant Recipient		
No	10	56%
Yes	8	44%