



Early Findings from Transitions I: Mental Health, Stress and Health-Related Behaviors During the Transition to University

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Section 1: Introduction

America's colleges are struggling to respond to what is widely-perceived to be a growing mental health crisis on their campuses.^{1–5} Mental health service utilization by college students has almost doubled over the past decade, reaching 34% in 2018.⁶ The severity of this crisis is magnified by the importance of adolescence as a key developmental period when symptoms of poor mental health begin for many who experience mental health difficulties as adults.^{7,8} Evidence suggests that the consequences of mental illness are far-reaching—mental illness is positively correlated with both poor physical health and mortality and negatively correlated with socioeconomic achievement and the quality of social and familial relationships.^{9–23}

In this report, we share early evidence on the state of mental health of UNC-Chapel Hill first-year students from a survey conducted October 2019 to February 2020. For our measures of mental health, we focus on anxiety and depression because they are the most frequently-cited concerns of students seeking mental health services.³⁵ We focus particularly on identifying the different types of stressors students face in order to help inform university efforts to support students. We study a broad range of stressors that have received some support in the literature as being important challenges students face during the transition to university, e.g., financial,²⁴ academic,^{25,26} and social stress.²⁷ We also study a range of behaviors that have been linked to mental health, including sleep, exercise, social media usage, screen time and alcohol/drug use. Finally, we consider utilization of mental health support resources on campus. We are particularly interested in identifying what student populations are most at risk of suffering from mental illness, the stressors they face and their help-seeking behaviors, in order to help inform ways the university can target resources to students most in need.

In summary, this report addresses the following questions:

1. What is the prevalence of symptoms of anxiety and depression among first-years at UNC-CH, and how does this differ by race/ethnicity, first-generation status, sexual/gender minority status, and gender?
2. What are the key stressors that students face during the transition to university? Who is most at risk of experiencing different types of stressors?
3. What student behaviors are related to mental health? In particular, we explore sleep, exercise, meditation, religiosity, alcohol/substance use, screen time, and social media use.
4. To what extent are students utilizing campus mental health resources when needed and how does this vary by race/ethnicity, first-generation status, sexual/gender minority status, and gender?

We begin in Section 2 by describing our methods, key measures of mental health and demographics and sample characteristics. We address Question 1 in Section 3, studying symptoms of anxiety and depression across different demographics in our sample. We turn to Question 2 in Section 4, characterizing the prevalence of different stressors. The behaviors described in Question 3 are discussed in Section 5 and placed in context of evidence in the literature. Section 6 addresses Question 4, mental health services utilization on campus. Section 7 then concludes by highlighting key findings and some potential policy recommendations. We hope these findings can help inform UNC's response to mental health challenges on campus and help them equip future first-year students to be mentally healthy/successful during their time at UNC.

Section 2: Data

We sent a survey to first-year students at UNC-CH using a web-based survey platform between October 2019 and February 2020. In the initial invitation(s) students were invited to participate with no incentive, and later invitations included the offer of a \$10 Amazon gift card to participants. The survey includes well-accepted measures of symptoms of anxiety (GAD-7) and depression (PHQ-8), along with psychological resources, including resilience, self-esteem, self-efficacy and coping. We analyze a range of key stressors that have been identified as salient in literature, such as academics, friends, family, finances, and the future. We also include questions about demographics — sex at birth, gender identity, sexual orientation, race/ethnicity, and parental education. Finally, we collect information on a range of behaviors that have been associated with mental health, including sleep, exercise, screen time, social media usage, prayer/meditation, religious attendance, substance abuse and use of campus resources for emotional health.

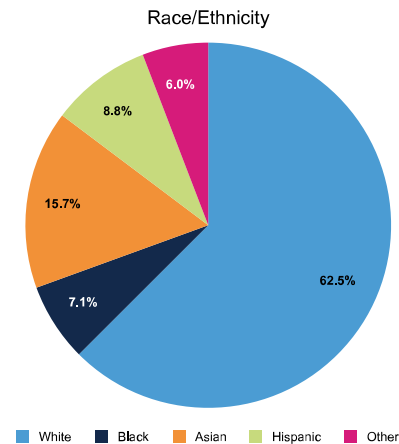


Figure 1: Percent breakdown of participants by race/ethnicity.

As shown in Figure 1, of our total respondents, 62.5% are non-Hispanic White alone, 7% are Black alone, 15.7% are Asian or Pacific Islander alone, 8.8% are Hispanic or Latino of any race, and the remaining 6% are classified as *other*, which includes respondents classifying as mixed race, American Indian, or Alaska Native. “Mixed race” indicates any respondent who classifies as two or more races. This is comparable to UNC’s entire first-year populations, which is 55.7% White only, 8.9% Black only, 12.3% Asian only, 9% Hispanic of any race, and 5.1% classify as two or more races.¹ In order to provide a way of characterizing our very heterogeneous mixed race population, we also

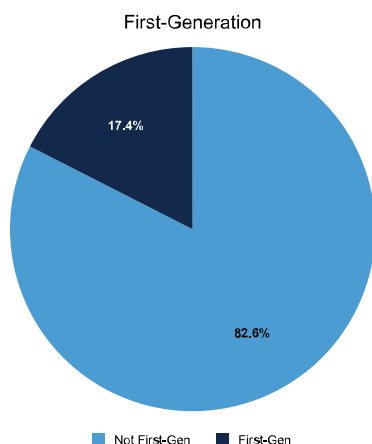


Figure 2: Percent breakdown of participants by first-generation college student status.

consider an alternative definition that is not mutually exclusive where a student is included in the classification for Black and Asian if they report either of these races. In this case, 10.6% are Black alone or selected Black along with other races/ethnicities and 20.0% are Asian alone or selected Asian along with other races/ethnicities.

We define first-generation college students as students for whom neither of the student’s parents have a bachelor’s degree or higher. Figure 2 shows 17.4% of our respondents are first-generation by this definition. This is close to the 18.9% of first-generation college students reported by UNC for the overall population of first-year students.¹

We define *sexual and gender minority (SGM)* as populations who are characterized by non-binary constructs of sexual orientation, gender, and/or sex. They include, but are not limited to, individuals who self-identify as lesbian, gay, bisexual, asexual, transgender, two-spirit, queer, and/or intersex.² As shown in Figure 3, 16.3% of our respondents classify as sexual/gender minorities.

Of our 1124 first-year respondents, 65.4% identify as women, 33.5% identify as men, and 1.1% identify as another gender. Gender proportions in our sample are comparable to proportions of sex assigned at birth, where 67.0% indicate female and 33.0% report male. In comparison, UNC reports the ratio of female to male to be 60.4% female and 39.6% male for the entire UNC first-year student population.¹

To measure symptoms of anxiety, we use the GAD-7, which is a clinically-validated measure for detecting Generalized Anxiety Disorder (GAD).³ This measure asks respondents to think back on a 2-week period of time and rate how often they have experienced 7 specific issues including feeling nervous, anxious, or on edge, not being able to stop or control worrying, worrying too much about different things, trouble

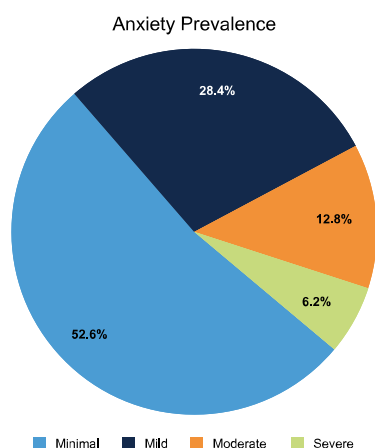


Figure 4: Percent Breakdown of Participants by Prevalence of Anxiety

relaxing, being so restless it's hard to sit still, becoming easily annoyed or irritable, and feeling afraid as if something awful might happen. Each item is scored on a 0-3 scale and summed to give a total possible score of 21. Anxiety symptoms are classified based on this total score as *minimal* (0-4 points), *mild* (5-9 points), *moderate* (10-14 points) and *severe* (15-21 points). 52.6% of respondents are classified as having minimal anxiety symptoms, 28.4% have mild anxiety symptoms, 12.8% have moderate anxiety symptoms, and 6.2% of respondents have severe anxiety symptoms. In the analysis that follows, we focus on those with symptoms of moderate to severe anxiety, about 19% of our respondents. Research has suggested that this is a good indicator of generalized anxiety disorder.³

For our measure of depression, we use the clinically-validated 8-question version of the Patient Health Questionnaire Depression Scale (PHQ-8).^{4,5} This measure asks respondents to consider the past 2 weeks and how often they have been bothered by a number of problems, including little interest or pleasure in doing things, feeling down, depressed or hopeless, trouble falling or staying asleep or sleeping too much, feeling tired or having little energy, poor appetite or overeating, feeling bad about yourself, trouble concentrating and moving or speaking so slowly that other people could have noticed or the opposite being fidgety or restless. Each question frequency response is designated a 0 to 3 point scale, with 3 points indicating *nearly every day* and 0

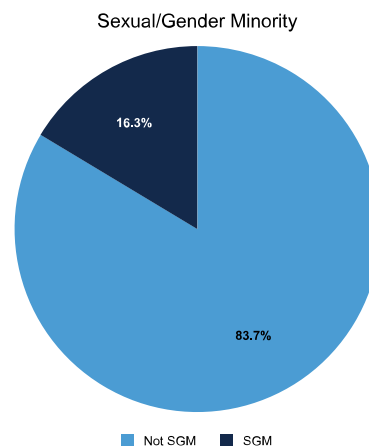


Figure 3: Percent breakdown of participants by sexual/gender minority status.

indicating *not at all*. The PHQ-8 aggregates points to diagnose symptoms of depression, classifying 0-4 points as *none*, 5-9 points as *mild*, 10-14 points as *moderate*, 15-19 points as *moderately severe*, and 20-24 point as *severe*. Among our respondents, there were no symptoms of depression in 44.0%, mild symptoms in 35.0%, moderate symptoms in 13.7%, moderately severe in 4.8% and severe in 2.5%. We use a cutoff of 10 for indicating symptoms of moderate to severe depression, a commonly-used cutoff in the literature.⁴ About 21% of our respondents have symptoms of moderate to severe depression.

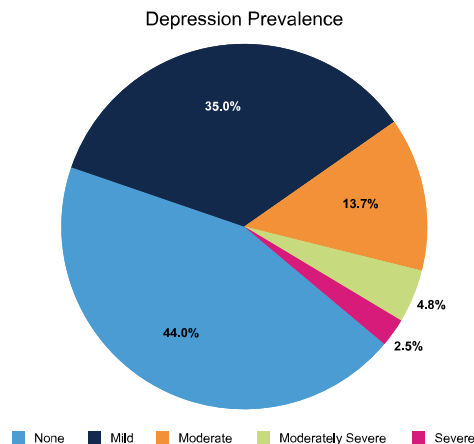


Figure 5: Percent of Breakdown of Participants by Prevalence of Depression

The comorbidity between anxiety and depression is fairly high.³ Appendix Table 1: Co-occurrence of Anxiety and Depression Symptoms shows that 11.5% of our sample experience both anxiety and depression while 16.5% exhibit symptoms of anxiety or depression alone. For simplicity in the analysis that follows, we focus on comparing respondents who experience moderate to severe anxiety or depression symptoms (29%) to those who do not experience at least moderate symptoms of either condition (71%), while acknowledging that there may be important issues to consider by looking at more detailed designations. We refer to these groups as those with anxiety/depression symptoms and those with no symptoms.

To place results from UNC in context with the state of mental health across places of higher education throughout the United States, we compare our findings with results from the Healthy Minds study. The Healthy Minds study, conducted by the University of Michigan and Boston University, is a large-scale survey-based assessment of the mental health of young people. It collects data from a wide variety of universities and colleges across the United States. Notably, it represents a slightly different population than that of our sample. Healthy Minds surveys students of all years, while we focus on students in their first year; our sample is substantially more female and considerably younger; our sample also has more Asian students and fewer White, Black, and Hispanic/Latinx students. All of these may complicate comparisons between Healthy Minds data and our own. That said, participants in the Healthy Minds study report higher levels of depression (26.2%) and anxiety (29.2%) than do our respondents (21% and 19%, respectively).⁶

Section 3: Mental Health by Demographics

In this section, we consider the prevalence of anxiety and depression symptoms by race/ethnicity, first-generation status, gender and sexual/gender minority status. We also discuss some of the literature investigating the potential sources of these disparities.

Race/Ethnicity

Figure 6 shows the breakdown of anxiety and depression symptoms respectively by race/ethnicity. In our sample, black and other non-white students experience the highest rates of anxiety and depression symptoms, between 26% and 39% compared to whites and Asians who have the lowest rates at between 17 and 18%. With the exception of Hispanic and other non-white students where rates of depression are significantly higher than anxiety (24% and 39% compared to 14% and 30%), rates of depression and anxiety are roughly equivalent for a given race/ethnicity, likely in part due to the high comorbidity rates between the two disorders.⁷

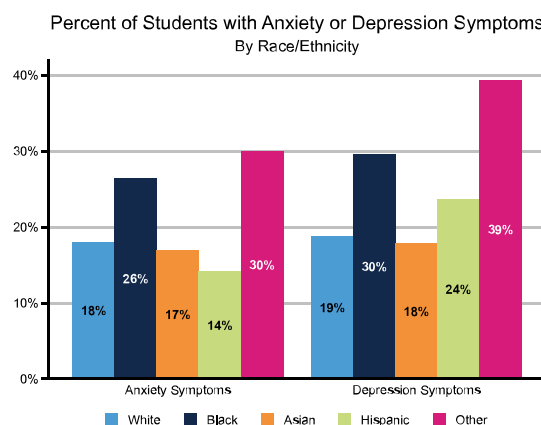


Figure 6: Percent of students with anxiety or depression symptoms by race/ethnicity.

The literature suggests at least two mechanisms that can explain the higher prevalence of anxiety/depression symptoms for Black and other non-white students — *minority status stress* and the *imposter phenomenon*.⁸ Minority status stress describes the inimitable stressors experienced by minority students, including discrimination, insensitivity, and questions of belonging. Black college students are more likely to experience minority stress status than are other racial groups,⁹ with an increased likelihood for those attending predominantly white universities, such as UNC-CH.¹⁰ The impostor phenomenon describes the sense of intellectual fraudulence that accompanies a struggle to internalize accomplishments and doubt of how one's intellectual abilities are perceived by others. During the first semester of college, individuals experience more potential stressors while discovering their emerging identities intensifying the potential implications for symptoms of anxiety and depression. We discuss this further when considering stressors in Section 4.

First-Generation College Student Status

Figure 7 shows how experiences of anxiety and depression differ by first-generation status at UNC. We find, perhaps surprisingly, that these groups have roughly the same rates of symptoms of anxiety or depression. By contrast, other studies have found that first-generation students report higher rates of feeling stressed, depressed, or upset compared with non-first-generation students.¹¹ This discrepancy deserves more investigation but may be indicative of the

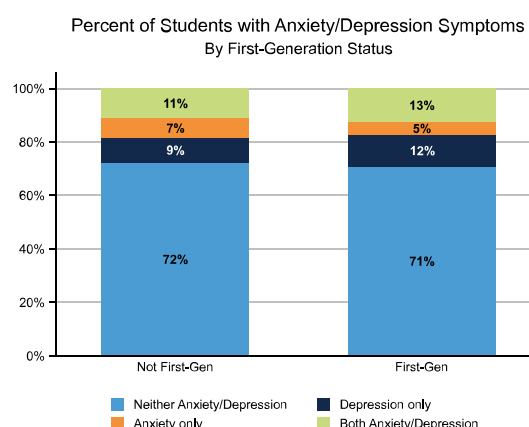


Figure 7: Percent of students with anxiety/depression by first-generation status.

resources UNC has put in place to support first-generation college students. Research shows that participation in living-learning programs, residential learning experiences where students have access to a variety of planned programming and faculty interactions, has been found to increase the success of academic and social transitions into college among first-generation students.¹² UNC has a number of Residential Learning Programs, including one tailored to first-generation students.

Sexual/Gender Minority Status

Figure 8 shows how rates of anxiety and depression symptoms vary by sexual/gender minority (SGM) status. The disparities are striking, with 47% of SGMs indicating symptoms of anxiety/depression compared to only 24% of non-SGMs. Among the explanations, research shows that SGM adolescents experience greater levels of loneliness, suicidality, depression, and anxiety within the college context compared to their non-SGM peers.^{13–15} Research suggests that SGMs experience greater stress, which contributes to increased risk for mental health symptomatology.¹⁶ The minority stress model helps explain these findings. SGM individuals are more likely to experience alienation, discrimination, victimization, and abuse as a result of their status.¹⁷ This association between sexual identity, stress, and mental health is likely exacerbated during the transition to college. It is important to note that mental health disorders are not necessarily present in each SGM individual. However, leading marginalized lives, enduring the stress of hiding one's identity, or facing verbal, emotional, or physical abuse from intolerant family members and communities can manifest mental health disorders.¹⁸ Although specific experiences of stress differ between sexual minorities and gender minorities, the two demographics are both likely to be rejection sensitive, which refers to an anxious expectation of rejection due to internalized stigmatization.¹⁹

Gender

Figure 9 shows that women have higher rates of depression and anxiety symptoms in our sample than men, 31% compared to 21%. This is consistent with literature showing that women have a higher prevalence of frequent mental distress and other mental health conditions than men.²⁰ This is partly explained by the finding that women report higher levels of stress than men, discussed further below.²¹ The literature also indicates the men and women experience different mental health issues, with men experiencing more externalizing disorders (as we measure below with substance abuse) and women experiencing more internalizing disorders, which are the focus of our report.²²

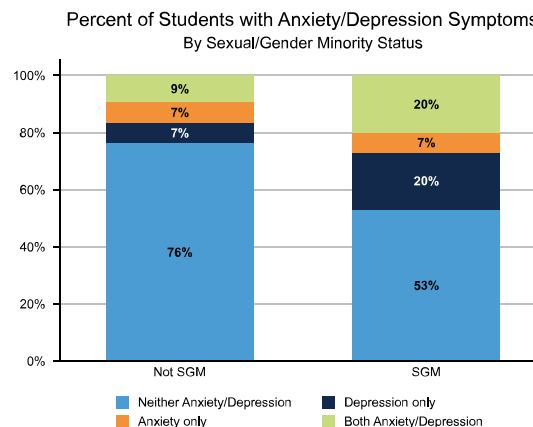
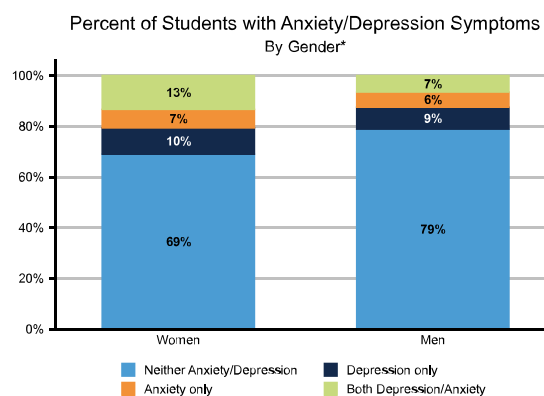


Figure 8: Percent of students with anxiety/depression by sexual/gender minority status.



*Note: Other gender identities are recorded in responses, but sample sizes are small and are not reported to protect respondents' privacy.

Figure 9: Percent of students with anxiety/depression symptoms by gender.

Section 4: Understanding Stressors

Understanding the stressors students experience can be helpful for informing how to help target resources to better support students. The stress-process model provides a way of conceptualizing the relationship between stressors and mental health.²³ Depression and anxiety can result from an individual's perception and reaction to stressors, which in turn may depend on a variety of factors, such as psychological resources and coping skills.²⁴ The literature makes an important distinction between *stressors*, the objective event, and *stress*, how the person experiences the stressor. Whether a stressor causes stress depends on varying factors like an individual's access to resources, resiliency, and worldview. In our survey, we are not able to distinguish these 2 constructs and so discuss stressors as measured by perceived sources of stress for students. We consider 11 potential stressors that have received support in the literature, including academics, the future, friendships, health, their appearance, peers, romantic relationships, finances, family, work, and chronic illness in our survey. We ask respondents to check which items in the list "made you feel stressed, upset, or worried at least two or three times a week for the past one month." For each stressor checked, we ask respondents to rate how often the event bothered them by indicating "just a little," "moderate," or "very much." In most of the analysis here, we focus on the prevalence of stressors, but we also provide a brief description of the severity in our sample.

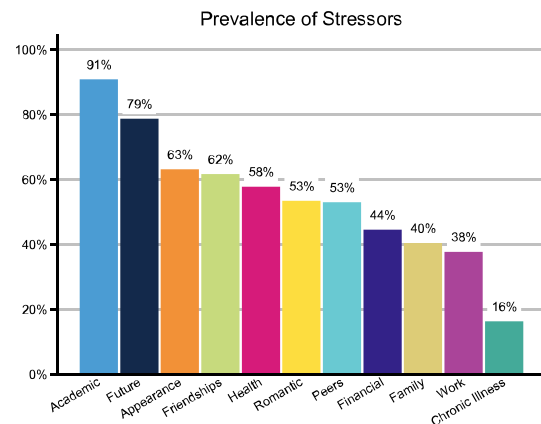


Figure 10: Overall prevalence of key stressors.

85% of our sample indicated experiencing at least one stressor. Figure 10 shows the percentage who indicate they are affected by each of the 11 stressors among those who reported experiencing at least one stressor. The most common stressor in the sample is academics, affecting 91% of respondents. A report from the Robert Wood Johnson Foundation notes that excessive pressure to excel can lead to high levels of stress.²⁵ UNC attracts top-performing and achieving students each year who may feel excessive pressure from the school, peers, or their families to continue to achieve during their first years.

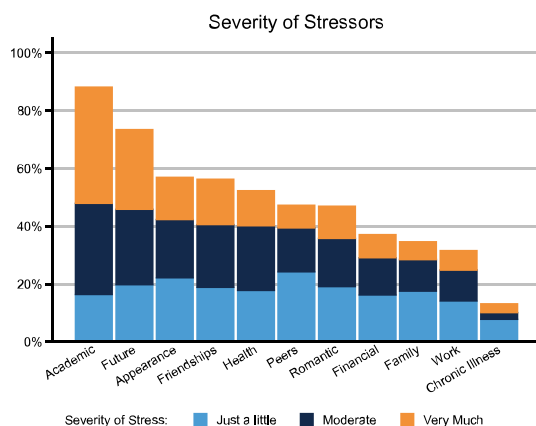


Figure 11: Overall severity of key stressors.

The future is also a significant source of stress with 79% of the respondents indicating it as a stressor. This is supported by literature on the overall goals undergraduate students have. Henderson, King and Smith²⁶ explores the meaning that education holds in the lives of contemporary undergraduate students and finds 10 different meanings. Three are related to the student's future: career preparation, a way to think about the direction their lives might take and to plan their futures, and a chance to learn skills that will enable them to make a difference in the world.

Appearance, friendships, and health are the next biggest stressors affecting around 60% of our sample. Romantic relationships and peer stressors affect more than 50%. Finances, family, and work affect around 40%. Stress from chronic illness is least prevalent, but still affects 16% of respondents.

Figure 11 shows the severity of stressors among respondents who reported the severity of stressors. In our sample, 3 to 21% of the population reported experiencing an individual stressor but not the severity, making the overall count slightly different between Figure 10 and Figure 11. The most severe stressor was academics, with 40% of the sample attesting they are “very much” stressed by academics. Detailed stressor prevalence and severity statistics are reported in Appendix Table 2: Prevalence of Stressors and Appendix Table 3: Severity of Stressors, respectively.

Stressors by Anxiety/Depression Symptoms

One goal of our research is to understand what stressors are associated with symptoms of anxiety and depression. To begin to explore this, Figure 12 shows experiences of stress by whether the students have anxiety/depression symptoms. While informative, these graphs cannot speak to whether the stressor causes anxiety or depression because it could also be the case that anxiety/depression leads to a heightened experience of a given stressor.

Across the board, individuals with anxiety/depression symptoms also experience higher prevalence of stressors. The greatest difference is in the category of health, with a 24 percentage point difference. Kaiser Permanente notes that those with depression often find it hard to take care of their health, tending not to use adaptive coping mechanisms like healthy eating and exercise and relying on maladaptive coping strategies like alcohol or drugs.²⁷ Anxiety is also understood to make health problems worse.²⁸ Those with symptoms of anxiety or depression also experience higher rates of social stressors including family, friends, peers, and appearance. Research has found that perceived social support can be a protective barrier from experiencing depression and anxiety.²⁵ Another significant stressor among the sample with anxiety/depression symptoms is finances.

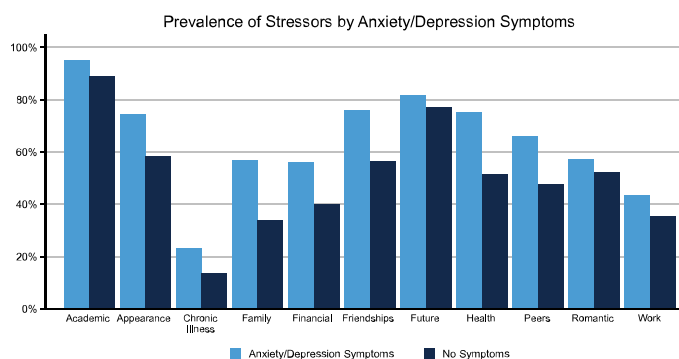


Figure 12: Prevalence of stressors by anxiety/depression symptoms.

Considering the severity of stressors provides an even starker picture of differences. Appendix Table 5: Severity of Stressors by Presence of Anxiety/Depression Symptoms shows that the incidence of being “very much” bothered by academics, the future, and health is over 20 percentage points higher among those with anxiety/depression symptoms relative to those who do not have anxiety/depression symptoms. This suggests the potential importance of measuring the severity for capturing effects on anxiety and depression.

Stressors by Key Demographics

In addition to how stressors differ for our sample respondents who have anxiety/depression symptoms, we also consider disparities by race/ethnicity, first-generation college status, gender, and sexual/gender minority status.

Race/Ethnicity

Figure 13 shows the prevalence of stressors by non-Hispanic white only, Hispanic, all reported black and all reported Asian. Other racial or ethnic groups are excluded from the analysis due to small sample sizes. Black students have higher prevalence for family, financial, and chronic illness stress. They are also the most severely stressed group, having the highest percentage of responders marking they are “very much stressed” by 7 out of 11 of the stressors (appearance, chronic illness, family, finances, friendship, future, health).

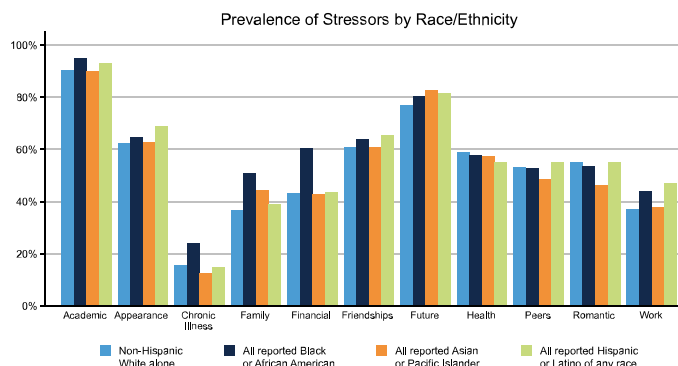


Figure 13: Prevalence of stressors by race/ethnicity.

As shown in Appendix Table 7, compared to non-black students, the largest differences in severity are for academics, finances and future, with black students 12-13% more likely to indicate that they are very much stressed by these factors. Hispanic students have higher prevalence for peer, work, appearance, and friend-related stress than any other racial/ethnic group. As shown in Appendix Table 9: Severity of Stressors by Hispanic or Latino Ethnicity, compared to non-Hispanic students, the largest differences are for academics, future and peers, with Hispanic students 8 to 12% more likely to indicate they are very much stressed by these factors.

The higher degree of stress for Black and Hispanic respondents could be due to experiencing cognitive stressors due to their racial identity status as minorities on UNC’s campus.²⁹ Findings from the minority stress model show that race and ethnic minorities in the U.S. experience stress related to prejudice and discrimination, leading to lower levels of psychological well-being.¹⁸ At predominantly white institutions of higher learning like UNC, minority students are likely to experience race and ethnic minority status stress.³⁰ In addition, research has found that campus climate regarding race issues and minority stress are

closely linked.²⁹ Recent race-related issues at UNC, such as student protests surrounding confederate statues on campus, may also be underlying determinants.

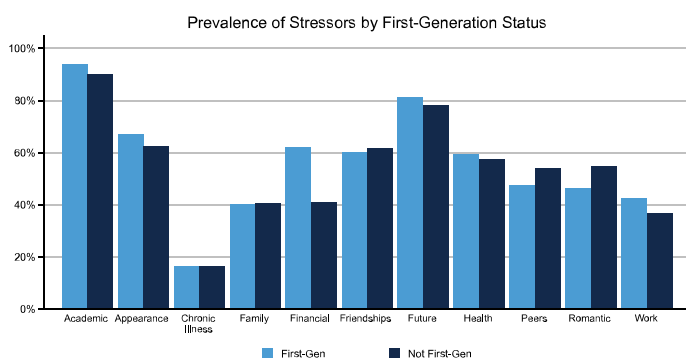


Figure 14: Prevalence of stressors by first-generation college student status.

First-Generation Status

Figure 14 shows the prevalence of stressors by first-generation college student status. First-generation college students in our sample have a 21 percentage point higher prevalence of experiencing finances as a stressor. First-

generation respondents are also more severely stressed, which is consistent with prior research.¹¹ In addition to not having a parent help navigate college with prior experience, prior research highlights that first-generation students are likely to face competing priorities like financial stress, work demands, and family pressures.³¹ Interestingly, we find that rates of stress related to romantic relationships, peers, friends, and family are lower in first-generation students relative to non-first-generation. This is surprising given research indicating that first-generation students tend to have lower sense of belonging to and satisfaction with the university than non-first-generation students.¹¹

Sexual/Gender Minority Status

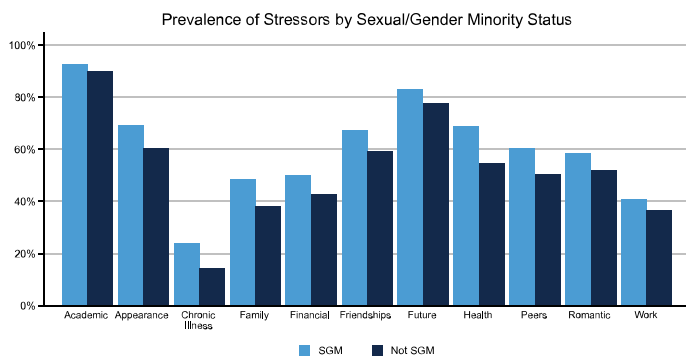


Figure 15: Prevalence of stressors by sexual/gender minority status.

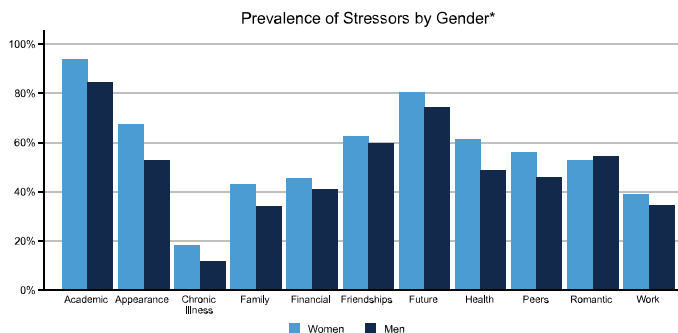
Figure 15 shows prevalence of stressors by SGM status. SGMs are more stressed about each of the 11 stressors surveyed than non-SGMs. The biggest differences are with health (14 percentage points), family (11 percentage points), chronic illness (10 percentage points), peers (10 percentage points), appearance (9 percentage points), and friends (8 percentage points). Appendix Table 12: Severity of Stressors by Sexual/Gender Minority Status shows that SGM students are also more severely affected by 10 out

of the 11 stressors, as indicated by SGM students reporting being “very much” bothered by the 10 stressors at a higher rate than non-SGM students. Chronic illness, where sample sizes are small, is the only stressor exempt from this pattern. In Section 3, we note that SGM respondents are more likely to experience alienation, discrimination, victimization and abuse, which may affect their experience of stressors.² For example, LGB youth who have faced discrimination may conceal their sexual identity and have thoughts of shame or guilt about their sexuality which causes psychological stress.² The American Psychiatric Association notes that internalized homophobia may compromise optimal mental health in sexual minorities as it affects access to appropriate care when mental distress occurs.⁴⁸ The Teen Health and Technology study found that gender minority youth disproportionately experienced bullying and harassment.³²

Gender

Figure 16 shows the prevalence of stressors by gender identity. Women in the sample have higher prevalence of each stressor except for romantic relationships. Academics, peers, health, and appearance have the largest differences in prevalence. While past research suggests that the prevalence of stressors for men and women differ by domain,²² other research on college students supports that women students indicate higher experiences of stressors, especially in the case of social activities and interpersonal problems.⁶¹

Previous research points to a number of possible explanations, such as women placing a greater emphasis on relationships, historic positions of power and social roles.²²



*Note: Other gender identities are recorded in responses, but sample sizes are small and are not reported to protect respondents' privacy.

Figure 16: Prevalence of stressors by gender binary gender identity. Other gender identities are recorded but are not reported to protect respondents' privacy.

Resilient Coping and Experiences of Stress

How individuals cope with stress, with either adaptive or maladaptive coping strategies, alters the experience of stressors.²⁴ We analyze whether students who are more resilient copers, experience lower levels of stress. We measure resilient coping through the Brief Resilient Coping Scale,³³ which is a 4-item scale designed to capture how individuals cope with stress. Respondents are asked to consider how well four statements (e.g., "I look for creative ways to alter difficult situations") relate to them and respond with the options of "does not describe me at all," "does not describe me," "neutral," "describes me," or

"describes me very well," with associated points from 1 to 5. Those who score 4-13 points are classified as low resilient copers, 14-16 as medium resilient copers, and 17-20 as high resilient copers. Based on these classifications, 4% of our sample are low, 53% are moderate, and 22% are high resilient copers.

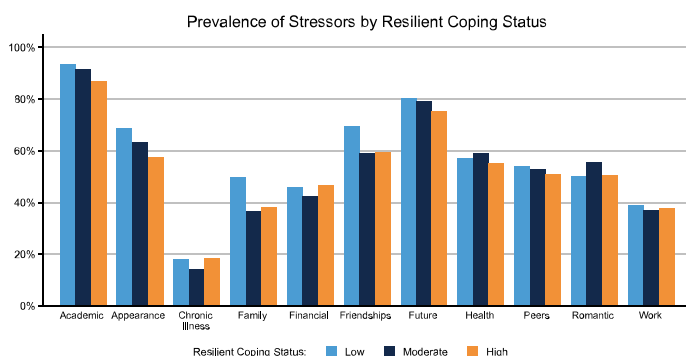


Figure 17: Prevalence of stressors by resilient coping status.

If resilient coping is a protective factor on the experience of stress, we would expect the prevalence of each stressor to be lowest among high resilient copers. We find that this is particularly true in the cases of academic, appearance, family, friendships, and future stressors. In the cases of chronic illness, financial and romance stressors, higher resilient did not indicate lower prevalence of stressors. The protective effect of resilient coping is more pronounced when considering severity of experiences of stressors. Appendix Table 15: Severity of Stressors by Low and High Resilient Coping Status shows that high resilient copers report they are "just a little" affected by 7 of the 11 stressors at higher rates than low resilient

copers. Similarly, high resilient copers report they are “very much” affected by 7 of the 11 stressors at lower rates than low resilient copers.

Our findings suggest that building resilient coping strategies can be helpful for alleviating stress and potentially affect rates of anxiety and depression among students.²⁴ Programs like Project Uplift, ACE, and Carolina Bridge are already conducting some of this work to build student’s confidence in their ability to cope with challenges at UNC.

Section 5: Mental Health and Related Behaviors

In this section, we consider different behaviors that may be associated with higher rates of anxiety and depression. These behaviors relate to both protective factors and coping mechanisms identified in the literature.²⁴ For instance, increased alcohol, internet use or decreased sleep in the face of stress could be seen as maladaptive coping strategies. On the other hand, increased exercise or prayer/meditation are often seen as positive, or adaptive, coping mechanisms. These behaviors may be motivated by a variety of factors other than stress, so we consider simply their prevalence regardless of whether the student perceives that he/she is using them to cope with stress. We provide below early evidence on the associations between anxiety/depression symptoms and exercise, sleep, religiosity, spirituality, social media use, screen time, and substance abuse. Understanding the relationship between these factors and anxiety/depression symptoms could help students cope with their stress in ways that alleviate the effects on mental health and also inform university efforts to encourage supportive behaviors.

Exercise

Previous research has shown that engaging in vigorous exercise for at least 3 days a week is associated with lower levels of depression.³⁴ Appendix Figure 1 shows percentage of respondents exercising for less than 3 days, 3 days and more than 3 days in our sample. 42% of our respondents indicate that they do not participate in vigorous exercise at least 3 days a week.

Figure 18 shows how rates of vigorous exercise differ by anxiety/depression symptoms. Students with symptoms of anxiety/depression are less likely to engage in vigorous exercise at least 3 days a week (49%) compared to students who do not have anxiety/depression symptoms (61%). This is consistent with prior research suggesting that exercise is a potentially effective adaptive coping mechanism that should be promoted to deal with stress.^{24,35}

Sleep

Previous research shows that receiving less sleep is associated with higher levels of anxiety and depression and affects academic performance negatively.^{36,37} In the survey, we ask about typical hours of sleep per night before attending university and while attending university. According to the Centers of Disease Control and Prevention, young adults should receive 7 or more hours of sleep per night.³⁸ Before attending university, 77% of students slept 7 or more hours per night on average. However, once they start attending university, only 58% of our sample reported sleeping 7 or more hours per night. As seen in Appendix Figure 2,

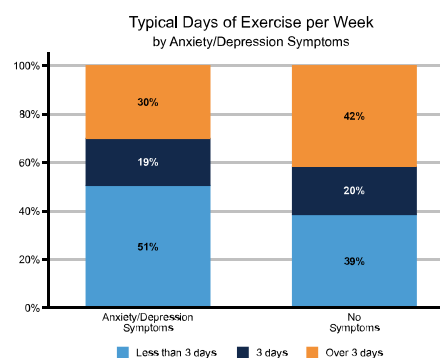


Figure 18: Percent of students by typical days of exercise and anxiety/depression symptoms.

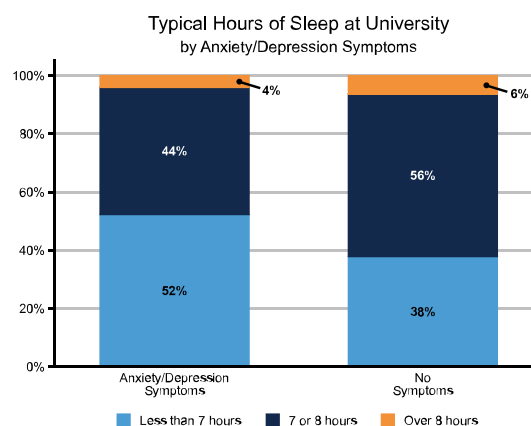


Figure 19: Percent of students by typical hours of sleep and anxiety/depression symptoms.

once students enter university, they receive less sleep (about 1 hour less) than before attending university.

Figure 19 shows how hours of sleep differs for student experiencing anxiety/depression symptoms. 52% of respondents with anxiety/depression symptoms sleep less than 7 hours a night, compared to 38% of those without anxiety/depression symptoms.

It is important to note that trouble sleeping or sleeping too much are also considered symptoms of anxiety or depression. Previous research suggests that sleeping too much can be considered a maladaptive coping mechanism, because avoiding stress does not actually resolve the stressful situation.³⁹ This indicates the importance of balance in sleep quantity.

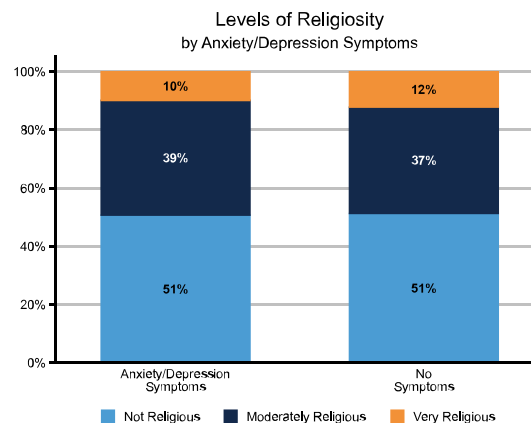


Figure 20: Percent of students by religiosity and anxiety/depression symptoms.

Religion and Spirituality

Studies find that some aspects of religiosity may provide protection against anxiety and depression.⁴⁰ We measure students' external *religiosity* by combining two questions about how often they attended religious service and how often they attend other religious groups while at university. As seen in Appendix Figure 5, a majority (51%) never attended religious service or other religious groups. 11% of our sample are designated *very religious*, in that they attend religious service or groups a few times a week or more. The remaining 37% are designated *moderately religious*, in that they attend religious services or groups at least occasionally to once a week.

Students may practice spiritual and religious techniques, such as meditation and prayer, but not attend church, also known as *internal religiosity or spirituality*. As seen in Appendix Figure 6, a plurality (44%) do not practice any spiritual or religious meditation techniques. 31% of the students report they practice spiritual and religious meditation techniques *very often*, which was indicated by reporting they practice a few times a week to many times a day. The remaining 25% fall in-between and are designated *somewhat*.

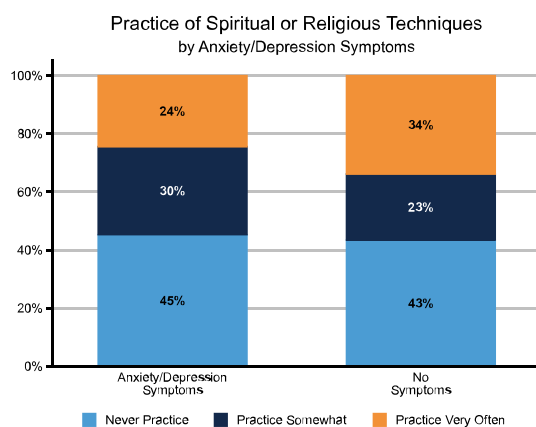


Figure 21: Percent of students by practice of spiritual/religious techniques and by anxiety/ depression symptoms.

Figure 20 shows the religiosity of individuals based on religious service or group attendance by anxiety/depression symptoms. The rates of religiosity do not differ significantly by anxiety/depression symptoms. The biggest difference is that 12% of students with no anxiety/depression symptoms report being very religious and compared to 10% of those with anxiety/depression. Figure 21 shows how the practice of spiritual/religious meditation differs by anxiety/depression symptoms. 34% without anxiety/depression practice spiritual/religious meditation very often, compared to about 25% of those with symptoms of anxiety and depression.

Thus, it appears from these figures that religious service attendance does not play much of a protective role whereas spiritual/religious meditation does. That said, these associations should be interpreted with caution. Previous research shows that the countervailing influence that anxiety/depression may cause students to attend religious services less leading simple associations to understate the potential protective role of religiosity.⁴¹

Social Media Use

Social media use in young people is often shown to be associated with poor mental health.⁴² However, there are also studies indicating no relationship⁴³ or a positive relationship^{35,44} with mental health. Some of the mixed findings may be due to the variety of ways that social media is used. Social media may be used to increase social connections with peers to reduce stress, as a form of coping for an existing mental health condition, or simply for recreation, all of which may be supportive. Social media may also be used to retreat from offline social interaction or for negative comparison, both of which may be harmful. Depending on the type of social media and how it is used, social media may play a protective role or exacerbate anxiety/depression symptoms.

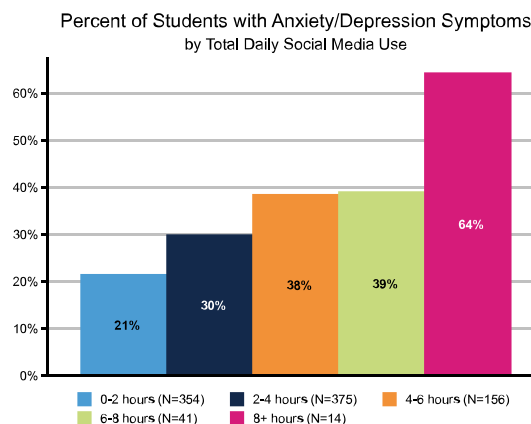


Figure 22: Rates of anxiety/depression symptoms by average hours of social media use per day.

Appendix Figure 7 shows the amount of time spent using different types of social media in our sample, organized by the frequency with which students reported using each type of social media. The most common use reported is *networking*, which includes Facebook, LinkedIn, Instagram, and Pinterest. Networking is followed by *video sharing* (YouTube, Facebook Live, Snapchat, TikTok), *microblogging* (Twitter, Tumblr), *news* (Reddit), and *dating* (Bumble, Tinder). The average total use across all categories is 2 hours and 45 minutes per day.

Figure 22 shows that rates of anxiety/depression symptoms almost triple between students who use less than two hours of social media per day (22%) and students who use more than eight hours per day (64%).

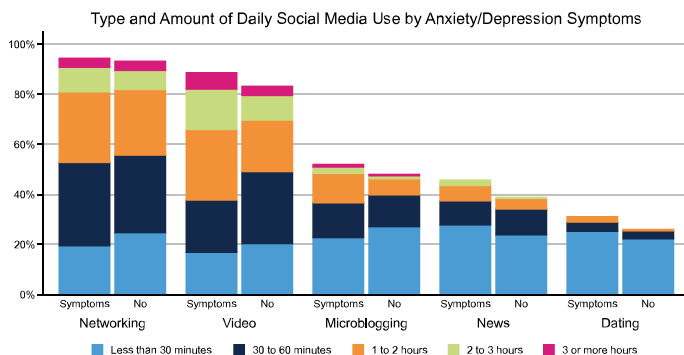


Figure 23: Daily social media use by anxiety/depression symptoms.

Figure 23 shows that within each category of social media, the percentage of students using social media is significantly higher for those with anxiety/depression symptoms. For a regression analysis of anxiety/depression symptoms and types of social

media

use,

see

Appendix Table 16: Associations between Social Media Use and Anxiety/Depression Symptoms.

We hypothesize that these relationships between social media use and mental health problems may be partially mediated by cyberbullying, as cyberbullying is known to be related to anxiety and depression in adolescents.^{45,46} Students who report being cyberbullied within the last 12 months are significantly more likely to report anxiety/depression symptoms (Appendix Figure 8; $P=.015$). However, we find no significant relationship between amount of social media use and rates of cyberbullying, suggesting it may not be a primary mediating factor.

Non-Academic Screen Time

We survey students on their non-academic screen time, the bulk of which is related to internet usage. Previous research indicates a complicated relationship between internet use and mental health in young people.⁴⁷ While some studies have found a benefit on mental health from increased internet use,^{45,48} most have noted that screen time related to poor mental health^{45,48–52} and to suicidality and self-harm.^{48,53} In one longitudinal study, increased internet use predicted increases in anxiety and depression.⁵⁴ This may be for a variety of reasons, including the role of the internet in sheltering students with social anxiety from the stressors of the offline world. Those students may then be less prepared for social challenges, increasing anxiety and depression.^{47,55} Research also indicates that the internet may be a facilitator for self-harm and suicidality – while online social groups may help some, for others, they may normalize and reinforce negative harmful behaviors.^{56,57} Additionally, through online social interaction, internet use may expose students to cyberbullying, which is associated with anxiety and depression.^{45,46} Internet use may also be related to sedentary behavior, which is related to

Percent of Students by Daily Non-Academic Screen Time

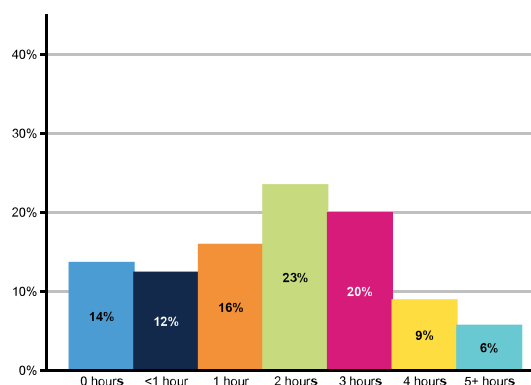


Figure 24: Percent of students by daily non-academic screen time.

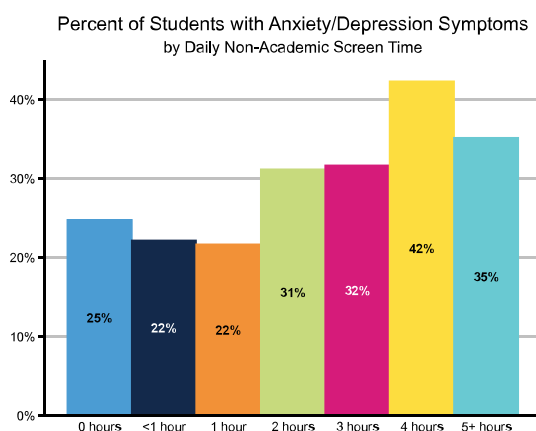


Figure 25: Rates of anxiety/depression symptoms by average daily internet use.

anxiety and depression.⁵⁸ The evidence on the effects of video games on mental health is mixed, with studies both highlighting the potentially positive role of some types of video games and the concerns about others.⁵⁹

We asked participants a broad question related to overall non-school-related screen time, “On an average school day, how many hours do you play video or computer games or use a computer for something that is not schoolwork? (Count time spent playing games, watching videos/shows (such as YouTube, Netflix, etc), texting, or using social media on your smartphone, computer, Xbox, PlayStation, iPad, or other tablet.)” Figure 24 shows that students most commonly use

around 2 hours per day, but use ranges from 0 hours to greater than 5.

Figure 25 shows a significant relationship between average daily hours of non-school-related screen time and anxiety/depression symptoms ($P<.001$). Students with higher screen time are more likely to report anxiety/depression symptoms. This may be because internet use generates or exacerbates anxiety/depression or because screen time is a response to anxiety/depression or for some other reason. Further research would be required to investigate a causal relationship.

Alcohol and Substance Use

Use of alcohol and other substances has been shown to be related to mental health symptoms, especially anxiety, in a variety of populations.^{60–65} However, some studies have shown no relationship between certain mental health conditions and use of certain substances.^{64,65} Both substance use and mental illness can also be independently harmful to students and alternative ways of expressing distress.²²

Figure 26 shows student reports of use of alcohol, tobacco, and other substances. Most students (52%) report having consumed alcohol within the last 30 days, and 37% had consumed enough to reach the “binge drinking” threshold (which is 4 or more consecutive drinks for females and 5 or more for males) on at least one occasion within that time period. 16% used some form of tobacco or cigarettes, e-cigs, or other), 16% used some form of marijuana, 3% used “hard drugs” (cocaine, ecstasy, non-prescription opioids, etc.), and 2% used stimulants.

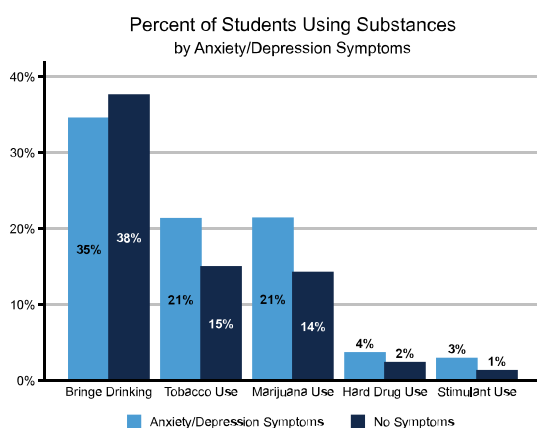


Figure 27: Percent of students reporting substance use in the last 30 days by anxiety/depression symptoms.

as substance use is associated with numerous consequences, including poor academic success, missed classes, and interpersonal concerns.⁶⁶ As our analysis suggests that students with anxiety/depression

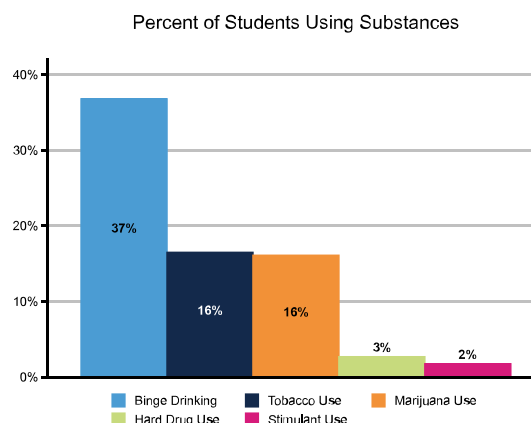


Figure 26: Rates of alcohol, tobacco, and substance use within the Last 30 Days.

Figure 27 shows how rates of binge drinking, tobacco and drug use differ across those with and without anxiety/depression symptoms. Binge drinking rates are slightly lower for those with anxiety/depression symptoms, but the opposite is true for tobacco and drug use. Rates of tobacco and marijuana use are also similar (21%) among those with anxiety/depression symptoms, compared to only 14–15% for those without symptoms. While not statistically significant, the increase in rate of anxiety/depression symptoms in students who reported stimulant usage is also quite striking (see Appendix Table 17: Associations between Substance Use and Anxiety/Depression Symptoms).

Increases in substance use associated with increased levels of anxiety/depression symptoms are concerning,

symptoms are more likely to use substances, consequences of substance abuse disproportionately affect this vulnerable population. Further research is required to determine whether increased substance abuse contributes to anxiety/depression or if anxiety/depression leads to substance abuse.

Section 6: Utilization of Mental Health Resources

University-provided services, like Counseling and Psychological Services (CAPS) and health services, can be critical for university students who are suffering from anxiety/depression.⁶⁷ CAPS provides brief therapy, assists with medications, and hosts support groups and other services. Research suggests that services on college campuses are underutilized,^{67,68} especially by students of various minority groups.^{67–75} This may be attributed to a number of factors, including lack of knowledge about services,^{73,76} interest,⁷⁴ or social encouragement for attendance,⁷⁷ or differences in socioeconomic status, parental education, or stigma.^{68,75,78} Racial/ethnic minorities may be particularly affected by higher levels of internal or external stigma,^{68,78} first-generation students by a lack of knowledge or interest,^{73,74} and male students by a lack of knowledge,⁷³ though all barriers affect all groups to some degree.

We examine the extent to which UNC students utilize mental health care services based on whether they report having visited CAPS or Health Services for a “problem related to [their] emotional well-being since arriving at UNC.” They are identified as utilizing private mental health care services if they indicate having “sought help from mental health professionals outside the university since arriving at UNC.” We refer to the percentage of students with anxiety/depression students who are not seeking help through UNC or outside-UNC sources as “unmet need.” While we focus on anxiety and depression, many students may seek emotional support for other reasons, including other psychiatric conditions or grief. This means that

Need Met by UNC or Private Mental Health Care

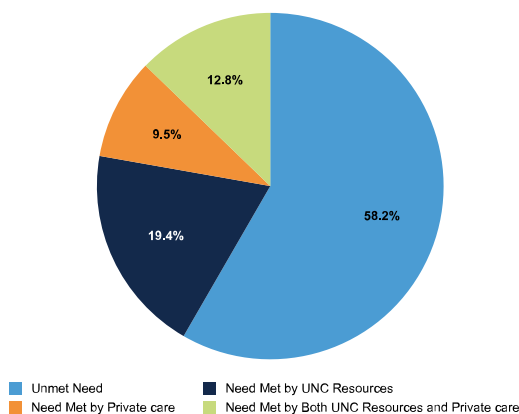


Figure 29: Utilization among students with anxiety/depression by type of service provider.

Utilization of UNC or Private Mental Health Care

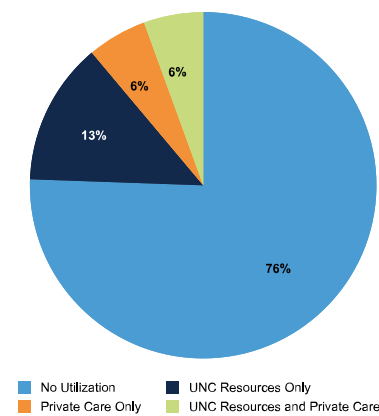


Figure 28: Utilization of UNC or private mental health care.

we may be understating the extent of unmet need. That said, unmet need is particularly interesting metric for comparing subgroups of students of different demographics, as it accounts for differences in prevalence of anxiety/depression across subgroups.

Figure 28 shows that 24 % of all students utilized some mental health treatment service since coming to UNC. Of this group, 77% had been to UNC-provided services. Figure 29 shows the breakdown of mental health service utilization for students with anxiety/depression symptoms. Of students with anxiety/depression symptoms, over half did not receive treatment since coming to UNC. About 32% sought support from CAPS or UNC Student Health services.

Unmet Need by Key Demographics

Figure 30 shows disparities in unmet need by race/ethnicity, first-generation status, sexual/gender minority status, and gender. All three demographic breakdowns are analyzed further below, and more detailed information about the intersection between utilization, mental health, and unmet need for each demographic breakdown can be found in Appendix Figure 9 to Appendix Figure 11. Appendix Table 18: Associations between Demographics and Utilization to Appendix Table 21: Associations between Race/Ethnicity and Unmet Need also contain analyses of the statistical relationships between unmet need, utilization, and key demographics.

Error! Reference source not found. shows students' levels of unmet need by race/ethnicity. We include multiracial students who report African American or Asian in these subgroups. We do not report multiracial or American Indian separately to protect respondents' privacy in small sample sizes. Asian students have comparable rates of unmet need to non-Hispanic white students at 59%. Hispanic students have the lowest levels of unmet need at 50%.

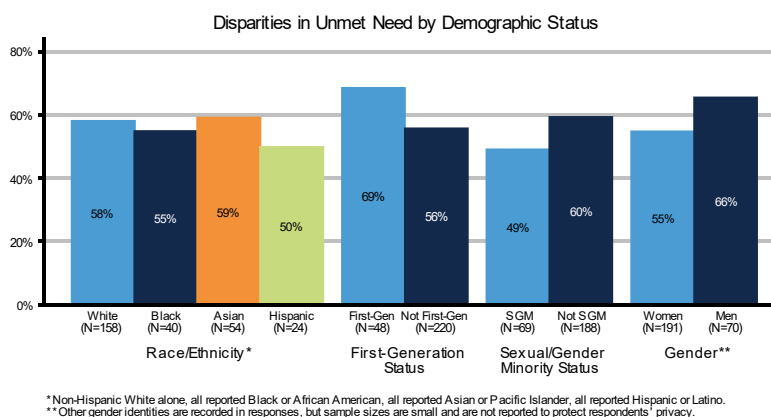


Figure 30: Rates of non-utilization among students with anxiety/depression symptoms (unmet need) by key demographics.

Rates of unmet need for first-generation college students are strikingly high at 69% compared to 55% for non-first-generation college students. A slightly greater percentage of first-generation students than non-first-generation students have anxiety/depression symptoms (30% vs 28%), but a much lower proportion of those students accesses mental health treatment (31% vs 44%). As mentioned above, there are several possible reasons for this, including lack of knowledge, financial/time constraints, lack of interest, and stigma.^{73,74}

Sexual/gender minorities report much higher levels of both anxiety/depression symptoms (47% vs 24%) and utilization (41% vs 21%) compared to non-SGMs. As a result, the overall level of unmet need for SGMs is relatively low at 49% compared to 60% for non-SGMs.

Women experience higher levels of anxiety/depression symptoms (31% vs 22%) and utilization (27% vs 19%) than men. Due to the higher utilization rates, there is higher unmet need among men in the sample at 66% compared to 55% for women.

According to the 2019 University of North Carolina Report of the Mental Health Task Force, Counseling and Psychological Health Services (CAPS) meets or exceeds guidelines for the extent to which students in need of support are provided with services.⁷⁹ However, we find significant unmet need in our sample of students with anxiety/depression students, with particularly troubling rates for first-generation college students and men. This is related to the ever-increasing prevalence of mental health problems on

America's college campuses. Further efforts to address this unmet need may benefit from addressing factors that have been identified as barriers to utilization for these populations.

Conclusion and Key Findings

As the mental health crisis on college campuses grows, our study seeks to contribute to the puzzle of how universities can help. We do this by combining validated measures of anxiety and depression symptoms with information on a comprehensive set of behaviors that have been identified as important protective factors and coping strategies in the literature. We also provide insight into the types of stressors students are facing with the understanding that this knowledge can better help universities target policies toward the greatest sources of stress. The report also highlights important disparities in anxiety/depression symptoms, stressors and mental health service utilization by race/ethnicity, first-generation college status, sexual/gender minority status, and gender. Awareness of the most at-risk groups can help the university identify ways of targeting mental health services to students most in need. We also hope that the information regarding different sources of stress can be helpful in that effort.

We conclude by highlighting some of our key findings:

- Black and mixed-race students experience the highest rates of anxiety/depression symptoms.
 - Black students reported more prevalent stressors for family, financial, and chronic illness stress.
- First-generation college students have similar rates of anxiety/depression symptoms as non-first-generation college students.
 - First-generation college students have a higher prevalence of experiencing finances as a stressor in comparison to non-first-generation college students.
- Sexual gender minority (SGM) students have significantly higher rates of anxiety/depression symptoms than non-SGM students.
 - SGMs are more stressed about each of the 11 stressors surveyed than those who did not identify as SGM.
- Women students have higher rates of anxiety/depression symptoms than men.
 - Women have higher prevalence of each stressor with the exception of romantic relationships.
- The most common stressor in the sample population was academics, affecting 91% of the sample.
 - Future was the second most common source of stressor for our sample at 79%.
- Several behaviors that have been identified as coping strategies and protective or risk factors in the literature also showed up as related to anxiety/depression symptoms in our sample
 - Practicing spiritual or religious techniques is related to lower levels of anxiety/depression symptoms
 - Decreased sleep quantity is related to increased anxiety/depression symptoms
 - Exercise is related to lower levels of anxiety/depression symptoms.
 - Increased social media use is related to increased anxiety/depression symptoms.
 - Substance use, including cigarettes, marijuana and other illegal drugs, are associated with increased levels of anxiety/depression symptoms, while binge drinking is slightly lower for those with anxiety/depression symptoms,
 - Students with more non-academic screen time have higher levels of anxiety/depression symptoms
- Among those with anxiety/depression symptoms, rates of unmet need are high.

- 58% do not get help from UNC CAPS, Student Health Services or off-campus mental health professionals
- Rates of unmet need are even higher for first-generation college students and men.

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Appendix

Appendix Table 1: Co-occurrence of Anxiety and Depression Symptoms

Moderate to Severe Depression Symptoms	Moderate to Severe Anxiety Symptoms	
	No	Yes
No	71.26% (724)	6.99% (71)
Yes	9.55% (97)	11.52% (117)

Note: Cell percentages do not sum to 100% due to non-response cells that are not reported to protect respondent privacy

Appendix Table 2: Prevalence of Stressors

Stressor	Prevalence
Academic	90.69% (867)
Future	78.56% (751)
Appearance	62.97% (602)
Friends	61.51% (588)
Health	57.64% (551)
Romantic	53.24% (509)
Peers	52.82% (505)
Financial	44.35% (424)
Family	40.27% (385)
Work	37.55% (359)
Chronic Illness	16.11% (154)

Appendix Table 3: Severity of Stressors

Stressor	None	Just a Little	Moderate	Very Much
Academic	11.76%(89)	16.38% (124)	31.57% (239)	40.29% (305)
Future	26.49%(205)	19.77% (153)	26.10% (202)	27.65% (214)
Friendships	43.71%(368)	18.88% (159)	21.73% (183)	15.68% (132)
Appearance	43.07%(354)	22.14% (182)	20.19% (166)	14.60% (120)
Health	47.70%(405)	17.79% (151)	22.38% (190)	12.13% (103)
Romantic	53.02%(447)	19.10% (161)	16.73% (141)	11.15% (94)
Peers	52.75%(451)	24.21% (207)	15.20% (130)	7.84% (67)
Financial	62.88%(532)	16.19% (137)	12.88% (109)	8.04% (68)
Family	65.33%(571)	17.51% (153)	10.98% (96)	6.18% (54)
Work	68.38%(597)	14.09% (123)	10.77% (94)	6.76% (59)
Chronic Illness	86.89%(802)	7.80% (72)	2.28% (21)	3.03% (28)

Appendix Table 4: Prevalence of Stressors by Presence of Anxiety/Depression Symptoms

Stressor	Symptoms	No Symptoms	Difference
Academic	95.26% (261)	86.01% (583)	6.25%
Appearance	74.45% (204)	58.47% (383)	15.98%
Chronic Illness	23.36% (64)	13.44% (88)	9.92%
Family	56.93% (156)	33.74% (221)	23.19%
Financial	53.84% (153)	40.00% (262)	15.84%
Friendship	75.91% (208)	56.34% (369)	19.58%
Future	81.75% (224)	77.10% (505)	4.65%
Health	75.18% (206)	51.30% (336)	23.88%
Peers	66.06% (181)	47.63% (312)	18.42%
Romantic	57.30% (157)	52.21% (342)	5.09%
Work	43.43% (119)	35.27% (231)	8.16%

Appendix Table 5: Severity of Stressors by Presence of Anxiety/Depression Symptoms

Stressor	Severity					
	None			Just a Little		
	Symptoms	No Symptoms	Difference	Symptoms	No Symptoms	Difference
Academic	6.16% (13)	13.66% (72)	-7.50%	9.95% (21)	19.17% (101)	-9.21%
Appearance	31.25% (70)	47.30% (272)	-16.05%	22.32% (50)	22.26% (128)	0.06%
Chronic Illness	82.03% (210)	88.59% (567)	-6.56%	8.59% (22)	7.66% (49)	0.94%
Family	50.00% (118)	70.92% (434)	-20.92%	17.37% (41)	17.81% (109)	-0.44%
Financial	52.38% (121)	66.50% (393)	-14.12%	16.45% (38)	16.07% (95)	0.38%
Friendships	28.82% (66)	48.64% (286)	-19.82%	17.90% (41)	19.73% (116)	-1.82%
Future	23.15% (50)	27.88% (150)	-4.73%	11.57% (25)	23.05% (124)	-11.47%
Health	29.96% (68)	53.52% (319)	-23.57%	17.62% (40)	18.46% (110)	-0.84%
Peers	40.79% (93)	56.98% (343)	-16.19%	25.88% (59)	23.42% (141)	2.46%
Romantic	50.65% (117)	53.23% (313)	-2.58%	19.05% (44)	19.39% (114)	-0.34%
Work	64.32% (155)	69.74% (424)	-5.42%	12.86% (31)	14.80% (90)	-1.94%

Stressor	Severity					
	Moderate			Very Much		
	Symptoms	No Symptoms	Difference	Symptoms	No Symptoms	Difference
Academic	28.91% (61)	32.45% (171)	-3.54%	54.98% (116)	34.72% (183)	20.25%
Appearance	20.54% (46)	20.00% (115)	0.54%	25.89% (58)	10.43% (60)	15.46%
Chronic Illness	3.13% (8)	2.03% (13)	1.09%	6.25% (16)	1.72% (11)	4.53%
Family	16.95% (40)	8.50% (52)	8.45%	15.68% (37)	2.78% (17)	12.90%
Financial	14.29% (33)	12.69% (75)	1.60%	16.88% (39)	4.74% (28)	12.15%
Friendships	24.89% (57)	20.75% (122)	4.14%	28.38% (65)	10.88% (64)	17.50%
Future	22.69% (49)	27.51% (148)	-4.82%	42.59% (92)	21.56% (116)	21.03%
Health	25.55% (58)	21.48% (128)	4.07%	26.87% (61)	6.54% (39)	20.33%
Peers	19.30% (44)	13.95% (84)	5.34%	14.04% (32)	5.65% (34)	8.39%
Romantic	16.02% (37)	17.18% (101)	-1.16%	14.29% (33)	10.20% (60)	4.08%
Work	12.45% (30)	10.20% (62)	2.25%	10.37% (25)	5.26% (32)	5.11%

Appendix Table 6: Prevalence of Stressors Among Racial and Ethnic Groups

Stressor	Non-Hispanic White Alone	All-reported Black	All-reported Asian	All-reported Hispanic
Peers	53.23% (321)	52.59% (61)	48.54% (100)	55.17% (48)
Family	36.82% (222)	50.86% (59)	44.17% (91)	39.08% (34)
Romance	55.22% (333)	53.45% (62)	46.12% (95)	55.17% (48)
Financial	43.28% (261)	60.34% (70)	42.72% (88)	43.68% (38)
Academics	90.38% (545)	94.83% (110)	89.81% (185)	93.10% (81)
Work	37.15% (224)	43.87% (51)	37.86% (78)	47.13% (41)
Future	76.95% (464)	80.17% (93)	82.53% (170)	81.61% (71)
Health	59.04% (356)	57.76% (67)	57.28% (118)	55.17% (48)
Chronic Illness	15.75% (95)	24.14% (28)	12.62% (26)	14.94% (13)
Appearance	62.19% (375)	64.66% (75)	62.62% (129)	68.97% (60)
Friends	60.86% (367)	63.79% (74)	60.68% (125)	65.52% (57)

Appendix Table 7: Severity of Stressors by Black or African American Ethnicity

Stressor	Severity					
	None			Just a Little		
	Black	Non-Black	Difference	Black	Non-Black	Difference
Academic	8.11% (6)	12.43% (83)	-4.32%	13.51% (10)	16.92% (113)	-3.40%
Appearance	45.45% (35)	43.05% (313)	2.40%	19.48% (15)	22.42% (163)	-2.94%
Chronic Illness	78.02% (71)	87.82% (714)	-9.80%	13.19% (12)	7.13% (58)	6.05%
Family	50.59% (43)	66.75% (514)	-16.17%	15.29% (13)	18.05% (139)	-2.76%
Financial	45.24% (38)	65.23% (486)	-20.00%	16.67% (14)	16.24% (121)	0.43%
Friendships	44.30% (35)	43.76% (326)	0.55%	20.25% (16)	18.79% (140)	1.46%
Future	27.54% (19)	26.42% (182)	1.12%	13.04% (9)	20.75% (143)	-7.71%
Health	49.41% (42)	47.72% (356)	1.69%	14.12% (12)	18.36% (137)	-4.25%
Peers	50.59% (43)	52.73% (396)	-2.14%	22.35% (19)	25.03% (188)	-2.68%
Romantic	51.19% (43)	53.11% (393)	-1.92%	11.90% (10)	20.14% (149)	-8.23%
Work	68.24% (58)	69.00% (532)	-0.77%	14.12% (12)	13.88% (107)	0.24%

Stressor	Severity					
	Moderate			Very Much		
	Black	Non-Black	Difference	Black	Non-Black	Difference
Academic	28.38% (21)	32.19% (215)	-3.81%	50.00% (37)	38.47% (257)	11.53%
Appearance	15.58% (12)	20.63% (150)	-5.05%	19.48% (15)	13.89% (101)	5.59%
Chronic Illness	—	—	2.30%	—	—	1.44%
Family	22.35% (19)	9.74% (75)	12.61%	11.76% (10)	5.45% (42)	6.31%
Financial	19.05% (16)	12.21% (91)	6.83%	19.05% (16)	6.31% (47)	12.74%
Friendships	16.46% (13)	21.88% (163)	-5.42%	18.99% (15)	15.57% (116)	3.42%
Future	20.29% (14)	26.56% (183)	-6.27%	39.13% (27)	26.27% (181)	12.86%
Health	17.65% (15)	23.06% (172)	-5.41%	18.82% (16)	10.86% (81)	7.97%
Peers	20.00% (17)	14.51% (109)	5.49%	7.06% (6)	7.72% (58)	-0.66%
Romantic	21.43% (18)	15.95% (118)	5.48%	15.48% (13)	10.81% (80)	4.67%
Work	12.94% (11)	10.77% (83)	2.18%	4.71% (4)	6.36% (49)	-1.65%

Calculations include all respondents reporting Black or African American ethnicity, including those reporting more than one race or ethnicity. Empty cells are not reported due to small sample sizes and to protect respondents' privacy.

Appendix Table 9: Severity of Stressors by Hispanic or Latino Ethnicity

Stressor	Severity					
	None			Just a Little		
	Hispanic	Non-Hispanic	Difference	Hispanic	Non-Hispanic	Difference
Academic	10.00% (6)	11.93% (83)	-1.93%	—	—	-10.43%
Appearance	36.23% (25)	43.54% (327)	-7.31%	24.64% (17)	21.97% (165)	2.67%
Chronic Illness	88.89% (72)	86.77% (728)	2.12%	7.41% (6)	7.75% (65)	-0.34%
Family	67.57% (50)	64.99% (518)	2.57%	13.51% (10)	17.94% (143)	-4.43%
Financial	64.79% (46)	62.56% (483)	2.22%	12.68% (9)	16.58% (128)	-3.90%
Friendships	42.42% (28)	43.67% (338)	-1.25%	24.24% (16)	18.48% (143)	5.77%
Future	24.62% (16)	26.69% (189)	-2.08%	23.08% (15)	19.49% (138)	3.59%
Health	54.29% (38)	47.10% (366)	7.18%	10.00% (7)	18.53% (144)	-8.53%
Peers	51.39% (37)	52.82% (412)	-1.43%	13.89% (10)	25.13% (196)	-11.24%
Romantic	52.11% (37)	52.99% (408)	-0.87%	15.49% (11)	19.48% (150)	-3.99%
Work	60.27% (44)	69.13% (551)	-8.86%	23.29% (17)	13.30% (106)	9.99%

Stressor	Severity					
	Moderate			Very Much		
	Hispanic	Non-Hispanic	Difference	Hispanic	Non-Hispanic	Difference
Academic	31.67% (19)	31.61% (220)	0.06%	51.67% (31)	39.37% (274)	12.30%
Appearance	20.29% (14)	20.24% (152)	0.05%	18.84% (13)	14.25% (107)	4.59%
Chronic Illness	—	—	-1.15%	—	—	-0.63%
Family	10.81% (8)	11.04% (88)	-0.23%	8.11% (6)	6.02% (48)	2.09%
Financial	11.27% (8)	13.08% (101)	-1.82%	11.27% (8)	7.77% (60)	3.50%
Friendships	18.18% (12)	22.09% (171)	-3.91%	15.15% (10)	15.76% (122)	-0.61%
Future	16.92% (11)	26.98% (191)	-10.05%	35.38% (23)	26.84% (190)	8.55%
Health	20.00% (14)	22.52% (175)	-2.52%	15.71% (11)	11.84% (92)	3.87%
Peers	19.44% (14)	14.87% (116)	4.57%	15.28% (11)	7.18% (56)	8.10%
Romantic	16.90% (12)	16.75% (129)	0.15%	15.49% (11)	10.78% (83)	4.71%
Work	5.48% (4)	11.17% (89)	-5.69%	10.96% (8)	6.40% (51)	4.56%

Calculations include all respondents reporting Hispanic or Latino ethnicity, including those reporting more than one race or ethnicity. Empty cells are not reported due to small sample sizes and to protect respondents' privacy.

Appendix Table 10: Prevalence of Stressors by First-Generation Student Status

Stressor	First-Gen	Non First-Gen	Difference
Academic	93.75% (150)	90.05% (706)	3.70%
Appearance	66.88% (107)	62.37% (489)	4.50%
Chronic Illness	16.25% (26)	16.2% (127)	0.05%
Family	40.00% (64)	40.31% (316)	-0.31%
Financial	61.88% (99)	40.82% (320)	21.06%
Friendships	60.00% (96)	61.61% (483)	-1.61%
Future	81.25% (130)	77.93% (611)	3.32%
Health	59.38% (95)	57.27% (449)	2.10%
Peers	47.5% (76)	53.95% (423)	-6.45%
Romantic	46.25% (74)	54.85% (430)	-8.6%
Work	42.5% (68)	36.73% (288)	5.77%

Appendix Table 11: Prevalence of Stressors by Sexual/Gender Minority Status

Stressor	SGM	Non-SGM	Difference
Academic	92.86% (143)	90.26% (695)	2.0%
Appearance	69.48% (107)	60.65% (467)	8.83%
Chronic Illness	24.03% (37)	14.55% (112)	9.48%
Family	48.70% (75)	38.05% (293)	10.65%
Financial	50.00% (77)	42.99% (331)	7.01%
Friends	67.53% (104)	59.48% (458)	8.05%
Future	83.12% (128)	77.66% (598)	5.45%
Health	68.83% (106)	54.68% (421)	14.16%
Peers	60.39% (93)	50.65% (390)	9.74%
Romantic	58.44% (90)	52.08% (401)	6.36%
Work	40.91% (63)	36.62% (282)	4.29%

Appendix Table 12: Severity of Stressors by Sexual/Gender Minority Status

Stressor	Severity					
	None			Just a Little		
	SGM	Non-SGM	Difference	SGM	Non-SGM	Difference
Academic	9.32% (11)	12.16% (75)	-2.83%	14.41% (17)	17.18% (106)	-2.77%
Appearance	37.01% (47)	44.96% (303)	-7.95%	20.47% (26)	21.96% (148)	-1.49%
Chronic Illness	84.17% (117)	87.38% (658)	-3.21%	8.63% (12)	7.70% (58)	0.93%
Family	57.66% (79)	67.28% (477)	-9.61%	18.98% (26)	16.78% (119)	2.19%
Financial	59.69% (77)	63.62% (439)	-3.93%	16.28% (21)	16.09% (111)	0.19%
Friendships	38.17% (50)	45.41% (312)	-7.25%	18.32% (24)	19.21% (132)	-0.89%
Future	21.67% (26)	27.22% (172)	-5.55%	19.17% (23)	20.09% (127)	-0.93%
Health	38.10% (48)	50.00% (349)	-11.90%	17.46% (22)	17.91% (125)	-0.45%
Peers	45.52% (61)	54.60% (380)	-9.08%	25.37% (34)	23.85% (166)	1.52%
Romantic	48.12% (64)	53.79% (369)	-5.67%	17.29% (23)	19.24% (132)	-1.95%
Work	68.94% (91)	68.44% (488)	0.50%	11.36% (15)	14.45% (103)	-3.08%

Stressor	Severity					
	Moderate			Very Much		
	SGM	Non-SGM	Difference	SGM	Non-SGM	Difference
Academic	29.66% (35)	31.93% (197)	-2.27%	46.61% (55)	38.74% (239)	7.87%
Appearance	22.83% (29)	19.73% (133)	3.10%	19.69% (25)	13.35% (90)	6.33%
Chronic Illness	5.04% (7)	1.86% (14)	3.18%	—	—	-0.90%
Family	12.41% (17)	10.44% (74)	1.97%	10.95% (15)	5.50% (39)	5.45%
Financial	13.95% (18)	12.46% (86)	1.49%	10.08% (13)	7.83% (54)	2.25%
Friendships	24.43% (32)	20.52% (141)	3.90%	19.08% (25)	14.85% (102)	4.24%
Future	25.83% (31)	26.27% (166)	-0.43%	33.33% (40)	26.42% (167)	6.91%
Health	26.19% (33)	21.63% (151)	4.56%	18.25% (23)	10.46% (73)	7.80%
Peers	18.66% (25)	14.37% (100)	4.29%	10.45% (14)	7.18% (50)	3.26%
Romantic	22.56% (30)	15.74% (108)	6.81%	12.03% (16)	11.22% (77)	0.81%
Work	10.61% (14)	11.08% (79)	-0.47%	9.09% (12)	6.03% (43)	3.06%

Empty cells are not reported due to small sample sizes and to protect respondents' privacy.

Appendix Table 13: Prevalence of Stressors by Gender

Stressor	Women	Men	Difference
Academic	93.91% (586)	84.26% (257)	9.65%
Appearance	67.31% (420)	52.79% (161)	14.52%
Chronic Illness	18.11% (113)	11.80% (36)	6.31%
Family	43.11% (269)	34.10% (104)	9.01%
Financial	45.35% (283)	40.98% (125)	4.37%
Friends	62.34% (389)	59.67% (182)	2.67%
Future	80.45% (502)	74.10% (226)	6.35%
Health	61.38% (383)	54.68% (148)	12.85%
Peers	55.77% (348)	50.65% (140)	9.87%
Romantic	52.56% (328)	52.08% (166)	-1.86%
Work	38.78% (242)	36.62% (105)	4.36%

Appendix Table 14: Prevalence of Stressors by Resilient Coping Status

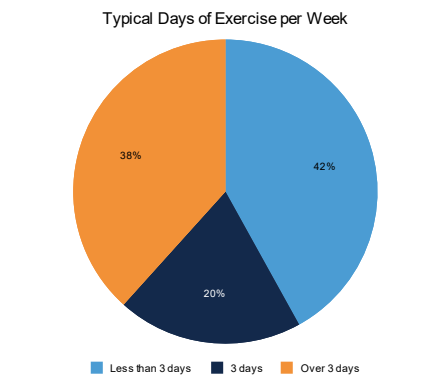
Stressor	Resilient Coping Level			High-Low Difference
	Low	Moderate	High	
Academic	93.45% (214)	91.54% (465)	86.79% (184)	-6.66%
Appearance	68.56% (157)	63.19% (321)	57.55% (122)	-11.01%
Chronic Illness	17.90% (41)	14.17% (72)	18.40% (39)	0.49%
Family	49.78% (114)	36.42% (185)	38.21% (81)	-11.57%
Financial	45.85% (105)	42.32% (215)	46.70% (99)	0.85%
Friendships	69.43% (159)	59.06% (300)	59.43% (126)	-10.00%
Future	80.35% (184)	79.33% (403)	75.47% (160)	-4.88%
Health	57.21% (131)	59.06% (300)	55.19% (117)	-2.02%
Peers	54.15% (124)	52.76% (268)	50.94% (108)	-3.21%
Romantic	50.22% (115)	55.71% (283)	50.47% (107)	0.25%
Work	38.86% (89)	37.01% (188)	37.74% (80)	-1.13%

Appendix Table 15: Severity of Stressors by Low and High Resilient Coping Status

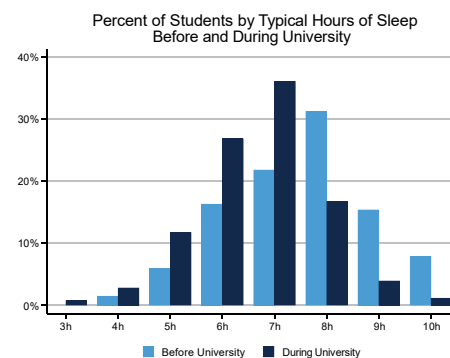
Stressor	Severity					
	None			Just a Little		
	Low Coping	High Coping	Difference	Low Coping	High Coping	Difference
Academic	8.77% (15)	15.82% (28)	7.05%	14.62% (25)	20.90% (37)	6.28%
Appearance	37.70% (72)	48.39% (90)	10.69%	19.90% (38)	20.43% (38)	0.53%
Chronic Illness	86.24% (188)	83.17% (173)	-3.07%	9.17% (20)	8.17% (17)	-1.00%
Family	57.21% (115)	66.50% (131)	9.28%	19.90% (40)	18.27% (36)	-1.63%
Financial	62.31% (124)	59.47% (113)	-2.84%	18.09% (36)	16.84% (32)	-1.25%
Friendships	37.23% (70)	44.56% (86)	7.33%	18.09% (34)	21.76% (42)	3.68%
Future	25.28% (45)	28.73% (52)	3.45%	18.54% (33)	22.10% (40)	3.56%
Health	49.00% (98)	48.97% (95)	-0.03%	16.00% (32)	20.10% (39)	4.10%
Peers	53.03% (105)	52.53% (104)	-0.51%	20.71% (41)	26.77% (53)	6.06%
Romantic	57.87% (114)	53.85% (105)	-4.02%	15.23% (30)	19.49% (38)	4.26%
Work	67.96% (140)	66.33% (132)	-1.63%	12.62% (26)	18.09% (36)	5.47%

Stressor	Severity					
	Moderate			Very Much		
	Low Coping	High Coping	Difference	Low Coping	High Coping	Difference
Academic	33.33% (57)	27.68% (49)	-5.65%	43.27% (74)	35.59% (63)	-7.68%
Appearance	19.37% (37)	19.89% (37)	0.52%	23.04% (44)	11.29% (21)	-11.75%
Chronic Illness	—	—	1.53%	2.75% (6)	5.29% (11)	2.54%
Family	15.42% (31)	9.14% (18)	-6.29%	7.46% (15)	6.09% (12)	-1.37%
Financial	11.06% (22)	13.68% (26)	2.63%	8.54% (17)	10.00% (19)	1.46%
Friendships	25.53% (48)	21.24% (41)	-4.29%	19.15% (36)	12.44% (24)	-6.71%
Future	24.16% (43)	28.18% (51)	4.02%	32.02% (57)	20.99% (38)	-11.03%
Health	20.50% (41)	18.56% (36)	-1.94%	14.50% (29)	12.37% (24)	-2.13%
Peers	14.14% (28)	13.64% (27)	-0.51%	12.12% (24)	7.07% (14)	-5.05%
Romantic	15.74% (31)	13.33% (26)	-2.40%	11.17% (22)	13.33% (26)	2.17%
Work	13.59% (28)	6.53% (13)	-7.06%	5.83% (12)	9.05% (18)	3.22%

Empty cells are not reported due to small sample sizes and to protect respondents' privacy.

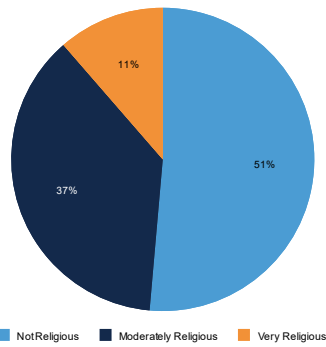


Appendix Figure 1: Typical number of days students exercise per week.



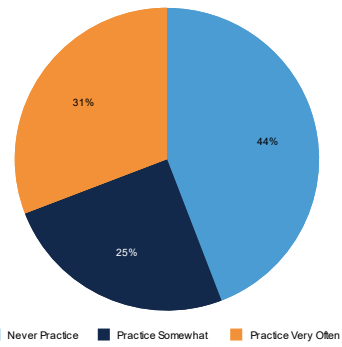
Appendix Figure 2: Distribution of typical hours of sleep students receive per night before and during university.

Percent of Students by Levels of Religiosity



Appendix Figure 3: Percent of students by religiosity (frequency of religious service or group attendance).

Percent of Students by Practice of Spiritual/Religious Techniques



Appendix Figure 4: Percent of students by practice of spiritual/religious techniques (frequency of meditation or prayer).

Appendix Table 16: Associations between Social Media Use and Anxiety/Depression Symptoms

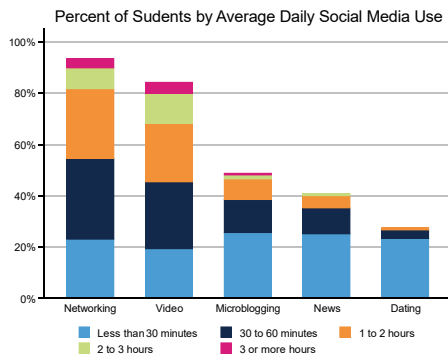
Dependent Variable: Anxiety/Depression Symptoms

Types of Social Media	Odds Ratio	Standard Error	P value	95% Confidence Interval	
				Lower	Upper
Networking	1.03	0.07	0.617	0.91	1.17
Videos	1.22	0.07	<0.001	1.09	1.34
Microblogging	1.10	0.08	0.180	0.96	1.26
News	1.12	0.09	0.158	0.96	1.31
Dating	1.13	0.14	0.315	0.89	1.44

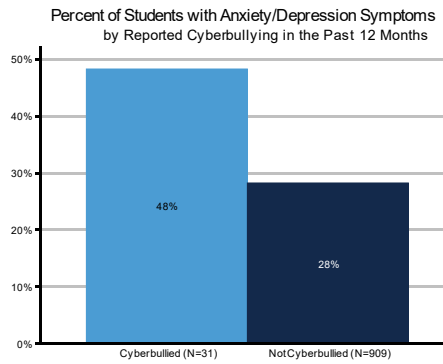
Appendix Table 17: Associations between Substance Use and Anxiety/Depression Symptoms

Dependent Variable: Anxiety / Depression Symptoms

Variables	Odds Ratio	Standard Error	P value	95% Confidence Interval	
				Lower	Upper
Binge Drinking	0.64	0.11	0.011	0.45	0.90
Tobacco Use	1.61	0.36	0.033	1.04	2.49
Marijuana Use	1.60	0.35	0.028	1.05	2.45
Stimulant Use	1.63	0.87	0.360	0.57	4.64
Hard Drug Use	0.96	0.45	0.932	0.38	2.42



Appendix Figure 7: Percent of students by daily use of different types of social media.



Appendix Figure 8: Anxiety/depression symptom rates by reported cyberbullying.

Appendix Table 18: Associations between Demographics and Utilization

Dependent Variable: Utilization of Mental Health Care Services					
Demographic Status	Odds Ratio	Standard Error	P value	95% Confident Interval	
				Lower	Upper
Minority Race	1.19	0.20	0.297	0.86	1.65
First-Generation	0.53	0.13	0.008	0.33	0.85
Gender	0.60	0.11	0.004	0.43	0.87
Sexual/Gender Minority	2.75	0.54	<0.001	1.88	4.04

Appendix Table 19: Associations between Race/Ethnicity and Utilization

Dependent Variable: Utilization of Mental Health Care Services					
Race/Ethnicity	Odds Ratio	Standard Error	P value	95% Confidence Interval	
				Lower	Upper
Non-Hispanic White	3.70	2.03	0.017	1.26	10.84
Any Reported Black	3.64	1.92	0.014	1.30	10.22
Any Reported Asian	3.94	2.10	0.010	1.38	11.19
Any Reported Hispanic	3.89	1.99	0.008	1.43	10.61

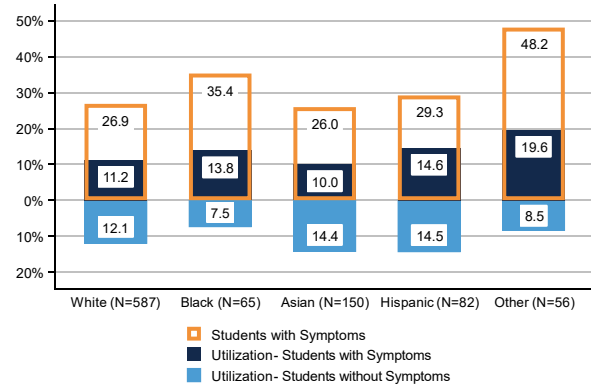
Appendix Table 20: Associations between Demographics and Unmet Need

Dependent Variable: Unmet Need					
Race/Ethnicity	Odds Ratio	Standard Error	P value	95% Confidence Interval	
				Lower	Upper
Minority Race	1.02	0.28	0.937	0.60	1.74
First-Generation	2.06	0.75	0.048	1.01	4.22
Gender	1.60	0.49	0.118	0.89	2.90
Sexual/Gender Minority	0.60	0.18	0.087	0.33	1.08

Appendix Table 21: Associations between Race/Ethnicity and Unmet Need

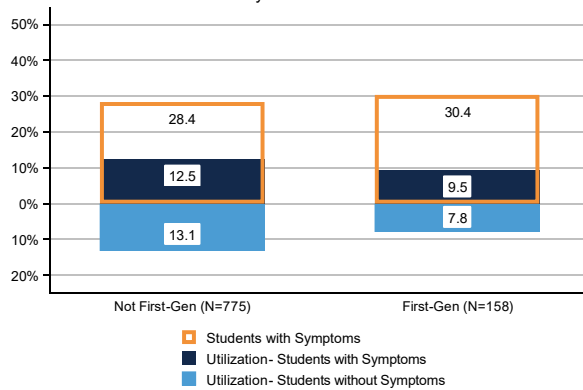
Dependent Variable: Unmet Need					
Demographic Status	Odds Ratio	Standard Error	P value	95% Confidence Interval	
				Lower	Upper
Non-Hispanic White	0.29	0.22	0.110	0.06	1.32
Any Reported Black	0.30	0.22	0.106	0.07	1.29
Any Reported Asian	0.35	0.26	0.157	0.08	1.50
Any Reported Hispanic	0.26	0.20	0.086	0.05	1.21

Moderate to Severe Anxiety and /or Depression Symptoms
and Utilization of Mental Health Services
by Race/Ethnicity



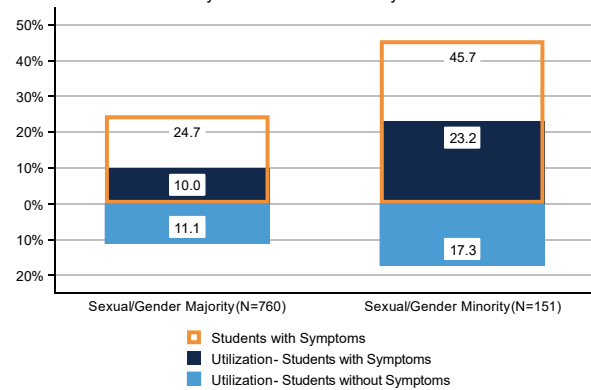
Appendix Figure 9: Utilization and unmet need by race/ethnicity

Moderate to Severe Anxiety and /or Depression Symptoms
and Utilization of Mental Health Services
by First-Gen Status



Appendix Figure 10: Utilization and unmet need by first-generation status.

Moderate to Severe Anxiety and /or Depression Symptoms
and Utilization of Mental Health Services
by Sexual/Gender Minority Status



Appendix Figure 11: Utilization and unmet need by sexual/gender minority status.

