

# August 2021 Research Brief

SELF-REPORTED COVID-19 INFECTION AND  
IMPLICATIONS FOR MENTAL HEALTH AND  
FOOD INSECURITY AMONG AMERICAN  
COLLEGE STUDENTS

THE **hope** CENTER

**For College, Community, and Justice**

HOPE4COLLEGE.COM

Sara Goldrick-Rab

Vanessa Coca

Japbir Gill

Kallie Clark

Elizabeth Looker

Morgan Peele

---

## SUMMARY

While the COVID-19 pandemic affected mental health and increased food insecurity across the general population, there is little known about the virus's impact on college students. A fall 2020 survey of more than 100,000 students at 202 colleges and universities in 42 states reveals sociodemographic variation in self-reported infections, as well as associations between self-reported infection and food insecurity and mental

health. We estimate that 7% of students self-reported a COVID-19 infection, with sizable differences by race/ethnicity, Pell Grant status, parenting status, and student-athlete status. Students with self-reported COVID-19 infections were more likely to experience food insecurity, anxiety, and depression. Higher education leaders need to consider ways to identify and support students who have been infected and be aware of the potential for impacts on academic performance and beyond.

---

## ACKNOWLEDGMENTS

We thank the students and institutions that participated in the Fall 2020 #RealCollege Survey. This project was supported by the Annie E. Casey Foundation, the Bill and Melinda Gates Foundation, Gates Philanthropy Partners, Imaginable Futures, the Lenfest Foundation, and the Prentice & Alline Brown Foundation. We thank our team at The Hope Center for College, Community, and Justice for assistance and Dr. Heather Clauss, Dr. Steve Hauser, and Dr. David Figlio for reviewing the paper. The views in this project are those of the authors and do not necessarily represent the views of the funders.

---

## INTRODUCTION

The COVID-19 pandemic upended American higher education in multiple ways, disrupting instruction, increasing economic insecurity, and isolating students from their support systems. The specific impacts of the COVID-19 virus on students, however, are not well understood. Most colleges and universities do not know who among their students has been infected, or how infections affect students' health and well-being. While some colleges and universities collect information about which of their students contracted COVID-19, the majority do not (Nadworny & McMinn, 2019).

This study is the first (as far as the authors know) to examine self-reported COVID-19 infection rates among more than 100,000 college students enrolled in fall 2020. Conditions brought on by the COVID-19 pandemic are associated with increased anxiety and depressive symptoms (Huckins et al., 2020; Freuhwirth, Biswas, & Perreira, 2021; Ettman et al., 2020; Guintella, Hyde, Saccardo, & Sadoff, 2021), and food insecurity (Mialki, House, Matthews, & Shelnutt, 2021; Laborde, Martin, Swinen, & Vos, 2020), among college students and in the general population. But the effects of COVID-19 infection, including perceived infection, are much less clear. At the end of July 2021, shortly before this paper was issued, Science reported on the lagged effects of COVID infections:

“The risk of COVID-19 has been largely communicated only in terms of deaths and hospital capacity, with recovery and survival conflated with each other. Around one in three people with symptomatic COVID-19 still experience symptoms 12 weeks after onset. Long Covid can be experienced by all age groups and not only those with acute severe disease...The most prevalent symptom of Long Covid is commonly called “fatigue.” This is often mistaken for tiredness, but it is better described as a feeling of utter exhaustion, energy drain, or bodily dysfunction that is not necessarily triggered by exertion and is not always relieved by rest. The prevalence of fatigue is followed closely by symptoms of cognitive dysfunction, including poor memory or concentration, confusion, and “brain fog” (Alwan, 2021).

Colleges and universities across the country are preparing to welcome students this

---

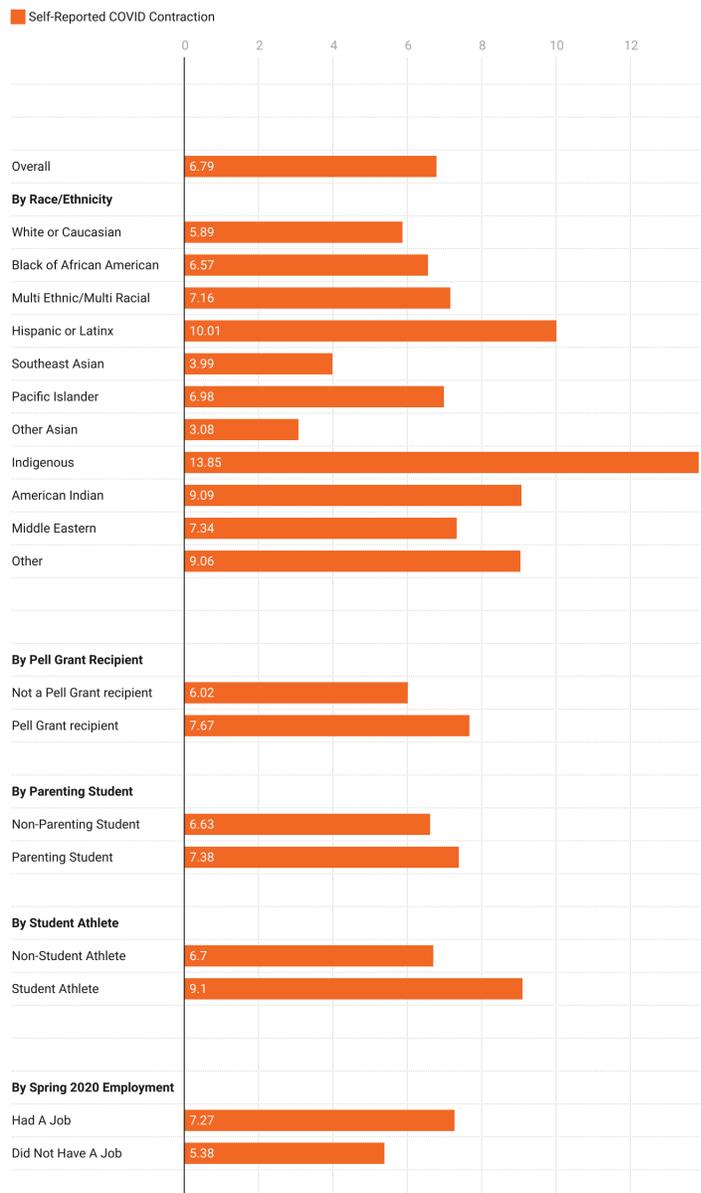
## INTRODUCTION

fall, even as the pandemic continues. This paper offers insights into the importance of preparing to support students who have been infected.

In fall 2020 we sent an electronic survey to more than 1.8 million undergraduates enrolled in 202 colleges and universities in 42 states, obtaining a typical response rate of 11% (Betacourt & Wolff-Eisenberg, 2019; California Student Aid Commission, 2020). This paper analyzes the results for students who responded to questions about whether they had been infected with COVID-19, and their mental health and food security at the time they took the survey. As higher education moves towards reopening in the fall, we offer insights into which students have been affected by the disease and its associations with their health and well-being. The results suggest the need for additional, ongoing support for student health and well-being.

## KEY FINDINGS

We assessed COVID-19 infection rates by asking students whether they were “sick with COVID” at any point during or since the spring 2020 academic term. Incomplete reporting is possible, as some students may have been asymptomatic, unaware they had the virus, or experiencing delayed effects. A study of adults in the United Kingdom found that 24% believed they had the virus but just 4% had tested positive. Therefore, ours are likely lower-bound estimates (Smith et al., 2020). Almost 7% of the 100,448 respondents reported that they had COVID-19 (Figure 1). Self-reported infection rates were higher among racial/ethnic minorities. For example, 14% of Indigenous students, 10% of Latinx students, and 7% of Black students reported having had the virus, compared to 6% of White students ( $p < 0.01$ ). We do not detect differences in self-reported infection rates between female and male students, though it is higher for multi-gendered students. Pell recipients had substantially higher self-reported rates of infection compared to others (8% vs. 6%,  $p < 0.01$ ).

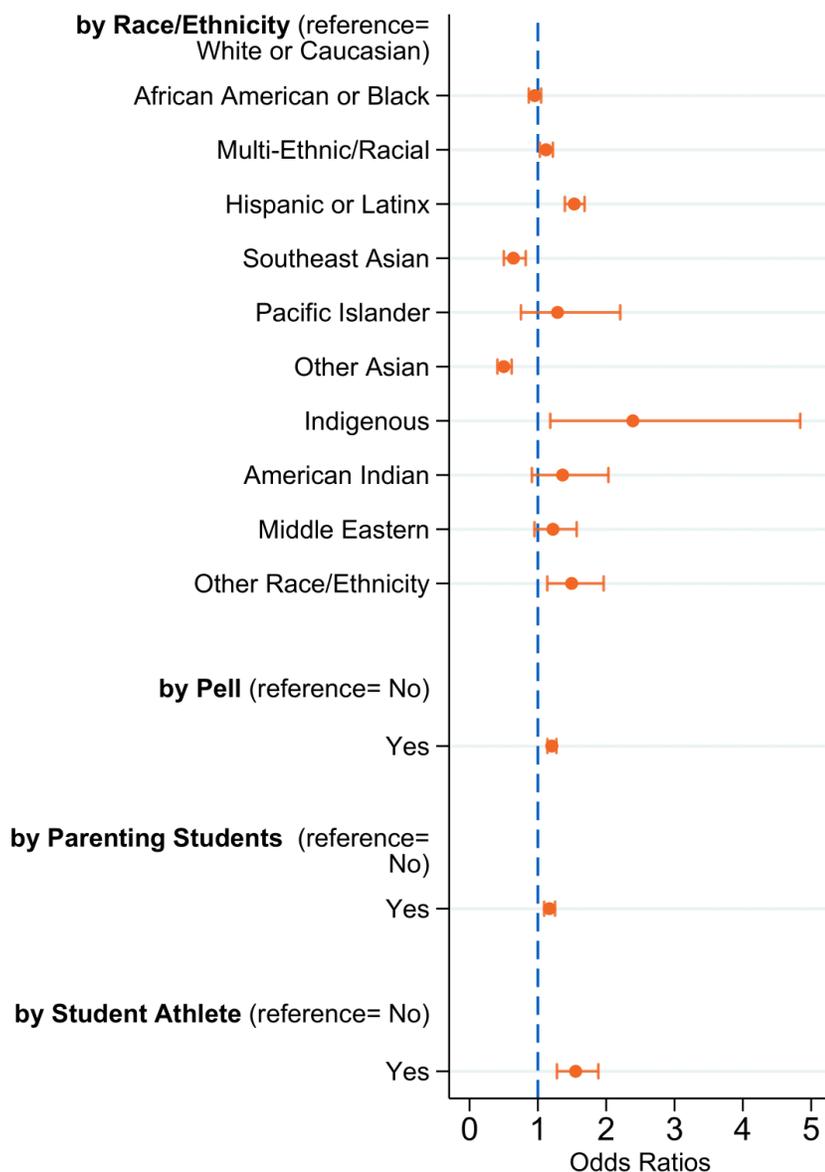


**Figure 1. Prevalence of Self-Reported COVID-19 Infection Among College Students, by Background Characteristics (%)**

Notes: Data are from the #RealCollege Survey 2020. N=100,488. All subgroups are mutually exclusive. \* =  $p < 0.05$ , \*\* =  $p < 0.01$ , \*\*\* =  $p < 0.001$

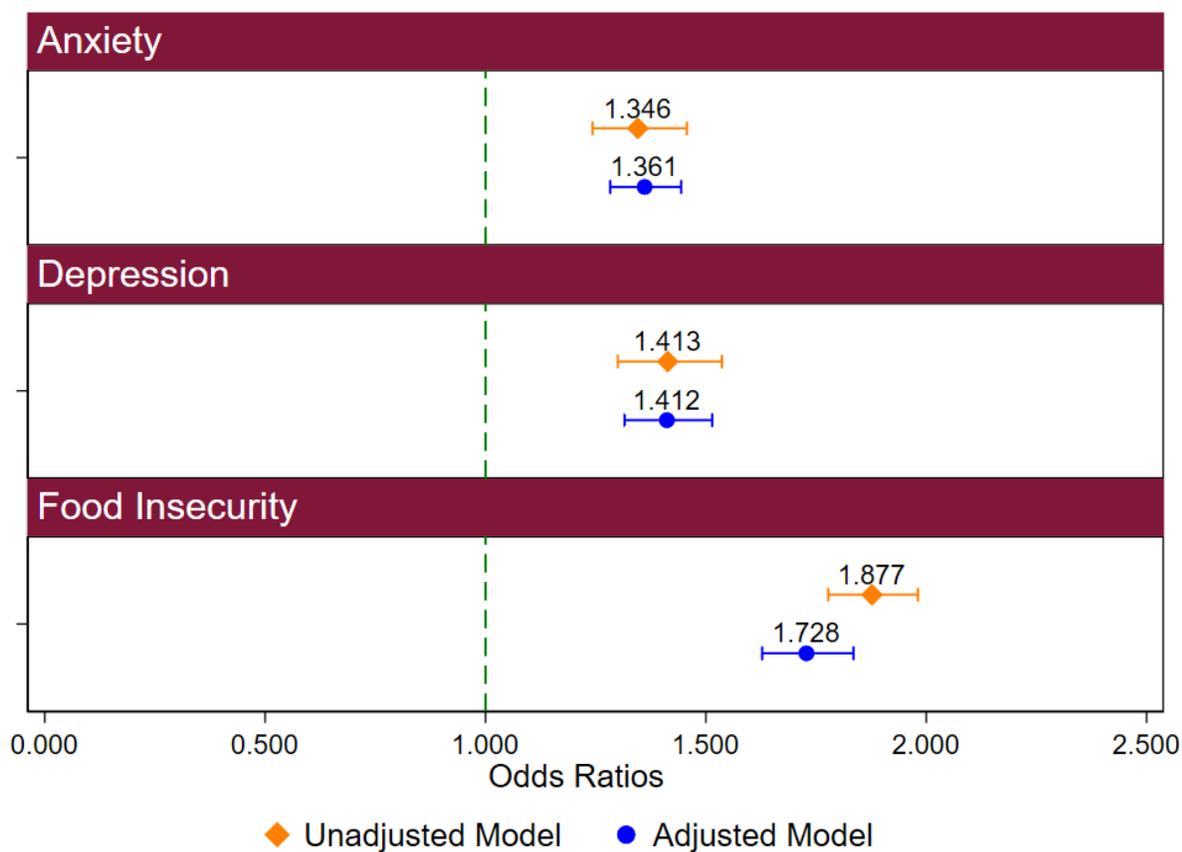
We implemented multivariate regression analyses to examine whether disparities in infection remained after adjusting for the risk factors discussed above. These adjustments fully accounted for the higher rate of self-reported COVID-19 infection among Black students, but not among Indigenous and Latinx students. Net of observable factors, the odds of self-reported infection were 2.3 times greater for Indigenous students and 1.5 times greater for Latinx students, compared to White students (Figure 2). Indeed, most of the disparities discussed earlier persist, or even increase, with multivariate modeling.

We next consider the association between a self-reported COVID-19 infection and mental health and food insecurity. We again used multivariate regression analyses to control for observable differences between students with and without self-reported COVID. Notably, the associations with anxiety, depression and food insecurity remained nearly the same or increased slightly, after controlling for a range of covariates.



**Figure 2. Adjusted Odds of Self-Reported COVID-19 Infection by Student and Institution Characteristics**

Notes: Data are from the #RealCollege Survey 2020. N= 100,488. Odds ratios and 95% confidence intervals for each subgroup are in comparison to the reference group (ref).



**Figure 3. Unadjusted and Adjusted Odds of Anxiety, Depression, and Food Insecurity by Self-Reported COVID-19 Infections**

Notes: Data are from the #RealCollege Survey 2020. N= 100,488. Unadjusted odds of experiencing anxiety, depression, and food insecurity compared to adjusted odds. Error bars included in the figure relate to a 95% confidence interval.

## CONCLUSION AND RECOMMENDATIONS

This study appears to be the first to examine inequities in self-reported COVID-19 infections among American undergraduates and to identify negative associations between self-reported COVID-19 infection and depression, anxiety and food insecurity for the college-going population. If the self-reported COVID-19 infection rate of 7% is generalizable there could be an estimated 1.4 million college students who have been infected since January 2020. If, as previously reported, actual rates of infection exceed self-reports, then the number of students affected is much larger.

The negative associations between self-reported COVID-19 infection and food insecurity, anxiety, and depression may have several explanations, but new research suggests increased psychiatric diagnosis after severe COVID-19 infection (Taquet, Luciano, Geddes, & Harrison, 2021). Given that the longer-term health implications of COVID-19 infections are still being documented (Spitzer, Kroenke, & Williams, 1999), colleges and universities should be prepared to support students who report having been infected with COVID-19. According to the Centers for Disease Control and Prevention (CDC), post-COVID symptoms may appear a month or later following illness and include (CDC, 2021):

- Tiredness or fatigue
- Mood Changes
- Dizziness on standing
- Difficulty thinking or concentrating (sometimes referred to as “brain fog”)

These symptoms may be evidenced in poorer academic performance, disengagement, or even withdrawal from college. Students themselves may not be aware of the cause, or sure how to respond. Faculty who are unaware may mislabel exhausted and brain-fogged students as uninterested in education, missing a critical opportunity to reach and retain them.

## CONCLUSION AND RECOMMENDATIONS

We therefore offer the following recommendations for immediate action at the institutional level:

01

Ask students to voluntarily self-identify whether they believe they have had COVID-19 so that you may direct support to them. While some may have concerns about the sensitivity of this question, #RealCollege surveys show that students welcome the opportunity to share with their colleges what their needs are for support, including when it comes to food and housing insecurity. The resulting information should be used alongside other key indicators to drive outreach to students.

02

Use multiple forms of repeated communication (emails, announcements on the learning management system platform, etc.) to let students know that if they are experiencing any effects of Long COVID they should reach out for help. Identify which units on campus can field questions and support students. Provide this information to all faculty and staff as well, and consider placing it on the syllabus. Particular attention should be paid to groups with high rates of self-reported infection, including racially minoritized students, lower-income students, and student athletes. Direct and indirect effects on students' academic performance, engagement on and off-campus, and health and well-being should be carefully monitored.

03

Work with community partners to increase the availability of mental health supports to students. Speak openly and honestly about both the pandemic and the virus and how it may affect individuals to de-stigmatize disclosure and encourage requests for support.

Mental and physical well-being are a critical component of students' basic needs, and a major driver of their success in college. In future research, we plan to delve more deeply into the full implications of the virus and the pandemic for students. For now, our hope is that this research will inspire immediate action to improve ecosystems of support for students this fall.

## REFERENCES

Alwan, N. The Road to Addressing Long Covid. *Science*, 373.6554, 491-493. (2021).

N. Betacourt, C. Wolff-Eisenberg, “Surveying Community College Students: Strategies for Maximizing Engagement and Increasing Participation” (Ithaka S+R, 2019) <https://doi.org/10.18665/sr.312046>

California Student Aid Commission, “COVID-19 Student Survey.” (California Student Aid Commission, 2020). [https://www.csac.ca.gov/sites/main/files/file-attachments/2020\\_covid19\\_student\\_survey.pdf?1594172054](https://www.csac.ca.gov/sites/main/files/file-attachments/2020_covid19_student_survey.pdf?1594172054)

Centers for Disease Control and Prevention. “Post-COVID Conditions.” (2021)<https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects.html>

C. K. Ettman, et al., Prevalence of depression symptoms in US adults before and during the COVID-19 pandemic. *JAMA network open* 3.9 e2019686-e2019686 (2020).

J. C. Fruehwirth, S. Biswas, K. M. Perreira. The Covid-19 pandemic and mental health of first-year college students: Examining the effect of Covid-19 stressors using longitudinal data. *PloS one* 16.3 e0247999 (2021).

O. Giuntella, K. Hyde, S. Saccardo, S. Sadoff, Lifestyle and mental health disruptions during COVID-19. *Proc. Natl. Acad. Sci. U.S.A* 118.9.

J. F. Huckins, et al., Mental health and behavior of college students during the early phases of the COVID-19 pandemic: longitudinal smartphone and ecological momentary assessment study. *Journal of Medical Internet Research*, 22.6, e20185 (2020).

D. Laborde, W. Martin, J. Swinen, R. Vos, COVID-19 risks to global food security. *Science*, 369.6503, 500-502. (2020)

## REFERENCES

K. Mialki, L. A. House, A. E. Mathews, K. P. Shelnett, Covid-19 and College Students: Food Security Status before and after the Onset of a Pandemic. *Nutrients*, 13.2, 628 (2021).

E. Nadworny, S. McMinn, Even In COVID-19 Hot Spots, Many Colleges Aren't Aggressively Testing Students, National Public Radio (October 6, 2020).  
<https://www.npr.org/2020/10/06/919159473/even-in-covid-hot-spots-many-colleges-arent-aggressively-testing-students>

L. E. Smith, et al., The impact of believing you have had COVID-19 on self-reported behaviour: Cross-sectional survey. *Plos one* 15.11 e0240399 (2020).

R. L. Spitzer, K. Kroenke, J. B. W. Williams, Patient Health Questionnaire Primary Care Study Group, and Patient Health Questionnaire Primary Care Study Group. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. *Jama* 282.18 (1999).

M. Taquet, Luciano, S., Geddes, J. R., Harrison P. J., Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62,354 COVID-19 cases in the USA. *The Lancet Psychiatry* 8.2 (2021).

