

Asian College Students' Well-Being During a Period of Rising Anti-Asian Sentiment *

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November 2025

Abstract

We use a large survey of students in U.S. colleges to study the distinct ways in which the COVID-19 pandemic and accompanying anti-Asian rhetoric shaped the experiences of Asian and Pacific Islanders (APIs). Using a difference-in-differences approach, we find that the pandemic led to Asian students experiencing more discrimination, feeling less safe during the day, and using fewer mental health services compared to White peers. The increase in discrimination and the perceived lower safety are concentrated among East and Southeast Asians, while South Asians were not affected. Despite these effects, we detect no relative deterioration in severe psychological distress or loneliness among Asian students.

*We thank Jason Lindo and Jiee Zhong, as well as seminar participants at American University, Amherst College, the Northeast Economics of Education Workshop, and Society of Labor Economists annual meeting. Declaration of interest: none.

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INTRODUCTION

The onset of the COVID-19 pandemic in the United States was accompanied by rising anti-Asian rhetoric and incidents involving violence, discrimination, and hate. Anti-Asian hate crimes increased nationally by 77 percent between 2019 and 2020 (Findling et al., 2022). One third of Asian adults reported knowing an Asian person in the U.S. who was threatened or assaulted due to their race since the onset of the pandemic (Ruiz, Im, & Tian, 2023). This context presents an opportunity to examine how Asians and Pacific Islanders (APIs) fare during a period of heightened stigmatization and the consequences of such exposure for mental health and well-being.

This paper studies how the pandemic affected Asians in the United States in ways that may differ from that of other racial and ethnic groups. We focus on students in U.S.-based postsecondary institutions using data from the National College Health Assessment (NCHA). Colleges are a particularly salient setting for this inquiry given that Asian young adults aged 18-29 disproportionately reported having experienced hate (Stop AAPI Hate, 2025). Furthermore, extensive research documents increasing levels of mental health challenges affecting U.S. college students, which elevates the need to examine discrimination and other potential contributors (Leshner & Scherer, 2021; Lipson et al., 2022; Oswald et al., 2020). The NCHA offers two key advantages for this study. First, it includes a large API student sample and disaggregates them into ethnic subgroups, such as East Asian and South Asian, enabling an examination of differences in experiences based on perceived ties to the pandemic's origins. Second, the the data capture multiple dimensions of student well-being, including experiences with discrimination, perceptions of safety, mental health, and belonging.

To measure the causal effect of the pandemic on the well-being of API students, we employ a difference-in-differences strategy. The preferred specification includes institution-by-semester fixed effects and relies on the assumption that trends in outcomes for API students relative to White peers in a school would have evolved in parallel, absent the pandemic. We provide support for validity of this assumption by showing no significant pre-pandemic differences in outcome trends between API and White students. Furthermore, we demonstrate that observed student- and institution-level characteristics do not change significantly before or after the pandemic, suggesting stability in sample composition over time. Our empirical approach broadly defines the treatment to include events starting in March 2020, encompassing both the global lockdown and accompanying anti-Asian rhetoric espoused by public figures.

We find that the pandemic increased the propensity that API students experienced

any discrimination relative to White peers, a pattern not observed among other racial or ethnic groups. When focusing on discriminatory incidents that caused moderate or severe stress, we find that the pandemic heightened API students' already higher risk of these experiences relative to White students by one third. This was accompanied by API students reporting lowered perceptions of safety during the day, both on and off campus. Event study graphs show substantial temporal overlap across these outcomes. API students experienced a sharp relative increase in discrimination from the onset of the pandemic that peaked in Spring 2021, while reports of daytime safety are lowest relative to White peers in the same semester. Disaggregating into Asian subgroups indicates that East Asian and Southeast Asian students experienced the greatest increase in discrimination and decline in safety perceptions. In contrast, South Asian and Pacific Islander students reported little relative change in these outcomes. These findings are consistent with the likely heightened stigma faced by East and Southeast Asians in the U.S. due to perceived affiliation with targeted groups in rhetoric such as "Chinese Virus" or "Wuhan Virus."

Our findings on discrimination and perceived safety raise questions about how these experiences subsequently shape the relationship of API students with their school communities and mental health. We show that despite the increased prevalence of discriminatory experiences, API students lagged further behind White peers in seeking mental health services after the onset of the pandemic. This amplifies a mental health service utilization gap relative to White students that was already larger than that of any other racial or ethnic group. This decline is concerning given research showing that APIs are reluctant to seek mental health services due to stigma (Gee, Khera, Poblete, Kim, & Buchwach, 2020; Han & Pong, 2015; S. Lee et al., 2009), or feeling pressure to appear emotionally controlled and self-sufficient as a result of internalizing the model minority stereotype, which in turn correlates with less favorable help-seeking behavior (Gupta, Szymanski, & Leong, 2011; P. Y. Kim & Lee, 2014; S. B. Kim & Lee, 2022). Despite the lag in mental health service usage, we find no evidence that the pandemic significantly worsened mental health outcomes of API students compared to White peers. The gap in the likelihood of API students versus White students reporting severe psychological distress remained stable through the pandemic, and API students' relative propensity to experience loneliness also did not worsen from the pandemic.

We undertake a number of analyses to ensure the validity of our empirical approach. First, we substantially extend the number of pre-periods for all outcome variables with available data from an earlier survey wave. We show no pretrends over four additional periods across perceived safety and multiple mental health measures. When restricting

to an Asian only sample and estimating the differential effects for non-South relative to South Asians, we show congruent findings on increased discrimination and reduced safety.¹ Such patterns of effects concentrated among East and Southeast Asians downplay the contributions of concurrent events such as the Black Lives Matter movement, which likely would not have had differential effects within API subgroups. We furthermore conduct a number of analyses to ensure that results are robust to the exclusion of international students and are not driven by underlying compositional changes over time.

We then investigate possible moderators for these effects. An examination of how effects vary across individual-, place-, and institution-specific attributes indicates that API students who are men, and those in larger cities and at institutions with higher enrollments were less likely to encounter discrimination (or discrimination that causes distress). The pandemic also led to a modest increase in the relative time API students spent engaging in entertainment activities with others, defined as attending cultural events, movies, concerts, sports, or other entertainment activities with other people. Although these results are somewhat speculative, they suggest that strengthened social connections may have helped buffer some of the adverse impacts of the pandemic.

This paper relates to multiple strands of research in economics and the broader social sciences. First, it advances our understanding of the distinctive experiences of Asian Americans, currently the fastest growing single racial or ethnic group in the U.S. (Bushman & Ruiz, 2021). Despite their increasing representation, Asians remain a relatively understudied demographic group. Existing economics studies on Asians in the U.S. primarily focus on the experience of Asians in education (Arcidiacono, Kinsler, & Ransom, 2022; Grossman et al., 2023; Y. Shi & Zhu, 2023) and the labor market (Duleep & Sanders, 1992, 2012; Hilger, 2017; C. Kim & Sakamoto, 2010; M. Kim, 2003; Mar, 2005; Zhu, 2024). This study contributes quasi-experimental evidence on how exposure to a stigmatizing shock can affect mental health and health service utilization, a relatively underexplored set of outcomes for this group. In doing so, it complements a largely descriptive literature in public health and psychology documenting health outcomes and disparities among Asian Americans,² Furthermore, we examine the differential impact of the pandemic across ethnic subgroups of Asians. In our context, studying Asians in the U.S. as

¹We distinguish South Asians as the API subgroup likely perceived as being most distant from individuals of Chinese descent, who are the target of racialized rhetoric during the pandemic.

²Examples of studies describing the health outcomes of Asian American include but are not limited to Chen Jr. (2005); Huang et al. (2012); J. Lee, Lei, and Sue (2000); Lin and Cheung (1999); Ye et al. (2012). Our study also complements existing descriptive work showing that many Asian Americans display lower willingness to use mental health services, compared to other racial and ethnic groups, despite experiencing comparable levels of psychological distress (Han & Pong, 2015; Matsuoka, Breaux, & Ryujiin, 1997; Sue, 2000; Zhang, Snowden, & Sue, 1998).

one monolithic aggregate group masks important differences across ethnic subgroups, a point echoed in health studies documenting descriptive differences across Asian subgroups (Esperat et al., 2004; Gordon et al., 2019).

One particularly relevant paper for our context examines whether inflammatory rhetoric from then-president Donald Trump, in particular his use of the term “Chinese Virus” at the beginning of the COVID-19 pandemic, contributed to the rise in anti-Asian hate incidents (Cao, Lindo, & Zhong, 2023). The authors find that this rhetoric led to a significant increase in anti-Asian behavior, with effects most pronounced in areas with higher concentrations of Trump supporters. Our paper builds on this work in examining the link between the increased stigma towards Asians and their mental health and well-being.

Finally, our paper adds to the literature on college students’ experiences with discrimination and mental health challenges. Prior research largely relies on online or campus surveys to document associations between discrimination and mental health outcomes or mental health service utilization (Bravo et al., 2023; Jochman et al., 2019; Qeadan et al., 2022; Singh, Melendez, & Sezginis, 2023). Evidence aiming at causal estimates are scarce, with the few existing studies relating exposure to hate crimes and victimization to college application and enrollment patterns, rather than on mental health outcomes (Baker & Britton, 2024; Lindo, Marcotte, Palmer, & Swensen, 2019). We build on this literature by leveraging the pandemic and the contemporaneous increase in anti-Asian rhetoric to examine whether the stigmatized group—Asians and Pacific Islanders—experience differential exposure to discrimination and, in turn, the consequences for perceived safety and mental health.

BACKGROUND

Concerns about stigma towards people of Asian descent emerged shortly after the COVID-19 virus began spreading throughout the world. In response to these concerns, the World Health Organization released explicit guidelines in early 2020 to try to prevent and address social stigma. Specifically, they caution individuals not to “attach locations or ethnicity to the disease,” as “this is not a ‘Wuhan Virus’, ‘Chinese Virus’ or ‘Asian Virus’”. The official name for the disease was deliberately chosen to avoid stigmatisation” (World Health Organization, 2020).

Despite these efforts, studies indicate that the COVID-19 pandemic did cause increased stigmatization for Asians in the United States. Darling-Hammond et al. (2020) find that there was a large spike in Twitter retweets using the phrase “Chinese virus” and related language, which led to increased implicit bias against Asian Americans. Cao et al. (2023)

document that the use of “Chinese virus” in tweets by then-president Donald Trump was followed by a spike in anti-Asian tweets and subsequently an increase in anti-Asian hate incidents. Furthermore, survey reports indicate that 39 percent of Asian Americans reported experiencing discrimination based on their racial identity sometimes or often during the COVID-19 pandemic, an increase of 9 percentage point relative to pre-pandemic rates (Findling et al., 2022).

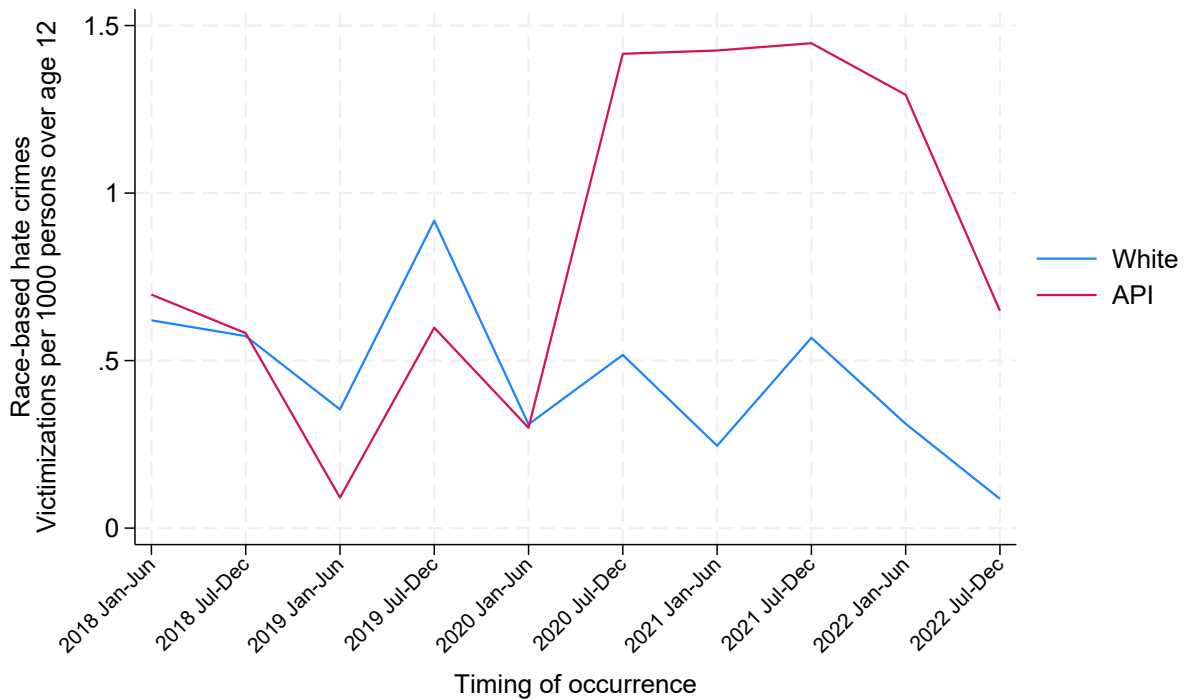
We find further support for these reports when looking at the evolution of reported hate crime prevalence against Asians in the U.S. using the National Crime Victimization Survey (NCVS). The NCVS is a nationally representative survey covering several hundred thousand households that is administered annually by the U.S. Census Bureau. It supplements official crime statistics by providing self-reported victimization data. A key advantage of the NCVS over other datasets is that it covers crimes not reported to the police, providing more comprehensive coverage of victimization in contexts where reporting rates might vary depending on factors such as respondents’ degree of trust in law enforcement institutions and cultural norms. Alongside the Uniform Crime Reporting program, the NCVS is one of the two leading sources of hate crime data.

Figure 1 compares the evolution of race-based hate crimes experienced by Asian and Pacific Islander (API) respondents with White individuals.³ Survey respondents are asked to recall all incidences of victimization experienced within a six-month period. The graph shows that in the months prior to the onset of the pandemic, API and White survey respondents reported similar levels of race-based hate crime victimization at an incidence of about 0.5 per 1,000 persons. After the onset of the pandemic, API respondents report a sharp uptick in the incidence of hate crime victimization rates, more than double that of pre-pandemic levels. In contrast, victimization rates for White respondents show no corresponding increase after the onset of the pandemic.

Trends from the NCVS data provide suggestive evidence that Asian Americans experienced an increase in discrimination after the onset of the COVID-19 pandemic. However, these data are limited in their ability to look at the differential effects of the pandemic on discrimination across Asian ethnic subgroups. Furthermore, they do not shed light on how pandemic-induced increases in discrimination affected individuals’ well-being. In the next section, we discuss the survey data we use in this paper, which allows us to conduct a nuanced analysis of the effects of the COVID-19 pandemic on Asian postsecondary students with respect to experiences with discrimination, perceptions of safety,

³A hate crime classification requires the victim to provide evidence regarding the offender’s motivation including: (1) The use of hate language, (2) the use of hate signs or symbols, or (3) confirmation from police investigators that victimization was a hate crime.

Figure 1: Race-Based Hate Crime Prevalence in the National Crime Victimization Survey



Notes: The figure displays the number of racially-motivated hate crimes that occurred within each six-month window per 1000 persons above age 12. An incident is classified as a racially-motivated hate crime if respondents perceive their victimization to be motivated by their being part of or associated with a particular racial or ethnic group. The figure separately plots victimization rates for Asian and Pacific Islanders and White respondents.

and mental health.

DATA AND DESCRIPTIVE STATISTICS

Data

Data for this study come from the National College Health Assessment (NCHA), a survey administered each semester by the American College Health Association (ACHA). The ACHA has been conducting this survey since the fall of 2000, which was designed by health professionals to learn about mental and physical health behaviors, perceptions, and habits of college students. The NCHA captures institutional attributes, student socio-demographics, and various aspects of health behaviors and perceptions including nutrition, substance use, sexual health, mental health, physical health and medical condi-

tions, and health service utilization.⁴ The survey is particularly valuable for our study because it offers detailed racial and ethnic categorizations, including separate classifications for Middle Eastern and North African individuals, as well as distinctions between East, Southeast, and South Asian subgroups.⁵ Information on student attributes includes age, visa and enrollment status, and parental education. Additionally, a wide array of available mental and physical health measures enables studying the effects of the pandemic on several sets of outcomes, including exposure to discrimination, perceptions of safety, mental health service use, mental health conditions, and time use.

This study uses data from Wave III of the NCHA survey, which spans from Fall 2019 to Spring 2023. We do not include periods before Fall 2019 due to changes in the survey questionnaire structure that make responses incomparable across waves. Note that the Spring 2020 collection in Wave III excludes all data gathered after the onset of the COVID-19 pandemic, such that we are able to classify this semester as a pre-period, with treatment commencing in Fall 2020.

The NCHA is de-identified at the college level, although it does contain unique institution codes that allow for linking colleges across semesters within each survey wave. Participating institutions vary over time, and we account for the potential issues from these composition changes by limiting our analyses to colleges that appear in at least two different periods within our sample. This facilitates the inclusion of institution fixed effects in our specifications to account for time-invariant institution-specific factors that may lead to racial differences in well-being outcomes. The final sample consists of 235,394 observations over eight survey periods (semesters).

Descriptive statistics

Table 1 presents descriptive statistics at the student level. Women make up nearly two-thirds of the sample, which is somewhat higher than the share of women enrolled in postsecondary institutions, as measured by a 2020 national sample of colleges and universities.⁶ White students constitute the majority racial or ethnic group at 57 percent, while Asian and Pacific Islander students comprise 15 percent. As such, API students are over-represented in our dataset compared to national data. Black and Hispanic students

⁴The extent of mental health and well-being outcome measures in the NCHA survey has led to its extensive use in studying these issues (see, for example, Braghieri, Levy, and Makarin (2022)).

⁵East Asia includes China, Korea, Japan, or Mongolia. Southeast Asia includes Burma, Brunei, Cambodia, Indonesia, Laos, Malaysia, Singapore, Thailand, Philippines, and Vietnam. South Asia includes Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka.

⁶Appendix Table A.1 displays characteristics across all schools in the Integrated Postsecondary Education Data System (IPEDS) for comparison.

are under-represented, making up 4 percent and 15 percent of our sample, respectively. The average age of 23 is due to more than a quarter of the students in our sample enrolling in Master’s, Doctoral, or professional degree programs. A sizable share comes from highly educated families, with 37 percent of students have at least one parent with a Master’s degree or higher. Detailed student characteristics broken down by race and ethnicity and pre- and post- the COVID-19 outbreak are shown in Appendix Table A.2.

Table 1: Student Characteristics

Women	0.64
White	0.57
Asian & Pacific Islander	0.15
Black	0.04
Hispanic	0.15
Other race	0.09
Visa	0.12
Age	23.18
<u>Year in School</u>	
Undergraduate	0.74
Master’s	0.14
Doctorate/professional	0.12
<u>Enrollment Status</u>	
Full-time	0.91
Part-time	0.09
<u>Parental Education</u>	
High school or less	0.17
Some postsecondary	0.16
Bachelor’s degree	0.30
Master’s degree or higher	0.37
<i>N</i>	235,394

Notes: Table presents descriptive statistics for students in the sample. Parental education refers to the highest level of educational attainment for either parent of the student.

Table 2 shows institution-level characteristics. 69 percent of the colleges and universities in our sample are public, which is consistent with the national average. Our sample skews towards large institutions, with over half serving at least 10,000 students, compared to 10 percent in the IPEDS sample in Appendix Table A.1. Institutions in our sample are also spread out across the U.S.: 17 percent of schools are in the Northeast, 18 percent are in the Midwest, 33 percent are in the South, and 32 percent are in the West.

Our first set of outcomes variables measures students’ experiences with discriminatory treatment (Table 3). *Discrimination* takes a value of one if an individual answers

Table 2: Institution Characteristics

Public	0.69
Religiously-affiliated	0.12
Minority-serving	0.21
<u>Enrollment Size</u>	
Less than 2,500	0.17
2,500-4,999	0.15
5,000-9,999	0.15
10,000-19,999	0.17
20,000 or more	0.37
<u>Region</u>	
Northeast	0.17
Midwest	0.18
South	0.33
West	0.32
<i>N</i>	171

Notes: Table presents descriptive statistics for schools in the sample.

yes on the survey to experiencing “the unjust or prejudicial treatment of a person based on the group, class, or category to which the person is perceived to belong” within the past 12 months and zero otherwise. For those who affirmatively report discrimination, the survey further assesses the level of distress caused. *Discrimination (moderate/severe distress)* indicates that the individual experienced discrimination and furthermore that the discrimination caused moderate or severe distress. After the pandemic, the share of students from every racial group experiencing discrimination increased. We then examine students’ perceptions of safety during the day or night, on-campus or off. Safety responses on the survey are collected on a 1 to 4 scale, ranging from “not safe at all (1)” to “very safe (4).” We code up an indicator variable if the individual responds affirmative to feeling very safe. The share of students from every racial group experiencing reporting feeling very safe decreased after the pandemic, both on- and off-campus and at all times of the day.

Next, we examine whether the student received psychological or mental health services in the last 12 months. This includes both in-person and telehealth appointments, and thus is not affected by changes in modality during the pandemic. *Belonging (strongly agree)* is an indicator variable that takes a value of one if a student reports that they strongly agree to the statement that they belong at their college/university. We also ex-

Table 3: Descriptive Statistics: Outcomes

	Asian & PI		White		Black		Hispanic	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Discrimination	0.141	0.154	0.064	0.071	0.235	0.247	0.131	0.140
Discrimination (moderate/severe distress)	0.061	0.076	0.028	0.034	0.124	0.147	0.064	0.072
Campus day (very safe)	0.802	0.700	0.848	0.792	0.695	0.655	0.770	0.716
Campus night (very safe)	0.333	0.248	0.348	0.288	0.259	0.253	0.275	0.247
Off-campus day (very safe)	0.470	0.379	0.501	0.450	0.413	0.394	0.458	0.414
Off-campus night (very safe)	0.183	0.135	0.178	0.151	0.163	0.176	0.166	0.148
Mental health service use	0.183	0.215	0.313	0.383	0.247	0.298	0.234	0.315
Belonging (strongly agree)	0.196	0.181	0.273	0.244	0.201	0.208	0.255	0.216
Kessler (serious psychological distress)	0.176	0.216	0.165	0.206	0.194	0.219	0.207	0.252
ULS (loneliness)	0.520	0.540	0.468	0.497	0.553	0.565	0.500	0.528
<i>N</i>	34,354		133,898		10,188		35,415	

Notes: Table provides descriptive statistics for various outcome variables that capture students' well-being before or after the onset of the COVID-19 pandemic, categorized by race/ethnicity.

amine the Kessler Psychological Distress Scale Score, a clinical measure of psychological distress. This is a well-known screening scale used by clinicians that yields a global measure of psychosocial distress based on questions about recent levels of nervousness, agitation, psychological fatigue, and hopelessness. We code the outcome measure *Kessler (serious psychological distress)* as an indicator variable if an individual exceeds the clinical threshold for serious psychological distress.⁷ Another clinical measure of well-being we examine is a measure of loneliness, as measured by the UCLA 3-item Loneliness (ULS) Scale. The outcome measure, *ULS (loneliness)* takes a value of one if an individual meets

⁷Respondents are asked how often they feel each of the following during the last 30 days. Possible responses are all of the time (4 points), most of the time (3), some of the time (2), a little of the time (1), none of the time (0):

- Nervous
- Hopeless
- Restless or fidgety
- So sad nothing could cheer you up
- That everything was an effort
- Worthless

Scores are then aggregated, with a range of 0-24. Higher scores reflect higher levels of psychological distress and mental illness. A score of 13-24 reflects serious psychological distress.

the clinical threshold for loneliness and zero otherwise.⁸

We prefer the Kessler and ULS screening scales in lieu of more common measures of specific psychological illnesses such as depression and anxiety. The main rationale is that the way these latter measures are collected in the survey depends on students' attitudes and habits towards mental health services and providers.⁹ However, we still include some measures of depression, anxiety, and stress in supplementary analyses, using measures from a survey question on how much each condition has affected academic performance in the past 12 months.¹⁰ Descriptive statistics in Table 3 indicate generally worse mental health and well-being outcomes for all groups after the onset of the pandemic, along with increased usage of mental health services.

EMPIRICAL STRATEGY

We aim to estimate the differential effects of the COVID-19 pandemic on exposure to discrimination and other dimensions of individual well-being for Asian students compared to their White peers. Our preferred specification compares outcomes across racial groups before and after the onset of the pandemic, incorporating institution-by-time fixed effects. This approach allows us to juxtapose Asian students with those of their White peers within the same college and semester:

$$Y_{ijt} = (Race'_i \times Post_t)\beta_1 + Race'_i\beta_2 + X'_{it}\omega + \theta_{jt} + \epsilon_{ijt} \quad (1)$$

where Y_{ijt} represents the outcome of interest for student i in college or university j during period t , with t measured at the semester-year level. We regress this outcome on the interaction of $Race_i$ with $Post_t$. $Race_i$ is a vector of race and ethnicity variables while $Post_t$ indicates whether the student participated in a survey administered in Fall

⁸Respondents are asked to indicate how often each statement below is descriptive of them. Possible responses are hardly ever (1 points), some of the time (2), and often (3):

- How often do you feel that you lack companionship?
- How often do you feel left out?
- How often do you feel isolated from others?

Scores are then aggregated, with a range of 3-9. Higher scores reflect higher levels of loneliness. A score of 6-9 reflects loneliness.

⁹Students are asked sequentially if 1) they have ever been diagnosed as having anxiety or depression by a mental health professional and if yes, 2) whether they saw such a professional in the past 12 months for these conditions. If Asian students are less likely to interact with mental health professionals at baseline, this may confound our estimated prevalence of common psychological illnesses.

¹⁰We code the outcome variable as one if students respond to having experienced this issue, regardless of the extent of impact. The outcomes are zero if the student answered that they did not experience this issue.

2020 or later. The omitted semester in our estimates is Spring 2020, with data for this semester limited entirely to responses collected before March 16, 2020.¹¹ The pre-period comprises Fall 2019 only for select outcomes, although we extend backwards four additional terms to Fall 2017 for dependent variables that can be harmonized across Waves II and III. X_{it} controls for a vector of student characteristics, including age, gender, year in school, enrollment status, parental education level, and visa status. Finally, θ_{jt} represents institution-by-semester fixed effects accounting for any institution- and time-specific characteristics that might commonly affect all students, including but not limited to policies on remote instruction, health service provision, social distancing, and availability of academic and extracurricular activities.

The parameter vector of interest, β_1 , captures the differential effects of the COVID-19 pandemic for various racial and ethnic groups relative to White students. We specifically focus on how API students' responses compare to their White peers within the same institution and semester. The validity of this estimate rests on the assumption that in the absence of the COVID-19 pandemic, the evolution of outcomes for Asian students and White students would have evolved in parallel.

There are two main threats to this identifying assumption. First, unobserved factors could be causing divergent trends in outcomes for API and White students independently of the pandemic. We check for pre-period differences in event study specifications that go as far back as 2017. Second, changes in college and student compositions over time could affect racial disparities in well-being outcomes. This is a potential issue since colleges enter and exit the sample over time, and student selection into the survey may vary. For example, if API students who are more prone to discrimination or mental health challenges are more likely to participate in the survey after the pandemic, our estimates could be biased. To assess this second concern, we conduct balance tests to evaluate whether observable student and institutional characteristics change over time.¹²

We start by looking at changes in observable student characteristics before and after the onset of the pandemic, which could be affected by both the composition of the institutions in our sample and the students within them. Among individual characteristics, we focus on gender, age, year in school (e.g., upperclassmen or graduate), parental education, and visa status. Table 4 regresses each of these observables on the interaction of $Race_i$ and $Post_t$ to examine whether the composition of Asian students differs from that

¹¹We acknowledge that the COVID-19 pandemic was receiving substantial media attention by early 2020. Any anti-Asian sentiment that was present in early 2020 should bias our estimates towards null.

¹²Although this test cannot explicitly speak to sorting on unobservable characteristics, it is helpful since prior research has shown sorting on observable characteristics to be proportionally informative of sorting on unobservable characteristics (Altonji, Elder, & Taber, 2005).

of White students along each dimension as a result of the pandemic. Panel A presents results from the parsimonious regressions, while Panel B includes all remaining covariates outside of the outcome variable (e.g., if visa status is the outcome, included covariates are gender, age and age-squared, grade/degree level, and parental education). All estimates of the interactions between API and post-period indicators are statistically insignificant and small relative to baseline means, suggesting that the composition of Asian students does not diverge from that of White students following the onset of the pandemic. This provides reassurance that results are not driven by underlying changes in the composition of students over time.

Table 4: Student-Level Balance Test

	Female (1)	Age (2)	Year in school		Parent education (5)	Visa (6)
			Upper (3)	Graduate (4)		
<i>Panel A. Without Controls</i>						
Asian & Pacific Islander × Post	-0.000 (0.015)	-0.443 (0.284)	0.018 (0.017)	-0.017 (0.027)	-0.004 (0.010)	-0.006 (0.026)
<i>Panel B. With Controls</i>						
Asian & Pacific Islander × Post	-0.002 (0.015)	-0.311 (0.215)	0.014 (0.015)	-0.006 (0.018)	-0.005 (0.009)	-0.006 (0.023)
<i>N</i>	235,394	235,394	235,394	235,394	235,394	235,394
Institution-Semester FE	Y	Y	Y	Y	Y	Y

Notes: Outcomes are student characteristics listed in the column title. School year (upper) takes a value of one if the student is enrolled as an undergraduate in the third year or above. School year (graduate) takes a value of one if the student is enrolled in a Master’s, professional, or doctoral program. Parent education takes a value of one if one of the student’s parents has at least an Associate’s degree. The top panel regresses individual outcomes on all race indicators and their interaction with *Post* (omitted category is White students). The bottom panel includes covariates: gender, age and age-squared, grade/degree level (e.g., freshmen, Master’s), parental education, and visa status. We do not control for the covariate used as an outcome variable (e.g., visa status is excluded from the set if it is the dependent variable). Standard errors clustered at the institution level. *** p<0.01, ** p<0.05, * p<0.1.

Next, we provide a direct assessment of the potential role of changes in institutional composition in Table 5. This analysis provides institution-level balance tests of the percentage of students with given attributes to address the concern that student-level balance tests in Table 4 may still mask heterogeneity in changes in composition within institutions over time. We construct an institution-semester level dataset and include institution fixed effects in models that aim to detect post-pandemic changes in student composition. Within institutions, we find no evidence that the Asian student body is shifting in the extent of internationalization, take-up of particular degree levels, or toward families of a particular class or education level relative to White peers as a result of the pandemic. These findings provide further reassurance that our estimation results are not driven by

within-institution changes in student composition over time.

Table 5: Institution-Level Balance Test

	Share of All API Students:			White-Asian Diff. in Shares:		
	With Visa (1)	Undergrad (2)	High Parent Ed (3)	With Visa (4)	Undergrad (5)	High Parent Ed (6)
Post	-0.011 (0.019)	-0.032 (0.023)	0.020 (0.021)	0.022 (0.020)	0.010 (0.019)	-0.011 (0.023)
Constant	0.380*** (0.014)	0.737*** (0.017)	0.295*** (0.002)	-0.339*** (0.015)	0.071*** (0.014)	0.071*** (0.017)
<i>N</i>	361	361	361	361	361	361
Institution FE	Y	Y	Y	Y	Y	Y

Notes: Sample is at the institution-semester level. Columns 1-3 use as outcomes the share of all Asian and Pacific Islander students in a given college-semester who 1) have a visa, 2) are enrolled as an undergraduate student, and 3) reported their parents' highest level of educational attainment as a graduate degree. Columns 4-6 use as outcomes the difference in the shares of White vs. Asian students with each of the three attributes. Standard errors clustered at the institution level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

We provide additional checks to concerns about sample selection changes in the robustness section. Specifically, we conduct supplementary analyses that examine changes in response rates and API enrollment shares following the pandemic. We also re-estimate student-level balance tests using only the sample of non-international students to address the concern that aggregate compositional changes might obscure shifts within the domestic student population.

RESULTS

Main results

We begin by assessing racial differences in the effects of the COVID-19 pandemic on student experiences with discrimination. Panel A of Table 6 shows estimates corresponding to β_1 from Equation 1 and are measured relative to the reference racial/ethnic group of White students. Before the pandemic, Asian and Pacific Islander, Black, and Hispanic students were all more likely to experience discrimination compared to their White peers. After the onset of the pandemic, there is suggestive evidence that discrimination increased for Asian and Pacific Islander students, further widening the existing API-White gap in exposure. There were notably no comparable increases for Black or Hispanic students.

Column 2 shifts to an outcome that respondents perceive to be more consequential: whether they experienced any discrimination causing moderate to severe distress. Ex-

isting studies commonly find that exposure to discrimination is associated with higher levels of distress (Chae et al., 2021; Cheah et al., 2020; L. Shi et al., 2022). API students experienced a 1.3 percentage point increase in this form of discrimination after the pandemic, equivalent to widening the pre-pandemic Asian-White gap by over one-third. This effect also reflects an increase of 28 percent from pre-pandemic mean levels of exposure to discrimination leading to distress.

There is also suggestive evidence that Black students may have experienced an increase in distressing forms of discrimination relative to White peers, following the onset of the pandemic. Although these results for Black students may be explained through pandemic-era mechanisms, we cannot rule out the role for the concurrent Black Lives Matter (BLM) movement and nationwide protests that culminated in the summer of 2020. Our analyses later in the paper indicate that BLM does not explain the findings for our core population of interest: API students.

The relative uptick in discriminatory experiences among API students post-pandemic echoes findings in the literature. If anything, the magnitudes of discrimination in our study are lower than levels reported in some previous research.¹³ Scholars trace the increased discrimination to a confluence of factors that uniquely racialize Asians during the pandemic, including the perception of Asians as perpetually foreign (Tuan, 1999; Wu, 2015; Zhou, 2004), associating Asian bodies with virus spread (Tessler, Choi, & Kao, 2020), and the stigmatizing experience of mask-wearing for a population that has historically been more likely than many to adhere to this practice (Ma & Zhan, 2022).¹⁴

The discrimination and scapegoating documented are often not confined to individuals of Chinese descent, but rather all Asian Americans perceived as having any connections to China (Li & Nicholson, 2021; Tessler et al., 2020). This suggests that the effects of the COVID-19 pandemic may be felt across API subgroups, even if only a subset are explicitly targeted. Panel B of Table 6 further disaggregates the effects of the pandemic by Asian subgroup.¹⁵ Results indicate that the increase in discrimination experienced by API students during the pandemic is driven by the experiences of East Asian and Southeast Asian students. Specifically, East Asian students experience a 1.8 percentage point increase in discrimination, while the increase is more than doubled at 3.9 percentage points for Southeast Asian students. There are similar effect magnitudes when focusing on dis-

¹³According to the 2020 FBI Hate Crime Statistics, anti-Asian hate crime incidents increased by 77% from 2019 to 2020. Several studies have found that about 29-33% of Asians have experienced discrimination or bias-victimization (Lantz & Wenger, 2022, 2023; Ruiz et al., 2023).

¹⁴Anti-Asian crimes involving face masks reveal that these Asians are associated with sickness or disease, portrayed as the source of the pandemic, and generally marked for their foreignness (Ren & Feagin, 2021).

¹⁵Although the analysis in Table 6 includes all racial groups, coefficient estimates for these groups are not shown here.

Table 6: Effects of COVID-19 on Discrimination by Race

	Discrimination (1)	Discrimination (moderate/severe distress) (2)
<i>Panel A. Overall</i>		
Asian & Pacific Islander × Post	0.011* (0.006)	0.013*** (0.004)
Black × Post	0.005 (0.013)	0.018* (0.010)
Hispanic × Post	0.001 (0.005)	0.002 (0.004)
Asian & Pacific Islander	0.085*** (0.005)	0.036*** (0.003)
Black	0.172*** (0.013)	0.096*** (0.010)
Hispanic	0.073*** (0.005)	0.038*** (0.003)
<i>Panel B. Disaggregated by Asian subgroups</i>		
East Asian × Post	0.018** (0.009)	0.014*** (0.005)
Southeast Asian × Post	0.039*** (0.012)	0.037*** (0.008)
South Asian × Post	-0.015 (0.009)	-0.001 (0.006)
Pacific Islander × Post	0.025 (0.039)	-0.001 (0.034)
East Asian	0.073*** (0.008)	0.031*** (0.004)
Southeast Asian	0.074*** (0.010)	0.019*** (0.006)
South Asian	0.095*** (0.009)	0.045*** (0.005)
Pacific Islander	0.105*** (0.032)	0.064** (0.027)
Institution-Semester FE	Y	Y
Dep. Var. Baseline Mean	0.101	0.047
N	235,394	235,394

Notes: Other racial/ethnic categories in model include American Indian, Middle Eastern/North African, other race, and non-responses on race. Estimations in Panel B also include controls and interactions of Black and Hispanic students, although coefficients are not displayed. Omitted category is White students. Covariates include gender, age and age-squared, grade/degree level (e.g., freshmen, Master's), parental education, and visa status. Dependent variable baseline means reflect aggregate pre-pandemic mean values. Standard errors clustered at the institution level. *** p<0.01, ** p<0.05, * p<0.1.

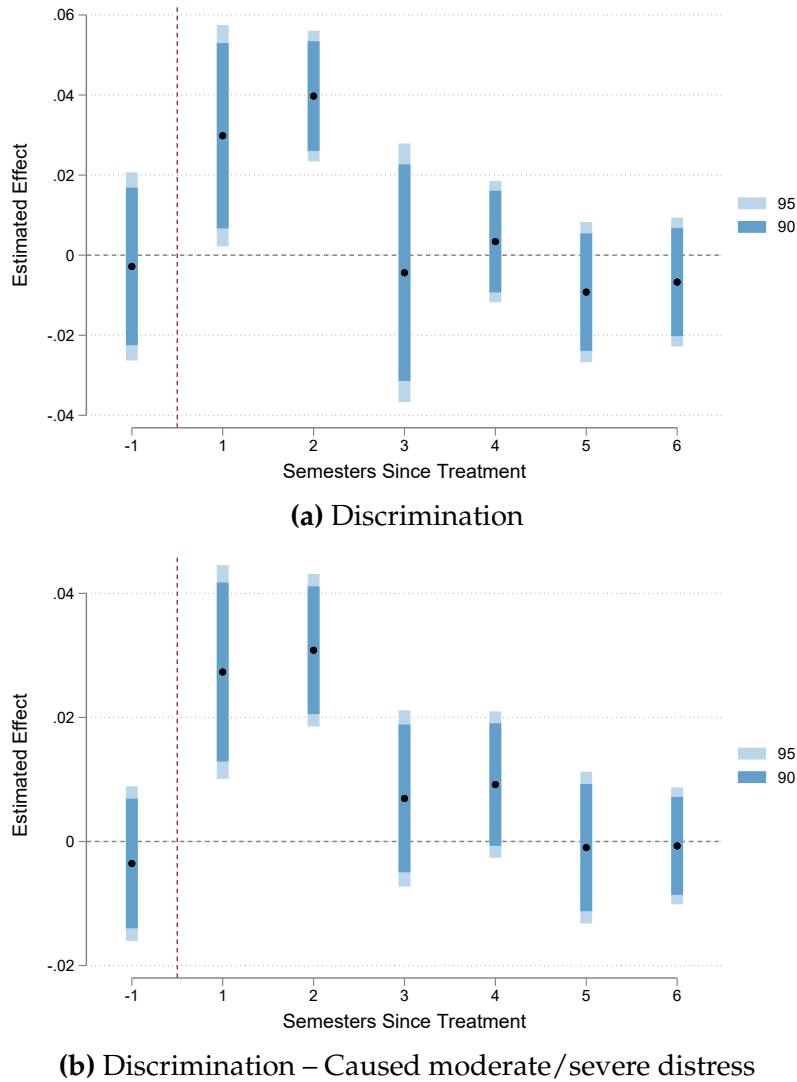
crimination causing moderate or severe distress, although they amplify smaller Asian-White gaps at baseline. In contrast, South Asian and Pacific Islander students do not report an increase in discrimination after the onset of the pandemic. Our results suggest that heightened discrimination is concentrated among individuals who are most likely viewed as having East Asian (particularly Chinese) ancestry, consistent with place-based characterizations of the pandemic (e.g., “Chinese” or “Wuhan” virus).

To evaluate the key identifying assumption in our empirical approach that in the absence of the COVID-19 pandemic, outcomes for Asian students and White students would have evolved in parallel, we provide event study estimates in Figure 2. Specifically, we test for pre-period differences in outcomes between White and Asian students. Event study results indicate that for both discrimination outcomes, there is no significant difference in estimated effects between Fall 2019 and Spring 2020, providing reassurance that Asian and White students were not diverging in outcomes prior to the pandemic. In contrast, there is a sharp increase across discrimination outcomes experienced by API students in the first two semesters after the pandemic, during Fall 2020 and Spring 2021. Asian students' personal experiences with discrimination then converge towards their White peers in subsequent semesters, such that there are once again no distinguishable API-White differences by Fall 2021.

Exposure to discrimination may yield greater distress and diminish individuals' sense of security in their environment. Panel A of Table 7 examines whether the pandemic also adversely impacted Asian students' perceptions of safety. Before the pandemic, Asian and Pacific Islander, Black, and Hispanic students all reported feeling less safe on and around campus across all hours compared to White peers. However, estimates indicate the pandemic uniquely eroded API students' relative sense of safety during the day. Specifically, the pandemic on decreased perceived safety of API students on campus during the day by 2.1 percentage points, which is a 2.6 percent decrease from the pre-pandemic mean. The pandemic also decreased perceived safety of API students off-campus during the day by 2.7 percentage points, a 5.6 percent decrease from the pre-pandemic mean. These decreases in perceived safety by API students relative to White peers widen API-White gaps in safety perceptions for on- and off-campus by one-third and one-half of baseline pre-pandemic Asian-White gaps in safety, respectively. Among the major racial and ethnic groups, API students are the least likely to respond post-pandemic that they feel very safe off-campus during the day. Black students are the least likely to feel very safe on-campus during the day, followed by API students. This contrasts with the null effects of the pandemic on API students' feelings of safety at night.¹⁶ As with the results on discrimination, disaggregating by Asian subgroups shows that impacts are driven by the experiences of East Asian and Southeast Asian students (Table 7, Panel B). South Asian and Pacific Islander students do not report changes in safety perceptions on or off campus relative to White peers after the onset of the pandemic.

¹⁶Interestingly, while the propensity for Asian and Hispanic students to report feeling very safe relative to White peers does not change after the pandemic, Black students are more likely to report feeling very safe on- and off-campus at night.

Figure 2: Effects of COVID-19 on Discrimination among APIs: Event Study Estimates



Notes: Figures display event study estimates on the effects of COVID-19 on discrimination outcomes for Asian and Pacific Islander students, relative to White students. The omitted racial/ethnic category is White students. The omitted semester at time zero is Spring 2020.

The event study graph in Figure 3 shows no significant pre-treatment trends, providing reassurance that Asian and White students were not diverging in safety perceptions prior to the pandemic. Asian students' relative daytime safety perceptions begin trending down in Fall 2020, but only becomes significantly lower than White peers two and three semesters after the onset of the pandemic, in Spring 2021 and Fall 2021. Safety perceptions converge across these two groups in subsequent semesters, such that no distinguishable differences are apparent by Spring 2022. These temporal patterns of decreased daytime safety closely match or occur one semester after the increased exposure to discrimination

Table 7: Effects of COVID-19 on Perceptions of Safety by Race

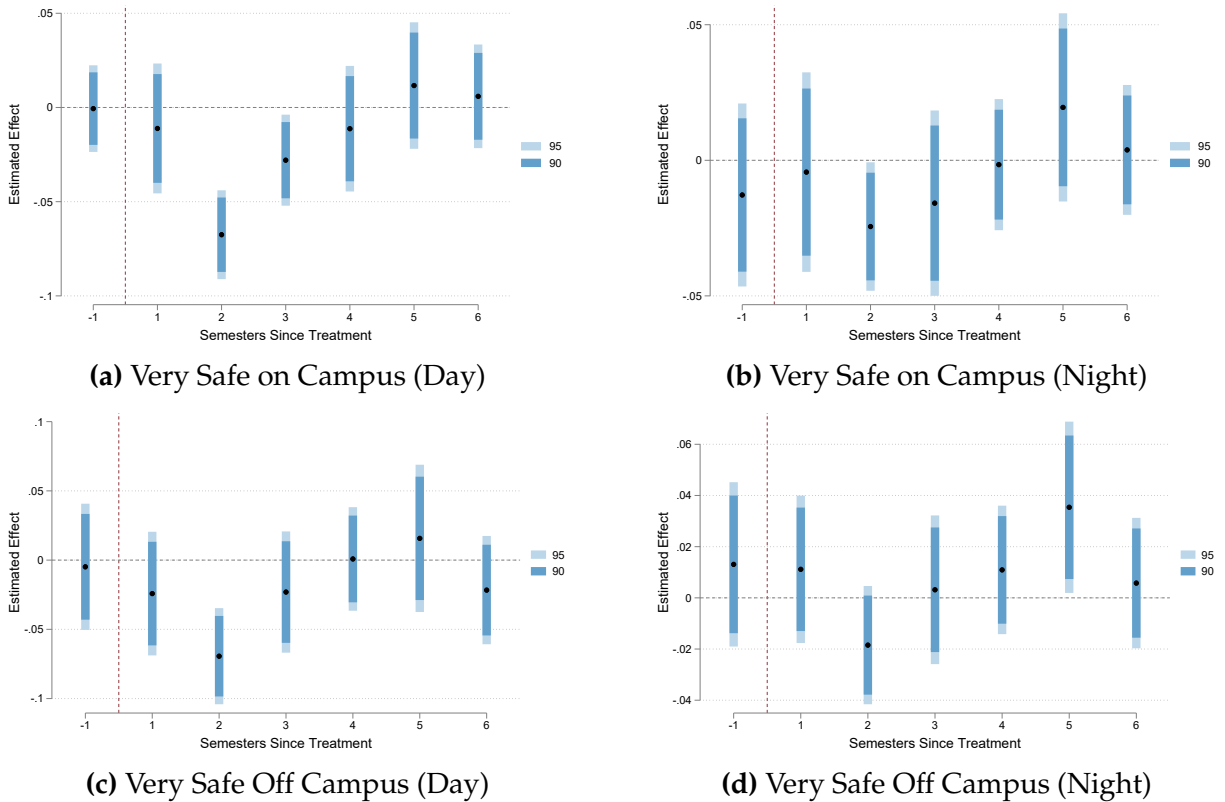
	Campus day (Very safe) (1)	Campus night (Very safe) (2)	Off-campus day (Very safe) (3)	Off-campus night (Very safe) (4)
<i>Panel A. Overall</i>				
Asian & Pacific Islander × Post	-0.021** (0.009)	-0.001 (0.010)	-0.027** (0.013)	-0.003 (0.009)
Black × Post	0.012 (0.013)	0.032** (0.012)	0.013 (0.014)	0.023** (0.010)
Hispanic × Post	-0.016*** (0.006)	0.010 (0.007)	-0.011 (0.008)	0.005 (0.006)
Asian & Pacific Islander	-0.066*** (0.006)	-0.063*** (0.008)	-0.051*** (0.011)	-0.019** (0.007)
Black	-0.118*** (0.011)	-0.048*** (0.011)	-0.031** (0.014)	0.006 (0.010)
Hispanic	-0.019*** (0.005)	-0.039*** (0.007)	0.001 (0.008)	-0.009* (0.005)
<i>Panel B. Disaggregated by Asian subgroups</i>				
East Asian × Post	-0.030*** (0.010)	-0.014 (0.013)	-0.045*** (0.015)	-0.012 (0.013)
Southeast Asian × Post	-0.056*** (0.019)	0.012 (0.015)	-0.028 (0.017)	-0.011 (0.014)
South Asian × Post	0.015 (0.016)	0.016 (0.016)	-0.005 (0.020)	0.016 (0.013)
Pacific Islander × Post	-0.069 (0.047)	-0.048 (0.049)	0.016 (0.046)	-0.044 (0.034)
East Asian	-0.077*** (0.007)	-0.063*** (0.010)	-0.067*** (0.013)	-0.015 (0.012)
Southeast Asian	-0.075*** (0.017)	-0.116*** (0.013)	-0.071*** (0.015)	-0.032*** (0.012)
South Asian	-0.036*** (0.010)	-0.029** (0.014)	0.001 (0.017)	-0.009 (0.010)
Pacific Islander	-0.059 (0.044)	-0.031 (0.042)	-0.113*** (0.041)	-0.024 (0.030)
Institution-Semester FE	Y	Y	Y	Y
Dep. Var. Baseline Mean	0.818	0.328	0.484	0.177
N	235,394	235,394	235,394	235,394

Notes: Other racial/ethnic categories in model include American Indian, Middle Eastern/North African, other race, and non-responses on race. Estimations in Panel B also include controls and interactions of Black and Hispanic students, although coefficients are not displayed. Omitted category is White students. Covariates include gender, age and age-squared, grade/degree level (e.g. freshmen, Master's), parental education, and visa status. Dependent variable baseline means reflect aggregate pre-pandemic mean values. Standard errors clustered at the institution level. *** p<0.01, ** p<0.05, * p<0.1

shown in Figure 2.

Taken together, the post-pandemic experiences of API students diverge markedly from those of White students and other racial/ethnic groups in their heightened exposure to discrimination and reduced perceptions of daytime safety. This prompts questions about how these experiences shape students' attachment to their college communities and general mental health. Prior studies have found that exposure to discrimination has

Figure 3: Effects of COVID-19 on Perceptions of Safety among APIs: Event Study Estimates



Notes: Figures display event study estimates on the effects of COVID-19 on safety outcomes for Asian and Pacific Islander students, relative to White students. The omitted racial/ethnic category is White students. The omitted semester at time zero is Spring 2020.

negative consequences for physical health (Armijos Bravo & Vall Castelló, 2021; Johnston & Lordan, 2012). Thus, to the extent that increased exposure to discrimination imposes additional psychological burdens, we may expect worse mental health outcomes among APIs alongside greater service utilization, under the assumption that they do not face differential costs of access or have distinct group-specific reasons to refrain from seeking care.

Panel A of Table 8 begins by examining the impact of the pandemic on the use of mental health services by API students relative to white peers. While all student groups exhibit higher rates of mental health service usage after the pandemic (Table 3), API students are relatively *less* likely to seek care after the pandemic’s onset compared to White peers, despite being subject to greater risk factors such as discrimination. While other non-White racial/ethnic groups increased their use of psychological or mental health services on a scale comparable with White students, APIs stand apart in the relatively small magnitude of increase. This further widens the double-digit White-API usage gap present

before the pandemic by over 40 percent. The relative decline in service use is consistent with research showing Asian Americans are more reluctant to seek mental health services due to stigma (Gee et al., 2020; Han & Pong, 2015; S. Lee et al., 2009). A growing psychological literature on internalizing the model minority stereotype also shows that APIs may feel pressure to maintain emotional self-control, which then predicts less favorable attitudes towards seeking professional help (Gupta et al., 2011; P. Y. Kim & Lee, 2014; S. B. Kim & Lee, 2022).¹⁷

Strikingly, API students maintain similar trajectories or close gaps with White students post-pandemic in reports of belonging, psychological distress, and loneliness, despite relatively increased exposure to discrimination and decreased perceptions of safety. The pandemic narrowed the API-White gap in the likelihood of feeling strongly that they belonged at their college or university by one-quarter, from a baseline difference of 8.4 percentage points. There is a marginally significant narrowing of the API-White gap in likelihood of reaching the clinical threshold for loneliness. We find no evidence that the pandemic had a significant effect on API versus White students' propensity to experience severe psychological distress, as measured by the Kessler scale.

Panel B of Table 8 breaks down estimates by Asian subgroup to highlight two findings. First, the pandemic's negative effects on mental health service utilization were pervasive across East, Southeast, and South Asians, with magnitudes that are statistically indistinguishable. We observe a negative coefficient for Pacific Islanders, but the effect is imprecisely measured. Second, East Asians consistently show improvements in belonging, psychological distress, and loneliness relative to White students. The results are more muted and inconsistent across the other Asian subgroups. This suggests that while a subset of Asians may have closed some well-being gaps with White peers, this does not fully account for the broadening Asian-White gap in mental health service use. Event study estimates in Figure 4 confirm that findings are not driven by diverging trends in mental health service uses, belonging, or well-being between API and White students leading up to the pandemic.

We verify our mental health findings using alternative measures on depression, anxiety, and stress, taken from student self-reports in response to a question about whether any of these conditions have affected academic performance.¹⁸ API students are less likely

¹⁷Another potential explanation is that Asian students were more likely to social distance during the pandemic (Baradaran Motie & Biolsi, 2021) and avoided health facilities for fear of catching the virus or discriminatory interactions, although this behavior should be mitigated by the availability of telehealth services.

¹⁸We do not include these results in the main manuscript, given concerns about Asian students' lower rates of mental health service use affecting their awareness of depression- and anxiety-related disorders and the manner in which these outcomes were solicited (via a question about effects on academic performance).

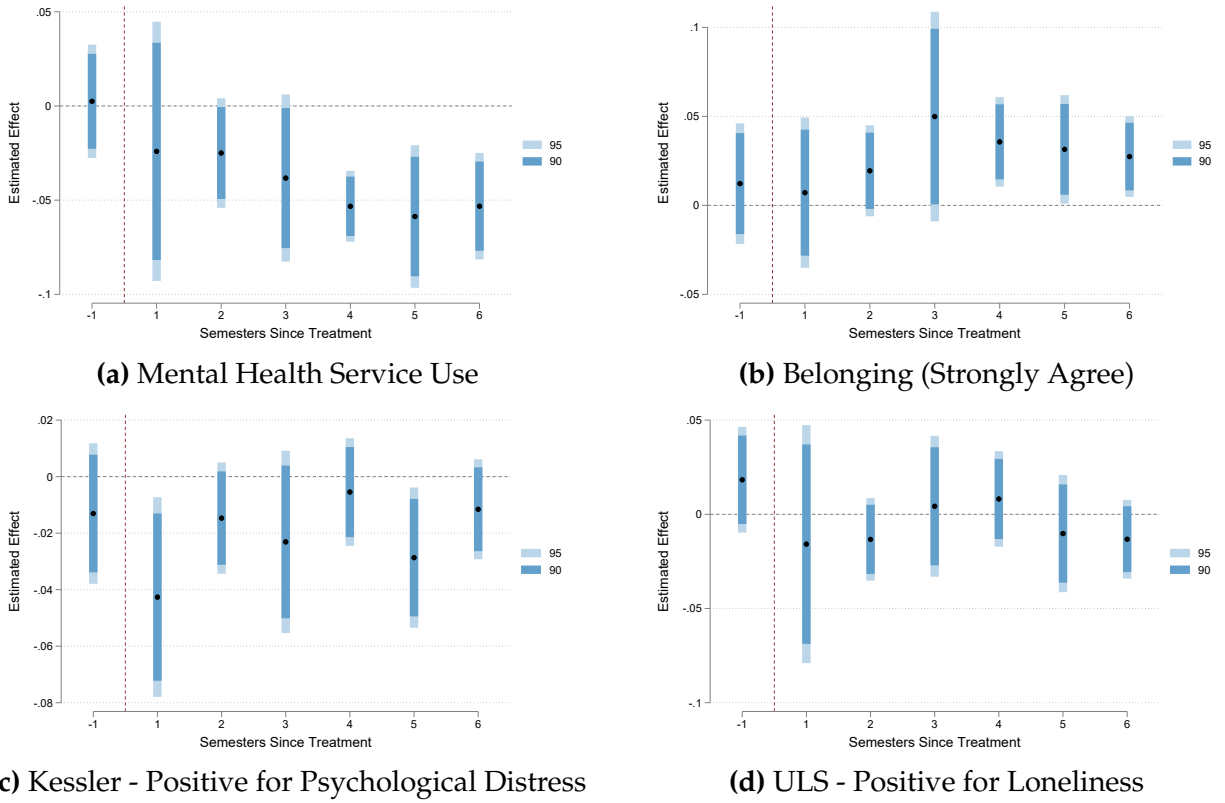
Table 8: Effects of COVID-19 on Mental Health Service Use, Belonging, and Well-Being by Race

	Mental Health Service Use (1)	Belonging (Strongly Agree) (2)	Kessler (Psychological Distress) (3)	ULS (Loneliness) (4)
<i>Panel A. Overall</i>				
Asian & Pacific Islander × Post	-0.044*** (0.009)	0.023*** (0.008)	-0.010 (0.007)	-0.015* (0.008)
Black × Post	-0.018 (0.012)	0.026* (0.014)	-0.008 (0.009)	-0.009 (0.010)
Hispanic × Post	-0.008 (0.009)	-0.008 (0.007)	0.006 (0.006)	-0.002 (0.007)
Asian & Pacific Islander	-0.109*** (0.007)	-0.084*** (0.008)	0.029*** (0.007)	0.059*** (0.007)
Black	-0.052*** (0.010)	-0.068*** (0.014)	0.022*** (0.008)	0.085*** (0.009)
Hispanic	-0.028*** (0.008)	-0.011 (0.007)	0.017*** (0.006)	0.017*** (0.006)
<i>Panel B. Disaggregated</i>				
East Asian × Post	-0.053*** (0.013)	0.022** (0.010)	-0.022** (0.009)	-0.023** (0.011)
Southeast Asian × Post	-0.036** (0.016)	0.002 (0.014)	0.015 (0.015)	-0.023 (0.017)
South Asian × Post	-0.033*** (0.010)	0.038*** (0.013)	-0.009 (0.010)	-0.004 (0.014)
Pacific Islander × Post	-0.072 (0.047)	0.044 (0.046)	-0.014 (0.049)	0.093 (0.065)
East Asian	-0.124*** (0.010)	-0.107*** (0.010)	0.008 (0.008)	0.043*** (0.010)
Southeast Asian	-0.091*** (0.015)	-0.097*** (0.013)	0.037*** (0.012)	0.078*** (0.015)
South Asian	-0.105*** (0.009)	-0.032** (0.013)	0.058*** (0.008)	0.083*** (0.013)
Pacific Islander	-0.036 (0.043)	-0.057 (0.036)	0.045 (0.041)	-0.045 (0.059)
Institution-Semester FE	Y	Y	Y	Y
Dep. Var. Baseline Mean	0.280	0.253	0.178	0.489
N	235,394	235,394	235,394	235,394

Notes: Other racial/ethnic categories in model include American Indian, Middle Eastern/North African, other race, and non-responses on race. Estimations in Panel B also include controls and interactions of Black and Hispanic students, although coefficients are not displayed. Omitted category is White students. Covariates include gender, age and age-squared, grade/degree level (e.g., freshmen, Master's), parental education, and visa status. Dependent variable baseline means reflect aggregate pre-pandemic mean values. Standard errors clustered at the institution level. *** p<0.01, ** p<0.05, * p<0.1

to report experiencing depression relative to White peers after the pandemic, with significant declines among East and South Asian students (Tables A.6 and A.7). In contrast, there are no changes in anxiety-related disorders and an increase in stress among API students (particularly East and Southeast Asians) that is not observed in other groups. We interpret the results on depression as consistent with our findings on psychological distress and loneliness using clinical screening scales (i.e., Kessler and ULS). Heightened

Figure 4: Effects of COVID-19 on Well-Being among APIs: Event Study Estimates



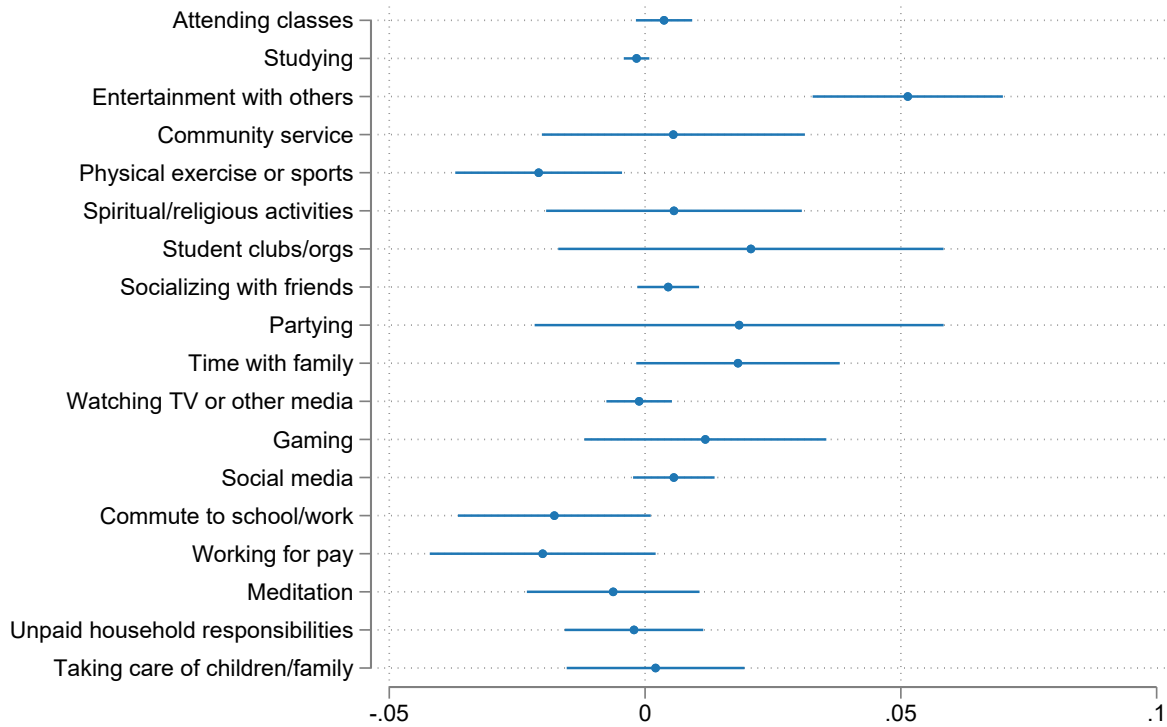
Notes: Figures display event study estimates on the effects of COVID-19 on well-being outcomes for Asian and Pacific Islander students, relative to White students. The omitted racial/ethnic category is White students. The omitted semester at time zero is Spring 2020.

stress does not appear to translate into adverse mental health outcomes in our setting.

To probe why exposure to discrimination and resulting distress have not led to worse mental health outcomes, we turn to survey questions on time use. Students are asked to report their estimated weekly time use (in bins) across multiple activities. We examine whether a student spent at least one hour per week on each activity. Figure 5 shows that the pandemic increased the time API students spent on entertainment with others relative to White peers, defined as attending cultural events, movies, concerts, sports, or other entertainment activities with other people. There are no other significant changes in time use, except for a slight decrease in time spent on physical exercise or sports. After the pandemic, students across all racial/ethnic groups spent less time on socially oriented activities such as entertainment with others and socializing with friends, yet there was a smaller decrease among Asian students relative to their White peers. We view the increase of 5 percentage points for Asian students in spending at least an hour on entertainment as a modest increase (6 percent from baseline). We also cannot determine whether these

interactions predominantly involve other Asian students. Even so, these results suggest that social connections may attenuate the adverse impacts of the pandemic and its consequences.

Figure 5: Relative Effect for API Students on Spending At Least One Hour Per Week



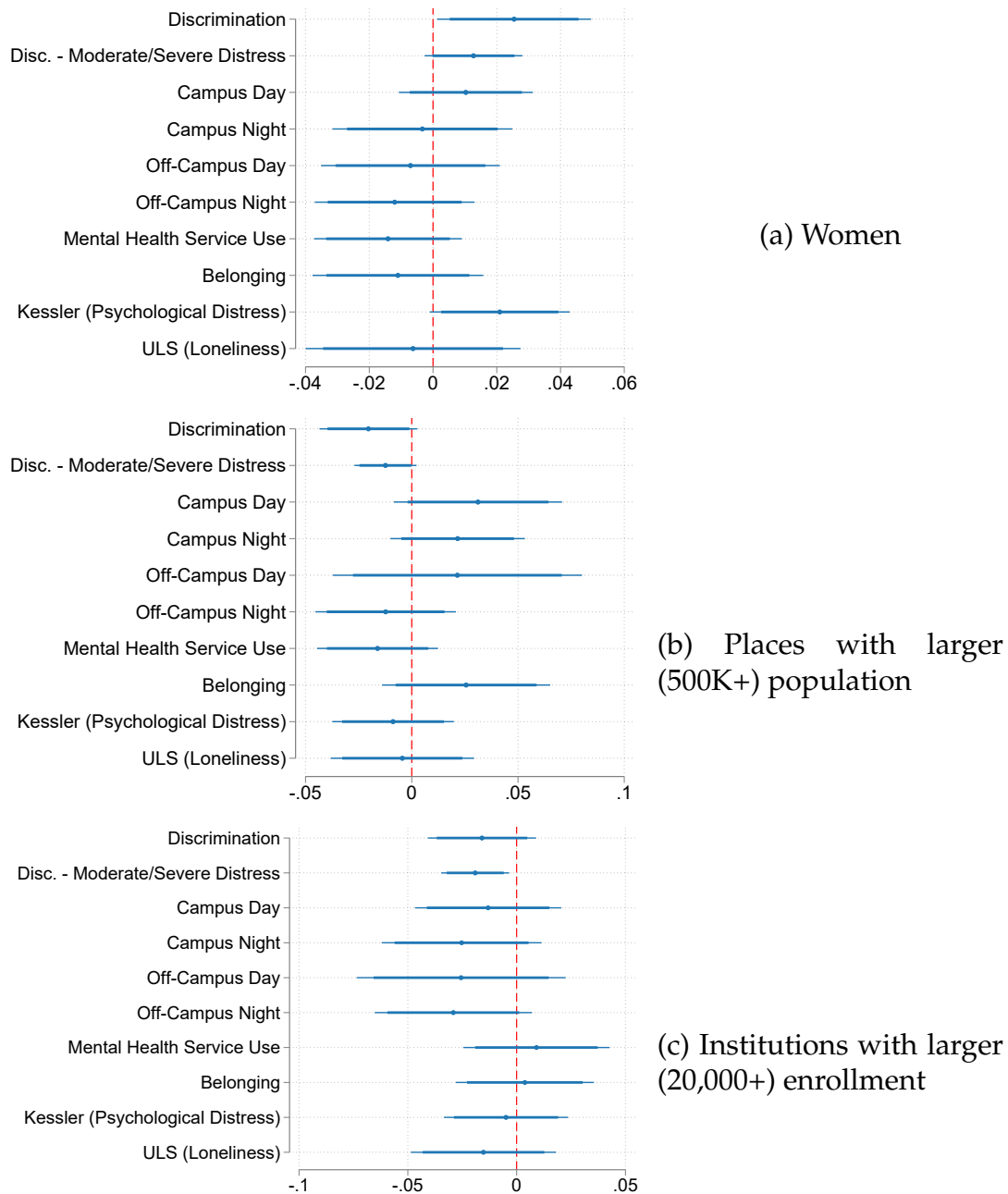
Notes: Figure displays the difference-in-differences effects of COVID-19 on weekly time use for Asian and Pacific Islander students, relative to White students. The omitted racial/ethnic category is White students. The figure plots both point estimates and 95% confidence intervals.

Heterogeneity in Treatment Effects

Next, we assess whether the pandemic differentially affected various subpopulations. We focus on three subpopulations of students: 1) women, who may experience varying levels of discrimination and safety concerns relative to men, 2) students in institutions in a more urban setting, and 3) students enrolled in larger institutions. Figure 6 plots coefficient estimates from the interaction of our treatment variable with each of these three moderators in a triple-difference model. Each line in the figure corresponds to a separate regression with the listed outcome.

When examining exposure to discrimination, several differences emerge. First, Asian women are significantly more likely to report experiencing any discrimination as a result

Figure 6: Heterogeneous Effects for APIs, by Individual, Place, and Institution Attributes



Notes: This figure displays the coefficients on the interaction of API_i , $Post_t$, and the moderator variable (gender, place size, or institution size). The moderators are coded as indicator variables for women, institutions in a larger city (population of at least 500,000), and institutions with larger enrollments (at least 20,000) in the three panels, respectively. The interpretation in panel (a) is the differential effect of the pandemic for female relative to male API students on discrimination, safety, and other well-being outcomes. Panel (b) shows the differential effects for API students in colleges in cities with a population of at least 500,000 relative to smaller cities, while Panel (c) shows the differential effects for API students in colleges with enrollments above 25,000 relative to smaller colleges.

of the pandemic, compared to Asian men. Although the coefficient for discriminatory incidents causing moderate or severe distress is positive, it is not statistically significant at conventional levels. While the risk of discrimination appears to be elevated for Asian women, Asian students in larger cities and colleges are somewhat buffered from exposure. They are less likely to report discriminatory experiences leading to distress than Asian students in places with populations of less than 500,000 and enrolled in institutions with fewer than 20,000 students.

While there are distinct differences in exposure to discrimination, these differences do not appear to systematically manifest in worse safety perceptions, differential service utilization, or heightened mental health challenges across the subpopulations examined. One exception is that Asian women are more likely to experience psychological distress (2.1 percentage points) as a result of a pandemic, compared to Asian men.

Robustness checks

We provide supplementary analyses that explore the feasibility of alternative explanations and provide further support for our identifying assumptions. First, the pandemic co-occurred with other influential movements and events, namely the BLM protests in the summer of 2020. One possibility is that our findings for API students can be attributed to the combined influences of these events rather than to the more isolated role of the pandemic. One approach to distinguishing the contribution of the pandemic is to limit our sample to only API students and directly estimate the effect on the subset theorized to be more affected by the pandemic, relative to those groups of API students who are less impacted, under the assumption that the BLM movement and other concurrent events affect all API subgroups similarly. Table A.3 compares the effects for non-South Asians, grouping together students who are more likely to be identified as Chinese, relative to South Asians which largely comprise students of Indian, Pakistani, and Bangladeshi descent. Results indicate that the pandemic led to higher rates of discriminatory experiences, decreased safety around campus during the day and off-campus at night, and lower utilization of mental health services among non-South Asians. These results closely echo our main findings, suggesting that the BLM movement and Asian-White differences in baseline individual characteristics (e.g., personality traits) are unlikely to assume a primary explanatory role.

We undertake a few additional checks to ensure the validity of our empirical approach. One current shortcoming of the data is that the onset of the Wave III NCHA survey in Fall 2019 constrains our event studies to a relatively short pre-period. The primary challenge

in addressing this issue is that substantial survey changes across Waves II and III render them incomparable.¹⁹ Most of our dependent measures varied substantially between the two waves. The exceptions are survey questions on perceived safety on and off campus, and students' experiences with depression, anxiety, and stress (in relation to how these conditions affected academic performance). Appending four semesters worth of data from the last administration of the Wave II survey (Fall 2015 - Spring 2019), Figure A.1 shows that there were no discernible differences in perceived safety among Asian and Pacific Islander students, relative to White peers, during the five pre-periods. Similarly, Figure A.2 shows no pretrends in the three self-reported measures of mental health. The absence of pretrends in these instances is consistent with, although does not unequivocally demonstrate, the exogeneity of the treatment variable.

Next, we examine the possibility that changes in sample composition may explain our results. Tables A.4 builds on the student-level and institution-level balance tests in Tables 4 and 5 by examining changes in institutional response rates and racial composition as a result of the pandemic. Using institution-by-semester data, we find no significant changes in response rates after the onset of the pandemic. We then look at Asian and Pacific Islander students as a share of overall college enrollment, both at the aggregate level and by subgroup. We do find a slight increase of 0.9 percentage points in the share of responses from API students. However, this increase is driven by South Asian students, while East and Southeast Asian shares remain unchanged. Since our core results on discrimination and safety derive from these latter groups, the stability of these student shares is reassuring.

Table A.5 re-estimates the student-level balance tests in Table 4 on a sample of non-international students only. This analysis assesses whether the aggregate compositional changes might obscure shifts in the composition of domestic students without visas. As before, Panel A regresses individual outcomes on all race and ethnicity indicators and their interaction with $Post_t$ without covariates, while Panel B includes covariates. All estimates for the interaction term of Asian students with the post-period are statistically insignificant, with the exception of the interacted coefficient for the specification with controls looking at age as an outcome, which is marginally significant at the 10 percent level. Altogether, these results indicate the composition of non-international Asian students is not changing significantly relative to White peers after the onset of the pandemic. These

¹⁹Survey items changed across waves. In some cases, questions were unique to a particular wave. In other cases, while questions were retained across waves, the wording of the questions did not remain constant. For example, the survey only began asking about recent experiences with discrimination in Wave III. Moreover, unique institutional identifiers allow for tracking the same college within a wave, but not across waves.

results provide reassurance that estimations using only the sample of non-international students, which we provide in the ensuing set of robustness checks, are not being driven by underlying composition changes of students over time.

Lastly, we assess whether results are robust to the exclusion of international students, defined as students with a visa. These findings shed light on whether results are driven primarily by the experiences of Asian students who came to the U.S. for postsecondary education, as opposed to Asian American students. Figure A.3 in the Appendix shows the estimated effects of the COVID-19 pandemic on discrimination outcomes for Asian American students compared to White peers, while Figure A.4 shows estimated effects on safety outcomes. We find that the pandemic's effects on Asian American students look very similar to that of the full sample: these students experience increased discrimination in the periods shortly after the onset of the pandemic and effects fade out over time. Additionally, Asian American students experienced decreased perceptions of safety during the day shortly after the onset of the pandemic, with effects also fading out by later periods. These findings indicate that our results are not driven by the unique experiences of international students, including visa and travel disruptions, differential language proficiency and cultural norms.

CONCLUSION

The COVID-19 pandemic led to increased stigmatization of Asians and Pacific Islanders, fueled by racialized rhetoric around the virus. This study provides novel evidence on the effects of the pandemic on the well-being of Asian students in the U.S., using data from a national college survey. We find evidence that the onset of the pandemic increased discrimination exposure among API students and decreased their perceptions of daytime safety on and around campus, relative to White peers. Disaggregated results by Asian subgroup and time indicate that findings are driven by the experiences of East Asian and Southeast Asian students, with outcomes for Asians largely converging with White peers by Spring 2022. Despite being subject to greater discrimination, Asian students became relatively less likely to seek mental health services after the pandemic, which further exacerbated the existing Asian-White mental health service utilization gap. Moreover, there was no discernible worsening in Asian students' relative psychological distress and loneliness.

The evidence in this paper points to pressing issues. The amplified mental health service use gap prompts further questions on the role of cultural stigma or internalized

model minority stereotype on Asian students' help-seeking behavior.²⁰ In addition to being barriers to health care access, these factors can contribute to under-reporting of mental health concerns. This underscores the need for verification of Asian students' mental health outcomes across datasets and contexts, particularly in an environment of heightened exposure to mental health risk factors. Our analyses also suggest that exposure to discrimination was attenuated among Asian students in larger cities and postsecondary institutions with higher enrollment. Asian students spent relatively more time on entertainment activities with others as a result of the pandemic. Future research can examine whether social connections sharing racial, ethnic, and cultural identities can mitigate the consequences of discriminatory exposure.

²⁰Exposure to model minority stereotypes can also shape others' perceptions of Asians, and may under select circumstances obscure attention to Asians' adverse experiences (Chen, Powdthavee, & Wiese, 2024).

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A APPENDIX

Table A.1: Institution Characteristics – IPEDS

<u>Student Demographics</u>	
Women	0.57
White	0.49
Black	0.12
Hispanic	0.19
Asian & Pacific Islander	0.07
Public	0.68
<u>Enrollment Size</u>	
Less than 1,000	0.58
1,000-4,999	0.25
5,000-9,999	0.08
10,000-19,999	0.06
20,000 or more	0.04
<u>Region</u>	
Northeast	0.21
Midwest	0.23
South	0.35
West	0.21
<i>N</i>	6,035

Notes: Table A.1 presents descriptive statistics for all schools in the Integrated Postsecondary Education Data System (IPEDS) for the 2019-2020 school year. Student demographics are weighted by enrollment size.

Table A.2: Student Characteristics Broken Down by Race and Time Period

	All Students		Asian & PI		White		Black		Hispanic	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Age	22.623	23.366	22.679	23.166	22.591	23.356	23.163	24.812	22.462	23.048
Female	0.634	0.645	0.572	0.604	0.645	0.653	0.711	0.705	0.634	0.654
Visa	0.122	0.125	0.426	0.406	0.048	0.045	0.157	0.161	0.132	0.119
<u>Year in School</u>										
Undergraduate	0.798	0.717	0.641	0.583	0.811	0.737	0.797	0.685	0.867	0.786
Master's	0.107	0.155	0.198	0.243	0.097	0.139	0.118	0.191	0.078	0.127
Doctorate/professional	0.095	0.128	0.161	0.174	0.092	0.125	0.084	0.124	0.056	0.087
<u>Enrollment Status</u>										
Full-time	0.905	0.909	0.937	0.940	0.910	0.905	0.908	0.898	0.860	0.893
Part-time	0.089	0.085	0.057	0.055	0.083	0.090	0.088	0.097	0.135	0.101
<u>Parental Education</u>										
High School or less	0.173	0.171	0.180	0.187	0.113	0.109	0.227	0.228	0.373	0.390
Some Postsecondary	0.176	0.155	0.102	0.105	0.170	0.152	0.264	0.235	0.219	0.188
Bachelor's degree	0.297	0.300	0.301	0.315	0.324	0.325	0.241	0.245	0.215	0.211
Master's degree or higher	0.355	0.374	0.418	0.393	0.392	0.413	0.268	0.292	0.193	0.212
<i>N</i>	235,394		34,354		133,898		10,188		35,415	

Notes: Table shows descriptive statistics for student characteristics before or after the COVID-19 pandemic, categorized by race. "Parental education" indicates the highest level of education completed by either parent. "Some Postsecondary" refers to a parent who has either an associate degree, incomplete college education, or trade/technical training.

Table A.3: Differential Effects Among API Student Sample

Outcomes	Non-South Asian X Post
Discrimination	0.035*** (0.012)
Discrimination (moderate/severe stress)	0.019** (0.018)
Campus day (very safe)	-0.043*** (0.016)
Campus night (very safe)	-0.026 (0.017)
Off-campus day (very safe)	-0.026 (0.019)
Off-campus night (very safe)	-0.032* (0.017)
Mental health service use	-0.026* (0.015)
Belonging (strongly agree)	-0.021 (0.014)
Kessler (severe psychological distress)	-0.004 (0.013)
ULS (loneliness)	-0.014 (0.017)
<i>N</i>	6,035

Notes: The sample is limited to API students only. The column shows coefficients from Non-South Asian X Post, which captures the differential effects of the pandemic on non-South Asians, relative to South Asians. Covariates include gender, age and age-squared, grade/degree level (e.g. freshmen, Master's), parental education, and visa status. Standard errors are clustered at the institution level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.4: Institution-Level Balance Test - Response Rates and Racial Shares

	Response	Enrollment Share				
	Rates	API	East Asian	SE Asian	South Asian	PI
	(1)	(2)	(3)	(4)	(5)	(6)
Post	-0.011 (0.008)	0.009*** (0.003)	0.001 (0.002)	0.002 (0.001)	0.006** (0.002)	0.000 (0.001)
Constant	0.137*** (0.006)	0.105*** (0.003)	0.050*** (0.002)	0.020*** (0.001)	0.027*** (0.002)	0.002*** (0.000)
<i>N</i>	340	368	368	368	368	368
Institution FE	Y	Y	Y	Y	Y	Y

Notes: Sample is at the institution-semester level. Standard errors are clustered at the institution level.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.5: Student-Level Balance Test - Non-International Students Only

	Female	Age	Year in school		Parent education
	(1)	(2)	Upper	Graduate	(5)
	(1)	(2)	(3)	(4)	(5)
<i>Panel A. Without Controls</i>					
Asian & Pacific Islander × Post	0.008 (0.012)	-0.342 (0.210)	0.012 (0.014)	-0.010 (0.019)	-0.013 (0.010)
<i>Panel B. With Controls</i>					
Asian & Pacific Islander × Post	0.006 (0.011)	-0.266* (0.141)	0.010 (0.014)	0.003 (0.012)	-0.013 (0.010)
<i>N</i>	206,178	206,178	206,178	206,178	206,178
Institution-Semester FE	Y	Y	Y	Y	Y

Notes: The sample excludes all international students with visas. Outcome: student characteristic listed in the column title. School year (upper) takes a value of one if the student is enrolled as an undergraduate in the third year or above. School year (graduate) takes a value of one if the student is enrolled in a Master's, professional, or doctoral program. Parent education takes a value of one if one of the student's parents has at least an Associate's degree. The top panel regresses individual outcomes on all race indicators and their interaction with *Post* (omitted category is White students). The bottom panel includes covariates: gender, age and age-squared, grade/degree level (e.g., freshmen, Master's), and parental education. We do not control for the covariate used as an outcome variable (e.g., parental education is excluded from the set if it is the dependent variable). SE clustered at the institution level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.6: Effects of COVID-19 on Mental Health Outcomes by Race

	Depression (1)	Anxiety (2)	Stress (3)
Asian & Pacific Islander × Post	-0.024*** (0.008)	-0.003 (0.009)	0.018** (0.008)
Black × Post	-0.004 (0.012)	-0.015 (0.015)	-0.008 (0.010)
Hispanic × Post	-0.010 (0.008)	0.004 (0.008)	-0.002 (0.006)
MENA × Post	-0.004 (0.025)	-0.005 (0.027)	0.030 (0.021)
Asian & Pacific Islander	-0.030*** (0.008)	-0.103*** (0.008)	-0.065*** (0.007)
Black	-0.024** (0.012)	-0.102*** (0.015)	-0.050*** (0.010)
Hispanic	-0.003 (0.008)	-0.020*** (0.007)	-0.004 (0.005)
MENA	0.010 (0.025)	-0.023 (0.024)	-0.043** (0.017)
Institution-Semester FE	Y	Y	Y
<i>N</i>	234,135	233,374	234,320

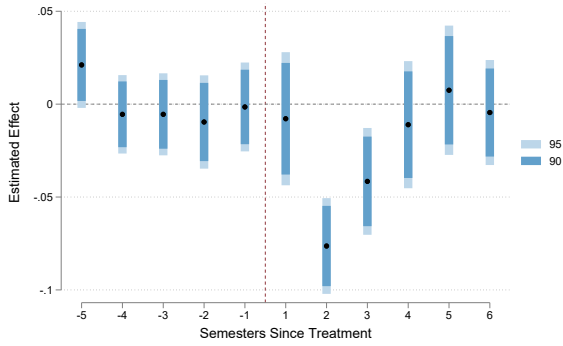
Notes: Other racial/ethnic categories in model include American Indian, other race, and non-responses on race. Omitted category is White students. Covariates include gender, age and age-squared, grade/degree level (e.g., freshmen, Master's), parental education, and visa status. Standard errors clustered at the institution level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A.7: Effects of COVID-19 on Mental Health Outcomes, Disaggregated by Asian Subgroups

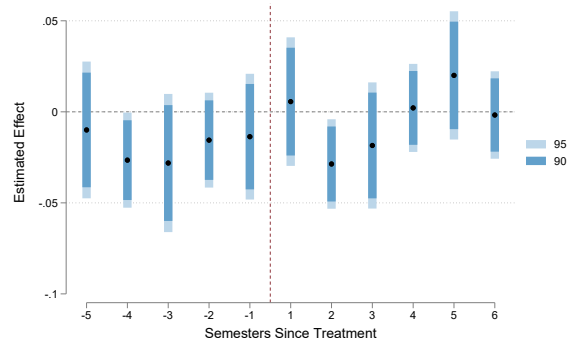
	Depression (1)	Anxiety (2)	Stress (3)
<i>Panel A. Overall</i>			
Asian & Pacific Islander × Post	-0.024*** (0.008)	-0.003 (0.009)	0.018** (0.008)
Asian & Pacific Islander	-0.030*** (0.008)	-0.103*** (0.008)	-0.065*** (0.007)
<i>Panel B. Disaggregated</i>			
East Asian × Post	-0.023** (0.009)	-0.004 (0.012)	0.023** (0.011)
Southeast Asian × Post	-0.008 (0.016)	0.006 (0.016)	0.036*** (0.012)
South Asian × Post	-0.033*** (0.012)	-0.008 (0.015)	0.001 (0.011)
Pacific Islander × Post	0.002 (0.061)	0.005 (0.062)	0.058 (0.047)
East Asian	-0.037*** (0.009)	-0.118*** (0.010)	-0.080*** (0.010)
Southeast Asian	-0.022 (0.015)	-0.069*** (0.015)	-0.032*** (0.011)
South Asian	-0.032*** (0.012)	-0.110*** (0.013)	-0.073*** (0.011)
Pacific Islander	-0.040 (0.050)	-0.081 (0.062)	-0.064 (0.053)
Institution-Semester FE	Y	Y	Y
<i>N</i>	234,135	233,374	234,320

Notes: Other racial/ethnic categories in model include American Indian, other race, and non-responses on race. Omitted category is White students. Covariates include gender, age and age-squared, grade/degree level (e.g. freshmen, Master's), parental education, and visa status. Standard errors clustered at the institution level. *** p<0.01, ** p<0.05, * p<0.1

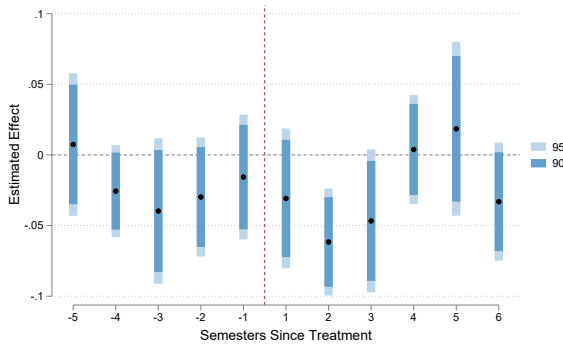
Figure A.1: Effects of COVID-19 on Perceptions of Safety among APIs: Additional Pre-Periods



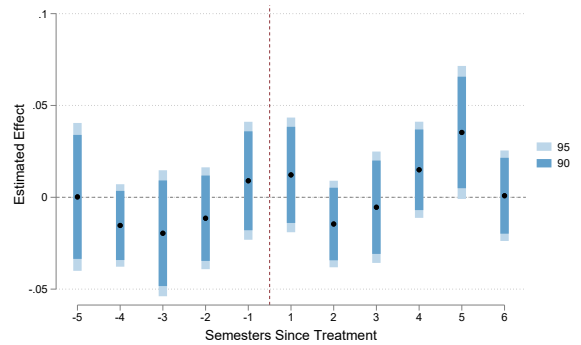
(a) Very Safe on Campus (Day)



(b) Very Safe on Campus (Night)



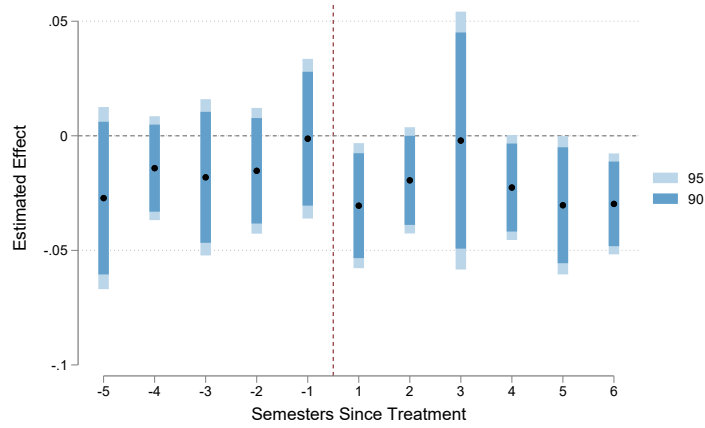
(c) Very Safe Off Campus (Day)



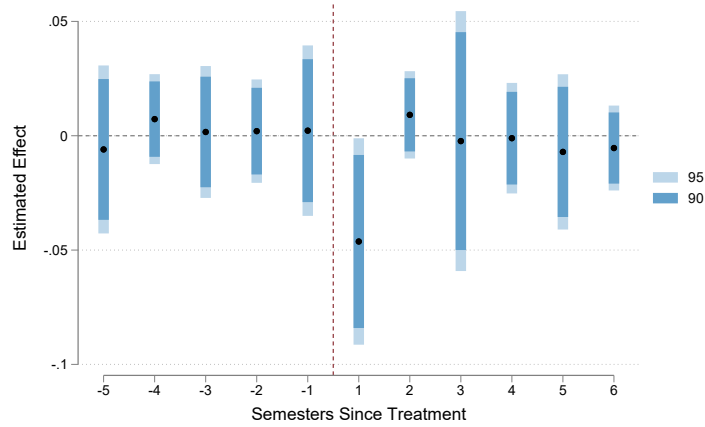
(d) Very Safe Off Campus (Night)

Notes: Figures display event study estimates on the effects of COVID-19 on safety outcomes for Asian and Pacific Islander students, relative to White students, using additional data from Wave II of the NCHA (Fall 2017-Spring 2019). Covariates include gender, age and age-squared, grade and degree level, and visa status. The omitted racial/ethnic category is White students. The omitted semester at time zero is Spring 2020.

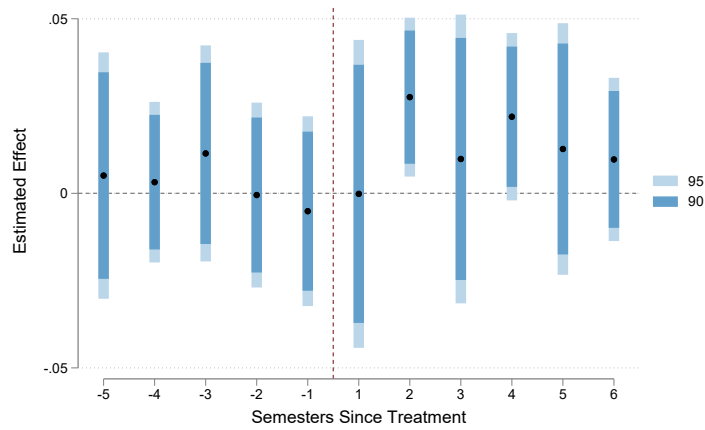
Figure A.2: Effects of COVID-19 on Mental Health Outcomes among APIs: Additional Pre-Periods



(a) Depression



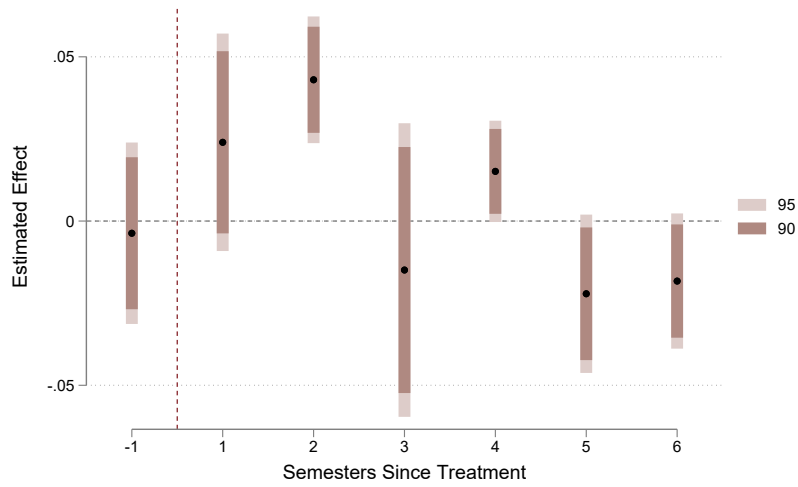
(b) Anxiety



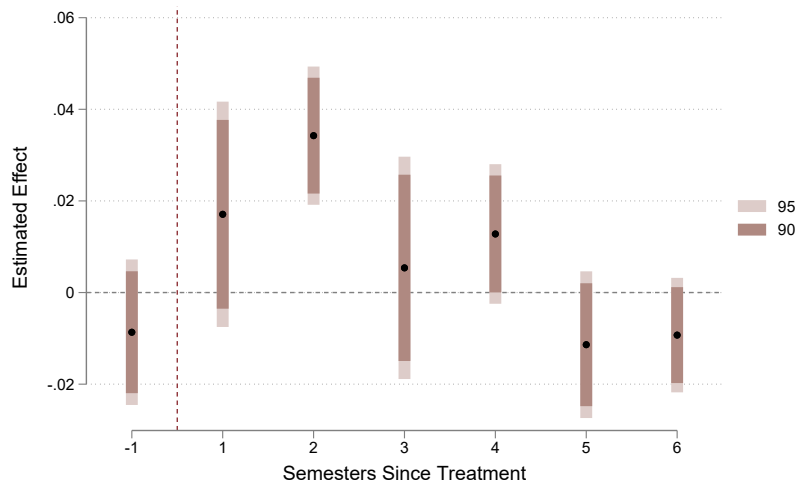
(c) Stress

Notes: Figures display event study estimates on the effects of COVID-19 on depression, anxiety, and stress for Asian students, relative to White students, using additional data from Wave II of the NCHA (Fall 2017-Spring 2019). Covariates include gender, age and age-squared, grade and degree level, and visa status. The omitted racial/ethnic category is White students. The omitted semester at time zero is Spring 2020.

Figure A.3: Effects of COVID-19 on Discrimination for APIs - Excluding International Students



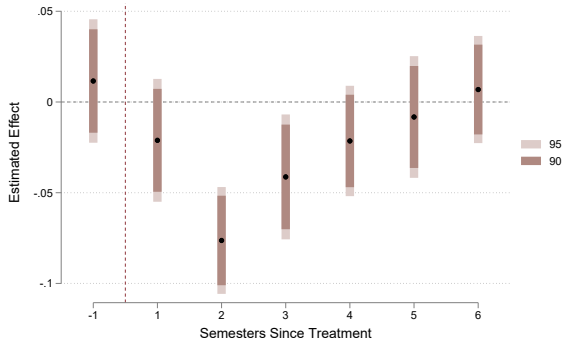
(a) Discrimination



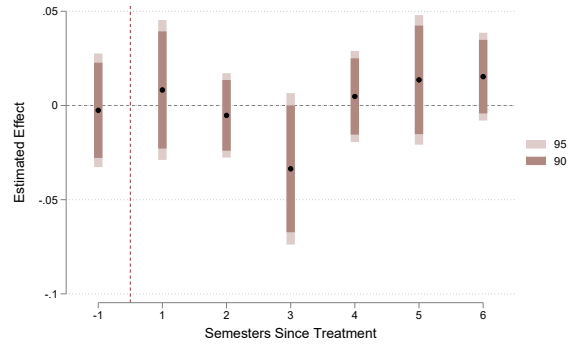
(b) Discrimination – Caused moderate/severe distress

Notes: Figures display event study estimates on the effects of COVID-19 on discrimination outcomes for Asian students. The omitted racial/ethnic category is White students. The omitted semester at time zero is Spring 2020.

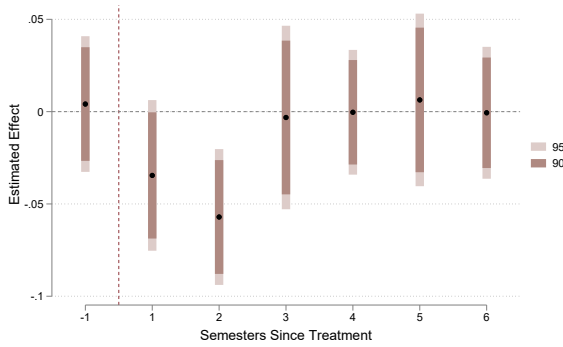
Figure A.4: Effects of COVID-19 on Perceptions of Safety for APIs - Excluding International Students



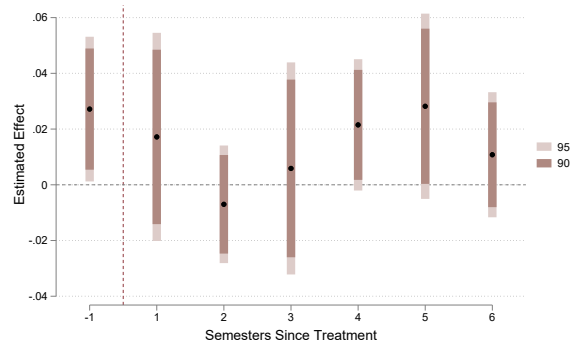
(a) Very Safe on Campus (Day)



(b) Very Safe on Campus (Night)



(c) Very Safe Off Campus (Day)



(d) Very Safe Off Campus (Night)

Notes: Figures display event study estimates on the effects of COVID-19 on safety outcomes for Asian students. The omitted racial/ethnic category is White students. The omitted semester at time zero is Spring 2020.