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Disparities in Postsecondary Education Disruptions During COVID-19 Pandemic: findings for Practice and Policy Decision Making

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Objective and Purpose

The global COVID-19 pandemic undoubtedly changed the face of education and created additional barriers to access and opportunity for learning at every stage. Studies (National Student Clearinghouse Research Center (NSC), 2021, Sedmak, 2020) show that college students in the U.S. encountered numerous challenges during the transition from campus-based learning to emergency remote learning during quarantine shutdowns. Now three academic cycles into the COVID-19 pandemic, college campuses have largely returned to in-person learning. Students, however, continue to experience various degrees of stress, health concerns, lack of access to technology for remote or hybrid learning, and lack of appropriate housing or spaces to study amidst multiple surges of the Delta and Omicron variants (Day, et al., 2021, Goldberg, 2021, Smith et al., 2020). Additionally, households across the country were affected by job loss and lost wages, thus increasing familial or financial responsibilities for many college students (Bhagat and Kim, 2020). As a result, some students entering post-secondary education or continuing their academic path altered their plans or turned away from college altogether.

The pandemic's impact on students' academic trajectories varies greatly along lines of gender, race, and socioeconomic status. Early studies suggest that Black and Latinx students as well as students from low-income households were more likely to experience negative disruptions early in the pandemic (Strada Center for Consumer Insights 2020, Rui, 2021). This early research does not reflect how the changing vaccine status of Americans effects the educational landscape, wherein the majority of college students, faculty, and staff are either partially or fully vaccinated. The purpose of this research project is to update and extend previous research regarding the negative impacts of the COVID-19 pandemic on post-secondary education plans between June 2021 and January 2022 when most American adults had received at least one COVID-19 vaccina-

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tion. This study will ascertain how these disruptions present in this new period of higher vaccine coverage, reasons for postsecondary enrollment disruptions, and the characteristics of households most negatively impacted. This information can be offered to educational leaders to more effectively address issues of equity in order to enact policies that could recapture and re-engage students whose college plans have been disrupted by the ongoing COVID-19 pandemic.

Theoretical Framework and Relevant Literature

While acknowledging the vast complexities of college retention and graduation outcomes, several important theories in education and sociology reveal important foundations for analyzing disparities in postsecondary enrollment and successful graduation outcomes.

Previous studies reveal an overall decline in post-secondary enrollment during the pandemic with the sharpest declines among Minority Serving Institutions (MSI) (Goldberg, 2021). As of January 2022, community colleges saw the largest declines at 13 percent in the fall 2020 (Goldberg, 2021, NSC Research Center, 2022, Sedmak, 2020), revealing that postsecondary enrollment plans have been unevenly impacted among different subsets of students. Freshman enrollment became more stable for fall semester in 2021, but a full recovery is a long way off as the nation's freshman class was still nine percent smaller than pre-pandemic levels in the fall of 2019 (NSC Research Center, 2022).

This study draws on the work of John Braxton et al. (2011). Braxton posits that secondary institutional practices influence a student's social integration and retention. To avoid higher rates of departure, institutions must carefully employ various strategies to increase a student's sense of belonging, connection, and commitment to their institution. Implementing these strategies can support student retention and foster persistence toward graduation amidst difficult periods such as the COVID-19 pandemic.

Clifford Adelman's (2005) perspective on credit accumulation suggests that college students that do not accumulate credits at a continuous pace throughout academic terms experience lower levels of degree completion. Students that delay their first year of college, stop and/or restart their education paths (such as taking a gap year or transferring to another institution during the CO-

VID-19 pandemic) could experience substantial long-term negative educational consequences. Similarly, the academic momentum theoretical framework suggested by Paul Attewell et al. (2012) states that negative disruptions to education plans can be harmful to degree completion. Specifically, a postponement in the transition from high school to college, as well as taking fewer classes—especially during the first semester—are both associated with lower rates of degree completion. These theoretical perspectives offer valuable insight regarding degree completion and are particularly useful in addressing student retention and recovery during challenging times such as the COVID-19 pandemic.

Research Questions and Hypotheses

This study investigates three research questions:

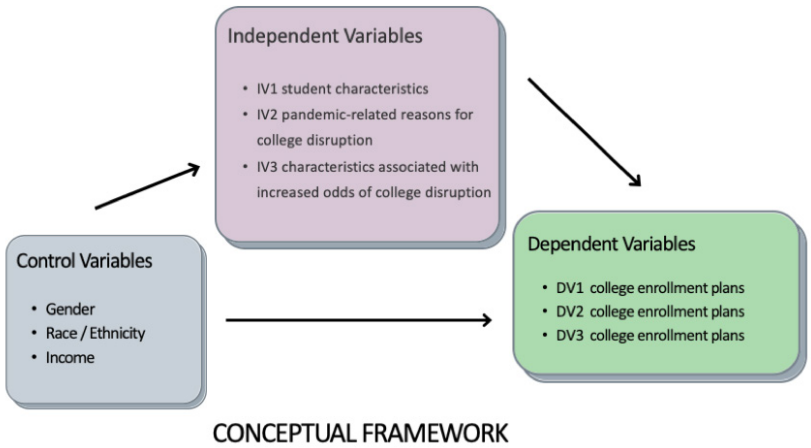
(1) What are the characteristics of households that reported disruptions to post-secondary education plans during the COVID-19 pandemic?

(2) Among those who reported negative postsecondary educational experiences, what were the most common reasons?

(3) What are the characteristics of households associated with increased odds of disrupted postsecondary plans?

For a conceptual framework of research questions and variables, see Figure 1.

Figure 1: Conceptual Framework



Data & Methods

Data and Samples

This study used data from the nationally representative Household Pulse Survey (HPS) conducted by the U.S. Census Bureau. Since April 2020, HPS has surveyed households across the United States about the social and economic impacts of COVID-19. The survey asks a series of questions regarding education, employment, health, childcare, energy use, food security, housing, spending, tax credit payments, and COVID-19 vaccinations. HPS data sets capture emergent trends about student transitions, such as the number of students that are experiencing disruptions to their post-secondary plans, reasons for disruptions, and student characteristics of those experiencing negative disruptions to their post-secondary plans during the COVID-19 pandemic.

In this study, the analytic sample was limited to data collected between Week 33 (June 23, 2021) and Week 41 (January 10, 2022) of the pandemic (Phase 3.1 to 3.3) to reflect the point at which roughly two-thirds of U.S. adults had received at least one dose of a COVID-19 vaccine (KFF COVID19 Vaccine Monitor: July 2021). The total number of respondents sampled in this timeframe was 584,991.

To measure disruptions to postsecondary education plans, the HPS asked respondents how many members in the household were planning to take classes at a "college, university, community college, trade school, or other occupational school (such as a cosmetology school or a school of culinary arts)". The analytic sample was limited to households that reported at least one household member planning on taking post-secondary classes for the next term, for a total of 95,707 respondents. The analysis was later restricted to households that reported negative impacts to educational plans including cancelling all plans to take classes (2), changing institutions (6), and taking fewer classes (4) out of the seven response options.

Measures

The HPS collected several essential measures regarding student demographic characteristics. The covariates controlled for in this study include gender, race/ethnicity, and income. Although defining low, middle, and high incomes is difficult due to localized cost of living and wages, the boundaries for the income brackets created for grouping income data include these three groups (US

Census Bureau, 2018). The lowest income group includes annual incomes ranging from $25,000-$34,999, the middle group includes incomes from $35,000-$99,999 and the highest income group ranges from $100,000 to an open-ended top bracket beginning at $200,000.

The outcome variable for this study is postsecondary education enrollment plans for U.S. adults during the pandemic. A series of measures regarding post-secondary plans were examined in this analysis based on household surveys administered by the HPS. Dummy variables were constructed for each response (1 = ***yes***, 0 = ***no***). Based on responses given, we assessed the negative outcomes of altered plans including cancelling all postsecondary plans, changing institutions, or taking fewer classes—as these were the most serious types of disruptions. A new variable was generated to account for these three negative outcomes into one dichotomous variable: "negplans".

We were also interested in understanding the characteristics of households that experienced disruptions to postsecondary plans. The HPS respondents were asked to share reasons for disruptions in their educational plans and were given nine response options. When analyzing reasons given for said disruptions, dummy variables were constructed for each response (1 = ***yes***, 0 = ***no***). For unweighted summary statistics of all household-level variables, types of disruptions, and each of the pandemic-related responses for changes to postsecondary plans, see Table 1.

Analytic Strategies

To examine student demographic covariates of race, gender, and income measures for Research Question 1 [***What are the characteristics of households that reported disruptions to post-secondary education plans during the COVID-19 pandemic?***], this study first conducted a summary statistics analysis to show both the proportions of who is affected and trends in disruptions. We recoded covariate variables and the dependent and independent categorical variables into dichotomous dummy variables and limited the scope of the analytic sample only to households that reported having postsecondary plans. Summary statistics are shown in Table 1. It is important to note that the summary statistics presented in Table 1 are not weighted and the percentages for subgroups represent the distribution within the analytic sample (23, 871), not in the gene-

ral population of the 95,707 households that reported at least one household member planning on taking post-secondary classes for the next term. Table 2A shows descriptive statistics on respondent-level variables and demographic characteristics for negative impact on postsecondary plans. Again, the sample (*n*) for Table 2A reflects the unweighted analytic sample of households that reported negative impacts to post-secondary education plans (23, 871).

To investigate differential patterns of the underlying reasons for disruption across sociodemographic groups for Research Question 2 [***Among those who reported negative postsecondary education plan changes, what were the most common reasons given?***], we determine negative impact to plans to include plan cancellation, fewer classes taken, and institution changes, all of which reflect the most severe types of disruptions. Table 2B shows unweighted descriptive statistics of the most frequent responses reported for disruptions. Note that the sample (*n*) for Table 2B reflects the unweighted analytic sample of households that reported negative impacts to post-secondary education plans (23, 871).

To help predict the probability of the dichotomous variable of postsecondary enrollment plans with dichotomous covariates, we made use of logistic regression modeling for Research Question 3 [***What are the characteristics of households associated with increased odds of disrupted postsecondary education plans?***]. To generate stable estimates of the parameters of interest, the analysis used person weighting (pweight) following HPS recommendation. The HPS provides household survey weights to produce estimates for all households in the United States. These weights were created to account for nonresponse and varying state demographics. A logistic regression analysis offers an understanding of the relationships between negative impact to postsecondary plans and the covariates by estimating probabilities. Table 3 shows weighted inferential statistics on the logistic regression analysis of demographic characteristics associated with odds of reporting negative changes to post-secondary plans.

Results

Research Question 1: *What are the characteristics of households that reported disruptions to post-secondary education plans during the COVID-19 pandemic?*

Of the households that reported postsecondary plans during the pandemic, preliminary results of our study show significantly different patterns for gender, race, and income. See Table 2A. Without controlling for covariates across gender identities, male students are least likely to report changes to postsecondary plans. Female students (57%) were most likely to report plan disruptions. White students were most likely to report negative changes to plans (72%), followed by Latinx students (17%), Black students (13%) and Other/Mixed students (9%). Asian students were least likely to report disruptions (5%). Middle-income students were more likely to report disruptions (44%) followed by low-income (28%) and finally high-income respondents (26%).

Research Question 2: *Among those who reported negative postsecondary education plan changes, what were the most common reasons given?*

For households that reported disruptions to postsecondary plans during the pandemic, our preliminary study showed a wide variety of responses among those surveyed. Table 2B shows the top four reported reasons for negative changes to plans include not being able to pay for college classes (38%, SD .49), institutional changes to class format (from in-person to online) (32%, SD .47), became infected with coronavirus or had significant concerns about contracting the coronavirus (30%, SD .46), and uncertainty about how classes/programs of study might change (27%, SD .44).

Research Question 3: *What are the characteristics of households associated with increased odds of disrupted postsecondary education plans?*

Logistic regression modeling results provide some preliminary answers to the third research question. The odds of reporting negative changes to postsecondary education plans for female students are 19% greater than males when controlling for race and income. The estimate is statistically significant at the critical level of 0.000. The odds of reporting negative plan changes are higher for trans-identifying individuals by about 145% when controlling for race and income. The estimate is statistically significant at the critical level of 0.000.

Negative changes to postsecondary education plans during the pandemic are more common among Latinx students. The odds of reporting negative changes to postsecondary plans for Latinx students are 16% greater than students of other racial/ethnic backgrounds when controlling for gender and income. The estimate is statistically significant at the critical level of 0.000. Meanwhile, the odds of reporting negative postsecondary plan changes are 18% lower for Black students than students of other ethnic/racial backgrounds when controlling for gender and income. The estimate is statistically significant at the critical level of 0.003. The odds of reporting negative postsecondary plan changes are 41% lower for Asian students and 28% lower for White students when controlling for gender and income. Both estimates are statistically significant at the critical levels of 0.000.

Finally, the odds of reporting negative changes to postsecondary plans were highest for low-income students with an increase of approximately 135% when controlling for gender and race. Disruptions to plans are also higher for respondents reporting a middle-income level with an increase of about 96% when controlling for gender and race. Both estimates are statistically significant at the critical levels of 0.000. While respondents reporting high income levels are associated with an increase in odds of disruptions by about 9%, the estimate is not statistically significant at the critical level of 0.320.

Significance of Study

This study utilizes the most updated and nationally representative data complied from U.S. households between June 2021 and January 2022 (weeks 33-41)—when most American adults were partially or fully vaccinated—to examine how the COVID-19 pandemic impacted postsecondary education plans for American college students. Firstly, preliminary results suggest that for those who reported having plans for college, one in four adults experienced negative changes to their educational plans. Secondly, the results from these three analyses reveal heightened disparities for students from traditionally underserved groups, particularly among racially minoritized and low-income students, as this preliminary study suggests that these students are more likely to experience negative impacts to college enrollment during the pandemic. Plan cancellation and taking fewer classes are both significantly detrimental to academic momentum, retention, and graduation rates (Attewell, 2012). Similarly, changing educational

institutions can also delay graduation due to non-transferrable credits within the new institution as well as for students that are stopping and/or restarting their education paths (Adelman, 2005). This preliminary study contributes to our knowledge regarding student experiences and offers policy makers key evaluation components that examine ways in which the pandemic has disproportionately impacted the education paths for already marginalized groups.

Furthermore, preliminary results of our descriptive analysis regarding the reasons households reported disruptions to postsecondary plans during the pandemic reveal the four most significant reported motives to be: (1) not being able to pay for college classes, (2) institutional changes to class format (from in-person to online), (3) respondents contracting coronavirus or concerns about contracting the coronavirus, and (4) uncertainty about how classes/programs of study might change. While the COVID-19 pandemic has negatively impacted many social groups, the results from this preliminary logistic regression analysis show many disparities within these disruptions. While more research is needed, females, trans-identifying students (although few in reporting numbers), low-income, and Latinx students are all associated with greater odds of negative disruptions to postsecondary enrollment plans. Respondents who describe themselves as male, Asian, White, and high-income are all less likely to report negative changes to postsecondary plans. These results provide important data for educational leaders so they may focus policy and intervention efforts toward student groups negatively impacted by the pandemic.

Students who do not enroll in the upcoming semester are less likely to persevere in college and are more likely to experience institutional departures (Braxton et al., 2011), revealing the urgent need for timely institutional support. This preliminary study offers an analysis of student characteristics and the multiple motives that move students to turn away from college—an analysis that higher education leaders must consider when attempting to recapture students. These findings further demonstrate the importance of grounding studies of students in the larger context of attrition/retention/departure models to provide an appropriate analytical lens for understanding which factors may help predict risk of student disenrollment during challenging times, which can either result in subsequent institutional departure or academic persistence and recovery. Finally, this study reveals how higher education institutions could capitalize on data

sets already at their disposal to better identify factors that can be used to help predict the probability of students' risk of departure. Additionally, this study identifies the urgency of additional policy interventions that can help reconnect racially marginalized and low-income students to their institutions in order to recover educational paths toward graduation.

Limitations

This study has several limitations. Firstly, there may have been coding issues that could have skewed data results. A return to the dummy coding strategies used for covariate variables and the dependent and independent categorical variables is necessary to increase model robustness. Specifically, two variables were omitted by Stata in the logistic regression analysis which could indicate uncertainty and the possibility of skewed results. Incorporating more control factors in the logit modeling would foster more accurate demographic measures. Furthermore, the HPS data collection used in this study is completed at the household level and may not achieve similar accuracy that could be identified in respondent-level data such as gender, age, and race offered by one person in the household. Respondents in the HPS data collection can answer surveys for other household members and not only themselves, which can blur the data collected. Lastly, the HPS does not include any survey questions about the student's current class standing (i.e., incoming freshman, sophomore, etc.). It would be valuable to know if the current term was the student's first semester in college, as the successful transition to and completion of the first year of college has been found to be specifically associated with degree completion (Attewell, 2012). Despite these limitations, this preliminary study points to significant disparities in changes to postsecondary education plans during the COVID-19 pandemic that could inform education policy so that already existing inequities found in higher education are not further intensified in the future.

Table 1
Unweighted Summary Statistics (N = 97,707)

	n (%)	% of Missing
Demographics		
Gender identity		10.28%
Female	53.97%	
Male	33.89%	
Trans	.51%	
None of these	1.3%	
Race		0%
White	75.31%	
Black	11.24%	
Hispanic	13.60%	
Asian	6.8%	
Other/Mixed	6.6%	
Income		4.26%
Low	20.08%	
Middle	38.83%	
High	36.83%	
No. of household members with postsecondary education plans		0%
1	12.21%	
2	3.22%	
3	.93%	
Type of disruption		0%
No disruption	44.15%	
All plans cancelled	14.26%	
Classes in different format	28.86%	
Fewer classes	9.71%	
More classes	1.83%	
Different institution	3.00%	
Different degree	4.86%	
Pandemic-related reasons for changes to postsecondary education plans		0%
Had coronavirus or concerns	12.85%	
Caring for someone with coronavirus	1.29%	
Disrupted care arrangements	3.07%	
Institutional changes / online format	24.35%	
Changes to financial aid	5.93%	
Changes to campus life	6.32%	
Uncertainty about classes/program	9.80%	
Changes to income / can't afford	11.30%	
Other reasons	5.97%	

Source. [Household Pulse Survey (HPS) Data, U.S. Census]
HPS Weeks 33-41: June 2021 to January 2022
Note. n = analytic sample size; S.D. = standard deviation; Missing / Did not report or Question seen but category not selected.

Table 2A
Descriptive Statistics (n = 23, 871)

	Mean	S.D.	Range	% of Missing
Changes to postsecondary education plans during COVID19: negative impact	.249	.198	0-1	
Demographics				
Female	.571	.494	0-1	10.82%
White	.724	.447	0-1	0%
Black	.132	.339	0-1	
Hispanic	.165	.371	0-1	
Asian	.053	.224	0-1	
Other	.090	.287	0-1	
Low income	.276	.447	0-1	2.90%
Middle income	.441	.496	0-1	
High income	.254	.435	0-1	

Source. [Household Pulse Survey (HPS) Data, U.S. Census]
HPS Weeks 33-41: June 2021 to January 2022
Note. Table 2 reports unweighted estimates. n = analytic sample size; S.D. = standard deviation; Negative impact= plans for college enrollment were cancelled, fewer classes taken or changed institutions.

Table 2B
Descriptive Statistics (n = 23, 871)

	Mean	S.D.	Range	% of Missing
Changes to postsecondary education plans during COVID19: negative impact	.249	.198	0-1	
Top four pandemic-related reasons for changes to postsecondary education plans				
Unable to pay for college classes	.378	.485	0-1	
Classes in different format (online)	.320	.466	0-1	
Had coronavirus or concerns of getting coronavirus	.296	.457	0-1	
Uncertain about format and program changes	.271	.444	0-1	

Source. [Household Pulse Survey (HPS) Data, U.S. Census]
HPS Weeks 33-41: June 2021 to January 2022
Note. Table 2 reports unweighted estimates. n = analytic sample size; S.D. = standard deviation; Negative impact= plans for college enrollment were cancelled, fewer classes taken or changed institutions.

Table 3
Inferential Statistics: Logistic Regression (*N* = 95, 707)

	OR	(S.E)
Reported negative disruption to postsecondary education plans during COVID19:	.238	(.025)
Demographics		
Female	1.191***	(.058)
Male	1.118*	(.059)
Trans	2.454***	(.416)
Other gender	omitted	
White	.739***	(.058)
Black	.822***	(.054)
Hispanic	1.161***	(.048)
Asian	.592***	(.048)
Other	omitted	
Low income	2.354***	(.213)
Middle income	1.964***	(.174)
High income	1.093	(.098)

Source. [Household Pulse Survey (HPS) Data, U.S. Census]
HPS Weeks 33-41: June 2021 to January 2022
Note. Table 3 reports weighted estimates. *N* = sample size; (S.E). = robust standard error; OR = odds ratio
**p<0.05, **p<0.01, ***p<0.001.*

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