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RESEARCH ARTICLE

Student and Parental Job Loss During the COVID-19 Public Health Emergency: Effects on Household Economic Security

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ABSTRACT

Background: While studies have examined effects of parental job loss early in the COVID-19 pandemic, few have assessed economic impacts of student job loss.

Methods: The Adolescent Behaviors and Experiences Survey (ABES) was a one-time online, nationally-representative survey administered by CDC in 2021 to understand high school students' experiences. We assessed associations between student, parent, and dyadic employment experiences and two measures of economic stress: housing instability and food insufficiency.

Results: Parental job loss was common and associated with both adverse economic outcomes. The adjusted prevalence rate (aPR) for housing instability was 2.79, 95% confidence interval (CI) = 1.73–4.51. A new finding is that student employment may also play a role in food sufficiency. Student job loss was significantly associated with both any food insufficiency and frequent food insufficiency (aPR = 1.61, 95% CI = 1.35–1.93 and aPR = 1.96, 95% CI = 1.43–2.70, respectively).

Discussion: Analysis of associations between employment status before and during the COVID-19 public health emergency and measures of household economic insecurity reveals social safety net gaps. Our finding that student employment may affect household food sufficiency highlights the need to better understand the role of student employment in household economic stress.

1 | Background

During April 2020, the first full month after COVID-19 was declared a pandemic, more than 20 million U.S. workers lost employment as businesses closed or reduced hours [1]. These job losses were not distributed equally. People with at most a high school education were twice as likely to lose jobs as those with college degrees (17.8% vs. 8.8%) [2]. This surge in unemployment, combined with inflation, had wide-ranging economic repercussions for U.S. households, among them housing insecurity, food insecurity and insufficiency, and reduced access to healthcare.

Before the COVID-19 pandemic, a number of social safety net programs were (and continue to be) in place to assist households with job loss or low incomes. Primary components of

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these programs include financial, food, and healthcare assistance. Major financial assistance programs are unemployment insurance [UI] and Temporary Assistance for Needy Families [TANF]. Food assistance is covered by Supplementary Nutritional Assistance Programs [SNAP] and, for school-aged children, free or low-cost breakfast and lunch at school. For low-income households, Medicaid provides medical (and in some states, dental) benefits for adults and both medical and dental insurance for children. Additional large-scale benefits cover specific populations: examples include Medicare; the Children's Health Insurance Program (CHIP); Supplemental Security Income (SSI); and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). However, the unprecedented, sudden job losses in the spring of 2020, combined with increased food prices and disruptions to crucial school-based food programs during school closures, markedly worsened the stress on this social safety net, where existing gaps led to inadequate coverage for many families even before the pandemic [2].

To ease economic hardship during the pandemic, the U.S. Congress passed a series of relief measures that included direct payments, expansions to unemployment insurance, and measures designed to bolster housing security, food security, and healthcare access. Major measures, summarized elsewhere [3, 4], included the Families First Coronavirus Response Act (FFCRA) and the Coronavirus Aid, Relief, and Economic Security (CARES) Act of March 2020; Coronavirus Response Consolidated Appropriations Act (CRCA) of December 2020; and the American Rescue Plan Act (ARP) of March 2021.

Despite the beneficial effects of these new economic relief measures, such as a decrease in child poverty [5], many families found themselves in precarious economic positions, particularly during the first year of the pandemic. Lower-income workers (those in households earning approximately $40,000 or less) experienced the greatest job losses; an August 2020 survey found that only 3% of upper income respondents but nearly one-third (32%) of lower-income respondents reported having trouble meeting rent or mortgage payments [6]. A longitudinal survey found that housing instability peaked in fall 2020, with 7.3% of participants reporting that a household member was forced to move due to eviction or foreclosure, and 11.8% that a household member was unable to pay rent or mortgage in full [7]. The authors note the roles of historical housing discrimination and resulting generational wealth inequities; housing hardship was particularly pronounced among Black and Hispanic respondents. Gaps in food security were reflected by an almost 50% increase in food assistance obtained from food banks and pantries in 2020 [4], although some unmet needs may have been short-term [8].

Along with adult employment, employment among young people declined early in the pandemic. Youth work for a variety of reasons. These include monetary compensation (for pocket money; to assist with long-term household expenses by saving for large purchases such as vehicles or college tuition, or, less commonly, to contribute directly to household income); gaining work experience; developing interpersonal skills; and more [9]. Overall, the number of workers in this age group dropped from 5.4 million in February 2020 to 3.3 million in April 2020 but then rebounded past 5 million by October 2020 [10]. Unemployment among workers ages 16–24 reached nearly 25% in spring 2020 [11]; this figure reflects in part over-representation of young workers in service-sector industries most likely to have closed or reduced hours [12]. In 2019, leisure and trade comprised almost 40% and retail trade nearly 20% of employment among 16–19-year-olds [13].

These economic stressors affected family life, including the lives of adolescents. While studies have examined effects of parental job loss during the pandemic on household financial stress and resulting impacts on adolescent mental health [14] and child abuse and maltreatment [15], few, if any, have examined the economic impact of changes in student employment status. The Adolescent Behaviors and Experience Study (ABES), a one-time online survey administered by the Centers for Disease Control and Prevention (CDC) from January 2021 to June 2021, included questions about employment status and job loss among high school students and their parents. The current study examines associations between the employment status of the parent or guardian, the high school student, and the dyad before and early in the pandemic and two measures that may be associated with economic insecurity: housing instability and food insufficiency.

2 | Methods

2.1 | Data Source

The ABES survey was designed to gather information on high school students' behaviors and experiences during the COVID-19 pandemic, adapting methodology from the national Youth Risk Behavioral Survey (YRBS). ABES, a probability-based survey, used a stratified, three-stage cluster sample to obtain a nationally representative sample of public and private school students in grades 9–12 in all U.S. states and the District of Columbia ($N = 7705$). Because of school closures early in the COVID-19 pandemic, ABES was conducted as an online survey. Students with parental permission completed the 110-item questionnaire (in English or Spanish) online via a secure internet link provided by their teachers. Details of ABES sampling data collection, response rates, and processing have been described elsewhere [16].

2.2 | Measures

These analyses focused on the effects of parental/other household adult and student job status before the COVID-19 pandemic and job loss early in the pandemic on housing insecurity and food insufficiency. Survey questions and coding are shown in Supporting Information S1: Table S1. All questions except one used the timeframe "during the COVID-19 pandemic" to reference events occurring between the declaration of the pandemic in March 2020 and the survey completion date (January–June 2021). For brevity, "during the pandemic" and "early in the pandemic" are used henceforth to indicate the period March 2020–June 2021. Only the question about housing insecurity asked instead about experiences during the previous 30 days.

2.3 | Independent Variables

Questions about employment status and status changes elicited information about both the student and the student's parent or other household adults (henceforth "parent" or "parental" for brevity). The parental employment question "During the COVID-19 pandemic, did a parent or other adult in your home lose their job even for a short amount of time?" had three response options: "My parents and other adults in my home did not have jobs before the COVID-19 pandemic started", "Yes", and "No." The student employment question and responses had the same structure. In addition to the separate variables for student and parental job loss, we constructed a combined student/parent job loss variable that assigned each dyad to one category: parent had no job before pandemic; parent and student both lost jobs during the pandemic; parent lost job during pandemic and student did not lose job; parent lost job during pandemic and student had no job before pandemic; parent did not lose job but student lost job; parent did not lose job and student had no job before pandemic; and neither parent nor student lost job during pandemic. Students indicating their parent or guardian had no job before the pandemic were not further categorized by student job status/change due to small numbers.

2.4 | Dependent Variables

Two outcomes that may indicate economic insecurity were available in the dataset: housing instability and food insufficiency.

Housing instability was ascertained by asking "During the past 30 days, where did you usually sleep?" Response options were: in my parent's or guardian's home; in the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing; in a shelter or emergency housing; in a motel or hotel; in a park, campground, or other public place; I do not have a usual place to sleep; and somewhere else. Answers other than "In my parent's or guardian's home" and "somewhere else" were considered unstable housing. "Somewhere else" is coded as stable housing because it encompasses a wide range of situations [17].

Food insufficiency was elicited by the question "During the COVID-19 pandemic, did you go hungry because there was not enough food in your home?" Response options were never; rarely; sometimes; most of the time; and always. Because the question does not tie the availability of food to economic constraints, food insufficiency is a better descriptor of positive responses to this question than the more robust food insecurity metric. Based on variable coding used in a prior publication using ABES data [18], any food insufficiency was defined by responses of "rarely", "sometimes", "most of the time", and "always". As the respondents are adolescents and may be hungry more often than adults, we also developed a frequent food insufficiency metric which was positive for responses of "sometimes", "most of the time", and "always", and negative for those reporting they were never or rarely hungry.

2.5 | Covariates of Interest

Covariates of interest included sex; race and ethnicity (non-Hispanic Black [henceforth, Black]; non-Hispanic White [White]; Hispanic or Latino [Hispanic] and another race/ethnicity [American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, non-Hispanic multiracial, henceforth "other or multi-race non-Hispanic"]); grade (9–12) and sexual identity (heterosexual/straight—henceforth heterosexual; lesbian, gay, or bisexual—LGB; "I describe my sexual identity some other way" or "I am not sure about my sexual identity (questioning)"—other/questioning).

2.6 | Analysis

We calculated weighted prevalence statistics and 95% confidence intervals (CIs) for demographic characteristics. We also calculated unadjusted weighted prevalence with 95% CIs for each outcome by job status/change category and adjusted prevalence ratios (aPRs) comparing outcomes among those in status (1) no job before pandemic, and (2) lost a job during the pandemic, to the reference group—those who kept their jobs during the pandemic. Demographic variables considered for inclusion in the model included sex, race/Hispanic ethnicity, grade, and sexual identity. Categories were combined where necessary in some cases to yield statistically reportable results, and variables that did not produce a 10% change in the aPR were dropped for parsimony. In the end, sex (male, female), and race/ethnicity (non-Hispanic Black, non-Hispanic White, non-Hispanic other, Hispanic). We performed comparisons on student job status alone, parental job status alone, and combined student and parental job status. We calculated weighted prevalence using SAS version 9.4 (SAS Institute Inc., Cary, NC) and aPRs using PROC RLOGISTIC in SAS-callable SUDAAN (version 11.0.1, RTI International, Research Triangle Park, NC) to account for the complex survey design and weighting. We considered weighted prevalence values with non-overlapping CIs to have statistically significant differences and aPRs with CIs excluding 1.0 to be statistically significant.

3 | Results

3.1 | Overall and by Demographic Groups

A total of 7705 students completed the survey (Table 1). Student employment status was available for 7176 respondents (missing = 529) and parental employment status for 7179 respondents (missing = 526). Records with missing data were dropped from analyses including the pertinent variables. Students were far more likely to have not been employed before the pandemic than their parent/guardian (59.8% vs. 3.7%), and pandemic-era parental job loss (27.4%) was reported more frequently than student job loss (9.0%). Nearly one-third (31.2%) of students reported they had retained their jobs during the pandemic, and more than two-thirds (69.9%) said their parents/guardians had retained their jobs (Table 1).

Student and parental employment status and changes differed among demographic groups. Female students were somewhat more likely than males to have not worked before the pandemic (61.8% vs. 57.5%) and were also more likely to have lost jobs (9.7% vs. 8.1%). Hispanic students and students identifying as

TABLE 1 | Weighted prevalence figures for student and parental job loss during the COVID–19 pandemic by sociodemographic characteristics of the study population. Adolescent Behaviors and Experiences (ABES), United States, January–June, 2021.

Characteristics	Unweighted sample	Weighted % in study population (95% CI)	Student job status		Parent/guardian job status	
			%[a] Not working before COVID-19 pandemic (95% CI)	%[a] Reporting job loss during COVID-19 pandemic (95% CI)	%[a] Reporting parent not working before COVID-19 pandemic (95% CI)	%[a] Reporting parental job loss during COVID-19 pandemic (95% CI)
All student respondents	7705	100%	59.8 (56.5–63.1)	9.0 (7.6–10.3)	3.7 (3.0–4.4)	27.4 (25.1–29.8)
Sex						
Female	3999	50.4 (46.9–53.9)	61.8 (58.0–65.7)	9.7 (8.1–11.3)	2.8 (2.1–3.6)	30.4 (27.9–32.9)
Male	3678	49.6 (46.1–53.1)	57.5 (53.7–61.3)	8.1 (6.2–10.0)	4.5 (3.6–5.5)	24.4 (21.8–27.1)
Missing	28					
Race/ethnicity						
White, non-Hispanic	3461	49.8 (41.5–58.1)	53.6 (50.3–56.8)	10.3 (8.3–12.3)	3.5 (2.6–4.5)	23.6 (21.1–26.0)
Black, non-Hispanic	1189	12.9 (8.8–16.9)	59.1 (53.0–65.3)	9.6 (6.9–12.4)	5.0 (3.0–7.0)	23.6 (20.0–27.3)
Other or multi-race, non-Hispanic[b]	944	11.9 (7.7–16.2)	67.4 (61.7–73.2)	7.4 (5.2–9.5)	4.1 (2.1–6.1)	28.5 (23.2–33.8)
Hispanic	2038	25.4 (19.6–31.2)	68.5 (64.4–72.6)	6.9 (5.0–8.8)	3.3 (1.9–4.7)	36.7 (32.6–40.8)
Grade level						
9th Grade	2144	26.7 (23.9–29.5)	72.3 (68.7–75.9)	3.5 (2.3–4.7)	4.1 (3.0–5.2)	27.9 (23.4–32.3)
10th Grade	1949	25.5 (23.0–27.9)	66.4 (62.4–70.4)	5.8 (4.5–7.0)	3.0 (1.8–4.2)	28.1 (25.4–30.8)
11th Grade	1858	24.3 (22.3–26.3)	55.4 (49.6–61.2)	8.3 (6.2–10.3)	3.6 (2.3–4.9)	26.5 (23.1–29.8)
12th Grade	1731	23.6 (21.1–26.0)	43.4 (39.8–47.1)	19.0 (16.4–21.7)	4.1 (2.7–5.5)	27.1 (23.8–30.5)
Missing	13					
Sexual identity						
Heterosexual	5539	77.5 (75.6–79.4)	57.6 (53.9–61.3)	9.2 (7.7–10.8)	3.7 (2.9–4.5)	25.6 (23.1–28.1)
Gay, lesbian, or bisexual	977	13.2 (11.9–14.5)	65.1 (60.4–69.9)	9.1 (6.7–11.4)	3.6 (1.9–5.3)	33.6 (28.0–39.2)
Other or questioning	648	9.3 (8.2–10.3)	71.7 (65.9–77.5)	7.5 (4.0–11.0)	3.1 (1.5–4.8)	33.8 (28.6–39.0)
Missing/do not understand question	541					

Abbreviation: CI, confidence interval.
[a]Denominator for all employment status prevalence figures is all students who responded to the question, regardless of whether they or their parents were employed before the COVID-19 pandemic.
[b]Other or multi-race non-Hispanic includes American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, and non-Hispanic multiracial.

other/questioning were least likely to have worked before or to have lost a job during the pandemic compared to all other race/ethnicity groups and to heterosexual, gay, lesbian, or bisexual students, respectively. Confidence intervals overlapped for most of these comparisons.

Parental pre-pandemic unemployment was higher among the parents of male than female students (4.5% vs. 2.8%) and among the parents of Black students (5.0%). Parental job loss was more common among female than male students (30.4% vs. 24.4%) and among Hispanic students, with some differences statistically significant. Parental job loss was more common among LGB and other/questioning (33.6% and 33.8%, respectively) than among heterosexual students (25.6%).

Of the economic outcome metrics (Table 2), housing instability was less common, reported by 2.0% of students. Food insufficiency was more common; 23.8% of students reported any food insufficiency and 8.4% reported frequent food insufficiency.

The prevalence of some outcomes also differed by demographic characteristics. Male students were more likely than female students to report unstable housing (3.0% vs. 1.1%), but food insufficiency showed no significant differences by sex. Black students had the highest prevalence estimate for unstable housing, but confidence intervals for all race/ethnicity groupings overlapped. For both food insufficiency metrics, the prevalence was highest for Black students, followed by other/multirace non-Hispanic students, and then Hispanic students; each group was significantly more likely than White students to report any food insufficiency. Black students were significantly more likely than White students to report frequent food insufficiency. No consistent patterns were observed in prevalence of housing instability by grade level.

Heterosexual students had the lowest prevalence estimates for each economic insecurity outcome, although confidence intervals overlapped for some measures. Any food insufficiency was more common among LGB (34.0%) and other/questioning (32.5%) students than heterosexual students (20.8%).

3.2 | Associations Between Employment Status and Changes and Adverse Economic Outcomes

Associations between employment status/job loss and outcome metrics differed by student and parental employment experience and by outcome metric. Student job loss (Table 3, left side) was significantly associated only with a higher prevalence of food insufficiency; this was observed for both any food insufficiency and frequent food insufficiency (aPR = 1.61, 95% CI = 1.35–1.93 and aPR = 1.96, 95% CI = 1.43–2.70, respectively). Students without jobs before the pandemic were significantly less likely to report housing instability (aPR = 0.42, 95% CI = 0.26–0.68).

In contrast, parental pre-pandemic non-employment and parental job loss during the pandemic were significantly associated with all adverse economic outcomes (Table 3, right side). The aPR for housing instability among students with parents not employed before the pandemic was very high (7.31, 95% CI = 4.03–13.3); the aPR for housing instability associated with parental job loss was also elevated (2.79, 95% CI = 1.73–4.51). For food insufficiency, aPRs were more modestly elevated with little difference between risk estimates when pre-pandemic parental non-employment and parental job loss were contrasted.

Results for the dyadic (parent and student) employment metrics were more complex (Table 4). Housing instability was most pronounced among students whose parent was not employed before the pandemic (aPR = 4.28, 95% CI = 2.27–8.09), followed by students who retained a job but experienced parental job loss (aPR = 3.20, 95% CI = 1.55–6.61) and when both parent and student lost jobs (aPR = 2.56, 95% CI = 1.24–5.26). Students who had no job before the pandemic and whose parents remained employed were least likely to experience housing instability (aPR = 0.22, 95% CI = 0.11–0.46).

In dyadic results as well, student job loss more strongly influenced food insufficiency than housing. Food insufficiency was most common when both student and parent lost jobs (aPR = 2.90, 95% CI = 1.98–4.25 for frequent food insufficiency and aPR = 2.24, 95% CI = 1.78–2.81 for any food insufficiency). Student job retention in the face of parental job loss resulted in a lower, non-statistically significant elevation for frequent food insufficiency (aPR = 1.50, 95% CI = 0.93–2.43).

4 | Discussion

This analysis of associations between employment status before and early in the COVID-19 pandemic and measures of household economic insecurity highlights the roles high school student and parental employment play in household economic security and reveals gaps in the social safety net. Parental job loss was experienced by more than one in four students, and the association of this loss with both adverse economic outcomes we examined (housing instability, food insufficiency) suggests that increased social benefits early in the pandemic did not fully offset the impact of these job losses. A new finding of our research is that student employment appears to play a role in food sufficiency.

Of the economic outcome metrics, housing was most strongly related to parental employment. The prevalence of housing instability among households with parents not employed before the pandemic was threefold that of households where parents lost jobs and fivefold that of households where parents retained jobs. Pandemic-era housing supports may have partially mitigated the effects of job loss. In spring 2020, the CARES Act provided protections for most tenants in federally-subsidized or federally-backed housing, including limits on evictions and fees for not paying rent on time, and the U.S. Congress issued a 120-day eviction moratorium. The 2021 ARP included emergency aid for renters who were behind on payments and a Homeowners' Assistance Fund for homeowners behind on mortgage and utility payments. The ARP also included aid for families and individuals recently homeless or at risk of homelessness. However, our finding of increased housing instability among students who experienced parental job loss indicates that pandemic relief programs were not fully protective in the housing domain.

TABLE 2 | Weighted prevalence figures for economic insecurity metrics during the COVID-19 pandemic by sociodemographic characteristics of the study population. Adolescent Behaviors and Experiences (ABES), United States, January-June, 2021.

Characteristics	Unweighted sample	Weighted % in study population (95% CI)	Housing instabiliity % reporting (95% CI)	Any food insufficiency % reporting (95% CI)	Frequent food insufficiency % reporting (95% CI)
All student respondents	7705	100%	2.0 (1.5–2.5)	23.8 (21.5–26.2)	8.4 (7.1–9.7)
Sex					
Female	3999	50.4 (46.9–53.9)	1.1 (0.8–1.4)	24.9 (21.9–27.9)	9.3 (7.8–10.8)
Male	3678	49.6 (46.1–53.1)	3.0 (2.0–4.0)	22.7 (20.2–25.1)	7.5 (6.0–8.9)
Missing	28				
Race/ethnicity					
White, non-Hispanic	3461	49.8 (41.5–58.1)	2.1 (1.4–2.8)	18.5 (16.4–20.5)	6.7 (5.3–8.0)
Black, non-Hispanic	1189	12.9 (8.8–16.9)	2.5 (1.4–3.5)	32.0 (28.3–35.6)	11.8 (9.0–14.6)
Other or multi-race, non-Hispanic[a]	944	11.9 (7.7–16.2)	2.1 (0.8–3.4)	29.7 (25.3–34.1)	10.3 (7.6–13.1)
Hispanic	2038	25.4 (19.6–31.2)	1.7 (1.0–2.3)	28.2 (23.9–32.5)	9.42 (7.5–11.4)
Grade level					
9th Grade	2144	26.7 (23.9–29.5)	1.9 (1.2–2.6)	24.9 (21.1–28.6)	9.5 (6.9–12.1)
10th Grade	1949	25.5 (23.0–27.9)	2.3 (1.2–3.3)	23.9 (20.2–27.7)	8.3 (5.8–10.8)
11th Grade	1858	24.3 (22.3–26.3)	1.6 (0.6–2.5)	23.1 (20.2–26.0)	8.3 (6.5–10.1)
12th Grade	1731	23.6 (21.1–26.0)	2.3 (1.2–3.3)	23.3 (20.1–26.6)	7.5 (5.6–9.3)
Missing	23				
Sexual identity					
Heterosexual	5539	77.5 (75.6–79.4)	1.6 (1.1–2.1)	20.8 (18.5–23.1)	7.2 (6.0–8.3)
Gay, lesbian, or bisexual	977	13.2 (11.9–14.5)	2.3 (0.8–3.9)	34.0 (29.4–38.6)	14.1 (10.6–17.7)
Other or questioning	648	9.3 (8.2–10.3)	2.5 (0.9–4.1)	32.5 (26.6–38.3)	8.5 (6.6–11.1)
Missing/do not understand question	541				

Abbreviation: CI, confidence interval.

[a]Other or multi-race non-Hispanic includes American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, and non-Hispanic multiracial.

TABLE 3 | Separate student[a] and parental[b] employment status before and during the COVID-19 pandemic and economic outcomes: weighted prevalence and adjusted[c] prevalence ratios (aPRs). Adolescent Behaviors and Experiences (ABES), United States, January-June, 2021.

	Student job status and change			Parental job status and change		
	Student had no paying job before pandemic Unadjusted (%) (95% CI) aPR (95% CI)	**Student lost job during pandemic Unadjusted (%) (95% CI) aPR (95% CI)**	**Student kept job during pandemic Unadjusted (%) (95% CI) aPR (95% CI)**	**Parent did not have paying job before pandemic Unadjusted (%) (95% CI) aPR (95% CI)**	**Parent lost job during pandemic Unadjusted (%) (95% CI) aPR (95% CI)**	**Parent did not lose job during pandemic Unadjusted (%) (95% CI) aPR (95% CI)**
Housing instability	1.2 (0.7–1.6)	4.0 (1.5–6.4)	3.0 (2.1–3.9)	9.1 (4.7–13.5)	3.0 (2.0–4.0)	1.2 (0.8–1.6)
	0.42 (0.26–0.68)	1.39 (0.78–2.47)	REF	*7.31 (4.03–13.3)*	*2.79 (1.73–4.51)*	REF
Any food insufficiency	23.6 (21.1–26.2)	34.5 (28.6–40.3)	20.9 (18.2–23.6)	28.3 (19.9–36.6)	35.1 (31.2–39.0)	19.1 (17.1–21.2)
	1.07 (0.94–1.22)	*1.61 (1.35–1.93)*	REF	*1.39 (1.04–1.86)*	*1.79 (1.59–2.00)*	REF
Frequent food insufficiency	8.1 (6.8–9.4)	14.4 (10.1–18.7)	7.15 (5.71–8.59)	12.7 (6.27–19.2)	13.1 (10.7–15.5)	6.26 (5.1–7.5)
	1.07 (0.84–1.36)	*1.96 (1.43–2.70)*	REF	*2.07 (1.30–3.30)*	*2.07 (1.67–2.57)*	REF

Note: Italics indicate statistically significant aPR.

Abbreviations: aPR, adjusted prevalence ratio; CI, confidence interval; REF, reference group.

[a]Derived from the question, "During the COVID-19 pandemic, did you lose your paying job even for a short amount of time?" Answer options were: (1) "I did not have a job before the COVID-19 pandemic started", (2) "Yes", (3) "No".

[b]Derived from the question, "During the COVID-19 pandemic, did a parent or other adult in your home lose their job even for a short amount of time?" Answer options were: (1) "My parents and other adults in my home did not have jobs before the COVID-19 pandemic started", (2) "Yes", (3) "No".

[c]Adjusted for sex and race/ethnicity.

TABLE 4 | Dyadic parental and student employment status before and during the COVID-19 pandemic[a] and economic outcomes: unadjusted prevalence and adjusted[b] prevalence rations (aPRs). Adolescent Behaviors and Experiences (ABES), United States, January–June, 2021.

	Unweighted percentage of respondents in category	Housing instability Weighted prevalence (95% CI) aPR (95% CI)	Any food insufficiency Weighted prevalence (95% CI) aPR (95% CI)	Frequent food insufficiency Weighted prevalence (95% CI) aPR (95% CI)
Parent had no job before pandemic (all student statuses combined)	4.0%	9.1 (4.7–13.5) *4.28 (2.27–8.09)*	28.3 (19.9–36.6) *1.48 (1.09–2.01)*	12.7 (6.27–19.2) *2.01 (1.22–3.30)*
Parent and student lost job during pandemic	3.8%	4.8 (1.9–7.7) *2.56 (1.24–5.26)*	40.8 (31.8–49.7) *2.24 (1.78–2.81)*	18.7 (12.0–25.4) *2.90 (1.98–4.25)*
Parent lost job and student did not lose job during pandemic	5.0%	6.4 (2.5–10.2) *3.20 (1.55–6.61)*	34.6 (27.4–41.7) *1.95 (1.54–2.47)*	9.30 (5.63–13.0) 1.50 (0.93–2.43)
Parent lost job during pandemic; student had no job before pandemic	18.0%	1.6 (0.8–2.4) 0.90 (0.45–1.81)	34.1 (29.7–38.4) *1.80 (1.52–2.13)*	13.0 (10.4–15.5) *1.95 (1.43–2.66)*
Parent did not lose job and student lost job during pandemic	4.5%	2.7 (0.0–5.9) 1.21 (0.46–3.19)	29.8 (23.0–36.6) *1.68 (1.30–2.18)*	10.8 (6.60–15.1) *1.67 (1.03–2.70)*
Parent did not lose job and student had no job before pandemic	38.0%	0.4 (0.2–0.7) 0.22 (0.11–0.46)	18.7 (16.2–21.2) 1.02 (0.87–1.21)	5.7 (4.4–7.0) 0.87 (0.64–1.17)
Parent and student did not lose jobs during pandemic	26.7%	2.1 (1.2–3.0) REF	17.6 (15.0–20.3) REF	6.25 (4.82–7.69) REF

Note: Italics indicate statistically significant result.
Abbreviations: CI, confidence interval; REF, reference group.
[a]Derived from the questions: "During the COVID-19 pandemic, did you lose your paying job even for a short amount of time?" Answer options were: (1) "I did not have a job before the COVID-19 pandemic started", (2) "Yes", (3) "No" and "During the COVID-19 pandemic, did a parent or other adult in your home lose their job even for a short amount of time?" Answer options were: (1) "My parents and other adults in my home did not have jobs before the COVID-19 pandemic started", (2) "Yes", (3) "No".
[b]Adjusted for sex and race/ethnicity.

Unlike housing instability, food insufficiency was sensitive to both parental and student job loss. Households with pre-pandemic parental non-employment were only slightly more likely than households with parental job loss to experience food insufficiency; both groups had a statistically elevated prevalence of food insufficiency compared to households where parents retained their jobs. In the United States, food insecurity (indicating more severe deprivation than food insufficiency) was 10.5% in 2019 and more than doubled in the first months of the pandemic; the adverse impact was particularly strong among Black and Latinx families [3]. Resulting increased reliance on charitable food assistance [4], along with operational challenges, created gaps in meeting patrons' needs. In a study following adults with household incomes below $75,000 from April-November 2020, 37.1% of those who lost jobs reported food insecurity at least once, although food insecurity was lower among those who received UI [19]. Some pandemic-relief programs specifically addressed food insecurity. The Families First Coronavirus Response Act (FFCR) increased access to food aid programs and, in some cases, the allotment. The ARP included a 15% increase in SNAP benefits through September 2021. The association between parental job loss and food insufficiency we observed likely reflects that these benefits did not completely compensate for the combined effects of job-related income reductions and marked inflation affecting groceries and other essentials.

The association between student job loss and food insufficiency may reflect both income reductions and other factors. Employed students may use some of their income to purchase food, either contributing to food available at home or buying foods aligning with their preferences. In addition, some students who work in food-related jobs access free or low-cost food at work and might thus rely less on food access at home; student job loss would end this access. Evaluating this hypothesis would entail knowing the type of jobs students held before or during the pandemic, but that information was not collected. Educational disruptions also affected student access to food. Before the pandemic, free and reduced-price breakfast and lunch were provided at school based on household income or on the income distribution of the school or district. In March 2020, the federal government expanded the free meal program to cover all students. When schools closed, some students lost access to school-provided food, although many districts and jurisdictions pivoted to distributing free food outside of schools and at other centralized locations [18]. However, in some areas, lack of transportation limited access to this resource. Pandemic Electronic Benefits Transfer, also designed to replace school meals [20], may have provided some relief.

Despite multiple economic stabilizing measures—extensions to unemployment coverage (including inclusion of independent contractors), emergency relief payments, housing protection measures and food relief,—parental job loss early in the COVID-19 pandemic was associated with increases in the indicators of economic instability we examine here. In addition, student job loss was associated with increased food insufficiency. The finding that the social safety net did not adequately compensate for pandemic-era job loss may reflect, in part, that public benefits can be difficult to access and maintain [3]. Lack of familiarity with the systems can create barriers for families new to applying for benefits, and enrolling in programs may have been delayed by closed or partially staffed benefits offices early in the pandemic. Some newly unemployed parents might have had limited savings but not yet been eligible for benefits. In addition, concerns about immigration status have been noted as a barrier for enrollment [4]. UI eligibility is lower among workers below 100% of the federal poverty level who do not meet work history requirements, are self-employed, or lack legal authorization to work [2]. Our findings that some students whose parents retained jobs nevertheless experienced these adverse economic outcomes during the pandemic, albeit at lower levels compared to students whose parents were previously not employed or lost jobs, suggests that for some households, wage increases and relief payments may not have fully offset financial stressors such as inflation.

5 | Strengths and Limitations

The ABES survey was unique among COVID-19 research efforts in capturing employment status and status changes for not only parents but also high school students. This inclusion facilitated assessment of the role of student employment in some measures of household economic security. Other strengths include the rapid design and administration of the survey, which enabled collection of national data on a wide range of adolescent behaviors and experiences fairly early in the COVID-19 pandemic, when many economic and other effects were pronounced.

Our study has limitations. The survey's primary focus was the behavior and experiences of adolescents, with limited information about economic experiences. The new finding that student employment is associated with food security suggests the need to better understand the role of student work in household economics. Information gaps related to employment, which was not the primary focus of the survey, hinder interpretation of some findings.

Students who did not work before the pandemic and whose parents retained jobs had among the lowest prevalence of all adverse economic outcome metrics. This finding may reflect privileged economic positions of some families before the pandemic, but the survey did not collect pre-pandemic household income or savings data (adolescents may not know this information), so accounting for pre-pandemic household financial security was not possible. The survey did not ask why students chose to work (to help meet household expenses vs. for pocket money or personal savings goals) or not to work (income not needed; desire to focus solely on schoolwork; lack of transportation to job). Some parent and student job loss might reflect voluntary job exits among persons with ample economic resources. Family structure is relevant to these choices but was not elicited in the survey. Some parental job loss may reflect a parent leaving a job to care for children when schools closed or switched to remote learning; economic impacts of this decision would vary with household expenses and savings, whether the household included another adult who retained a job, and the percentage of household income previously contributed by each adult. The timing and duration of job loss before and during the pandemic, and whether the parent or student who lost a job was subsequently reemployed, were not captured. Pandemic-related

closures in the United States began in March 2020, so by the time a student took the survey, parents and students may have been unemployed for anywhere from 1 day to over a year.

The outcome variables also entail limitations. McKinnon et al. [17], following 42 USC CHAPTER 119, SUBCHAPTER VI, Part B: Education for Homeless Children and Youths [21], categorized students who reported they slept "somewhere else" in the past 30 days as stably housed, although some students selecting this option might have been unstably housed; thus, housing instability may be underestimated. Krause et al. [18] note that self-reported hunger is a non-validated proxy measure for food and nutrition insecurity. The current report references this metric as food insufficiency, but definitions of food insufficiency and insecurity vary and are more robust if they reference finances. In addition, the respondents were adolescents who may have been experiencing rapid growth and frequent hunger. Reduced availability of certain foods due to supply chain disruptions could also have affected perceived availability of food in the house.

General limitations of the ABES data described elsewhere [16] also pertain to this research. ABES data are representative of students enrolled in schools but not all U.S. adolescents, although 95% of youth attend school. As among adults, social desirability or response bias may be present, despite measures to protect student privacy. As well, directionality and temporality cannot be determined for this cross-sectional survey; the survey was administered at different points during the COVID-19 pandemic, but the design precludes comparisons by completion date. The overall response rate was 18%.

Finally, while our demographic results and previous research reflect higher levels of food insufficiency among students who are LGB or other/questioning, and earlier research reported some of the highest levels of parental job loss among Asian students [18], we were unable to present results reflecting detailed categories of sexual orientation and race/ethnicity due to statistical reporting requirements, limiting identification of some populations with high prevalence of adverse economic impacts.

6 | Conclusions

Overall, these findings confirm expectations that parental employment is key to household economic security, but also suggest a role for adolescent employment. While many educational losses during the pandemic are attributed to school closures or remote schooling, the impact of increased housing instability and food insufficiency has not been fully appreciated. Previous analyses of ABES data have noted the adverse effects of these economic events on schoolwork, health-related behaviors, mental health, and the likelihood of experiencing violence [17, 18, 22]. Given these observations and the literature on adverse effects of unstable housing on adolescents before the pandemic [22, 23] both pre-pandemic housing instability and the elevated prevalence of this adverse outcome associated with parental job loss are concerning.

Our finding that household food security may depend in part on the labor of high school students highlights the need to better understand the role of student employment in all aspects of household economic stability. Researchers from the National Institute for Occupational Safety and Health and the National Center for Health Statistics have developed a set of 21 cognitively-tested questions about youth and work for deployment on surveys, including one about respondent's primary reason for working, with a response option indicating the need to contribute to household income [24]. Including these questions in future surveys could advance understanding of effects of student employment, including equity implications of the complex relations among adolescent work (drivers, type, and extent), school outcomes, and future economic position. Collection of information about household income and assets is also key.

While this study focuses on pre-pandemic and early pandemic-era economic concerns, these issues remain salient, despite the return to full employment. The child poverty rate, as measured by the Supplemental Poverty Measure, which accounts for some government programs for low-income families, rose from 5.2% in September 2021 to 12.4% in September 2022, according to the U.S. Census Bureau [25]. New and ongoing economic challenges, including increased gaps in the social safety net with the end of Public Health Emergency supplements, highlight the need for additional research on how these programs, as well as both adult and adolescent employment, affect household economics.

Author Contributions

Sharon R. Silver conceived the research question and led the writing of the paper. Jonetta J. Mpofu participated in development of the ABES survey and provided critical guidance for analyzing the data. Sharon R. Silver and Taylor M. Shockey conducted the analyses and drafted and revised the article. All authors participated in interpretation of the data and approved the version to be published.

Disclosure by AJIM Editor of Record

John Meyer declares that he has no conflict of interest in the review and publication decision regarding this article.

Ethics Statement

The ABES study protocol was reviewed and approved by institutional review boards at CDC and ICF International, CDC's survey contractor (see 45 C.F.R. part 46; 21 C.F.R. part 56).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The ABES questionnaire, datasets, and documentation are publicly available at https://www.cdc.gov/healthyyouth/data/abes.htm. The data that support the findings of this study are available in Adolescent Behaviors and Experiences Survey (ABES) at https://www.cdc.gov/abes/data/index.html. These data were derived from the following resources available in the public domain: - ABES data, https://www.cdc.gov/abes/data/index.html.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.