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Student loans, physical and mental health, and health care use and delay in college

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ABSTRACT

Objective: Determine relationships between college students' student loan presence and self-rated physical and mental health, major medical problems, mental health conditions, physical, dental, and mental health care visits and delays, and medication use and reductions. **Participants:** A total of 3,248 undergraduates at two regional public U.S. universities, surveyed Spring 2017. **Methods:** OLS and Logistic regression. **Results:** Loan presence was related to significantly worse self-rated physical and mental health and more major medical problems, but not to mental health conditions, or physical or mental health medication use. Respondents with loans were less likely to visit the dentist and more likely to report delaying medical, dental, and mental health care, and reducing medication use to save money. **Conclusions:** Results provide evidence of health and health care use divides among college students by loan presence.

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Debt; health; health care use; mental health; student loans

Introduction

Although public higher education can serve to facilitate class mobility among those with limited means, growing student debt can limit that mobility.^{1–3} In the United States, disinvestment in public colleges by state governments has increased student loan debt held by individuals, with only around one-third of college graduates avoiding this debt.^{1,4–7} Student debt has consequently emerged as a salient marker of inequality, creating a “class divide” among the highly educated.⁸ Examining correlations between student debt and physical health, mental health, and health care use can uncover hidden inequalities between college students with and without loans, and can have implications for health and college health policy and outreach. We collected and analyzed an original survey dataset of over 3,000 undergraduates at two public, regional universities in the U.S., examining correlations between student loan presence and health and health care use outcomes, including self-rated physical and mental health (referring to both as “health” in this text), major medical problems, mental health conditions, physical, mental, and dental care (referring to all three as “health care” in this text) and delays in care to make ends meet, physical and mental health medication use, and medication reductions to save money. Results contribute to literatures on health, debt, education, and class.

Socioeconomic status, debt, health, and health care use

Student loans create a unique dimension of class, or socioeconomic status (SES), leading to divides among the highly educated that operate similarly to other SES measures, such as education, income, wealth, and occupational status, with loans also having unique properties related to their purpose—increasing education—and social norms tied to debt.⁸ Health and SES are positively related,^{9–13} although those with lower income and education are more optimistic about their health.¹⁴ SES is also related to health care-seeking behavior, or delaying associated costs.¹⁵ Financial assets are related to physical and dental health and health care use, especially in the United States, where insurance, care, and prescription medications are often costly due to public health and insurance policy, and substantial health expenses fall to individuals, even among those with insurance.^{9,10,16–19} Consequently, even many who have health insurance delay health care due to cost.²⁰

Theories of relationships between SES, health, and health care center on social-structural conditions.²¹ Berkman, Kawachi, and Glymour²² outline relevant social-structural conditions that shape health, including the labor market, inequality and discrimination, cultural conditions, such as social norms and values, and public health policies. These

varied factors shape social networks and network ties, affecting opportunities for social support and social influences on health behavior. They also affect access to material goods and resources, such as health care, housing conditions, economic opportunities, and assets. These mechanisms and resources then shape behaviors such as seeking health care or help for mental health issues, diet, exercise, smoking, substance use, and also affect physiological pathways (such as allostatic load), which influence health.

Past research theorizing linkages between debt, SES, health, and health care use has often discussed student loans in conjunction with other types of unsecured debt such as credit card debt. Unsecured debt can influence health care use, as this type of debt is often unplanned and tends to constrain the debt holder's flexibility, leaving fewer resources to devote to health care services.²³ Secured debts (eg mortgage loans), are less likely to influence health care-seeking behaviors.²³ In addition to reducing preventative or necessary health care use, unsecured debt can affect health more directly by increasing stress and anxiety, and constraining financial resources, which in turn can increase perceptions of poor health, increase unhealthy behaviors, and decrease psychological well-being, leading to poor health (or *causal effects*).^{24,25}

Common factors (or *selection effects*) may also shape health, health care use and the likelihood of having debt,²⁴ such as material constraints, related to SES and SES background. Kalousova and Burgard²³ argue that debt is not the determining factor affecting health and health care-seeking behavior, but rather, when individuals' socioeconomic resources do not meet expenses or debt burdens and spending choices are consequently restricted, health care-seeking behaviors are also hindered. Grafova²⁴ notes that risk aversion, self-control, and impatience are related to taking on unsecured debt and health, and poor health can increase debt. She found that unsecured debt was related to worse health indicators and behaviors, and selection effects were stronger than causal effects, but causal effects could not be ruled out.²⁴

Theorizing linkages between student loan debt, health, and health care use in college

We build on prior work on SES, debt, health and health care use to describe how student debt can affect health and health care use in college. In addition to creating a unique dimension of SES, student debt is a distinctive type of unsecured debt, as it is accrued to advance education among those who might not otherwise attend or complete college, and is therefore, in part, an investment in potential future earnings.^{6,26,27} Education is associated with increased future earnings,²⁸ potentially leading to improved health—and higher expenditures when it comes to preventative or necessary health care—compared to those not attending or completing college.²⁹

Despite the educational benefits of loans, when students with loans are compared to their similarly-educated counterparts without loans, they may have worse health, and may limit health expenditures as a result of causal effects of loans. Student loans often have unintended effects on financial outcomes and long-term economic security for

borrowers, consequently affecting health and health behaviors.^{6,25} As with other types of unsecured debt, student loan debt can increase concerns about the future, causing stress that can worsen mental and physical health.^{30,31} Further, *social norms*—collective expectations, or unwritten cultural “rules”³²—related to paying off student debt, taking on additional debt, or prioritizing paying bills on time may reduce the money students are willing to spend on preventative and necessary health care or medication. Our past research found students with loans believed they would and *should* avoid or delay future expenses such as homeownership and childbearing in order to first pay off student debt.⁸ Students may similarly limit their current expenses by skipping or delaying non-essential health care visits, or by reducing medication use, to avoid taking on more debt. Delays in health care use can then have long-term effects, causing problems to become more severe and harder to address. Past research found health care delays were associated with longer hospital stays among hospitalized patients, and higher future health expenditures.^{33,34} Reductions or delays in health care can also result in lower rates of diagnoses or medication use for medical problems or mental health conditions when they are present. Prior research found that people who more frequently accessed preventive care had greater awareness of their overall health and illness symptoms.³⁵

Selection into loans can also result in differences in health and health care use. Unlike other forms of unsecured debt, such as credit card debt,²⁴ student loans are unlikely to be accrued when paying for health care, or among those who are impatient or lack self-control, although they are more common among the less risk-averse,³⁶ which may correlate with other risk-taking health behavior, such as delaying health care. More importantly, among college students, loans are more common when parents have lower education and wealth^{36–38} and when students are not in a financial position to pay for tuition—and perhaps health care expenses—up front. Wealth differences can influence loan presence, even among those with similarly educated parents. However, students whose parents have very few assets have greater access to Pell grants, a needs-based federal grant program determined by parental assets, potentially reducing loan burdens for students with the lowest levels of parental education, who tend to have the lowest incomes and assets. Parents with fewer financial resources to help students pay for college may also be unable to aid with health expenditures, reducing health care use among those students. Even though they have access to student health services, students from lower SES backgrounds may reduce health care use because of established habits of less frequent health care visits, reflecting stratified social norms related to health help-seeking learned in childhood. Dental care may similarly be reduced or delayed because of these habits and norms, and because students do not have access to free dental services. Lower-income families also face more exposure to stress, violence, traumatic experiences, and environmental pollution, which can lead to long-term negative health and mental health impacts.^{16,39–41} Accounting for parental education in statistical models helps control for these confounding effects to some extent.

Our study focuses on the practices of students while they are still in college, an important period in which students are often gaining independence from parents and establishing habits, such as health care use, which may continue into later adulthood. College policies and college attendance can also affect health care use, leading to distinct patterns in this population compared to those who have left college and may be repaying debt. Both colleges we surveyed required full-time students to carry insurance, offering a fee-based plan and either low-cost or free physical and mental (but not dental) health services. Analysis of our survey (not shown) found students with and without loans had similarly high rates of health insurance coverage, with over 97% of students reporting they had insurance. Loans offer a source of funds to students who may use them to pay for health care or insurance they might not otherwise obtain and enable access to college health care facilities; required health insurance fees may also necessitate loans.

Past research on student debt, health, and health care use

Though a limited number of studies have examined correlations between student debt and measures of self-rated physical and mental health, some examining students and some analyzing those with debt after they have left college, the use of mental health care, or medication among students has not been examined, nor has dental care, which can reduce oral health problems that have been linked to worse physical health.⁴² Past research has also focused on mental health, physical health, or health care use alone, and has not considered whether patterns differed across types of health and health care use within the same population; we take a more holistic approach, examining overall physical and mental health and health care use, which can reveal patterns of inequality that are hidden when these variables are examined in isolation.

Past research found student loans were associated with more financial stress and with sadness, general negative emotions, and worse sleep, as well as poorer psychological functioning, life satisfaction, psychological well-being, and physical health for some select groups.^{25,43–47} Much of this research examined those who had already left college and were facing debt payments; research examining college students have focused on select groups, such as African American and Latino students^{31,44} or medical students,⁴⁵ and health care use has only been examined among those who have left college.⁴⁸ One study found that students with higher student debt were more likely to report that stress about money affected academic performance.⁴⁹ Research on those who have left college found that households with student debt had a higher likelihood of reporting they could not afford a doctor, hospital visit, dentist, or their prescriptions;⁷ that student loan borrowers who were repaying their loans were more likely to reduce and delay health care services by not purchasing prescribed medicine, skipping follow-up care, or not seeking care for a medical problem;²⁶ and that those behind on student loan payments were more likely to skip physical, mental health, and dental care.⁴⁸

Research focused more generally on household debt found debt was related to poorer self-reported physical and mental health, higher blood pressure, depression, and stress.^{24,50,51} Some found that debt type mattered to health outcomes: unsecured “bad” debt was related to higher heart attack risk, likely because of relationships to stress and income insecurity, but secured “good” debt, such as mortgage debt, related to higher wealth, was associated with lower heart attack risk and lower premature mortality.⁵² Others found both long-term unsecured debt and mortgage debt were related to premature mortality and decreased life expectancy, while short-term debt could improve health outcomes.⁵³ Student loans may be “good debt” in some respects, because it is related to obtaining a college education, which can increase income relative to those who are less educated. Yet, it reduces financial stability compared to similarly educated adults without debt (whom student debt holders may work alongside), and potentially increases stress or has other negative effects on health similar to other unsecured debt.

Other factors affecting loan presence, health, and health care use

Health and health care use are related to SES background, race, and gender, as are loans, making it important to control for these variables in comparisons. Yet loans create a dimension of inequality among students that may operate separately from these other measures, and which may persist after accounting for demographic differences in loan presence and health. Parents’ education is related to childhood differences in SES, health, and health care access and use that can cause ongoing problems, help establish habits, and affects the ability of parents to help with both health care and college expenses, affecting whether students need to take out loans.³⁷ College students from higher SES backgrounds are more likely to seek mental health care⁵⁴ and children with more educated parents are more likely to receive preventative dental care.⁵⁵ Loans are more common and parental financial assistance is less common among college students of color^{56–59} and people of color tend to have poorer physical health,^{60,61} with mixed evidence on race and mental health.^{62,63} Race is also related to wealth disparities, with the families of Black and Latino students having considerably lower wealth on average,^{64,65} which can affect health care use. Black people are more likely to delay health care and Black and Latino children are less likely to have preventative dental care.^{34,55} Asian Americans and Latinos are also more likely to rely on some types of alternative medicine,^{66,67} potentially reducing traditional health care use. Racial differences in norms about mental health care may also reduce mental health care use among people of color. Past research found Asian college students were less likely to use mental health services⁵⁴ and that Black and Latino adults were less likely to seek out mental health care.⁶⁸ Research has also found differences in physical and mental health by gender.^{36,69–71} Men, who are more likely to have loans if they attend college, are also less likely to visit the doctor, which can

result in a reduction in diagnosed conditions.^{35,36} Gender non-conforming individuals commonly rely on regular physical medication associated with gender transitions and can experience more mental health problems as a result of experiencing stigmatization and discrimination.⁷²

Other social factors, such as age, parental marital status, and region may also affect health, health care, and loans. Having unmarried parents is positively correlated with loan presence, and with worse financial status resulting from selection factors and the negative influence of divorce on financial stability.^{73–76} Parental divorce is related to having more psychiatric conditions, and parental death is associated with worse physical health.⁷⁷ Regional differences in health, labor markets, cost-of-living, and social norms related to help-seeking and health care use can also affect outcomes; the two universities we examined were in different regions, allowing regional comparisons.

This study

In this study, we ask: Is student loan presence related to worse self-rated physical health and mental health, medical problems and mental health conditions, and differences in health care visits, medication use, and delays in health care use in college? Do these differences persist even after accounting for selection effects, measured *via* differences in background and demographic characteristics (age, race, gender, parents' education and marital status, and region) between students with and without loans? We expect:

1. Students with loans will report worse health, reduced use of health care, and more health care delays and medication reductions to save money.
2. These relationships will persist after accounting for selection effects, including age, race, gender, parents' education and marital status, and region.

Materials and methods

Data

In March 2017, we sent an IRB-approved survey (UNCG IRB #16-0036) to all undergraduate students enrolled at two universities in the United States ($N=19,268$), one in the northeast and one in the southeast. Both schools were regional public research universities and were racially diverse; the southeastern state was a designated minority-serving institution because over 40% of students were people of color. Both universities attract a mostly in-state population. The survey was incentivized with raffled gift cards, and students were asked to read a consent form and affirm consent before beginning the survey. To maintain confidentiality, names were not collected, and IP addresses, email addresses, and other potential identifying information were removed from the dataset by the first author before sharing data with other IRB-approved researchers; deidentified data were stored on a password-protected Box drive to maintain security. In line with typical response rates for

Web surveys,⁷⁸ the survey had a 19.3% response rate: 3,728 students partially or fully completed the survey, with response rates lower at the northeastern school. The lower proportion of the sample from the northeastern school also reflects their smaller student body. Of the 3,728 students who partially or fully completed the survey, 3,281 responded to questions about college payment methods and were retained in the sample. After removing 33 students missing responses to other independent variables (apart from parental education: see below) the final sample included 3,248 students. Some students were missing information on some dependent variables but not others; we retained these in the sample to make full use of data.

We compared the sample to institutional data to assess response bias, using one-sample t-tests. Loan presence rates in the sample did not significantly differ from loan rates reported in institutional data. Women were overrepresented among survey respondents, comprising 75% of northeastern respondents in this study and 59% of the student body at that school, and 78% of southeastern respondents in this study and 66% of the student body at that school. There were no differences in percent White, Black, Asian, or mixed race, but Latino students were underrepresented among respondents at one school. Regression results control for these factors to account for these differences.

Variables

Dependent variables

Participants were asked, "How would you rate your physical health?" and "How would you rate your mental health?" with response choices ranging from 1 (poor) to 4 (excellent), and higher numbers indicating better health. We use a four-scale rating instead of the more common five-scale rating to more easily allow for dichotomization; prior studies examining differences between four- and five-scale measures for health found no difference in explanatory power or in statistical associations with other variables when comparing these two scales.⁷⁹ Variables were analyzed as continuous measures, and also recoded to a dichotomous measure in which 0 indicated poor or fair health and 1 indicated excellent or good self-ratings. We next asked, "Have you had any major medical problems in the last year?" and "Since starting college, have you received a new mental health diagnosis and/or treatment for a continuing mental health condition such as depression, anxiety, bipolar disorder, etc.?" Participants were also asked, "Have you been to a doctor or health practitioner for a check-up in the last two years? (OB/GYNs count, do not include dentist visits)," "Have you been to a dentist in the last year?" and "Have you been to a counselor or other mental health practitioner in the last year?" The longer length of time for obtaining a checkup *versus* a dentist was to account for the different recommended frequency in obtaining these types of care; once a year for physical care *versus* twice a year for dental care. We doubled the length of these recommended time periods to account for students who may obtain regular care but do not strictly adhere to this schedule. For mental health care, we asked about the last year to account for recent care. Later in the survey, after

asking about financial information, we asked, “Have you done any of the following to help make ends meet since you started college?”, which included a long set of responses: we here examine the responses “postponed medical or dental care” and “postponed mental health care.” While this survey combined medical and dental care, a later follow-up survey with a subsample of the population who had graduated college (not shown, available from authors) asked about postponing dental and medical care as separate measures; in that survey 70% of respondents who reported delaying either dental or medical care reported delaying both, 15% reported delaying medical care only, and 15% reported delaying dental care only, and associations between student loans presence and both measures had similar patterns. All measures were coded as dichotomized variables in which 1 indicated yes and 0 indicated no.

Participants were also asked, “Do you use any medication regularly that is related to a physical health problem such as an asthma inhaler, blood pressure medication, etc.? (not including vitamins, birth control or mental health medication)” and those who answered affirmatively were asked, “Do you ever take less medication than the amount you are supposed to take in order to save money?” The next question asked, “Do you use anti-depressants, anti-anxiety medication or some other mental-health related medication?” We coded these as a dichotomous measure with 1 indicating an affirmative answer. For medication reduction, we coded respondents as 1 indicating they reduced medication and 0 indicated they either did not reduce medication, or did not take medication. We present additional results for percent reducing medication, limited to those who took physical health medication.

Student loans

Students were asked, “How do you pay for your tuition and other educational expenses (like textbooks)? Check all that apply” and “How do you pay for your other living expenses while in college (housing, food, car, entertainment, etc.)? Check all that apply.” Those responding to either question with “public subsidized loans,” “public unsubsidized student loans,” “private student loans,” or “student loans, but I’m not sure whether they are private or public” were counted as having student loans, while those responding to the question but not selecting student loans were coded as 0 in a dichotomous measure of student loan presence.

Other independent variables

Race was determined by the question, “What is your race or ethnicity?” with respondents able to check all that apply. Responses were divided into White (only) or White/Middle Eastern, Black (only), Latino (including those also identifying as any other race except Asian or Middle Eastern), Asian or Asian American, or Other/Mixed race, which included those who indicated they were Native American or Pacific Islander, Middle Eastern but not White, multiple races, or “Other.” Respondents were asked, “What is your sex/gender identity? Check all that apply” with responses divided into female only, male only, and other gender, combining those who indicated

they were male-to-female transgender, female-to-male transgender, genderqueer, intersex, or other. Parents’ education was assessed by asking, “Thinking about the following people, what is the highest level of education that they have?”; responses for “your father” and “your mother” were combined, measuring the highest education level of either parent. Results were divided into “both parents had less than a high school degree,” or at least one had “a high school degree or GED” “some college, associates or technical degree,” “a bachelor’s degree or post-bachelor’s certificate” or a “graduate degree.” Those who reported only one parent’s education level were assigned that value. Those who did not know the highest level of education of either parent or did not respond were retained as a separate category for “Parents’ Education Unknown.” Parents’ marital status was measured by responses to, “What is the current relationship of your biological or adoptive parents?” and divided into those whose parents were married and those who parents were never married, separated, divorced, or one or both were deceased.

Analysis

We present descriptive statistics for independent and dependent variables, with results for the total sample, and estimated separately by student loan presence, with chi squares (or for age, a t-test) estimating relationships between demographic characteristics and loan presence. We examined whether dependent variables differed by student loan presence using two-sample t-tests. We next estimated a series of OLS (for four-point health scales) and logistic regressions (for other outcomes) predicting dependent variables. The first set of models only included student loan presence as an independent variable, and the second added controls for age and age squared, race, gender, parents’ education, and marital status and school attended. Reference categories were White, women, parents with a college degree, parents married, and northeastern school. After running each model, we used the *margins* command to estimate regression-adjusted means, proportions, and 95% confidence intervals for dependent variables separately by student loan presence;

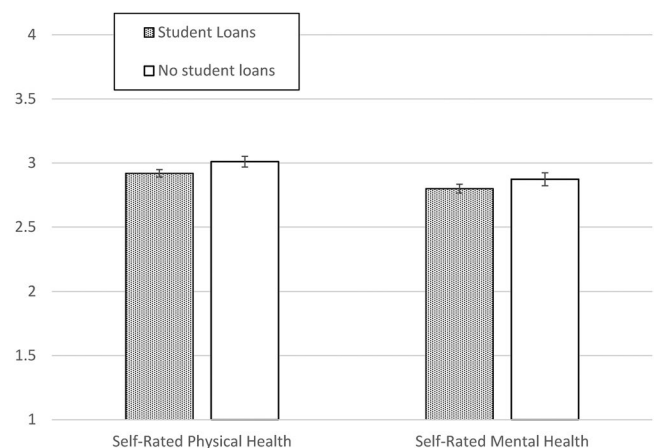


Figure 1. Regression-adjusted means for self-rated physical and mental health and differences by student loan presence, with 95% confidence intervals (1 = poor; 4 = excellent).

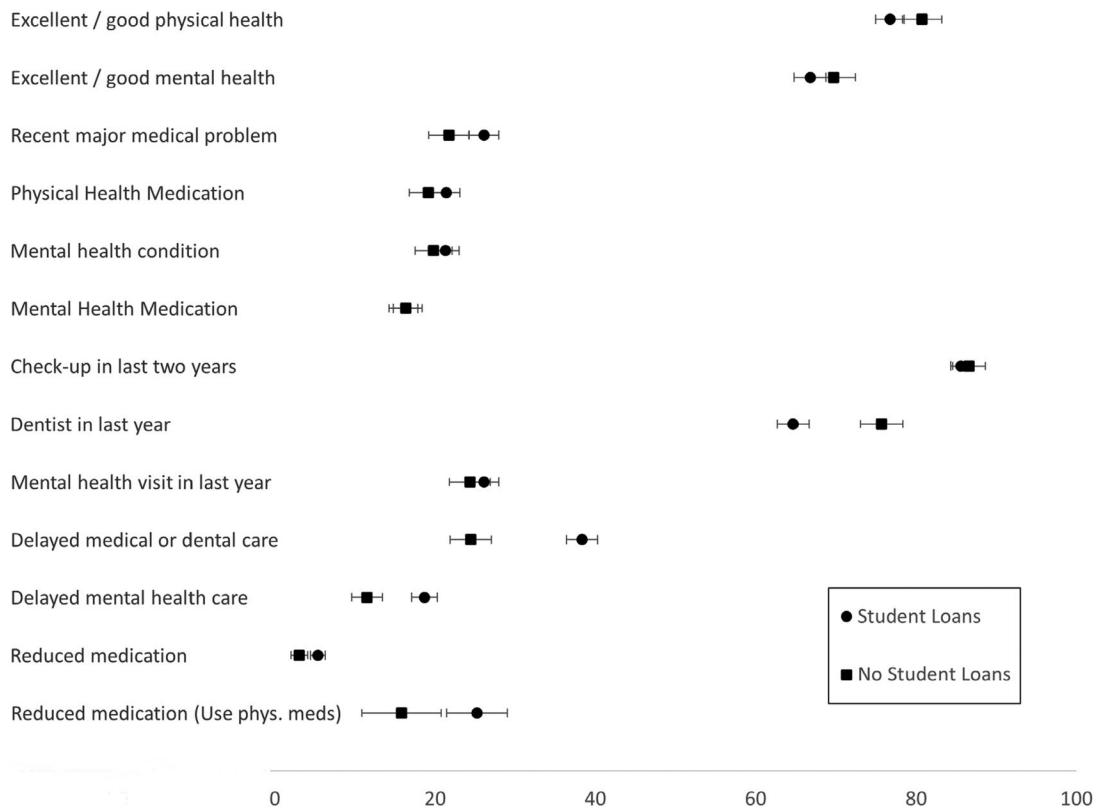


Figure 2. Regression adjusted percentages for health, mental health and health care use, and differences by student loan presence, with 95% confidence intervals.

regression-adjusted proportions were multiplied by 100 to obtain percentages (see Figures 1 and 2). These numbers represent what the mean value or percent would be for each group (those with or without loans) if both groups had the same distribution of age, race, gender, parents' education/marital status, and school. All results were calculated using Stata version 17 (StataCorp LLC, College Station, TX).

Results

The sample was diverse, reflecting the student bodies at the two universities in our study; just over half of students were White and over 48% were people of color, while just under half of students had a parent who had completed a college degree (see Table 1). Approximately, 67% of respondents had loans. White, Latino, and Asian students were underrepresented among those with loans, with Black students overrepresented. Those with loans had parents who were less likely to be married and who had less education, although students whose parents had particularly low levels of education were less likely to take out loans. There were no differences by gender, age, or school in loan presence.

Table 2 presents descriptive statistics by loan presence for all dependent variables and t-tests of difference by loan presence, while Table 3 presents the beta coefficients and odds ratios for the relationship of student loans to dependent variables, in regression models with no control variables ("model 1"), and models with demographic controls ("model 2"); full results for Model 2 are available in the Online Appendix (Supplementary analyses). 78% of students rated

Table 1. Descriptive statistics for independent variables and differences by loan presence.

	Total	No student loans	Has student loans	χ^2 or t-Test
Has loans	67.4%	.0%	100%	–
Age (mean)	23.6	23.6	23.7	
White	51.6%	58.7%	48.1%	***
Black	26.1%	14.3%	31.9%	
Latin American	9.5%	11.1%	8.7%	
Asian	6.3%	9.6%	4.8%	
Other/mixed Race	6.5%	6.3%	6.5%	
Woman	77.4%	77.2%	77.5%	
Man	21.3%	21.4%	21.3%	
Other gender	1.3%	1.4%	1.2%	
Parents < HS	5.1%	5.6%	4.8%	***
Parents HS	16.3%	13.0%	17.8%	
Parents some college	29.0%	21.3%	32.7%	
Parents BA	28.0%	29.7%	27.1%	
Parents grad degree	20.4%	28.6%	16.5%	
Parents' educ unknown	1.3%	1.8%	1.0%	
Parents married	49.9%	58.7%	45.6%	***
Parents unmarried	50.1%	41.3%	54.4%	
Southeast school	81.7%	81.9%	81.5%	
Northeast school	18.4%	18.1%	18.5%	
N	3,248	1,060	2,188	

Note: *** $p < 0.001$ for chi-square tests or a t-test (for age) comparing respondents by loan presence.

their physical health excellent or good, and 68% rated their mental health excellent or good. In t-tests and both models, self-rated physical health was worse for those with loans, and the probability of rating health good or excellent was lower for this group, although differences were small in magnitude (see Figures 1 and 2). Mental health did not differ by loan status in t-tests or Model 1 for either measure, but in Model 2 was significantly worse for those with loans

Table 2. Descriptive statistics for dependent variables and differences by loan presence.

	Total	No loans	Has loans	t-Test	N
Self-rated health (1 = poor 4 = excellent)	2.95	3.02	2.92	***	3,248
Self-rated mental health (1 = poor 4 = excellent)	2.82	2.84	2.81		3,246
Excellent/good physical health	78.0%	81.0%	76.6%	**	3,248
Excellent/good mental health	67.7%	68.5%	67.4%		3,246
Recent major medical problem	24.6%	22.1%	25.9%	*	3,247
Physical health medication	20.7%	19.2%	21.3%		3,248
Mental health condition	20.8%	20.9%	20.7%		3,246
Mental health medication	16.3%	18.1%	15.4%	†	3,247
Checkup in last two years	86.1%	86.2%	86.0%		3,248
Dentist in last year	68.2%	76.7%	64.0%	***	3,246
Mental health visit in last year	25.5%	25.7%	25.5%		3,248
Delayed medical or dental care	33.9%	23.2%	39.1%	***	3,230
Delayed mental health care	16.3%	11.6%	18.6%	***	3,230
Reduced medication	4.6%	3.0%	5.4%	**	3,247
Reduced medication (uses physical medication only)	22.3%	15.7%	25.3%	**	670

Note: † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$ in two-tailed t-tests comparing respondents by loan presence.

in regression models in the 4-point scale measure, although only marginally worse in the dichotomized measure. Further analyses (not shown, available from authors) found that this pattern was accounted for by racial differences; Black students were more likely to take out loans but reported better mental health, therefore, mental health differences did not become significant until racial differences in loan presence were accounted for in models.

Around one-fourth of students had a recent medical problem, just over 20% used physical health medication or reported having been diagnosed or receiving treatment for a mental health condition while in college, and 16% reported using mental health medication. Those with loans were significantly more likely to have experienced a recent major medical problem in *t*-tests and both regression models, but were equally likely to use physical health medication. Students with loans were marginally, but not significantly, less likely to use mental health medication in *t*-tests and Model 1, but this marginal difference disappeared in Model 2. There were no differences by loan presence in reported mental health conditions.

Over 86% of students reported a checkup in the past two years, while 68% had visited a dentist in the last year and 25.5% had visited a mental health counselor in the last year. In *t*-tests and regressions, the only significant difference was in dental visits, which were significantly less common among those with loans, at 64%, *versus* 77% among those without loans. Around 34% of students reported delaying medical or dental care to make ends meet, while 16% delayed mental health care to make ends meet. Those with loans had significantly worse outcomes for these measures in *t*-tests and both sets of regression model results. Almost two-fifths; 39%, reported delaying medical or dental care, *versus* 23% of those without loans. Of those with loans, 19% delayed mental health care, compared to 12% of those without loans. Just under 5% of all

Table 3. Beta coefficients and odds ratios (when indicated) for relationship of student loans to dependent variables.

	Model 1	Model 2	N
<i>Beta coefficients</i>			
Self-rated health (1 = excellent 4 = poor)	-.10 ***	-.09 **	3,248
Self-rated mental health (1 = excellent 4 = poor)	-.03	-.07 *	3,246
<i>Odds ratios</i>			
Excellent/good physical health	.76 **	.78 *	3,248
Excellent/good mental health	.95	.87 †	3,246
Recent major medical problem	1.23 *	1.28 **	3,247
Physical Health Medication	1.14	1.16	3,248
Mental health condition	.99	1.10	3,246
Mental Health Medication	.83 †	.99	3,247
Checkup in last two years	.98	.93	3,248
Dentist in last year	.54 ***	.57 ***	3,246
Mental health visit in last year	.99	1.10	3,248
Delayed medical or dental care	2.11 ***	2.06 ***	3,230
Delayed mental health care	1.74 ***	1.83 ***	3,230
Reduced medication	1.83 **	1.85 **	3,247
Reduced medication (uses physical medication only)	1.82 **	1.89 **	670

Note: † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$ in OLS (beta coefficients) or logistic regression (odds ratios) model. Model 1 has no additional variables in the model, Model 2 controls for gender, parents' highest level of education, parents' marital status, race, age, age squared, and school. Full model results can be found in the Online Appendix.

students reported reducing medication use to save money, but among those who reported using physical health medication, 22% reported reducing medication, including over 25% of students with loans compared to under 16% of those without loans. Differences by loans were significant both for the entire population and for models restricted to students using physical health medication, in *t*-tests and both regression models. As shown in Figure 2, differences in health care delays and medication reductions were both significant and substantial, as were gaps in dental care, exceeding differences in self-reported physical and mental health and major medical conditions.

We conducted a series of Supplementary analyses and sensitivity tests (available from authors) in which we examined models that did not control for loans, and those that controlled for loan *amounts* in various ways; models that examine the effect of loan amounts anticipated at graduation on outcomes among students who have loans are included in the Online Appendix. Among students with loans, loan amounts anticipated at graduation were not significantly related to any outcome other than delaying physical, dental, and mental health care, which was more common among students with higher loan amounts. Results were consistent across sensitivity tests. Notably, controlling for loan presence or amounts in the full sample did not substantially change coefficients for other independent variables when compared with models that did not include any controls for loan presence or amount.

Discussion

Our dataset allowed an examination of health and health care use during college and differences by student loan presence. Our first hypothesis predicting worse outcomes for those with loans received some support, although was

not universally supported for all measures. In line with our hypotheses, in almost every arena in which those with and without loans differed, those with loans were worse off. Students with loans had worse self-rated physical and mental health, and more major medical issues during college, received less regular dental care, and were more likely to reduce medication use or delay mental, physical, or dental health care to make ends meet. In line with our second hypothesis, accounting for demographic differences by whether or not students had loans did not explain these differences. In fact, accounting for demographic differences revealed significant differences in mental health that were concealed by the higher rates of loans and higher general self-reported mental health among Black students. Our Supplementary analysis revealed anticipated loan amounts at graduation were not related to the measures we examined in most cases, but was related to delayed health care. Social norms related to not taking on more debt or delaying costs seen as unnecessary while in debt, or selection into debt, more than specific debt amounts, drove health divides among college students. Sensitivity tests further revealed that loans did not explain inequalities by other demographic variables examined (including parents' education), but operated as a separate measure of inequality.

In contrast with prior studies,^{43,47} loan presence was not related to having had a mental health condition diagnosed or treated in college, although in line with those studies, those with loans reported worse self-rated mental health on the four-point scale measure. Loans were also not related to use of physical or mental health medication, or to having had a recent physical health checkup or mental health counselor visit—perhaps as a result of college services providing access to regular health care and free or low-cost counseling services, and university requirements for health insurance. However, students with loans still reported delaying mental health visits at a higher rate, despite having had an equal likelihood of visiting a counselor in the past year, perhaps delaying visits until recently, or reducing their total number of visits and visiting a counselor less frequently than they preferred. Results indicate that measures examining whether individuals have visited a specific type of health care provider within a given period may not fully capture delays in health care that may occur, and that such delays should be measured explicitly.

Prior studies focus on health, mental health, or health care use in isolation,^{43–53} but our holistic approach revealed further inequalities. For instance, students with loans reported worse physical health, and were more likely to report having had a recent major medical problem, but were not more likely to use physical health medication. They reported worse mental health, but were equally likely to have visited a mental health counselor, to have been diagnosed or treated for a mental health condition, or to have used mental health medication. They were more likely to report delaying mental health care to make ends meet, but these results may in part be due to higher needs (because of their worse self-reported mental health) in combination with restricted finances. Examining health and health care use in isolation conceals and confounds these inequalities.

Examining findings holistically also suggests that, at least in college, disparities in health are not as large as disparities in health care use; while students are relatively young, substantial health differences may not yet have emerged, but disparities in health care use in early adulthood, like those we find in this study, may lead to larger health gaps in later life, potentially explaining previously found links between student debt and worse health after college.²⁵ Future research should examine how health disparities by loan presence may change over the life course.

Past research has examined health care delays among those who have left college and are paying off their debt, finding these delays are more common among those with debt and those unable to meet their debt payments.^{26,48} Our research suggests that this behavior begins even before they begin to pay off their debt and face those financial constraints, and is already common while students are still enrolled in college. Findings suggest that when college students face worse material conditions (selection effects), it can increase their likelihood of taking out student debt, and they may also forgo medical care. Debt itself may also affect behavior even before students begin to pay it off (causal effects), as they anticipate future repayments, and are reluctant to take on additional costs, which may lead to medical debt on top of their student debt.

Limitations

This study had some limitations. We were unable to fully determine whether results stem from causal or selection effects, which both provide plausible explanations for findings, although our control variables accounted for several important selection factors, including race and parents' education. Results were restricted to two regional public universities and were not nationally representative. These populations allowed us to examine a non-elite group representing more typical college experiences and allowed an examination of regional differences. Restricting the sample to two similar universities also allowed a “control” for many confounding selection factors that may affect comparisons in nationally representative studies that include students at a wide range of universities with different tuition rates. Yet, results do not represent those at more elite colleges, private colleges, small liberal arts colleges, community colleges, or colleges in regions outside the northeast and southeast. Dental health was not assessed, and delayed dental or medical care was combined into a single question; examining medical and dental care separately may affect findings. In a follow-up survey that we conducted with a subsample of this population who graduated college, we asked about dental and medical care delay separately, finding similar patterns for both measures and a 70% overlap among those delaying these types of routine care to make ends meet; future research should assess how delay of these services differs among college students. Finally, self-rated health measures may be inaccurate, and may differ from professionals' assessments, though past research found self-ratings were predictive of professionally-assessed health.⁸⁰ Future research should examine student loan differences with a broader

sample of students at more types of universities, and among those who have left or graduated college, and assess additional measures, such as self-rated dental health, separate measures of health care and dental delay, and more direct measures of physical and mental health, such as biomarkers or psychological scales.

Conclusion

A broader understanding of the relationship between student debt and wellbeing is necessary to inform public debate.⁸¹ Results reveal hidden disadvantages among those with student loans. The health benefits of higher education do not accrue equally to all, at least not while they are still enrolled in college. About two-thirds of graduates of 4-year public universities take out loans to acquire higher education,⁵ and we find that student loans are associated with health care delays, medication reduction, worse self-rated physical and mental health, and more major medical problems. Student loans therefore operate like other dimensions of SES with regards to health and health care.

Results also reveal impacts of education policy on health, and negative health effects of state disinvestments in higher education. Recently, the Biden administration announced they will cancel some student debt and alleviate the burden of loan payments after graduation by lowering interest rates and reducing income-based repayments. Other researchers have proposed making debt dischargeable in bankruptcy, or subsidizing health care for those falling behind on debt repayment.⁴⁸ But these policies leave the current funding system of higher education, in which many students must take on debt to pay for high tuition costs, largely untouched. Our findings suggest that taking on debt is associated with worse physical and mental health, and health care use delays and medication reductions to save money, even before students are repaying their debt. Policies to trim debt payments would not address the fundamental relationship that exists between debt, health, and health care use prior to repayment. But this relationship could potentially be addressed by policies that reduce tuition to help students avoid going into debt to pay for college. Growing student debt is in large part a result of cuts to public higher education funding at the state level, and the failure of state budgets to keep up with growing demands and costs of higher education.^{2,4} Our findings and the findings of prior research suggest that restoring and fortifying public funding for higher education would have myriad benefits, including improvements in health and health care use both during and after college.

In the absence of a broader overhaul of the higher education funding system, colleges can also put policies into place that mitigate health disparities by student loan presence. University policies that require students to carry health insurance, access to on campus physical and mental health (but not dental health) services, and insurance policies requiring fees for use of non-preventative health care likely also affected our results. Though students reported delaying medical, dental, and mental health care if they

had loans, they were as likely as those without loans to report visiting a doctor or mental health counselor, but were substantially less likely to have been to the dentist, a practice which can lead to other physical health problems.⁴² Expanding access to free or very low-cost dental care and physical and mental health care services, and eliminating medication copays, could also reduce disparities in use of these services among the student population, and could reduce the accompanying long-term effects of reduced use of health care on health.

Targeted public health outreach on campuses may also help reduce disparities in health care use. Many colleges offer health and mental health services at no or low cost to students, but students may be unaware of these offerings, potentially leading those with reduced means to limit health care use as a result. Babula and Ersoy-Babula⁴⁸ suggest “triaging” those leaving college with loans, and offering them exit counseling on health care programs that they can access. Health information, including information about costs, and both on campus and other local low-cost health care services, could be specifically distributed to students with loans, Pell grants, or others who apply for financial aid earlier, while they are still enrolled in college.

Loans enable higher education, and college graduates have improved health compared to those who do not attend or complete college.²⁹ Yet, our findings point to a health and health care divide among college students, potentially causing problems and establishing or reinforcing habits that continue after graduation, leading to long-term health and health care use disparities that can last beyond the life of their debt. This may temper young adults’ ability to achieve class mobility and the associated health benefits of college, despite the increased access to higher education and college-associated health insurance that loans enable.

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Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States of America and received approval from the Institutional Review Boards of the University of North Carolina at Greensboro and Rutgers University-Camden.

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References

1. Cochrane D, Reed M. *Student Debt and the Class of 2014*. The Project on Student Debt, 10th Annual Report. Oakland, CA: The Institute For College Access And Success; 2015.
2. Houle JN. A generation indebted: Young adult debt across three cohorts. *Social Problems*. 2014;61(3):448–465. doi:10.1525/sp.2014.12110.
3. Witteveen D, Attewell P. Family background and earnings inequality among college graduates. *Soc Forces*. 2017;95(4):1539–1576. doi:10.1093/sf/sow109
4. Archibald RB, Feldman DH. *The Anatomy of College Tuition*. Washington DC: The American Council on Education; 2012.
5. National Center for Education Statistics. Loans for undergraduate students. <https://nces.ed.gov/programs/coe/indicator/cub>. Retrieved October 6th, 2021.
6. Chen R, Wiederspan M. Understanding the determinants of debt burden among college graduates. *J Higher Educ*. 2014;85(4):565–598. doi:10.1080/00221546.2014.11777340
7. Despard MR, Perantie D, Taylor S, Grinstein-Weiss M, Friedline T, Raghavan R. Student debt and hardship: evidence from a large sample of low- and moderate-income households. *Children Youth Serv Rev*. 2016;70:8–18. doi:10.1016/j.childyouth.2016.09.001
8. Kuperberg A, Mazelis JM. Social norms and expectations about student loans and family formation. *Sociol Inq*. 2022;92(1):90–126. doi:10.1111/soin.12416.
9. Brunner E, Marmot MG. Social organization, stress and health. In: Marmot MG, Wilkinson RG, eds. *Social Determinants of Health*. 2nd ed. Oxford: Oxford University Press; 2006:17–31.
10. Castañeda H, Carrion IV, Kline N, Tyson DM. False hope: effects of social class and health policy on oral health inequalities for migrant farmworker families. *Soc Sci Med*. 2010;71(11):2028–2037. doi:10.1016/j.socscimed.2010.09.024.
11. Dubay LC, Lebrun LA. Health, behavior, and health care disparities: disentangling the effects of income and race in the United States. *Int J Health Serv*. 2012;42(4):607–625. doi:10.2190/HS.42.4.c.
12. Hanson MD, Chen E. Socioeconomic status and health behaviors in adolescence: a review of the literature. *J Behav Med*. 2007;30(3):263–285. doi:10.1007/s10865-007-9098-3.
13. Williams DR, Priest N, Anderson NB. Understanding associations among race, socioeconomic status, and health: patterns and prospects. *Health Psychol*. 2016;35(4):407–411. doi:10.1037/hea0000242.
14. Layes A, Asada Y, Kepart G. Whiners and deniers - what does self-rated health measure? *Soc Sci Med*. 2012;75(1):1–9. doi:10.1016/j.socscimed.2011.10.030.
15. Pampel FC, Krueger PM, Denney JT. Socioeconomic disparities in health behaviors. *Annu Rev Sociol*. 2010;36:349–370. doi:10.1146/annurev.soc.012809.102529.
16. Adler NE, Stewart J. Health disparities across the lifespan: meaning, methods, and mechanisms. *Ann N Y Acad Sci*. 2010;1186(1):5–23. doi:10.1111/j.1749-6632.2009.05337.x.
17. Mulligan J. The problem of choice: from the voluntary way to affordable care act health insurance exchanges. *Soc Sci Med*. 2017;181:34–42. doi:10.1016/j.socscimed.2017.03.055.
18. Nunn R, Parsons J, Shambaugh J. *A Dozen Facts about the Economics of the US Health-Care System*. Washington DC: Brookings; 2020.
19. Smarsh S. There is no shame worse than poor teeth in a rich world. Aeon. Available at: <https://aeon.co/essays/there-is-no-shame-worse-than-poor-teeth-in-a-rich-world>. Published October 23, 2014. Retrieved December, 2022.
20. Smith KT, Monti D, Mir N, Peters E, Tipirneni R, Politi MC. Access is necessary but not sufficient: Factors influencing delay and avoidance of health care services. *MDM Policy Pract*. 2018;3(1):1–11. doi:10.1177/2381468318760298.
21. Vonneilich N, Lüdecke D, von Dem Knesebeck O. Educational inequalities in self-rated health and social relationships - analyses based on the European social survey 2002–2016. *Soc Sci Med*. 2020;267:112379–112379. doi:10.1016/j.socscimed.2019.112379.
22. Berkman LF, Kawachi I, Glymour MM, eds. *Social Epidemiology*. 2nd ed. Oxford: Oxford University Press; 2014.
23. Kalousova L, Burgard SA. Debt and foregone medical care. *J Health Soc Behav*. 2013;54(2):204–220. doi:10.1177/0022146513483772.
24. Grafova IB. Your money or your life: managing health, managing money. *J Fam Econ Iss*. 2007;28(2):285–303. doi:10.1007/s10834-007-9060-0.
25. Kim J, Chatterjee S. Student loans, health, and life satisfaction of US households: evidence from a panel study. *J Fam Econ Iss*. 2019;40(1):36–50. doi:10.1007/s10834-018-9594-3.
26. Anong ST, Henager R. Student loans and health-related financial hardship. *J Stud Fin Aid*. 2021;50(2). doi:10.55504/0884-9153.1715.
27. Dwyer RE, McCloud L, Hodson R. Debt and graduation from American universities. *Soc Force*. 2012;90(4):1133–1155. doi:10.1093/sf/sos072.
28. Kuperberg A, McMillan A, Mazelis JR. Are student loans worth it? Stratification in work-life balance, income and family. Paper presented at: the 2017 American Sociological Association Conference; August 12–15, 2017; Montreal, Canada.
29. Goldman D, Smith JP. The increasing value of education to health. *Soc Sci Med*. 2011;72(10):1728–1737. doi:10.1016/j.socscimed.2011.02.047.
30. Sweet E, Nandi A, Adam EK, McDade TW. The high price of debt: household financial debt and its impact on mental and physical health. *Soc Sci Med*. 2013;91:94–100. doi:10.1016/j.socscimed.2013.05.009.
31. Tran AGTT, Mintert JS, Llamas JD, Lam CK. At what costs? Student loan debt, debt stress, and racially/ethnically diverse college students' perceived health. *Cult Divers Ethnic Minor Psychol*. 2018;24(4):459–469. doi:10.1037/cdp0000207.
32. Gibbs JP. Norms: the problem of definition and classification. *Am J Sociol*. 1965;70(5):586–594. doi:10.1086/223933.
33. Thomas A, Valero-Elizondo J, Khera R, et al. Forgone medical care associated with increased health care costs among the US heart failure population. *Jacc Heart Fail*. 2021;9(10):710–719. doi:10.1016/j.jchf.2021.05.010
34. Weissman JS, Stern R, Fielding SL, Epstein AM. Delayed access to health care: risk factors, reasons, and consequences. *Ann Intern Med*. 1991;114(4):325–331. doi:10.7326/0003-4819-114-4-325.
35. U.S. Department of Health And Human Services. Women's health. Centers for Disease Control and Prevention. <https://www.cdc.gov/nchs/fastats/womens-health.htm>. Updated April 14, 2021
36. Brown S, Ortiz-Nuñez A, Taylor K. Educational loans and attitudes towards risk. *SERPS* 2010;2011010:1–26.
37. Millett CM. How undergraduate loan debt affects application and enrollment in graduate or first professional school. *J Higher Educ*. 2003;74(4):386–427. doi:10.1353/jhe.2003.0030
38. Hart NK, Mustafa S. What determines the amount students borrow? Revisiting the crisis-convenience debate. *J Stud Fin Aid*. 2008;38(1). doi:10.55504/0884-9153.1035.
39. Monnat SM, Chandler RF. Long-term physical health consequences of adverse childhood experiences. *Sociol Q*. 2015;56(4):723–752. doi:10.1111/tsq.12107.
40. O'Rand AM, Hamil-Luker J. Processes of cumulative adversity: childhood disadvantage and increased risk of heart attack across the life course. *J Gerontol B Psychol Sci Soc Sci*. 2005;60:117–124. doi:10.1093/geronb/60.special_issue_2.s117.
41. O'Rand AM, Hamil-Luker J, Elman C. Childhood adversity, educational trajectories, and self-reported health in later life among u.s. women and men at the turn of the century. *Z Erziehungswiss*. 2009;12(3):409–436. doi:10.1007/s11618-009-0081-3.
42. Seymour RA. Is gum disease killing your patient? *Br Dent J*. 2009;206(10):551–552. doi:10.1038/sj.bdj.2009.472.

43. Cooke R, Barkham M, Audin K, Bradley M, Davy J. Student debt and its relation to student mental health. *J Furth High Educ.* 2004;28(1):53–66. doi:10.1080/0309877032000161814
44. Deckard FM, Goosby BJ, Cheadle JE. Debt stress, college stress: implications for Black and Latinx students' mental health. *Race Soc Probl.* 2022;14(3):238–253. doi:10.1007/s12552-021-09346-z.
45. Morra DJ, Regehr G, Ginsburg S. Anticipated debt and financial stress in medical students. *Med Teach.* 2008;30(3):313–315. doi:10.1080/01421590801953000.
46. Walsemann KM, Ailshire JA, Gee GC. Student loans and racial disparities in self-reported sleep duration: evidence from a nationally representative sample of USA young adults. *J Epidemiol Community Health.* 2016;70(1):42–48. doi:10.1136/jech-2015-205583
47. Walsemann KM, Gee GC, Gentile D. Sick of our loans: student borrowing and the mental health of young adults in the United States. *Soc Sci Med.* 2015;124:85–93. doi:10.1016/j.socscimed.2014.11.027.
48. Babula M, Ersoy-Babula AI. Falling behind: The role of student loans on forgoing healthcare. *Health Social Care Commun.* 2022;30(5):1944–1950. doi:10.1111/hsc.13573.
49. Ross S, Cleland J, Macleod MJ. Stress, debt and undergraduate medical student performance. *Med Educ.* 2006;40(6):584–589. doi:10.1111/j.1365-2929.2006.02448.x.
50. Bridges S, Disney R. Debt and depression. *J Health Econ.* 2010;29(3):388–403. doi:10.1016/j.jhealeco.2010.02.003.
51. Keese M, Schmitz H. Broke, ill, and obese: is there an effect of household debt on health? *Rev Income Wealth.* 2014;60(3):525–541. doi:10.1111/roiw.12002.
52. O'Rand AM, Hamil-Luker J. Landfall after the perfect storm: cohort differences in the relationship between debt and risk of heart attack. *Demography* 2020;57(6):2199–2220. doi:10.1007/s13524-020-00930-3.
53. Clayton M, Liñares-Zegarra J, Wilson JOS. Does debt affect health? Cross country evidence on the debt-health nexus. *Soc Sci Med.* 2015;130:51–58. doi:10.1016/j.socscimed.2015.02.002.
54. Eisenberg D, Golberstein E, Gollust SE. Help-seeking and access to mental health care in a university student population. *Med Care.* 2007;45(7):594–601. doi:10.1097/MLR.0b013e31803bb4c1.
55. Kenney GM, McFeeters JR, Yee JY. Preventive dental care and unmet dental needs among low-income children. *Am J Public Health.* 2005;95(8):1360–1366. doi:10.2105/AJPH.2004.056523.
56. Atkinson A. Race, Educational loans & bankruptcy. *Mich J Race L.* 2010;16(1):1–43.
57. Houle JN, Addo FR. Racial disparities in student debt and the reproduction of the fragile Black middle class. *Sociol Race Ethnic.* 2019;5(4):562–577. doi:10.1177/2332649218790989.
58. Grinstein-Weiss M, Perantie DC, Taylor SH, Guo S, Raghavan R. Racial disparities in education debt burden among low- and moderate-income households. *Children Youth Service Rev.* 2016;65:166–174. doi:10.1016/j.childyouth.2016.04.010.
59. Nam Y. Parents' financial assistance for college and black-white disparities in post-secondary educational attainment. *Children Youth Services Rev.* 2020;110:104828. doi:10.1016/j.childyouth.2020.104828.
60. Nguyen AB, Moser R, Chou WY. Race and health profiles in the united states: an examination of the social gradient through the 2009 chis adult survey. *Public Health.* 2014;128(12):1076–1086. doi:10.1016/j.puhe.2014.10.003.
61. O'Brien R, Neman T, Seltzer N, Evans L, Venkataramani A. Structural racism, economic opportunity and racial health disparities: evidence from US counties. *SSM Popul Health.* 2020;11:100564. doi:10.1016/j.ssmph.2020.100564.
62. Rosenfield S. Triple jeopardy? Mental health at the intersection of gender, race, and class. *Soc Sci Med.* 2012;74(11):1791–1801. doi:10.1016/j.socscimed.2011.11.010.
63. Williams DR. Stress and the mental health of populations of color: advancing our understanding of race-related stressors. *J Health Soc Behav.* 2018;59(4):466–485. doi:10.1177/0022146518814251.
64. Bhutta N, Chang AC, Dettling LJ, Hsu JW, Board of Governors of the Federal Reserve System. Disparities in wealth by race and ethnicity in the 2019 survey of consumer finances. *Feds Notes.* 2020;2020(2797). doi:10.17016/2380-7172.2797.
65. Goldrick-Rab S. *Paying the Price: College Costs, Financial Aid, and the Betrayal of the American Dream.* Chicago, IL: University of Chicago Press; 2017.
66. Cherniack EP, Ceron-Fuentes J, Florez H, Sandals L, Rodriguez O, Palacios JC. Influence of race and ethnicity on alternative medicine as a self-treatment preference for common medical conditions in a population of multi-ethnic urban elderly. *Complement Ther Clin Pract.* 2008;14(2):116–123. doi:10.1016/j.ctcp.2007.11.002.
67. Upchurch DM, Wexler RBK. Racial and ethnic profiles of complementary and alternative medicine use among young adults in the United States: findings from the national longitudinal study of adolescent health. *J Evid Based Complementary Altern Med.* 2012;17(3):172–179. doi:10.1177/2156587212450713.
68. De Luca SM, Blois JR, Hentschel EAW, King E, Amen S. Mental health care utilization: how race, ethnicity and veteran status are associated with seeking help. *Community Ment Health J.* 2016;52(2):174–179. doi:10.1007/s10597-015-9964-3.
69. Asiskovitch S. Gender and health outcomes: the impact of health-care systems and their financing on life expectancies of women and men. *Soc Sci Med.* 2010;70(6):886–895. doi:10.1016/j.socscimed.2009.11.018.
70. McDonough P, Walters V. Gender and health: reassessing patterns and explanations. *Soc Sci Med.* 2001;52(4):547–559. doi:10.1016/S0277-9536(00)00159-3.
71. Mulye TP, Park MJ, Nelson CD, Adams SH, Irwin CE, Jr, Brindis CD. Trends in adolescent and young adult health in the united states. *J Adolesc Health.* 2009;45(1):8–24. doi:10.1016/j.jadohealth.2009.03.013.
72. Yang M-E, Manning D, van den Berg JJ, Operario D. Stigmatization and mental health in a diverse sample of transgender women. *LGBT Health.* 2015;2(4):306–312. doi:10.1089/lgbt.2014.0106.
73. Kuperberg A, Mazelis JR. Student loans, families and the unequal transition to adulthood. In: Rutter, V, Williams, K, Risman, B, eds. *Families as They Really Are.* 3rd ed. London: Norton & Co.; In Press; 2024.
74. Lin IF, Brown SL, Hammersmith AM. Marital biography, social security receipt, and poverty. *Res Aging.* 2017;39(1):86–110. doi:10.1177/0164027516656139.
75. Tach LM, Eads A. Trends in the economic consequences of marital and cohabitation dissolution in the united states. *Demography* 2015;52(2):401–432. doi:10.1007/s13524-015-0374-5.
76. Raley RK, Sweeney MM. Divorce, repartnering, and stepfamilies: a decade in review. *J Marriage Fam.* 2020;82(1):81–99. doi:10.1111/jomf.12651.
77. Tebeka S, Hoertel N, Dubertret C, Le Strat Y. Parental divorce or death during childhood and adolescence and its association with mental health. *J Nerv Ment Dis.* 2016;204(9):678–685. doi:10.1097/NMD.0000000000000549.
78. Laguilles JS, Williams EA, Saunders DB. Can lottery incentives boost web survey response rates? Findings from four experiments. *Res High Educ.* 2011;52(5):537–553. doi:10.1007/s11162-010-9203-2
79. Smith TW. The impact of alternative response scales on measuring self-ratings of health. *Surv Pract.* 2008;1(1):1–7. doi:10.29115/SP-2008-0004
80. Marja J. What is self-rated health and why does it predict mortality? Towards a unified conceptual model. *Soc Sci Med.* 2009;69(3):307–316. doi:10.1016/j.socscimed.2009.05.013.
81. Nissen S, Hayward B, McManus R. Student debt and wellbeing: a research agenda. *Kōtuitui: New Zealand J Soc Sci Online.* 2019;14(2):245–256. doi:10.1080/1177083X.2019.1614635.