The impact of wealth and debt on
children's risk of household food insecurity

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Abstract

In the United States, almost one in seven households with children have limited access to food. The problem of food insecurity is closely tied to a household's financial circumstances. Yet, prior research has paid insufficient attention to the financial risk factors beyond poverty that impact food insecurity. Lack of liquid financial assets may compromise a household's ability to smooth consumption during income shortfalls, while debt obligations, such as debt from credit cards or medical bills, may deplete financial resources and constrain food budgets. Using longitudinal data from the Panel Study of Income Dynamics (PSID) and mixed effects growth curve models, I estimate associations of household debt and liquid assets with food insecurity among households with children. Additionally, I disaggregate household debt by amount and type of debt incurred, including debt from housing, student loans, credit cards, medical bills, and other sources of unsecured debt. Results indicate significant heterogeneity in wealth and debt profiles based on food security status. Further, debt from unpaid medical bills, other sources of unsecured debt, and student loans increase the odds of household food insecurity net of income and other household characteristics. I also find that lack of liquid assets is an important determinant of food insecurity, independent of household income and debt. Considering the full spectrum of household finances, including lack of financial assets and specific debt obligations, is essential for identifying at-risk households and alleviating the problem of food insecurity.

Executive Summary

Introduction. In the United States, almost one in seven households with children have limited access to food (Coleman-Jensen et al. 2020). Although income deprivation is a significant predictor of food hardship, it remains unclear why some families are more vulnerable to food insecurity than others (Gundersen and Ziliak 2018). Prior research has paid insufficient attention to the financial risk factors beyond income deficits, such as asset poverty and debt. This empirical oversight is surprising since wealth and debt are important dimensions of socioeconomic status (SES) with financial and health implications that differ from income (Berger and Houle 2019; Gibson-Davis and Percheski 2018). Moreover, rising wealth inequality among households with children indicates that many children in the U.S. grow up in asset poor and indebted households (Gibson-Davis and Hill 2021). Yet, few studies consider how wealth and debt profiles impact a household's vulnerability or resilience to food insecurity.

To fill this gap, I use longitudinal data to examine associations of household debt and liquid assets with food insecurity among households with children. Research indicates that the financial and health implications of debt vary based on the amount and type of debt accrued (Berger and Houle 2019). Accordingly, I consider debt from five major sources: housing, student loans, credit cards, medical bills, and other sources of unsecured debt (legal fees, loans from relatives, and other sources).

Data and Methods. Data is from the 2013-2019 Panel Study of Income Dynamics (PSID). The sample includes households with dependent children whose reference person remained the household reference person and/or partner from 2013-2019. After accounting for missing data, these restrictions yield an analytic sample of 5,232 household-wave observations and 1,744 unique households. Household food insecurity is the outcome, which is a dichotomous measure

indicating "low" or "very low" food security derived from the USDA's 18-item food insecurity scale (Bickel et al. 2000). Measures of debt and liquid assets are lagged from the 2013-2017 PSID. For each type of debt, a series of time-varying measures indicate whether a household has any debt (e.g., 1= has credit card debt) and total debt balance (e.g., total credit card debt). A dichotomous time-varying measure indicates whether a household has less than $1,000 of liquid assets, which is derived from summing the total dollar value reported in checking/savings accounts, stocks, bonds, and insurance. I also account for relevant individual and household characteristics (e.g., age, race/ethnicity, relationship status, income, and education).

First, I provide a rich descriptive portrait of the sample households, focusing on their debt profiles, sociodemographic characteristics, and differences based on food security status. Then, I estimate a series of mixed effects logistic regression growth curve models to examine the associations of interest. Growth curve models assess between and within-household change, where observations at Level 1 are nested within households at Level 2 (Rabe-Hesketch and Skondral 2008). These models are ideal for assessing variation in food insecurity due to differences between and within households over the measurement occasions (Singer and Willet 2003).

Results. First, I find diverging patterns of debt accumulation and liquid assets based on a household's recent food security status. In particular, the proportion of food insecure families with medical debt and less than $1,000 in liquid assets is significant. I also find that debt from credit cards and housing is associated with lower odds of food insecurity, though these associations are attenuated after controlling for individual and household characteristics. In contrast, debt from medical bills, student loans, and other sources of unsecured debt increase the odds of household food insecurity, net of income and other covariates. Having less than $1,000

in liquid assets also significantly increases the risk of food insecurity even after accounting for other risk factors.

Discussion. Results indicate that household debt and liquid asset poverty impact vulnerability to food insecurity. As such, an exclusive focus on income deprivation will overlook important financial determinants of food insecurity among households with children. While it is beyond the scope of this study to test the mechanisms related to these findings, it is possible that families with student loans, medical bills, and other forms of unsecured debt are especially vulnerable to resource depletion and expense trade-offs stemming from their debt obligations. Researchers interested in the predictors of food hardship should further examine how debt and wealth profiles shape food insecurity onset and duration.

In addition to scholarship on food insecurity, this study contributes to an emerging literature on household debt and child well-being (Berger and Houle 2019) and furthers research on debt as an emerging mechanism of stratification (Dwyer 2018). The findings also have implications for programs and policies designed to eliminate food hardship. Efforts to address debt burden, especially from medical bills and student loans, may be essential for preventing food insecurity. Additionally, food assistance programs might reconsider eligibility requirements if based on income, alone (Gundersen 2015). Overall, considering the full spectrum of household finances, including debt ownership and asset poverty, is essential for identifying at-risk households and alleviating the problem of food insecurity.

The Impact of Debt and Wealth on Children's Risk of Household Food Insecurity

Introduction

In the United States almost 1 in 7 households with children have limited access to food (Coleman-Jensen et al. 2020). Identifying the determinants of food insecurity is a priority for researchers and policymakers (Gundersen and Ziliak 2018). Food insecurity is linked with a host of negative outcomes for adults and children (Gundersen and Ziliak 2015). While important non-financial correlates of food hardship have been identified, the problem of food insecurity is closely tied to a household's financial circumstances (Coleman-Jensen et al. 2020). Although income deprivation is a significant predictor of food hardship, it remains unclear why some families are more vulnerable to food insecurity than others (Gundersen and Ziliak 2018; Gundersen, Kreider, and Pepper 2011). Poverty is a limited predictor, at least in part, because income is only one indicator of economic well-being (Gibson-Davis, Keister, and Gennetian 2021). Yet, prior research has paid insufficient attention to the financial risk factors beyond income deficits that impact food insecurity.

Although the literature remains sparse, recent studies indicate that debt obligations and lack of financial assets, such as savings and homeownership, are risk factors for food insecurity (Bartfeld and Collins 2017; Gundersen, Engelhard, and Hake 2017; Guo 2011; Leete and Bania 2010). Financial assets are economic reserves that protect against food hardship by enabling households to smooth consumption during income shortfalls or expenditure shocks (Chang, Chatterjee, and Kim 2014; Gjersten 2016). Debt may increase vulnerability to food insecurity by redirecting financial resources, such as income and assets, toward debt obligations and away from food purchase (Brewer 2020). Unsecured debt, such as debt from credit cards and medical bills, has significantly increased, especially among lower income populations who have fewer

resources (including assets) to meet debt obligations and secure basic needs (Morduch and Schneider 2017). Nonetheless, a comprehensive understanding of the financial conditions that contribute to food insecurity remains limited.

The literature on the financial determinants of food insecurity has three significant gaps which this study addresses. First, most research on food insecurity is cross-sectional and cannot assess the dynamic relationship between economic resources and food insecurity (Gundersen and Ziliak 2018). Second, several studies are based on select samples, such as food bank clients, which may not generalize to the broader population of U.S. households (e.g., Gundersen, Engelhard, and Hake 2017). Notably, asset poverty and debt burden are not limited to income poor households (Gibson-Davis, Keister, and Gennetian 2021). Third, previous research on household debt and food insecurity often relies on an aggregate measure of debt (e.g., any outstanding loans) or does not consider total debt balance (e.g., Moffitt and Ribar 2016, Tarasuk 2001), despite recent scholarship showing that relationship between debt and well-being varies based on the amount and type of debt accrued (Berger and Houle 2019; Dwyer 2018).

The current study addresses these gaps by using longitudinal data from the Panel Study of Income Dynamics (PSID) to assess the impact of financial resources and liabilities on food insecurity among a diverse sample of U.S. households with children. The longitudinal study design and use of growth curve models allows me to examine how financial assets and debt obligations are associated with experiences of food insecurity over a five-year period. A longitudinal approach is imperative for better informing programs and policies designed to address food insecurity. Another major strength of this study is assessing the impact of liquid assets, a specific component of net worth, on food insecurity and disaggregating household debt into specific types, including debt from housing, student loans, credit cards, medical bills, and

other sources of unsecured debt. This approach moves beyond a limited focus on poverty and provides a detailed portrait of the financial conditions that promote or hinder food security among households with children.

Household Wealth and Debt in the United States

Wealth inequality, or the unequal distribution of assets and debts across a population, has increased significantly in the United States over the past few decades (Pfeffer and Schoeni 2016), especially among households with children (Gibson-Davis and Percheski 2018). Wealth is often measured as net worth, the sum of all assets minus debts. In 2019, child households in the top decile of the wealth distribution owed 82% of all wealth among households with children (Gibson-Davis and Hill 2021). In contrast, child households in the bottom 50% of the wealth distribution in 2019 had no wealth or net debt (Gibson-Davis and Hill 2021). Indeed, while income poverty has decreased among child households, net worth poverty has risen (Gibson-Davis, Keister, and Gennetian 2021). The extreme and increasing concentration of wealth among child households is partially attributable to declining assets and rising indebtedness (Gibson-Davis and Percheski 2018).

Household debt has reached unparalleled levels in the United States. By the start of 2019, total household debt surpassed $13.5 trillion, with Americans holding approximately $9.2 trillion in home mortgages, $1.5 trillion in student loans, $1.3 trillion in auto loans, and $850 billion in credit card debt (Federal Reserve Bank of NY, 2019). While the Great Recession highlighted the risks of soaring consumer debt, total household debt is 7.8% higher than the previous peak in 2008 (Federal Reserve Bank of NY, 2019). There has also been a steep rise in household debt-to-income ratios (Dynan 2009), suggesting that debt has become a central component of household finances which many borrowers find difficult to repay. Debt accumulation is especially high and

rising among household with children. Compared to nonchild households, a greater share of child households carry debt (87% versus 72%), and among those with debt, report higher (median) amounts of debt (Gibson-Davis and Hill 2021).

The rise of consumer debt is linked to a range of neoliberal policies and structural conditions. Deregulation of the financial markets beginning in the 1980s made lending more profitable for banks and expanded access to credit across the socioeconomic spectrum, though not on equal lending terms (Dwyer 2018; Lyons 2003). On the demand side, many Americans have taken on debt to supplement income and finance expenses in response to socioeconomic conditions, such as stagnant or declining wages, the rising cost of living and healthcare, and a withering social safety net system (Kus 2015; Leicht and Fitzgerald 2014; Sullivan, Warren, and Westbrook 2000; Sullivan 2008). Under these circumstances, debt profiles have changed dramatically. Recent cohorts of adults hold far more non-mortgage debt, such as student loans and credit card debt, compared to previous generations whose major source of debt was a secured home mortgage (Houle 2014).

Consumer debt can be classified as secured or unsecured debt. Secured debt, such as home mortgage, is tied to an asset or some form of collateral, while unsecured debt refers to debt, such as credit card debt and medical bills, that is loaned without collateral. The risks and rewards associated with consumer debt are variable. Debt can be distinguished as "good" or "bad" debt based on factors such as the type of debt accrued and the cost of borrowing, among other considerations (Manning and Butera 2010). Good debt, such as a home mortgage, can increase future earnings and wealth by allowing individuals to build credit and make important investments, such as getting a college education or buying a home. As such, lack of access to mainstreams forms of credit on fair lending terms can be a barrier to wealth attainment (Morduch

and Schneider, 2017; Oliver and Shapiro 2019). In contrast, bad debt, which might be used to finance consumption or healthcare needs, can undermine financial stability and trap families in a cycle of debt and economic hardship (Halpern-Meekin, Edin, and Sykes 2015; Dwyer 2018). The financial risks associated with debt, especially unsecured debt, and the diverging profiles of wealth and debt among households with children have far-reaching implications for family and child well-being.

Household Wealth, Debt and Health

A growing literature indicates that wealth inequality contributes to health disparities (Boen, Keister, and Aronson 2020; Boen and Yang 2016). Wealth provides an economic buffer against income loss, expenditure shocks, and financial hardship. The availability or absence of wealth is thought to impact individual health outcomes through pathways such as household consumption, time use, stress exposure, and investments in human, social and economic capital (Berger and Houle 2019; Gibson-Davis and Hill 2021; Killewald, Pfeffer, and Schachner 2017). While studies often focus on the relationship between net worth and health, recent findings from Boen and colleagues (2020) illustrate how specific components of net worth, including different types of assets and debt, have differential impacts on adult health outcomes. This research, among others, demonstrates the importance of considering specific dimensions of wealth in relation to various domains of health and well-being.

Household debt is an important yet overlooked component of net worth with health implications. An emerging literature suggests that debt, especially unsecured debt, impacts health through stress exposure, depression, poor health behaviors, compromised access to health care, and an inability to secure basic needs (Berger and Houle, 2019; Drentea and Lavrakas 2000; Drentea and Reynolds 2015; Kalousova and Burgard 2013; Sun and Houle 2018; Sweet et al.

2013). The health risks of debt may be especially acute for lower income borrowers, who are more likely to accrue high-cost, unsecured debt and have fewer resources to manage debt obligations (Bird, Hagstrom, and Wild 1999; Gibson-Davis, Keister, and Gennetian 2021; Sullivan 2012). Still, the literature on debt and health is sparse (Richardson, Elliott, and Roberts 2013), especially compared to the well-established literature on income and health (Phelan, Link, and Tehranifar 2010). Moreover, despite concerns over declining wealth and rising debt among households with children, only a handful of studies consider how different types and amounts of parental debt associate with child health and development (Berger and Houle 2019; Nepomnyaschy et al. 2021).

Household Debt and Food Insecurity

Debt has specific implications for household food insecurity. First, a well-established relationship exists between socioeconomic status (SES) and household food insecurity (Gundersen and Ziliak 2018). Debt, which has increased dramatically among U.S. households, is an important dimension of socioeconomic status that impacts a household's financial status (Kus 2015). Second, debt may undermine food security if borrowers are unable to manage debt obligations alongside other bills and basic expenses. This concern is especially acute for resource-constrained borrowers who are less equipped to service debt obligations and maintain food security. Still, some debt, such as credit card debt, may allow families to access credit, finance expenses, and stave off food insecurity. Additionally, other forms of debt, such as student loans, are used to invest in human and economic capital and do not necessarily reflect financial instability.

While research that examines the effects of household debt on food insecurity is limited, a small body of literature indicates that debt compromises food security. However, many studies

on debt ownership and food hardship rely on an aggregate measure of individual or household debt, such as any outstanding loans or total non-mortgage debt (Chang, Chatterjee, and Kim 2014; Tarasuk 2001; Moffitt and Ribar 2016). These studies are unable to assess which types of debt promote or hinder food security and for whom. Moving beyond an aggregate measure of unsecured debt, Brewer (2020) found that medical debt associated with higher odds of household food insecurity, while credit card debt, student loans, and other forms of unsecured debt were unrelated to food insecurity risk after adjusting for individual and household characteristics. While informative, this study was cross-sectional and did not examine housing debt.

More research is needed to assess the impacts of household debt, differentiating by type and amount of debt, on food insecurity risk among households across the income spectrum. Recent scholarship suggests that some sources of debt, such as medical debt, may undermine a household's ability to avoid food insecurity, while other sources of debt may protect against or be unrelated to food insecurity once more proximal risk factors are considered (Brewer 2020; Gundersen, Engelhard, and Hake 2017). Establishing the full range of financial resources and liabilities related to food hardship is essential for preventing food insecurity and identifying at-risk households. To address these knowledge gaps, I use longitudinal data to examine how various sources of debt, including debt from housing, student loans, credit cards, medical bills, and other sources of unsecured debt (e.g., legal fees, loans from relatives), may differentially impact food insecurity among households with children.

Housing Debt and Food Insecurity

Housing debt may increase risk of food insecurity. On one hand, mortgage loans facilitate homeownership, which is the largest source of wealth for middle class Americans (Wolff 2017). Homeownership, in turn, has been associated with a lower risk of food insecurity (Guo 2011).

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Housing debt may also protect against food hardship by allowing some homeowners to access credit, such as a home equity line of credit, and finance expenses during times of economic distress.

On the other hand, a mortgage loan, which differs from home equity, is a large reoccurring payment that can deplete a household's saving and disposable income used for paying bills and purchasing food (Kirkpatrick and Tarasuk 2007). A cross-sectional study of Canadian households found that the protective effect of homeownership varied based on the presence of mortgage debt and the value of the house, suggesting that housing debt diminishes the buffering effect of homeownership (St-Germain and Tarasuk 2020). Specifically, compared to mortgage-free homeowners with high housing asset, renters and mortgage holders with low housing asset had similar and higher odds of food insecurity. Given the limited research on housing debt and food hardship, it remains unclear whether housing debt increases the risk of food insecurity among U.S. households after accounting for homeownership and other dimensions of socioeconomic standing.

Education Debt and Food Insecurity

Student debt is the largest source (in dollar terms) of non-mortgage debt owned by U.S. households (Bhutta et al. 2020). In 2019, an estimated 62% of college seniors who graduated from public and nonprofit colleges had student loan debt, averaging $28,950 (Institute of College Access & Success 2020). Despite the social and economic advantages associated with a college degree, households with education debt have fewer assets and lower net worth compared to their non-indebted counterparts (Bhutta et al. 2020; Elliott and Nam 2013). Additionally, financial burden from education debt and rates of student loan delinquency are trending upward (Federal Reserve Bank of NY 2019; Houle 2014; Oliver and Shapiro 2019). The financial burden of

student loans may hinder a household's opportunities to invest, ability to save, or secure basic needs, such as healthcare and food.

While most studies on education debt and food hardship are limited to current college students (e.g., Gaines et al. 2014; Knol 2018), one study found that student loan debt increased the likelihood of food insecurity among a sample of lower income tax filers, though higher student loan amounts were not associated with a greater risk of food insecurity after accounting for other socioeconomic characteristics (Despard et al. 2016). While informative, this study relied on a single question to capture food security status and was based on a select sample of low-income households who used a specific tax-preparation software program. The current study builds on this research to assess the effect of student loan debt on food insecurity among an economically diverse sample of U.S. households with children.

Credit Card Debt and Food Insecurity

Credit card debt might offer short-term relief from food insecurity. Across income groups, credit cards have become a common tool for managing expenses and financing consumption. In 2019, almost 45% of U.S. households had credit card debt, with a mean balance of $6,300 (Bhutta et al. 2020). Resource-constrained households may use credit cards to finance expenses and avoid food hardship (Gaines et al. 2014). Bartfeld and Collins (2017), for example, found that credit card debt was associated with marginal food security (but not low or very low food security) among higher-income respondents (<185% poverty line). It is possible that more advantaged households can access credit and use credit cards as a coping strategy to prevent food insecurity. Additionally, Brewer (2020) found a lower percentage of food insecurity among families with credit card debt, although the adjusted association between credit card debt and food insecurity was attenuated after accounting for individual and household characteristics.

Still, the financial consequences of credit card debt can be severe. These include, for example, a tarnished credit score and subsequent reliance on predatory loans, which in turn, can perpetuate financial instability and drive households further into debt (Halpern-Meekin, Edin, and Sykes 2015). Lower income and minority borrowers, who have fewer resources to manage credit card debt obligations, are especially vulnerable to predatory lending practices and poor financial outcomes (Dwyer 2018; Halpern-Meekin, Edin, and Sykes 2015). Taken together, credit card debt might be a short-term solution to stave off food insecurity for those with access to credit but possibly at the expense of long-term food security.

Medical Debt and Food Insecurity

Medical debt may be especially harmful for food security. Many Americans struggle to pay their medical bills. A recent analysis based on consumer credit reports estimates that 17.8% of individuals in the U.S. had medical debt in collections, with an average balance of $429 in June 2020 (reflecting healthcare provided before the COVID-19 pandemic) (Kluender et al. 2021). Compared to other sources of unsecured debt, such as credit cards, medical debt indicates an outstanding payment obligation and does not provide access to credit or facilitate investment in social or economic capital. Moreover, the coping strategies used to pay off medical bills can have severe financial consequences. These include, for example, reliance on predatory loans, drained savings and retirement accounts, bankruptcy, and forced trade-offs between debt payments and basic needs (Doty et al. 2008; Dranove and Millenson 2006; Hamel et al. 2016; Edin et al. 2013).

Though the literature is limited, research indicates that medical debt, as well as out-of-pocket medical expenditures, increase risk of food hardship (Brewer 2020; Gundersen, Engelhard, and Hake 2017; Nielsen, Garasky, and Chatterjee 2010). Still, questions remain

regarding the relationship between medical debt and food insecurity. It is possible that poor health or a negative health event, which resulted in unaffordable medical bills, drives the association rather than medical debt, per se (Johnson et al. 2021). It is also unclear whether medical debt traps households in a cycle of economic distress and increases risk of long-term food insecurity. Prior research has been cross-sectional and unable to fully account for these possibilities (Brewer 2020; Gundersen, Engelhard, and Hake 2017; Nielsen, Garasky, and Chatterjee 2010). To address these gaps, I use longitudinal data to examine the effect of medical debt on food insecurity, while accounting for the health status of adult household members and other known risk factors. I also consider a household's liquid financial assets, which might mitigate the effect of debt on food insecurity.

Liquid Assets and Food Insecurity

Assets protect against food insecurity (Gjerston 2016; Guo 2011; Leete and Bania 2020). Liquid assets are a specific form of wealth that may be especially relevant for understanding why some households are vulnerable to food insecurity, while others are more resilient. Compared to nonliquid assets, such as a home or retirement account, liquid assets are more easily converted into cash and can be used like income to finance expenses and purchases goods. Liquid financial assets, therefore, indicate a household's ability to smooth consumption and purchase food after large expenses or during income shortfalls. Accordingly, the absence of liquid assets increases risk of food insecurity (Brewer 2020).

Additionally, the effect of debt on food insecurity might depend on a household's liquid assets. Households can use liquid assets and income to manage debt payments and avoid the financial and non-pecuniary consequences of debt obligations. A recent study, for example, found that liquid financial assets mitigated the food insecurity risks associated with unpaid

medical bills but only among families with sufficient liquid assets (Brewer 2020). To date, few studies consider the role of financial liabilities, as well as resources, in relation to food insecurity risk among households with children.

The Current Study

The purpose of this study is to examine the financial determinants of food insecurity, focusing on household debt and liquid assets. Prior research has paid insufficient attention to the financial predictors of food insecurity beyond income and has failed to examine how specific components of net worth, including debts and assets, associate with food hardship. To address these limitations, I employ longitudinal data from the Panel Study of Income Dynamics (PSID) to assess how debt incurred from housing, student loans, credit cards, medical bills, and other sources of unsecured debt effect household food insecurity, after accounting for individual and family characteristics. I also consider the effect insufficient liquid assets have on food insecurity. With stagnant wealth gains and increasing debt accumulation among a growing share of households with children (Gibson-Davis and Hill 2021), this study provides important insights into the financial conditions that promote resilience or increase vulnerability to food insecurity.

Research Methods

Using data from the Panel Study of Income Dynamics (PSID) (2013-2019), I employ random-intercept growth curve models to address the following questions: (1) How is debt, differentiating by type and amount of debt, associated with household food insecurity after accounting for relevant individual and household-level (e.g., income) characteristics? I hypothesize that the relationship between debt and food insecurity will vary based on the amount and type accrued, with medical debt exerting a particularly harmful effect on household food

security. (2) How does liquid asset constraint associate with food insecurity after accounting for individual and household characteristics, such as income and debt? I hypothesize that insufficient liquid assets will compromise food security independent of household income and other known risk factors.

Data

Data is drawn from the Panel Study of Income Dynamics (PSID). The PSID is an on-going and nationally representative panel survey that began following over 18,000 individuals residing in 4,800 U.S. households in 1968. The original sample members and their descendants were surveyed annually until 1997 and biennially thereafter. The PSID collects a range of information on the sociodemographic and economic characteristics of individuals and their households, such as employment, income, housing, and health. The PSID began collecting data on household wealth and debt every five years from 1984 to 1999 and in each survey wave after 1999. Since 2011, non-mortgage debt is disaggregated into different types of debt (student loans, medical bills, credit card debt, etc.), which is essential for examining how specific types of debt associate with experiences of food insecurity. Food security status was collected from 1999-2003 and again since 2015, as well as in the Child Development Supplement.

This study uses data from the 2013-2019 waves of the PSID. This data is optimal for the current analysis because it allows me to assess the impact of assets and debt, disaggregated into distinct components, on three consecutive measures of food security status among a recent sample of U.S. households with children.

Analytic Sample

The analytic sample includes PSID respondents who were the reference person of the household in 2013 and remained the reference person or spouse/partner from 2015-2019. Additionally, the sample is limited to households with at least one resident child present under the age of 18 in the household from 2013-2019. The sample restrictions produced an eligible sample of 1,904 households. Approximately 8% of households had missing data on one or more independent variable of interest. Given the low levels of missing data, I restricted the sample to cases with complete data on all independent variables of interest for a final analytic sample of 5,232 household-wave observations and 1,744 unique households.

Measures

The outcome is a binary measure of household food insecurity derived from the18-item Household Food Security Module in the 2015, 2017, and 2019 PSID. Examples of the questions include whether it was often true, sometimes true, or never that in the last 12 months "(I /We) worried whether (my/our) food would run out before (I/we) got money to buy more" and "(I/We) couldn't afford to eat balanced meals." Households answering in the affirmative to three or more items are considered food insecure (Bickel et al. 2000). For sensitivity tests, I also used a generated variable indicating a household's scaled food security score, where values are determined by the sum of the raw score of endorsed items. The scale ranges from 0-9.3, where higher values indicate greater food insecurity.

Measures of debt and liquid assets are from the 2013, 2015, and 2017 PSID. These indicators were lagged so that food insecurity at time t was a function of debt and liquid assets at time $t – 1$. This approach reduces concerns about reverse causality and strengthens inferences about the relationships between financial conditions and food insecurity (Boen, Keister, and Aronson 2020). The analysis focuses on five major sources of debt: education, housing, credit

card, medical, and other unsecured debt (Dwyer 2018). Education debt includes money owed for student loans. Housing debt consists of all mortgage and home equity loans. Credit card debt includes money owed to all credit card and store card debt. Medical debt includes unpaid medical bills. Other debt is a composite measure of other sources of unsecured debt, including legal bills, loans from relatives, and all other sources of unsecured debt.[1] Respondents are asked to report whether they or anyone in their family living there currently have these debts; and if so, to report the total amount. I created binary indicators for each type of debt, where households receive a 1 if they report debt (e.g., 1= has credit card debt) or a 0 for no debt, and continuous measures that indicate total debt balance (e.g., total amount of credit card debt). For the continuous debt and wealth measures, as well as income, I applied a 98th percentile top code (Berger and Houle 2019) and adjusted for inflation to 2019 dollars using the Consumer Price Index (CPI-U). Additionally, these variables were logged in the modeling process to adjust for extreme values.

A dichotomous measure indicates whether a household reports less than $1,000 of liquid financial assets, which is derived from summing the total dollar value reported in checking/savings accounts, stocks, bonds, and insurance. The $1,000 cut-off proxies whether a household has enough financial reserves to cover food expenditures over a relatively short period. Approximately 36% of the analytic sample reported no liquid assets in 2013. In supplementary models, I examined the role of total net worth, measured as the sum value of household assets minus debts, and total liquid assets, which produced substantively similar results as the dichotomous measure for less than $1,000 in liquid assets.

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[1] It was necessary to aggregate other unsecured debt into a single measure given how few respondents reported debt from these sources.

I also include time-invariant and time-varying covariates. Time-invariant variables include the reference person's race/ethnicity (white, reference; black, Hispanic, other race/ethnicity) and educational attainment (less than a high school diploma; reference, high school diploma/GED, some college, college degree or more). In addition to the debt and wealth indicators, time-varying characteristics include the reference person's relationship status (married; reference, cohabiting, not married/cohabiting), age, number of children in the household, employment status (1= currently employed), household income, homeownership (1= owns home) and whether the reference person and/or their spouse/partner reports "fair" or "poor" self-rated health (1= poor health) or a physical or nervous condition that limits their work (1= health-related work limitation).

Analytical Approach

First, I provide a descriptive portrait of the sample households, focusing on their debt profiles, sociodemographic characteristics, and differences across food security status. Descriptive statistics are presented in Table 1 and Figures 1-2. Next, I estimate a series of mixed effects logistic regression models to examine longitudinal associations between each wealth/debt measure of interest and household food insecurity. Growth curve models assess between and within-household change, where observations at Level 1 are nested within households at Level 2 (Rabe-Hesketch and Skondral 2008). As such, these models are ideal for assessing variation in food insecurity due to differences between and within households over the measurement occasions (Singer and Willet 2003). In all analyses, I used random-intercept models, which estimate a mean growth curve in food insecurity, while allowing the intercept to vary across households. Odds ratio (OR) are presented along with 95% confidence intervals (CI).

Specifically, Table 2 focuses on the binary measures of debt and liquid assets and progressively adjusts for covariates. Table 3 is an abbreviated table that focuses on the continuous debt measures to assess associations of total debt balance and household food insecurity after accounting for individual and household characteristics. In supplementary analysis, I assess various interactions (e.g., between poor self-rated health and debt) to assess potential heterogeneity in associations between wealth/debt and food insecurity.

Sensitivity Tests

I conducted several sensitivity tests to assess the robustness of the findings. First, in place of the dichotomous measure of liquid assets, I examined the impact of total net worth and total liquid assets (logged) on food insecurity after adjusting for covariates, which produced substantively similar results. Next, using random-slope logistic regression models, I found no evidence that the effect of debt (for each type of debt) or liquid assets varied across time, or moderated the overall trajectory (slope) of household food insecurity. Additionally, I controlled for adult health status (poor self-rated health and a health-related work limitation) in the fully adjusted models. These measures were associated wit higher odds of food insecurity, net of other control variables, though controlling for adult health did not alter the relationships of debt and liquid assets with food insecurity. For parsimony, I do not include the measures for poor health or a health-related work limitation in the final models. I also found no evidence that poor adult health moderated the impact of medical debt on odds of household food insecurity. Taken together, these findings suggest that medical debt exerts an independent effect on food insecurity risk above and beyond the health status of adult household members.

Finally, I used linear mixed effects models to examine adjusted associations of debt and liquid assets with a household's scaled food security score. These models yielded similar results

to the mixed effects logistic regressions (using the dichotomous measure of food insecurity).

However, the significant associations between other unsecured debt and food insecurity were

attenuated (though coefficients were in a similar direction).

Results

Descriptive Statistics

Table 1 displays descriptive statistics for the full sample and compares food secure and

food insecure households from 2015-2019. On average, food insecurity declined across survey

waves, falling from 19% of families in 2015 to 13% in 2019. These proportions closely mirror

national trends in food insecurity among households with children (Coleman-Jensen et al. 2020).

Approximately 28% of sample experienced food insecurity at least once during the 2015-2019

period. In terms of debt status, almost 50%, 25%, 9%, 46% and 48% of families reported credit

card, medical, other unsecured debt, education, or home debt, respectively, at least once between

2013-2017. Around 62% of households held less than $1,000 in liquid assets in one or more

survey wave. Figure 1 shows conditional averages for each type of debt across survey waves.[2]

Additional descriptive statistics (see Table A1) show sample characteristics for each survey

wave, including conditional means and medians for the different types of debt. On average, total

credit card and education debt increased over time. For example, families with credit card debt

reported a mean balance of $6,943 in 2013 compared to a marginal increase of $7,483 in 2019.

The percentage of households with medical debt declined, though families with unpaid medical

bills reported similar amounts of medical debt across time (e.g., $5,025 in 2013 versus $4,817 in

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[2] These are conditional mean averages, indicating the average total debt among households with that type of debt.

2019). For each type of debt, the median balance is lower than the mean, except for other unsecured debt (see Table 1A).[3]

Table 1 also shows comparisons between food secure and food insecure households. Stark differences emerge based on food security status, including wealth and debt profiles. Food insecure families were significantly less likely to report credit card and housing debt and with lower (average) debt balances compared to food secure households. Although a similar percentage of food insecure and food secure households reported education debt, total education debt, on average, was marginally higher among food secure families. In contrast, food insecure households reported more unpaid medical bills and other forms of unsecured debt (legal fees, family loans, other unsecured debt) than food secure families. For example, 37% of food insecure families reported medical debt between 2013-2017 compared to one in four food secure families. Notably, 92% of food insecure households held less than $1,000 in liquid assets in at least one survey wave compared to half of food secure households. The percentage of food insecure households across time and debt are shown in Figure 2.

Across individual and household characteristics, the percentage of food insecure households was higher among families with a younger, Black, unmarried, or less educated reference person. Food insecurity was also higher among households with more children, lower levels of annual income, or a reference person and/or their partner who reported poor health or a health-related work limitation. A lower percentage of homeowners experienced food insecurity compared to non-homeowners. Overall, Table 1 illustrates significant differences in

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[3] The similar conditional median and mean values for other unsecured debt indicates fewer outliers in total other unsecured debt after applying a 98th percentile top code.

sociodemographic characteristics, as well as debt status and liquid assets, based on food security status.

Growth Curve Models

Table 2 shows results from mixed effects logistic regression models. The intercept-only model is the simplest model (not shown), which provides estimates of the proportion of between-household variability in food insecurity. The random-intercept variance was estimated at 10.592, which expressed as an intraclass correlation of 0.76 indicates that 76% of the variation in food insecurity is attributable to households.

Model 1 controls for the survey wave (the time metric) and includes the binary indicators of household debt. The time metric is significant, indicating that household food insecurity, on average, declined from 2015-2019. Results also show that credit card debt (OR: 0.60, 95% CI= 0.44, 0.81) and housing debt (OR: 0.15, 95% CI= 0.11, 0.22) are associated with lower odds of food insecurity, while the opposite is true for medical debt (OR: 1.63, 95% CI=1.15, 2.30) and other unsecured debt (OR: 1.83, 95% CI= 1.01, 3.31), net of one another. There is no association between education debt and food insecurity.[4] Model 2 adds controls for age, race/ethnicity, and relationship status. A likelihood ratio test comparing Models 1 and 2 indicates improvement in model fit after adding these covariates. Compared to their white counterparts, families with a non-white reference person have higher odds of food insecurity. In terms of relationship status, single-parent status is associated with higher odds of food insecurity, holding constant other factors. The associations between each type of debt and food insecurity are not significantly altered after accounting for these covariates.

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[4] The associations between each type of debt and food insecurity are similar when I do not control for other types of debt in the model.

Model 3 is the fully adjusted model, adding controls for education, family income, liquid assets, employment, and homeownership. A likelihood ratio test comparing Models 2 and 3 indicates improvement in model fit after adding these covariates. A college degree or higher, current employment, and homeownership are protective against food insecurity. Notably, having less than $1,000 in liquid assets is associated with over three times the odds of experiencing food insecurity (OR: 3.45, 95% CI= 2.52, 4.73). Results also show that accounting for these factors attenuates some of the racial and ethnic differences in the odds of experiencing food insecurity. Moreover, the significant protective effect of credit card and housing debt are fully attenuated. Robustness checks indicate that controlling for liquid assets, specifically, attenuates the association between credit card debt and food insecurity. Education debt exerts a significant and harmful effect on food insecurity after accounting for education attainment. Debt from medical bills and other sources of unsecured debt remain associated with higher odds of food insecurity. For example, the odds of food insecurity are almost twice as high for households with medical debt (OR: 1.75, 95% CI=1.24, 2,47), holding constant other factors.

Table 3 shows mixed effect logistic regression models predicting odds of household food insecurity for the continuous (logged) debt measures, after accounting for the covariates included in Model 3 of Table 2. Greater debt from medical bills, other unsecured debt, and student loans are associated with higher odds of food insecurity, while total credit card debt is not significantly associated with food insecurity status (though the coefficients point toward a protective effect). Total housing debt is associated with a marginal protective effect on food insecurity (significant at the $p < 0.10$ level), net of homeownership and other covariates. Overall, Table 3 indicates that whether measured as having any debt or total debt balance, unpaid medical bills, student loans,

and other sources of unsecured debt are associated with higher odds of food insecurity after adjusting for individual and family risk factors.

Discussion

Scholarship on the financial determinants of food insecurity has focused on income deprivation and has overlooked other forms of financial constraint, such as asset poverty and indebtedness. This empirical oversight is surprising since wealth and debt are important dimensions of socioeconomic status (SES) with financial and health implications that differ from income (Berger and Houle 2019; Gibson-Davis and Hill 2021; Gibson-Davis and Percheski 2018). Moreover, the extreme concentration of wealth among households with children implies that many U.S. children grow up in households with debt and little to no wealth (Gibson-Davis and Hill 2021; Gibson-Davis, Keister, and Gennetian 2021). Yet, few studies consider how wealth and debt profiles impact a household's vulnerability or resilience to food insecurity.

To fill this gap, I use longitudinal data and mixed effects growth curve models to examine how household debt, differentiating by amount and type of debt, and lack of liquid assets impact food insecurity among households with children. First, I find diverging patterns of debt accumulation and liquid assets based on a household's recent food security status. In particular, the proportion of food insecure families with medical debt and less than $1,000 in liquid assets is significant. I also find that debt from credit cards and housing is associated with lower odds of food insecurity, though these associations are attenuated after controlling for individual and household characteristics. In contrast, debt from medical bills, student loans, and other sources of unsecured debt increase the odds of household food insecurity, net of income and other household characteristics. Having less than $1,000 in liquid assets also significantly increases the risk of food insecurity.

While it is beyond the scope of the current study to assess the mechanisms related to these findings, it is possible that families with student loans, medical bills, and other forms of unsecured debt are especially vulnerable to resource depletion and expense trade-offs stemming from their debt obligations. In terms of medical debt, parents may prioritize paying off medical bills, even at the expense of food security, to avoid repercussions related to healthcare. Unpaid medical bills may prevent individuals or their dependents from accessing healthcare (e.g., making a doctor's appointment) or receiving needed treatment (e.g., filling a prescription) (Pryor and Prottas 2006; Seifert and Rukavina 2006). In terms of education debt, future research should consider the heterogenous impacts of student loan debt on food security based on borrower characteristics, such as education attainment, employment, parental resources, and age (Despard et al. 2016; Houle 2014b). Research suggests, for example, that financial burden from student loan debt is especially acute among borrowers who do not complete college (Despard et al. 2016). Finally, relatively few households reported other sources of unsecure debt, which includes debt from legal fees and loans from relatives. Future research should explore how and why these forms of unsecured debt undermine food security among households with children.

The findings also showed that the significant and protective effect of credit card debt diminished after accounting for household characteristics. It is possible that low-income and asset poor families lack access to mainstream forms of credit (Bartfeld and Collins 2017), and therefore do not use credit cards as a strategy to finance basic needs, such as food (Tarasuk 2001). It also possible that credit card debt does not threaten food security because resource-constrained borrowers tend to ignore their credit card debt or make minimum monthly payments (Halpern-Meekin, Edin, and Sykes 2015). Under these circumstances, credit card debt may not drain household resources and strain food budgets, at least in the short-term. Data limitations

prevent me from testing these possibilities. The PSID does not collect information on debt repayment behavior or the cost and repayment structure of loans (e.g., interest rates).

Overall, this study moves beyond an income-centric approach and contributes to a growing body of research that identifies the financial conditions that shape patterns of food insecurity. Additionally, the longitudinal study design and use of growth curve models strengthens inferences about the observed effects of debt and liquid assets on household food insecurity. This study also contributes to an emerging literature on household debt and child health (Berger and Houle 2019). The results demonstrate that parental debt, conditional upon the type of debt accrued, and liquid assets impact family and child well-being via food insecurity, warranting additional research on asset poverty, indebtedness, and child health. Moreover, the findings support previous research showing that the consequences of debt vary based on the type and amount of debt accrued, as well as borrower characteristics (Boen, Keister, and Aronson 2020; Nepomnyaschy et al. 2021). Thus, this study furthers research on debt as an emerging mechanism of stratification (Dwyer 2018). Specifically, debt obligations impact a household's access to food and thus contribute to unequal and diverging outcomes among children and their families.

The findings also have implications for reducing food hardship. First, boosting household assets and addressing debt burden is essential for creating financial conditions that support food security and child flourishing. Given the high levels of debt from student loans and medical bills in the United States (Bhutta et al. 2019; Bricker et al. 2014; Johnson et al. 2021), this is an important area for research, as well as policy. Recent studies, for example, suggest that Medicaid expansion under the Affordable Care Act (ACA) reduced medical debt for adults residing in Medicaid expansion states (Kluender et al. 2021; Sommers et al. 2017). Yet, with a significant

share of insured individuals acquiring medical debt, often from insurance-related features, such as costs associated with out-of-network care (Hamel et al. 2016; Karpman and Caswell 2017), policies designed to reduce out-of-pocket medical expenditures are essential for eliminating medical debt burden and subsequent food insecurity.

Second, the findings have direct implications for programs and policies specifically designed to address food insecurity. Programs, such as the Supplemental Nutrition Assistance Program (SNAP) and the School Breakfast Program (SBP), effectively reduce food insecurity among children (Gundersen 2015). Many of these programs, however, use income-based eligibility requirements. A more comprehensive approach, which incorporates indicators of household assets and debts, may expand access to reach food insecure children who would otherwise be excluded from participation based on income requirements, alone.

Conclusion

In sum, household debt and lack of liquid assets increase the likelihood a household is food insecure, though the relationship between debt and food insecurity depends on the amount and type of debt accrued. Specifically, debt from medical bills, student loans, and other sources of unsecured debt increase the odds of food insecurity among households with children, independent of income and other risk factors. The findings indicate that for researchers interested in establishing the financial predictors of food insecurity, an exclusive focus on income deficits will overlook how wealth and debt profiles shape vulnerability to food insecurity. Moreover, considering the full spectrum of household finances, including liquid assets and debt obligations, is essential for identifying at-risk families and creating effective policies that alleviate the problem of food insecurity.

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Table 1. Proportions and Means for Households with Children, PSID (2013-2019)

	Full Sample (N=1,744)	Food Secure (N=1,252)	Food Insecure (N=492)	*p*-value [a]
Food insecure, 2015-2019	0.28			
Food insecure, 2015	0.19			
Food insecure, 2017	0.16			
Food insecure, 2019	0.13			
Food insecurity scale (0-9.3), 2015-2019 average	0.95	0.19	2.88	***
Household Debt & Wealth, 2013-2017				
Credit card debt [b]	0.50	0.54	0.41	***
Total credit card debt (2019 USD) [c]	2,498	2,919	1,425	***
Medical debt	0.25	0.21	0.37	***
Total medical debt (2019 USD)	553	373	1,009	***
Other unsecured debt	0.09	0.07	0.12	***
Total other unsecured debt (2019 USD)	68	61	85	+
Education debt	0.46	0.45	0.48	
Total education debt (2019 USD)	11,089	11,714	9,499	+
Housing debt	0.48	0.59	0.21	***
Total housing debt (2019 USD)	69,557	90,783	15,543	***
Less than $1,000 in liquid assets	0.62	0.50	0.92	***
Individual & Household Characteristics [d]				
Age	37.20	37.75	35.82	***
Race				
White	0.44	0.52	0.24	***
Black	0.39	0.32	0.57	***
Hispanic	0.11	0.11	0.12	
Other race/ethnicity	0.05	0.05	0.07	+
Relationship status				
Married	0.56	0.66	0.30	***
Cohabiting	0.09	0.08	0.12	**
Single	0.35	0.26	0.58	***
Education				
Less than high school degree	0.11	0.09	0.18	***
HS/GED	0.27	0.24	0.34	***
Some college	0.28	0.26	0.34	**
College degree or higher	0.34	0.42	0.14	***
Number of children in household	2.17	2.13	2.29	**
Employed	0.82	0.87	0.68	***
Family income, 2015-2019 average (2019 USD)	85,729	102,119	44,024	***
Owns home	0.47	0.57	0.21	***
Poor health	0.17	0.11	0.33	***
Limitation	0.14	0.09	0.25	***

[a] *p* value for a test of significance between food secure vs. ever food insecure; ***≤ 0.001 **≤ 0.01 *≤ 0.05 + ≤0.10
[b] Debt/wealth percentages indicate occurrence in any observed wave (e.g., ever reported debt from 2015-2019).
[c] Financial mean values are averaged across observed survey waves for each household.
[d] Individual and household characteristics are from baseline, except for family income.

Table 2. Mixed Effects Logistic Regression Models for Household Food Insecurity

	Model 1		Model 2		Model 3	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Survey Wave	0.69	(0.60, 0.78)	0.70	(0.61, 0.80)	0.74	(0.65, 0.85)
Household Debt						
Credit card	0.60	(0.44, 0.81)	0.71	(0.52, 0.97)	0.86	(0.63, 1.18)
Medical	1.63	(1.15, 2.30)	1.72	(1.22, 2.44)	1.75	(1.24, 2.47)
Other unsecured	1.83	(1.01, 3.31)	1.98	(1.08, 3.60)	2.03	(1.12, 3.70)
Education	1.04	(0.76, 1.40)	1.08	(0.80, 1.47)	1.46	(1.06, 2.00)
Housing	0.15	(0.11, 0.22)	0.32	(0.21, 0.47)	0.75	(0.48, 1.17)
Individual & Household Characteristics						
Age			1.00	(0.98, 1.02)	1.01	(0.99, 1.03)
Race						
White			Ref.		Ref.	
Black			2.34	(1.51, 3.62)	1.34	(0.87, 2.04)
Hispanic			2.82	(1.58, 5.03)	1.98	(1.12, 3.48)
Other race/ethnicity			2.97	(1.41, 6.26)	2.22	(1.07, 4.59)
Relationship status						
Married			Ref.		Ref.	
Cohabiting			2.37	(1.41, 4.01)	1.56	(0.93, 2.61)
Single			4.81	(3.25, 7.13)	2.72	(1.83, 4.05)
Number of children			1.14	(0.99, 1.30)	1.05	(0.93, 1.20)
Education						
Less than high school degree					Ref.	
HS/GED					1.09	(0.65, 1.84)
Some college					0.82	(0.48, 1.40)
College degree or higher					0.32	(0.17, 0.60)
Family income					1.00	(0.90, 1.10)
Less than $1,000 in liquid assets					3.45	(2.52, 4.73)
Employed					0.43	(0.32, 0.60)
Owns home					0.46	(0.31, 0.60)
Intercept Variance	6.47	(5.07, 8.26)	5.97	(4.70, 7.59)	4.83	(3.80, 6.13)
Log Likelihood	-1871.1286		-1813.3837		-1728.0593	

Data are based on 5,232 biennial household-wave observations of 1,744 households from the PSID.

Table 3. Mixed Effects Logistic Regression Models for Household Food Insecurity

	OR	(95% CI)
Survey Wave		
Total Household Debt		
Credit card debt (logged)	0.98	(0.95, 1.02)
Medical debt (logged)	1.07	(1.03, 1.12)
Other unsecured debt (logged)	1.10	(1.02, 1.20)
Education debt (logged)	1.04	(1.01, 1.07)
Housing debt (logged)	0.97	(0.93, 1.00)
Individual & Household Characteristics	Yes	
Intercept Variance	4.80	(3.78, 6.09)
Log Likelihood	-1726.7254	

Data are based on 5,232 biennial household-wave observations of 1,744 households from the PSID. Model controls for the individual and household characteristics included in Model 3 of Table 2.

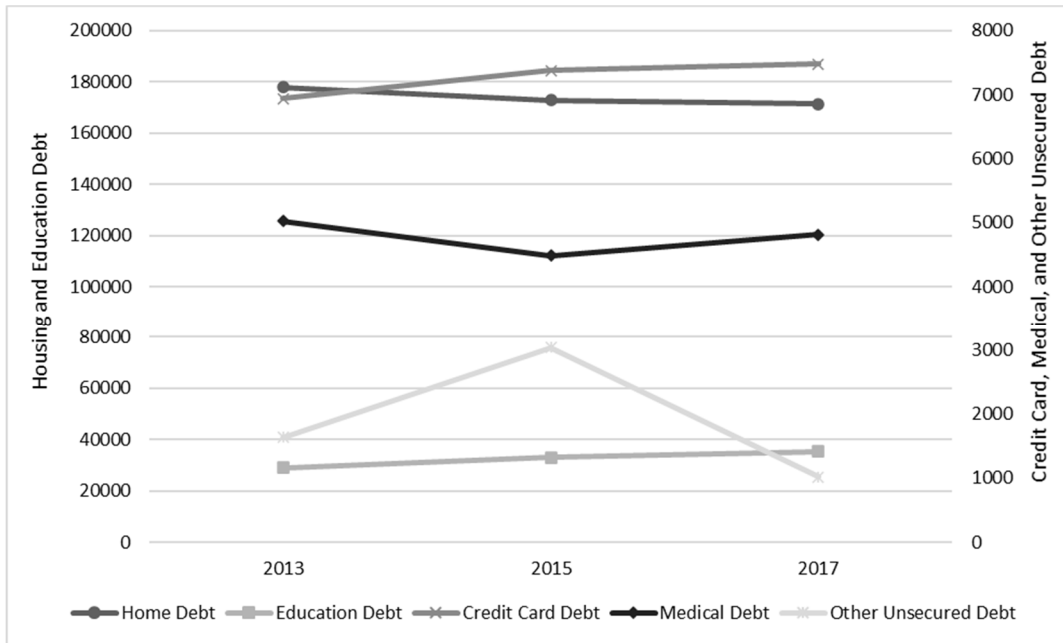**Figure 1. Household conditional debt averages by survey wave**

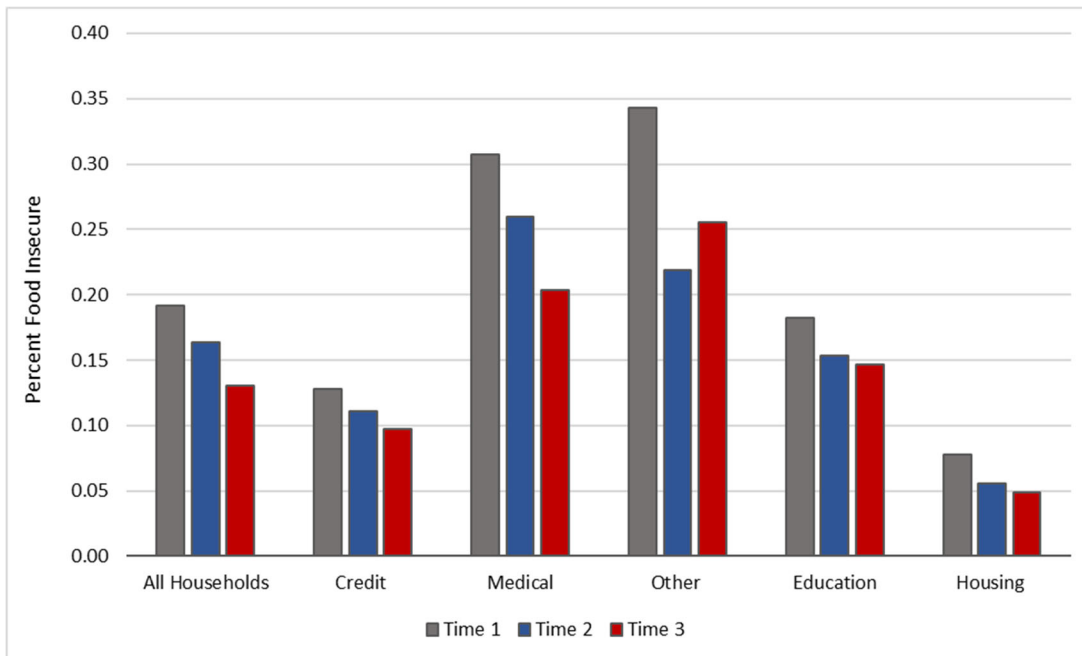**Figure 2. Percent food insecure, by time and household debt**

Table A1. Proportions and Means Across Survey Waves (PSID)

	Time 1	Time 2	Time 3
Food Insecure	0.19	0.16	0.13
Food Insecurity Scale	0.95	0.80	0.67
Household Debt & Wealth, 2013-2017			
Unsecured debt [a]	0.44	0.42	0.40
Total unsecured debt [b, c]	7,717	7,863	8,070
Median	5,487	5,393	6,258
Credit card debt	0.35	0.34	0.34
Total credit card debt	6,943	7,381	7,483
Median	4,390	5,393	5,215
Medical debt	0.13	0.11	0.11
Total medical debt	5,025	4,485	4,817
Median	3,292	3,236	3,129
Other unsecured debt	0.04	0.04	0.03
Total other unsecured debt	1,635	3,034	1,019
Median	1,975	3,784	1,043
Education debt	0.35	0.35	0.33
Total education debt	28,933	32,984	35,273
Median	17,558	21,572	20,860
Housing debt	0.38	0.40	0.43
Total housing debt	177,906	172,942	171,433
Median	158,026	155,318	146,020
Less than $1,000 in liquid assets	0.49	0.50	0.38
Individual & Household Characteristics			
Age	37.20	39.16	41.08
Race [d]			
White	0.44		
Black	0.39		
Hispanic	0.11		
Other race/ethnicity	0.05		
Relationship status			
Married	0.56	0.58	0.60
Cohabiting	0.09	0.08	0.08
Single	0.35	0.33	0.32
Education [d]			
Less than high school degree	0.11		
HS/GED	0.27		
Some college	0.28		
College degree or higher	0.34		
Number of children in household	2.17	2.21	2.15
Employed	0.82	0.82	0.84
Family income	78,003	86,025	93,160
Owns home	0.47	0.51	0.54
Poor health	0.17	0.19	0.21
Limitation	0.14	0.14	0.16

[a] Debt and wealth variables are lagged from 2013-2017.
[b] Conditional debt averages (e.g., total credit card debt among households with credit card debt).
[c] Financial values adjusted for inflation to 2019 USD.
[d] Time-invariant covariate.