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Food Insecurity, Financial Shocks, and Financial Coping Strategies among Households with Elementary School Children in Wisconsin

This article examines the associations among food insecurity, financial shocks, and financial coping strategies among elementary school students' households in Wisconsin using a survey of parents. Volatility in income and expenses are predictive of households' ability to meet food needs, and parents who have experienced large or volatile expenses report more difficulty in shielding child(ren) from food hardships. Food insecurity is characterized by a continuum of financial adaptations—ranging from relying on savings, borrowing from family and friends, and increased work effort in conjunction with marginal food security, and progressing toward use of potentially inferior forms of credit such as payday and pawn loans at the more severe end of the food insecurity spectrum. In addition to income-focused coping strategies, survey respondents report food-specific coping strategies. Overall, the results suggest that food security and financial security interventions may work in concert and may benefit from greater coordination.

Household food security—or the assured access of all people to enough food for a healthy and active life—has been an increasing focus for policymakers and researchers for the past two decades. Interest has been motivated by the availability of annual data on the prevalence of food insecurity; the persistence and sharp escalation in food insecurity during the Great Recession; and a growing body of evidence linking food insecurity to a range of negative outcomes for children (see Gundersen and Ziliak 2015; Jyoti, Frongillo, and Jones 2005; Kirkpatrick, McIntyre, and Potestio 2010;

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Ryu and Bartfeld 2012; Whitaker, Phillips, and Orzol 2006; Ziliak, Hardy, and Bollinger 2011).

Trends reveal fairly steady rates of food insecurity among households with children during the early and mid 2000's, with a sharp increase related to the Great Recession. Food insecurity rates among this group were 15.6% to 18.6% from 2001 to 2007, jumping to 21% in 2008—the highest since formal measurement began in 1995. Rates remained essentially unchanged until 2015, when they saw their first substantive decline, still elevated from prerecession levels (Coleman-Jensen et al. 2016). There has also been a shift toward higher severities of food hardship, among food insecure households. In 2001, 23.6% of food insecure households had food insecurity that had reached the point where the households experienced multiple disruptions in food intake; by 2009, this share reached 31%, and it was still 29.5% as of 2015 (author's calculations). Over the past 15 years, then, households that experienced disruptions in access to food have become less successful at managing that disrupted access in a way that allows them to maintain consistent patterns of food intake.

By definition, higher severities of food hardship are characterized by a progression from anxiety about meeting food needs, to cutting back quality and variety of food, to reducing the quantity of food available to adults, and finally to reducing the quantity of food available for children (Bickel et al. 2000). However, relatively little attention has been paid to exploring how food insecurity intersects with households' broader patterns of financial experiences and behaviors, and in particular, whether levels of food insecurity are associated with different patterns of coping with and responding to shortfalls in income relative to needs that go beyond food-specific adaptations. This article examines how food insecurity is situated within the broader realm of households' financial experiences and behaviors, using data from a large sample of elementary school students' households in Wisconsin. We address two primary questions: First, to what extent are financial shocks—including income shocks and expenditure shocks—associated with food insecurity and child-specific food hardships? Second, to what extent do household financial coping strategies—such as borrowing from family and friends or using payday loans and pawn loans—differ among otherwise-similar households with varying levels of food (in)security? We also consider the association between food insecurity and more targeted food coping strategies involving use of public and private food assistance—specifically the Supplemental Nutrition Assistance Program (SNAP) and food pantries. We address these questions using regression models that are descriptive rather than causal.

BACKGROUND: FOOD INSECURITY, INCOME, AND FINANCIAL BEHAVIORS AND STRESSES

Food security and financial security are fundamentally interconnected, though the literature formally bridging the two domains is thin. Below, we provide a broad overview of the literature linking financial circumstances, experiences, and capabilities to food security outcomes, as well as the much sparser evidence on how food insecurity is associated with financial coping strategies. The literature demonstrates that food security is intertwined with financial circumstances, experiences, and practices, with causality potentially in both directions. We therefore try to distinguish between financial circumstances and experiences that may serve as risk factors for food insecurity, and financial coping strategies that at least in part may be responsive to food insecurity, both in the literature review and the subsequent analysis. While this is a simplified framing of a fundamentally complex set of relationships, it offers insights into the behavior and well-being of families.

Food Security and the Role of Income, Volatility, Liquidity, and Financial Capability

Not surprisingly, poverty and food insecurity are related: the prevalence of food insecurity declines from 42.9% among poor households with children to 6.5% among households with children who have incomes above 1.85 times the poverty line (Coleman-Jensen et al. 2016). Yet, poverty and food insecurity are distinct phenomena. More than half of poor households with children are not food insecure, and more than half of food insecure households with children are not poor. At least some of the disconnect between poverty and food insecurity likely reflects that poverty status is an imperfect proxy for economic well-being. Nonetheless, it remains apparent that food hardship, at any severity level, is not strictly a manifestation of limited resources but a more complex phenomenon.

Beyond income levels, other research points to income shocks and unemployment, captured by observed changes in income and/or employment across survey periods (see Gundersen and Gruber 2001; Heflin 2016; Jackowitz, Morrissey, and Brannegan 2015; Leete and Bania 2010). Income volatility is an increasing focus of research attention in the broader literature on economic well-being (e.g., Dynan, Elmendorf, and Sichel 2012; Morduch and Schneider 2017; Rauscher and Elliott 2016), and qualitative research suggests that this volatility is associated with considerable challenges in meeting household food needs (Edin et al. 2013).

Other work has identified lack of savings, lack of assets, and lack of home ownership as risk factors, all of which could potentially proxy for a more general capacity to access financial resources to smooth consumption in the context of income and/or expenditure shocks (Guo 2011; Mills and Amick 2010; Olson et al. 2004). To that end, Gjertson (2014) reports that households that save for emergencies are less likely to be food insecure, and other recent work suggests liquidity constraints are particularly salient with regards to food insecurity among the poor and those just above food assistance eligibility thresholds (Chang, Chatterjee, and Kim 2014). Consistent with the importance of liquidity constraints, some evidence suggests access to short-term credit in the form of payday loans may smooth food consumption and reduce the risk of food insecurity (Fitzpatrick 2013; Fitzpatrick and Coleman-Jensen 2014; Karlan and Zinman 2010; Zaki 2016). This research is decidedly mixed, however, with other studies finding detrimental impacts (e.g., Chang and Perry 2015). Looking at perceived access to credit, Sullivan, Turner, and Danziger (2008) find higher risk of material hardship when formal credit is constrained.

Researchers have also explored connections between broader measures of financial capability and food security. Being unbanked imposes additional hurdles to credit and savings (Barr, Dokko, and Keys 2009), and several studies have documented a link between being unbanked and food hardship (Barr 2009; Birkenmaier, Huang, and Kim 2016; Fitzpatrick 2013). Still other evidence suggests that financial knowledge and/or skills may offer some protection against food insecurity (Gaines et al. 2014; Gundersen and Garasky 2012; Millimet, McDonough, and Fomby 2015).

While research on the relationship between financial circumstances and food insecurity has tended to focus on the resource side, a more limited body of work has considered the role of competing consumption demands. Higher food costs have been linked to food insecurity (Gregory and Coleman-Jensen 2013), as have costs in other domains including housing and energy (see Bartfeld and Dunifon 2006; Bartfeld, Ryu, and Wang 2010; Nord and Kantor 2006), suggesting that levels and stability in income and resources are only one side of the financial picture. There is also some evidence that higher levels of out-of-pocket medical expenditures are predictive of food insecurity (Nielsen, Garasky, and Chatterjee 2010). While costs and expenditures appear to matter, there has been little effort to explore the role of expenditure shocks or volatility as risk factors for food insecurity, even as awareness of such volatility has grown (Morduch and Schneider 2017).

Financial Coping Strategies

In the face of growing awareness of households' financial volatility, there is increasing interest in the strategies households use to make ends meet when their regular cash flow is insufficient to meet expenses. A variety of strategies are available—ranging from utilizing savings, to borrowing from traditional, nontraditional, or informal sources, to delaying or skipping payment on bills (see Collins and Gjertson 2013; Morduch and Schneider 2017).

During the Great Recession, nearly one-quarter of adults reported borrowing from friends or family to pay bills, and one-third withdrew money from savings or retirement accounts to pay bills (Taylor, Morin, and Wang 2010). One-quarter of adults have used a form of high-cost borrowing over the previous 5 years (Lusardi and Scheresberg 2013); and households at both low- and moderate-income levels report high use of alternative financial services and informal mechanisms to meet financial needs (Barr 2009). Research on the extent and correlates of financial coping strategies is not well developed, however, and strategies have often been studied in isolation rather than collectively. There is no well-established conceptual framework to characterize how or when people use potential financial coping strategies, nor how such patterns arise in terms of either constraints or preferences.

In the past several years, there has been progress in moving toward a more integrated examination of financial coping strategies. For instance, Lusardi, Schneider, and Tufano (2011) asked a cross section of US households whether and how they would come up with \$2,000 to meet an unexpected need, and grouped responses into savings, getting help from family or friends, using mainstream credit, using alternative credit, selling possessions, and working more. Among those who were at least somewhat confident about raising the funds, 61% would look to savings for some or all of the total; 34% to family or friends; 30% to mainstream credit; 11% to alternative credit (e.g., payday or pawn loans), 19% would sell possessions, and 23% would work more. The authors, looking at the frequency and combinations with which various strategies were reported as well as their association with other measures of advantage or disadvantage, suggest that households have a “pecking order” of preferences for various strategies, though work remains to flesh out the extent to which preferences are consistent or varying across households.

The notion of an ordered preference for financial coping strategies in the face of a shortfall in cash flow has at least some similarity to the idea of a continuum of food-related coping strategies encompassed by the

food security measure. There has, thus far, been little effort to identify whether and how different severities of food insecurity are associated with different strategies for explicitly coping with financial shortfalls that accompany food insecurity. It would not be surprising, however, if much as households tend to exhibit a predictable sequence of food-related coping strategies (from cutting back on variety and nutritional quality, to reducing adult portions, to ultimately cutting back on food for children), they also deployed a progressively severe set of strategies on the financial side—even as such strategies might in term either exacerbate or ameliorate food-related hardships. Teasing out these relationships is challenging, both because causality can run in both directions, and because there are limited data sources that address both food insecurity and financial behaviors.

Food Assistance and Food Security

While research on the relationship between food security and financial coping strategies is in its infancy, there is a substantial body of work exploring the relationship between food security and SNAP (see Gregory, Rabbitt, and Ribar 2015 for a recent review). This work has largely focused on the impact of SNAP on food security outcomes, and there is strong evidence that SNAP is beneficial in this regard (see DePolt, Moffitt, and Ribar 2009; Mykerezi and Mills 2010; Ratcliffe, McKernan, and Zhang 2011). This is hardly surprising, in that SNAP, by design, is responsive to changes in economic circumstances: Eligibility is based on income during a 3-month window, and unemployment rates as well as individual job and income loss are strong predictors of participation (see, e.g., Ziliak 2015). At the same time, a pervasive undercurrent in this literature has been the differential selection of food insecure households into the program, and the resulting challenges in documenting impacts. Indeed, without adequate controls for selection, SNAP almost always is negatively correlated with food security outcomes (Gregory, Rabbitt, and Ribar 2015). Longitudinal data indicate that low-income households that are not participating in SNAP are twice as likely to enter the program if they are food insecure as they are otherwise (Bartfeld 2015). In short, there is ample evidence that the relationship between SNAP and food security runs in both directions. For purposes of the current research, we are interested in food insecurity as predictive (in a descriptive sense) of SNAP participation, where SNAP is one of a number of potential coping strategies available.

Use of food pantries, for which eligibility is less formal and less standardized than SNAP, is also a well-documented strategy for addressing food hardships. Nationally, 30% of food insecure households report using

food pantries (authors' analyses of Current Population Survey data). A study of Feeding America's national food pantry network found that over 82% of clients were food insecure over the past year (Weinfield et al. 2014), and food insecurity is a strong risk factor for food pantry use after controlling for endogeneity (Bhattarai, Duffy, and Raymond 2005). While food assistance receipt and broader financial coping strategies are typically not studied in tandem, it is notable that almost one-third of Feeding America's food pantry clients reported pawning personal belongings over the past year (Weinfield et al. 2014), suggesting that food-oriented and income-oriented strategies may go hand in hand in the context of food hardships.

CONCEPTUAL FRAMEWORK AND RESEARCH FOCUS

The conceptual framework informing this article situates food security in the broader context of financial circumstances, experiences, and behaviors. We expect the prevalence and severity of food insecurity to be influenced by the amount and predictability of resources and needs; and food insecurity in turn to influence households' choice of financial coping strategies in the face of shortfalls—where those strategies would span ways to enhance food access via public and private food assistance, but also income-based coping strategies such as using savings, borrowing from friends and family, relying on credit cards, or using alternative forms of credit—even as these strategies may in turn moderate (positively or negatively) the severity of food hardship.

Our analyses extend the literature in several important ways. Focusing first on the economic precursors of food insecurity, we pay particular attention to measures of both income and expense volatility. In contrast to past work that has focused on absolute changes in income or employment status, we use self-reported measures of unexpected income drops as well as reductions in hours or pay while still working, which tap into more nuanced experiences of income volatility that have received increasing attention in the financial security literature, along with measures of job loss and extended periods of unemployment. We also include measures of expense volatility, which have not been the subject of formal attention in the food security domain, differentiating large medical expenses from other unexpected expenses. We extend the focus to include child food hardships in addition to household food insecurity as our outcomes of interest; and we explicitly consider how attending to income and expense volatility alters the apparent role of static income measures.

Next, we provide new information about the extent to which differing severities of food insecurity are predictive (in the descriptive sense) of various financial coping strategies, net of income, other household demographics, and financial shocks. To contextualize these results, we also consider the extent to which food insecurity is predictive of two specifically food-related coping strategies—participation in SNAP and receipt of emergency food from food pantries.

While our overarching framework postulates potential relationships between food security and coping strategies that operate in both directions—that is, coping strategies as responses that may also either help or exacerbate food hardships—our empirical approach is not focused on causality, nor can our data support a causal analysis. We are interested, rather, in the extent to which the degree of food hardship a household has experienced in the past year—net of other observable factors related to income and economic shocks—is associated with their likelihood of having used each of a range of potential strategies to cope with resource constraints. In doing so, we seek to provide new information about the extent to which increasing severities of food hardships can be not only characterized by specific behavioral strategies to adjust to limited food resources as implicit in the food security measure (ranging from worrying about food running out, to limiting variety and nutritional content, to skipping meals), but also by differences in resource-oriented strategies that may enhance income in general or food resources in particular.

DATA AND METHODS

Data Overview

Data are from the Wisconsin Survey of Household Food Needs (WSHFN), conducted to explore issues related to food security, food acquisition, and financial behaviors and well-being among families with elementary school students in Wisconsin, and funded as part of the University of Kentucky's Research Program on Child Hunger as well as by the University of Wisconsin's Institute for Research on Poverty. Self-administered surveys were sent home with students for anonymous completion by a parent or guardian, and returned to school in a sealed envelope. Surveys were available in English and Spanish, the latter accounting for 3.9% of completed surveys. Schools were provided with small incentives if they achieved at least a 75% response rate. At the local level, data collection was coordinated by University of Wisconsin–Extension staff, who solicited participation among local schools and worked with the schools to collect data using established protocols. Data processing

and analysis was conducted at University of Wisconsin–Madison, in conjunction with the University of Wisconsin Survey Center (UWSC).

The sample includes households with children in 26 schools located in ten counties, with data collection spanning November 2012 through March 2014. The schools were invited to participate by locally based Extension staff. Participating schools are predominantly low income, with an average free-and-reduced-price meal eligibility rate of 58%, as compared to an average of 44% for all schools statewide during the same period. The schools are located in a combination of rural and urban areas around the state, including 13 in fully rural school districts, 5 in mixed urban and rural districts, and 8 in primarily urban districts. Because this is a convenience sample—and by design a relatively low-income one—results should not be viewed as representative of the state as a whole.

Food security was measured using the standard six-item food security scale with a 12-month reference period (Blumberg et al. 1999). One additional question (“The children weren’t eating enough because we couldn’t afford enough food”) is from the 18-item scale and designed to capture child-specific food hardship. The survey also asked about financial shocks over the past year including income shocks (job loss, reduction in hours or pay while still working, unexpected drop in income, extended unemployment of 3+ months) and expenditure shocks (excessive medical expenses and other large unexpected expenses). And, questions asked about a variety of financial coping strategies over the past year, including (among others) use of payday lenders and pawn shops; borrowing from friends or family to cover household or emergency expenses; using savings for routine expenses; working an extra job or overtime to make ends meet; paying late fees on bills; and not paying off credit cards. Information also includes participation over the past year in SNAP and other food assistance programs, and receipt of food from food pantries. Demographic and related information includes household size and structure, employment of respondent and partner (if any), disability status, home ownership, household income,¹ education of respondent and partner, vehicle ownership, and access to public transportation. The survey is included in Appendix S1.

1. We followed common practice in providing income ranges rather than asking for exact income. Ranges included <\$15,000, \$15,001–\$20,000, \$20,001–\$25,000, \$25,001–\$30,000, \$30,001–\$35,000, \$35,001–\$42,000, \$42,001–\$50,000, \$50,001–\$60,000, and >\$60,000.

Data Quality

A total of 2,803 surveys were returned, ranging from 35 to 245 per participating school; this includes 2,778 with useable responses to the food security questions and that are therefore available for our analyses. Surveys that are missing data on other items used in analyses are dropped from the sample for specific models as warranted, yielding analytic samples ranging from 2,550 to 2,606.

Across the 26 schools, the share of students covered by a survey ranged from 41% to 84%, with an average response rate of 62% and only 4 of 26 schools below 50%. To assess the representativeness of survey respondents, we compared reported participation in free or reduced price school lunch with official certification rates for the schools. Official rates ranged from 21% to 80% across participating schools, with an average per-school rate of 58%; reported rates among children covered by returned surveys ranged from 19% to 83%, with an average per-school rate of 53%. On average, the schools' reported rates were 4.2 percentage points (and 8%) lower than official rates, suggesting a very modest underrepresentation of low-income students.

To assess the quality of the food security data, we computed the share of all food insecure households who have very low food security to the analogous share in the Current Population Survey–Food Security Supplement (CPS–FSS) data for households with children in 2012, and found a higher share in our sample (47% vs. 30.5%); we also compared the share of very low food security households who responded affirmatively to the “children were not eating enough because we couldn't afford enough food” question, finding virtually the same share in our sample as in the 2012 CPS–FSS (48% and 49% in our sample and in the CPS–FSS, respectively, among households with very low food security); and we compared the share of food insecure households among poor, near poor, and higher income households, and found higher food insecurity in our sample (relative to the CPS) among the poor (63% vs. 43%) and the near poor (45% vs. 31%), and slightly higher food insecurity among the higher income households (11% vs. 9%). Overall, then, our sample appears to have somewhat higher rates of food insecurity among poor and low-income households as compared to national data, as well as being somewhat skewed toward a higher severity of household food hardships among those households that are food insecure. On the other hand, child-specific food hardships are proportionally as common among very low food secure households as they are in the CPS–FSS. Differences in household food security patterns in our data relative to the CPS–FSS

may reflect differences stemming from the 6-item vs. 18-item scale; differences due to the mode of administration; differences in the age of children (our CPS comparison includes all households with children, whereas our Wisconsin sample is limited to households with elementary school children); incomes skewed lower in each of the income ranges; or differences in underlying hardship patterns.

Sample Characteristics

Table 1 provides descriptive data on sample characteristics, overall and by food security status. Consistent with our targeting, it is a low-income sample: 29% of households with nonmissing information are estimated to be poor, 26% are low income (up to 185% of the poverty line), and 45% have incomes above 185% of the poverty line. Poverty and low-income status are imputed based on the midpoint of the income range in conjunction with household size, and are therefore inexact measures. Over one-third of the sample reported food insecurity over the past year (35%), and more than one in ten reported child-specific food hardships (11.4%).

A significant portion of respondents reported some form of financial shock. About one-in-three (34%) reported a large and unexpected drop in income and 29% reported a reduction in hours or pay while still working. Job loss was also reported at high rates (17%), and 18% reported an unemployment episode of at least 3 months. Excessive medical bills and other large unexpected expenses were also commonly reported (25% and 38%, respectively).

Families used a wide range of financial coping strategies. Using savings to meet routine expenses was reported by half of respondents (49%), and borrowing from friends or family by 35%. It was also common to pay late fees on bills (48%) and to carry a balance on a credit card (42%). Alternative financial services were less common though by no means rare—12% reported using payday loans, and 12% pawn loans. Use of food assistance was common as well. Consistent with the generally low incomes, about one-third of respondents had received SNAP (34%), and roughly half that share had received food from food pantries (16.5%). Overall, this sample has many characteristics and behaviors consistent with financial vulnerability.

Columns 2 and 3 report these characteristics, experiences, and behaviors by food security status. All the well-being measures were more common, often starkly so, among the food insecure sample as compared with their food secure counterparts. Likewise, financial coping strategies differed

TABLE 1
Sample Characteristics, Overall and by Household Food Security Status

	All (% of Col)	Food Secure (% of Col)	Food Insecure (% of Col)
Household is food insecure	35.0	0.0	100
Child experienced food hardship	11.4	0.3	32.0
Income level:			
Poor	28.8	16.4	52.0
Near poor (1–1.85 * poverty)	26.1	22.0	33.7
Higher income (>1.85 times poverty)	45.1	61.6	14.3
Highest education of parent or partner			
< High school	5.4	3.8	8.3
High school	22.4	17.2	32.2
Some college	26.3	22.3	33.8
Associate's degree	17.0	18.3	14.7
4-year college degree or higher	28.8	38.5	11.0
Permanent disability (parent or partner)	4.7	2.1	9.4
Owens home	62.8	74.7	40.7
Owens working vehicle	94.8	97.4	90.6
Income and expenditure shocks in past 12 months			
Large unexpected drop in income	33.5	20.7	57.4
Lost a job	16.5	10.3	28.1
Hours or pay reduced while still working	28.7	19.4	45.8
3+ months unemployed and looking for work	18.0	10.0	33.0
Excessive medical bills	24.8	18.9	35.8
Other large unexpected expenses	37.9	24.1	63.7
Financial coping strategies in past 12 months			
Use savings to cover routine expenses	49.4	43.4	60.5
Borrow from friends or family	35.4	18.1	67.4
Pay late fees on bills	48.3	33.9	75.1
Pay less than full balance on credit card	41.8	43.7	38.4
Work overtime/second job to make ends meet	36.1	26.1	54.6
Use a payday loan	11.5	5.2	23.0
Sell items at a pawn shop	11.5	4.5	24.6
Food assistance strategies in past 12 months			
SNAP	34.4	19.7	61.2
Food pantry	16.5	6.6	34.4
Number of observations	2,778	1,805	972

Source: Wisconsin Survey of Household Food Needs.

Notes: All differences between food secure and food insecure households are significant ($p < .01$). Available sample sizes range from 2,676 to 2,778 due to missing information. All percentages are based on nonmissing data.

between the two groups, with higher rates among the food insecure for all of the strategies. Among the starkest differences was borrowing money from family or friends and use of payday and pawn loans, all more than three times as common among the food insecure. Finally, as expected, there are substantial differences between food secure and food insecure

households with regard to participation in food assistance programs, with participation in SNAP three times as common among the food insecure, and use of food pantries five times as common.

At a descriptive level, then, food insecure households inhabit a very different financial universe than their food secure counterparts—one that not only includes fewer resources, but also is more volatile in both income and expenditures, and that relies much more heavily on a range of coping strategies to make ends meet—including strategies related to securing food as well as broader strategies for obtaining income. Our primary analyses examine the extent to which these relationships persist even after controlling for observable differences between the groups.

Analysis

In our first analyses, we estimate logistic regression models to explore the extent to which financial shocks—including both income shocks and expenditure shocks—are associated with food insecurity as well as with child-specific food hardships. We control for characteristics typically linked to food insecurity, including income, education, household structure and size, disability, and home and vehicle ownership. We cluster on schools to account for correlation among households in the same schools arising from unmeasured factors, an approach which yields more conservative standard errors. We estimate two sets of models, with and without financial shocks, to assess how controlling for shocks changes the role of other variables that are more routinely included in food security models. These are not causal models, but useful to understand the coincidence of financial shocks and other characteristics with food security.

Additional models examine the extent to which food insecurity is associated with a range of financial coping strategies, again using logit models and controlling for a fairly comprehensive array of household characteristics as well as financial shocks. We use a detailed food security measure that combines household food security status with the child food hardship variable, differentiating among households that are fully food secure, those with marginal food security, low food security, very low food security, and finally those reporting child food hardship. Additionally, we estimate analogous models of receipt of SNAP and use of food pantries, where these represent more explicitly targeted coping strategies to meet food needs. As above, we cluster on schools to account for within-school correlations. These estimates assess the extent to which varying degrees of food insecurity are correlated with a range of coping strategies that households might use to respond to income or material hardship, net of

other observable household characteristics and experiences. Like the prior estimates, these should not be interpreted as being causal.

RESULTS

Economic Shocks and Food Insecurity

Table 2 shows odds ratios from logistic regressions of food insecurity and child food hardships, illustrating the extent to which financial circumstances and experiences are associated with food security outcomes. Both income shocks and expenditure shocks are strongly associated with food insecurity (column 1). Specifically, a large unexpected drop in income is associated with an 80% increase in the odds of food insecurity, and a reduction in hours or pay while still working is associated with a 73% increase in odds. Having lost a job over the past year has no net association with food insecurity, while an extended period of unemployment is associated with increased odds of 44%. On the expenditure side, large unexpected nonmedical expenses are associated with a threefold increase in the odds of food insecurity, and large medical expenses are also significant. In the case of child food hardships, on the other hand, only the expenditure shocks play a role (column 3); notably, none of the income shocks are significant (mostly reflecting smaller coefficients, not just lack of precision). Parents appear better able to shield their children from food-related hardships in the face of income disruptions than when confronted by large medical or unanticipated expenses, even as both forms of shocks appear to be associated with food-related hardships at the household level.

In addition to financial shocks, financial attributes and other measures of economic security also play a role in both household food insecurity and child food hardships, largely consistent with past research. Not surprisingly, income is the strongest factor, with the odds of food insecurity three to ten times higher in the lower income groups relative to those in the over \$60,000 group, and even larger differentials in the case of child food hardship. Long-term disability, lack of home ownership, and lack of a working vehicle are all associated with higher risk of food insecurity as well. Notably, the income differentials, while large, are roughly 40% smaller than when financial shocks are omitted (columns 2 and 4). The odds ratios for the variables other than income, including those not shown in the table, are similar with or without the financial shocks included; it is largely income that is sensitive to their inclusion.

The differential risk of household food insecurity and child food hardships associated with financial shocks translates into sizable differences in predicted probabilities of food insecurity among otherwise similar

TABLE 2
Logistic Regression Models of Food Insecurity and Child Food Hardship, with and without Financial Shocks

	(1) Food Insecure Household	(2) Food Insecure Household	(3) Child Food Hardship	(4) Child Food Hardship
Large unexpected income drop	1.803*** (0.301)		1.311 (0.262)	
Lose job	0.949 (0.203)		0.712 (0.202)	
Pay or hours reduced while working	1.728*** (0.134)		1.090 (0.126)	
3+ months unemployed	1.438** (0.259)		1.333 (0.292)	
Excessive medical bills	1.576*** (0.162)		1.763*** (0.231)	
Other large unexpected expenses	2.981*** (0.293)		2.130*** (0.326)	
Income:				
Less than \$15,000	8.681*** (1.628)	15.96*** (2.791)	12.30*** (5.292)	19.01*** (7.207)
\$15,000–\$20,000	7.947*** (1.940)	13.86*** (3.191)	9.010*** (4.823)	14.43*** (6.477)
\$20,001–\$25,000	10.33*** (2.020)	18.31*** (3.363)	7.456*** (3.176)	12.79*** (4.804)
\$25,001–\$30,000	7.466*** (1.880)	11.89*** (3.244)	8.216*** (3.371)	12.08*** (4.192)
\$30,000–\$35,000	5.886*** (1.276)	9.042*** (1.898)	9.353*** (4.286)	13.09*** (5.179)
\$35,001–\$42,000	4.146*** (0.989)	7.226*** (1.512)	4.868*** (2.182)	7.293*** (2.823)
\$42,000–\$50,000	3.880*** (0.786)	5.729*** (1.101)	6.018*** (2.656)	8.079*** (3.397)
\$50,001–\$60,000	2.802*** (0.734)	3.679*** (0.909)	4.234** (2.451)	5.540*** (3.129)
>\$60,000	(Omitted)	(Omitted)	(Omitted)	(Omitted)
Permanent disability	2.398*** (0.608)	2.535*** (0.603)	1.393 (0.355)	1.685** (0.399)
Homeowner	0.600*** (0.0684)	0.600*** (0.0579)	0.706* (0.127)	0.705** (0.107)
No working vehicle	1.602** (0.348)	1.577** (0.335)	1.428* (0.302)	1.415* (0.296)
Constant	0.00231*** (0.00124)	0.00542*** (0.00373)	0.000970*** (0.000636)	0.00156*** (0.000959)
Observations	2,562	2,620	2,557	2,606

Source: Wisconsin Survey of Household Food Needs.

Notes: Table shows odds ratios; Standard errors in parentheses. Controls not shown include household size, education level (five categories), household structure (five categories), and Spanish-language survey indicator.

* $p < .10$, ** $p < .05$, *** $p < .01$.

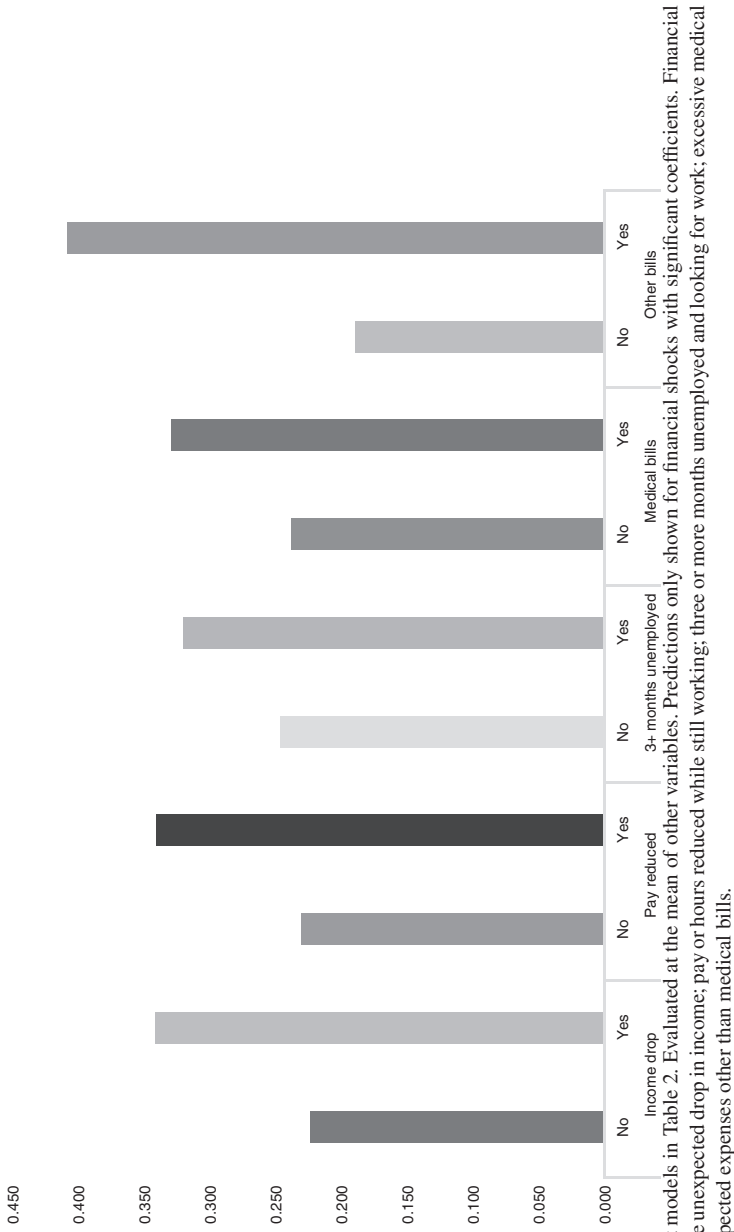
households. Evaluated at the sample mean, the predicted probability of household food insecurity is .22 for a household without an unexpected drop in income, as compared to .34 for a similar household with such a drop; the predicted probability for a household without large unexpected expenses is .19, more than doubling to .41 in the presence of such expenses (Figure 1). In the case of child-specific food hardship, the predicted probability increases from .038 in the absence of unexpected large expenses to .078 when such expenses have occurred (not shown).

Food Insecurity and Financial Behaviors

We next explore the association between food security status and the reported use of seven financial coping strategies: (1) spending out of savings to cover routine expenses, (2) borrowing from family or friends to cover household expenses or emergencies, (3) using payday loans, (4) using pawn loans, (5) working overtime or extra to make ends meet, (6) paying less than the full balance on credit cards, and (7) paying late fees on bills. The key independent variable is a more nuanced food insecurity measure that differentiates among a range of severities of food hardships. The models also include household demographics and income and expenditure shocks (not shown).

The food insecurity indicators are significant predictors (in a descriptive sense) of all of the financial coping strategies (Table 3, panel 1). The relationship between food security severity and use of coping strategies, however, varies. In the case of using savings to cover routine expenses (column 1), the odds are roughly double at any level of household food insecurity—whether marginal security, low security, or very low security—though less elevated in the case of child-specific food hardships. The pattern is different for borrowing from friends or family to meet basic needs (column 2): here the odds increase sharply with the severity of household food insecurity—from roughly double the odds among the marginally secure, over triple the odds among those with low food security, and over six times the odds among those with very low food security, relative to households who are food secure—though here again, the odds trail off in the presence of child food hardships. These patterns suggest that child food hardship is associated with reduced odds of using either savings or money from family and friends to cover basic expenses, compared to households with food insecurity that does not extend to children. A plausible explanation is that these strategies have already been exhausted, or perhaps were never available, for households experiencing child food hardships.

FIGURE 1
Predicted Probability of Food Insecurity with and without Financial Shocks



Note: Based on logit models in Table 2. Evaluated at the mean of other variables. Predictions only shown for financial shocks with significant coefficients. Financial shocks refer to a large unexpected drop in income; pay or hours reduced while still working; three or more months unemployed and looking for work; excessive medical bills; and large unexpected expenses other than medical bills.

In the case of both working overtime to make ends meet (column 3), and paying late fees on bills (column 4), the odds also increase as severity of food insecurity increases, from roughly a doubling of odds in the presence of marginal food insecurity, to three to four times the odds with very low food security, and remaining elevated with child food insecurity. Paying less than the full balance on a credit card (column 5) has somewhat elevated odds at the marginal and low food security levels, though at the more severe levels, the odds are no different from the food secure—indicating that accessing an arguably mainstream form of credit is more common among those with milder vs. more severe food hardships. Those who do not carry a credit card balance include those who pay off credit cards in full each month, as well as those who do not have or use credit cards. Finally, the last two strategies involve payday loans (column 6) and pawn loans (column 7). Use of these strategies is not elevated until households are food insecure (rather than at the lower marginally secure threshold), increasing in odds by roughly 50%, and becoming sharply more common with very low food security. In the case of pawn loans, child food hardship is associated with a further increase.

Looking across models suggests a pattern of coping behaviors associated with increasing severities of food hardship: In the presence of marginal food security, otherwise similar households report elevated levels of spending out savings, juggling bills as evidenced by paying late fees, borrowing from family and friends, using mainstream credit in the form of credit card debt and working overtime or at a second job—with the odds of each of these strategies roughly one and one-half to double the odds for fully food secure households; in the presence of low food security, the odds of those strategies remain elevated and in some cases become greater, with notable increases in paying late fees and borrowing from family and friends; there is also increased likelihood of both pawn loans and payday loans relative to baseline (fully food secure) households. And in the presence of very low food security, almost all of the already elevated odds continue to increase further, with the largest increase evident for borrowing from family and friends as well as payday and pawn loans, though credit card debt is no longer elevated over baseline levels. When child food hardships are present, the odds of pawn loans are further elevated, whereas the odds of support from either savings or from family or friends are less elevated than among the very low food security group.

We further examine whether the associations between food insecurity and financial coping strategies are similar or different in lower and higher income households, by estimating models separately for households below and above 185% of the federal poverty line (Table 3, panels 2–3).

TABLE 3

Logistic Regression Models of Financial Coping Strategies, Overall and by Household Income

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Spend from Savings	Borrow from Friends/ Family	Overtime or second Job to Pay Bills	Late Fees on Bills	Carry Credit Card Balance	Payday Loans	Pawn Loans
All households:							
Marginal food security	2.281*** (0.403)	1.889*** (0.360)	1.963*** (0.264)	1.654*** (0.244)	1.553*** (0.260)	0.996 (0.352)	1.431 (0.334)
Low food security	1.815*** (0.272)	3.357*** (0.528)	2.594*** (0.395)	2.896*** (0.461)	1.353** (0.201)	1.539* (0.372)	1.637** (0.354)
Very low food security	2.245*** (0.396)	6.484*** (1.640)	3.308*** (0.737)	3.971*** (0.802)	1.113 (0.192)	2.534*** (0.553)	3.030*** (0.650)
Child food insecurity	1.411* (0.250)	3.390*** (0.460)	2.631*** (0.395)	3.617*** (0.365)	1.204 (0.229)	2.398*** (0.560)	4.370*** (0.950)
Observations	2,555	2,559	2,550	2,556	2,550	2,559	2,558
Lower income households (<185% poverty line):							
Marginal food security	2.043*** (0.454)	2.040 (0.502)	1.628*** (0.307)	1.694*** (0.303)	1.514 (0.404)	0.751 (-0.241)	1.443 (0.349)
Low food security	1.844*** (0.367)	3.003*** (0.575)	2.056*** (0.316)	2.427*** (0.488)	1.319 (0.256)	1.159 (0.288)	1.535** (0.315)
Very low food security	2.408*** (0.540)	5.820*** (1.617)	2.754*** (0.600)	3.252*** (0.745)	1.164 (0.187)	1.952*** (0.410)	2.498*** (0.522)
Child food insecurity	1.493** (0.297)	3.058*** (0.508)	2.228*** (0.274)	3.020*** (0.342)	1.363 (0.330)	1.859*** (0.423)	4.222*** (0.832)
Observations	1,376	1,380	1,375	1,378	1,373	1,380	1,379
Higher income households (>185% poverty line):							
Marginal food security	2.853*** (0.852)	1.276 (0.388)	2.456*** (0.527)	1.460 (0.437)	1.677** (0.360)	1.817 (0.863)	1.120 (0.729)
Low food security	1.611* (0.409)	6.361*** (1.596)	4.329*** (1.529)	4.958*** (1.756)	1.354 (0.461)	9.137*** (6.030)	2.668* (1.429)
Very low food security	1.716 (1.098)	15.79*** (10.11)	5.033*** (2.533)	13.27*** (7.381)	0.981 (0.554)	12.94*** (8.845)	18.53*** (11.22)
Child food insecurity	2.384 (1.354)	7.650*** (3.688)	4.955*** (3.050)	10.73*** (7.149)	1.100 (0.521)	17.63*** (10.63)	2.847 (2.637)
Observations	1,142	1,142	1,141	1,141	1,143	1,119	1,108

Source: Wisconsin Survey of Household Food Needs.

Notes: Table shows odds ratios; standard errors in parentheses. Omitted category is food secure. Controls not shown include income categories, household size, household structure, education level, disability, home ownership, income shocks, expenditure shocks, vehicle ownership, and Spanish-language survey indicator. Columns 1–7: spending out of savings to cover routine living expenses, borrowing from family or friends to cover household expenses or emergencies, working overtime or extra to make ends meet, paying less than the full balance on credit cards, paying late fees on bills, using payday loans, and using pawn loans.

* $p < .10$, ** $p < .05$, *** $p < .01$.

Low-income households that are marginally food secure report increased odds of using savings, juggling other bills, borrowing from friends and family, and working extra, relative to food secure households. Marginally food secure higher income households likewise show elevated odds of using savings and of working more. There is no evidence of increased borrowing from friends and family or of juggling other bills, although they do have increased odds of carrying credit card debt. In the context of low food security, low-income households continue to have elevated odds of all the coping strategies associated with marginal food security, and also have higher odds of using pawn loans. For higher income households experiencing low food security, the differences as compared to what was seen for the marginally secure are pronounced. They continue to have elevated odds of spending out of savings and of working more, while they no longer report higher likelihood of carrying a credit card balance. They show a sixfold increase in the odds of borrowing from friends and family; a ninefold increase in the odds of using payday loans and also increased use of pawn loans; and fivefold increase in paying late fees on other bills. These patterns continue at the very low food security level. Low-income households show further elevated odds across all strategies except credit card debt; high-income households again show much steeper increases. In general, odds ratios are similar to those for very low food security for child food hardships, for *both* income groups, though for both groups there is a decline in odds of borrowing from family and friends. Overall, results suggest that higher income households exhibit much more pronounced changes in financial coping behaviors in conjunction with differences in food security relative to lower income households.

The above odds ratios illustrate the relative odds of various coping strategies at different food security levels, but do not speak to the likelihood of using strategies in absolute terms. Higher odds ratios do not imply higher overall probabilities, only greater marginal probabilities. Next, we generate predicted probabilities of each of the coping strategies at various food security levels, for the sample as a whole and for the high- and low-income subsamples. Predicted probabilities are estimated at the relevant (sub)sample mean of other variables (Table 4).

Among food secure households, the predicted probabilities of the various strategies range from around 5% in the case of payday loans and pawn loans, to close to one-fifth for borrowing from friends and families to cover household expenses or emergencies (18.7%), to one-quarter for working overtime or an extra job to make ends meet, to close to two-fifths predicted to pay late fees on other bills (38.3%) or to carry a balance on credit cards

TABLE 4
Predicted Probability of Various Financial Coping Strategies, by Food Security Status

	Food Secure (% of Col)	Marginally Secure (% of Col)	Low Food Secure (% of Col)	Very Low Food Secure (% of Col)	Child Food Hardship (% of Col)
All households:					
Spend from savings	43.1	63.4	57.9	63.0	51.7
Borrow from friends/family	18.7	30.3	43.5	59.8	43.8
Overtime/extra job	25.2	39.8	46.6	52.7	47.0
Late fees on bills	38.3	50.7	64.3	71.2	69.2
Credit card balance	37.5	48.3	44.8	40.1	42.0
Payday loan	5.6	5.6	8.4	13.1	12.5
Pawn loan	4.6	6.4	7.3	12.7	17.3
Low-income households:					
Spend from savings	45.2	62.8	60.4	66.6	55.2
Borrow from friends/family	37.0	54.5	63.8	77.3	64.2
Overtime/extra job	32.5	44.0	49.8	57.0	51.8
Late fees on bills	51.1	63.9	71.7	77.2	75.9
Credit card balance	28.0	37.1	33.9	31.2	34.6
Payday loan	13.1	10.2	14.9	22.8	21.9
Pawn loan	8.2	11.4	12.1	18.2	27.4
Higher income households:					
Spend from savings	39.7	65.3	51.5	53.1	61.1
Borrow from friends/family	6.5	8.2	30.7	52.4	34.8
Overtime/extra job	18.0	35.1	48.8	52.6	52.2
Late fees on bills	26.3	34.2	63.8	82.5	79.3
Credit card balance	49.6	62.2	57.1	49.1	52.0
Payday loan	0.9	1.6	7.5	10.2	13.5
Pawn loan	2.0	2.2	5.1	27.2	5.4

Source: Wisconsin Survey of Household Food Needs.

Notes: Predictions based on models in Table 3, evaluated at the sample means.

(37.5%), to a high of 43% who are predicted to spend out of savings to cover routine living expenses. Each of the strategies increases in likelihood at lower food security levels, albeit to varying degrees consistent with the odds ratios discussed earlier.

The predicted probabilities also highlight striking differences in financial coping strategies between lower and higher income households who share the same food security status, with the differences largest among the fully secure. With no evidence of food insecurity, both lower and higher income households who have mean characteristics for their income group have fairly similar probabilities of spending out saving to cover routine expenses—45.2% and 39.7%, respectively. They are dramatically different, though, in their reliance on friends and family, with predicted probability of 37% for the low-income food secure, more than five times that for

the higher income food secure (6.5%). Among the food secure, low-income households with average characteristics have about twice the predicted likelihood of working extra to make ends meet (32.5%) or paying late fees on bills (51.1%) as compared to their higher income counterparts (predicted probabilities of 18% and 26.3%). Conversely, the low-income food secure have much lower predicted probabilities of unpaid credit card balances (28% vs. 49.6%), but much higher probability of using payday and pawn loans—13.1% and 8.2%, as compared to 0.9% and 2% among the higher income food secure. In the absence of any indication of food hardship, then, higher and lower income households exhibit widely varying financial strategies to meet their day-to-day financial needs.

While most of the strategies continue to be less common among the higher vs. lower income, most also increase more sharply for the higher income group in conjunction with lower levels of food security, such that the groups become considerably more similar in their financial behaviors. Among those with very low food security, more than half of the higher income households are predicted to borrow from family and friends, as are more than three-quarters of the low income; slightly more than half of both income groups are predicted to work extra to make ends meet; more than three-quarters of both groups are predicted to pay late fees on bills; and higher income households have substantially higher likelihood of carrying credit card balances (49.1% vs. 31.2%). Higher income households with very low food security still have substantially lower probability of using payday loans than their lower-income counterparts (10.2% vs. 22.8%), though higher predicted probability of using pawn loans (27.2% vs. 18.2%). Overall, results imply that while low and higher income households differ considerably in their financial coping strategies in the absence of food hardship, higher income households with food hardships, particularly more severe hardships, have financial strategies that more closely resemble their lower income counterparts.

Food Insecurity and Food Program Participation

While our primary interest is in income-focused coping strategies, we conduct parallel analyses on receipt of SNAP and food from food pantries, both strategies that are explicitly targeted to meeting food needs. In Wisconsin, SNAP is available to households with gross income up to 200% of the poverty line and net income below the poverty line, due to expanded categorical eligibility rules. Food pantries do not have uniform eligibility criteria, though they target low-income households. We focus only on our low-income sample, those below 185% of the poverty line. Among

the higher income group, participation is rarely an option and reported rates are, hence, extremely low. Here too, we emphasize the potential bidirectionality of the relationships—where food insecurity may lead to the decision to seek food assistance, while such assistance may also impact the presence or severity of food insecurity among participants. Our descriptive models merely explore the extent to which food insecurity—which denotes the highest severity experienced in the past year—is associated with program participation. To the extent food assistance ameliorates food insecurity, there would be higher rates of food assistance among food secure or lower severity food insecure households than there would be otherwise, and this would be reflected in the associations seen in our models.

The odds of SNAP participation are roughly 60% higher for low-income households that experienced low food security over the past year; at both lower and higher severities, however, there is no difference relative to fully food secure households (Table 5). As participation is high regardless of food security status, the higher odds for the food insecure do not translate into large differences in predicted probabilities. A low-income household with no reported food hardship in the past year has a predicted 61.3% likelihood of receiving SNAP—somewhat lower than the 72% likelihood of a similar household who experienced low food security over the past year, though hardly different at all from 63% likelihood of participation for a similar household that experienced child-specific food hardships.

On the other hand, the severity of food hardship is strongly correlated with food pantry use. The odds of receipt of food from food pantries double in the face of marginal food insecurity and are 400% higher in the case of very low food security and child food hardships. Consistent with this, the predicted probability of using food pantries increases sharply with elevated food hardships—from 12.7% for a typical food secure low-income household, to around 35% for a similar household that experienced very low food security or child food hardships over the past year.

DISCUSSION AND CONCLUSIONS

This article explores how household food insecurity and child food hardships are embedded within broader financial circumstances and behaviors. We show how food security varies with both income and expenditure shocks, as well as the extent to which it is correlated with a continuum of financial coping strategies. While our analyses cannot speak to causality, we nonetheless are able to document a number of findings that we believe are policy relevant and may inform future research.

TABLE 5
Logistic Regression Models and Predicted Probabilities of Food Assistance Use among Low-Income Households

	SNAP Participation			Food from Food Pantries		
	Odds Ratio	SE	Predicted Probability	Odds Ratio	SE	Predicted Probability
Food secure	(omitted)		61.3	(omitted)		12.7
Marginal food security	1.299	(0.334)	67.3	1.918***	(0.457)	21.9
Low food security	1.624***	(0.246)	72.0	1.877***	(0.530)	21.5
Very low food security	1.359	(0.380)	68.3	3.797***	(0.876)	35.6
Child food insecurity	1.080	(0.229)	63.1	3.681***	(1.071)	34.9
Observations	1,371			1,363		

Source: Wisconsin Survey of Household Food Needs.

Notes: Controls not shown include income categories, household size, household structure, education level, disability, home ownership, income shocks, expenditure shocks, vehicle ownership, and Spanish-language survey indicator. Predicted probabilities of program participation are evaluated for each food security status at the sample means.

* $p < .10$, ** $p < .05$, *** $p < .01$.

Results suggest that volatility in both income and expenses plays important roles with regard to households' ability to meet their food needs, and that in the face of large or volatile expenses, parents have particular difficulty in shielding their child(ren) from food hardships. Our findings with regard to income shocks go beyond past work, pointing specifically to the importance of self-characterized large unexpected income losses, reductions in hours or pay while still working, and extended periods of unemployment, rather than job loss itself, as factors associated with food insecurity. Furthermore, our results suggest that more standard models of food insecurity that omit economic shocks result in inflated estimates of the role of low income per se. While income continues to be of considerable importance in and of itself, it is nonetheless revealing that the commonly observed associations between low income and food insecurity appear to encompass, in reality, the separate influences of low income, shocks to income, and shocks to expenditures.

These findings add to a growing body of work highlighting the challenges associated with volatility in income and spending among low-income households. Over the last two decades, low-income households have become more likely to experience significant drops in income (Dyner, Elmendorf, and Sichel 2012), and changes in the structure of the labor market have contributed to increased employment instability (Kalleberg 2009). In a recent national survey, over one-fifth of respondents

reported occasional months with very high or low income, most commonly due to an irregular work schedule (Board of Governors of the Federal Reserve System 2014). Our findings suggest that such volatility is associated with greater food insecurity risk, and point toward the potential merit in developing mechanisms to promote consumption-smoothing strategies and tools.

Our analyses also reveal strong associations between food insecurity and a range of financial coping strategies. Much as food insecurity is characterized by a continuum of increasingly severe food-related adaptations as it progresses from mild to severe levels, our results suggest it may also be characterized by a continuum of financial adaptations—ranging from relying on savings, borrowing from family and friends, and increased work effort in conjunction with marginal food security, and progressing toward use of potentially inferior forms of credit such as payday and pawn loans at the more severe end of the food insecurity spectrum. While we are not able to assess the extent to which this association is causal, differences in relative likelihood of different strategies at different severities of food hardship are nonetheless suggestive of a response continuum. Furthermore, we find that several of the more benign coping strategies that are elevated from the earliest stages of food insecurity—including using savings to cover routine expenses, and borrowing from family and friends—appear to be less commonly used in households with child-specific food hardships as compared to similar households in which food hardships are limited to adults, a pattern that is consistent with less availability of those strategies to households at the most severe food insecurity levels. Potentially riskier strategies such as use of payday loans and pawn loans, however, remain elevated among those households. The results indicate that knowing something about the severity of food hardships a household has experienced provides insight to the kinds of financial coping strategies they are likely to have used.

Also notable is that the relationship between food insecurity and coping strategies differs substantially between lower and higher income households, with higher baseline use of most of the coping strategies among lower income households, but much steeper gradients for higher income households when food insecurity is present. These patterns are suggestive, at least, of differences in responsiveness to food insecurity between lower and higher income households, possibly because the former already deploy more of the potential strategies even in the absence of food hardships.

Finally, the association between food hardships and use of food assistance among low-income households is revealing. High use of SNAP

across food security statuses suggests that SNAP is a normative source of support among low-income households—consistent with the program’s goal of preventing food insecurity—as opposed to a strategy only deployed once food hardships have already occurred. After controlling for a range of factors, it does appear moderately more common among households with low food security, consistent with well-documented selection of food insecure households into the program. Overall, however, there is relatively little variation across food security statuses, in contrast to that seen for most of the financial coping strategies. SNAP is more common among the low-income food secure than are any of the income-focused strategies—yet varies less across food security severity; at higher severities, its predicted use is broadly similar to using savings, borrowing from family and friends, and paying late fees on bills. In contrast to SNAP, food pantry use looks much more like the financial coping strategies in its relation to food insecurity, with predicted probability increasing sharply in tandem with food hardship. In its scope and relation to food security, it is most similar to use of payday and pawn loans, though somewhat more common.

Several potential policy implications are consistent with this work. Income and expense volatility are associated with food insecurity, yet the safety net does not have well established strategies for responding to such volatility. Safety net programs could work to support people with short-term emergency help, including credit and budgeting counseling, access to emergency grants for certain expenses or accelerated income verification to qualify for benefits. Furthermore, given that means-tested programs often include asset tests, families who use, or plan to apply for, benefits may resist accumulating emergency savings (O’Brien 2008), which hinders their own capacity to respond to volatility. Safety net programs may support greater food security by exempting emergency savings from means tests, such as most states do by waiving asset tests in the case of SNAP.

Beyond the role of public assistance, the consequences of income and expense volatility, as distinct from problems of low income, deserve more attention. Stability in cash flow would seem most likely to have a direct impact for high-frequency consumption items, like food. Food is rarely the only area affected, however: the prevalence of paying late fees on bills, reported by three-quarters of food insecure households, is illustrative of the multifaceted challenges they face. Developing avenues to helping families manage spikes and dips in household income and expenses, such as promoting savings as well as supporting enhanced access to low-cost credit, may allow families at risk of food hardships to offset potentially

more severe problems. At a more fundamental level, efforts to reduce underlying volatility via strategies that both support predictable and stable earnings and reduce the risk of large unexpected medical expenses may have beneficial impacts on food security.

It would be useful to explore these issues in a geographically broader and more generalizable sample, with data that supports causal models. While our results are suggestive of a continuum of financial coping responses to increasing severities of food hardship, this is no doubt a simplification of a more complex and potentially two-way relationship. Additionally, it would be beneficial to extend our current focus on the correlates of individual coping strategies to a more complex focus on packages of and relationships among income-based and food-based coping strategies.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix S1. Wisconsin survey of household food needs

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