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Research Report

Does Short-Term Emergency Savings Translate into Longer-Term Financial Wellness?

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Summary

Liquid assets, often in the form of emergency savings, contribute substantially to financial well-being across income and demographic factors.[1] For instance, liquid savings of a few hundred to a few thousand dollars has been shown to significantly buffer households from material hardship in the near term (McKernan et al. 2016; Gallagher and Sabat 2017). But what does that mean for long-term financial well-being? Relatively little research has examined the role of household liquidity in financial well-being over time. This paper is the first in a series authored by academic scholars in collaboration with the AARP Public Policy Institute that addresses this research question.

In this paper, authors Jorge Sabat and Emily Gallagher examine the longitudinal relationship between liquid assets and financial well-being. Building on their previous research showing that liquid savings of at least $2,452 can meaningfully buffer low- to moderate-income households against financial hardship, they find that households that achieved that same liquid savings level at any point in 2013–16 are significantly less likely to experience financial hardship up to three years later. Further, they find that, when controlling for other financial and demographic factors, achieving this savings buffer is associated with a 9.5 percentage point decrease in the likelihood that a household will experience hardship three years later.

These results point to the power of liquid assets in sustaining financial well-being over time. They also bolster other recent research findings that savings is a dynamic process of accumulation and decumulation. Low-income households that spend their liquid savings, presumably in the case of common unexpected events, can still be better off financially compared with similar households that never saved approximately one month of income. These are important takeaways for policy and product design to better meet people's real financial needs.

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[1] The US Financial Health Pulse has consistently found that liquid assets are the single largest predictor of overall financial well-being in a composite index that includes seven other factors. (Financial Health Network, 2020).

Acknowledgments

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Introduction and Background: The Relationship between Liquidity and Financial Well-Being

In this brief we ask whether having a short-term emergency savings buffer is associated with better financial health up to three years later. To evaluate this question, we use data from the 2008 and 2014 Surveys of Income and Program Participation (SIPP). In particular, we use the 2008 SIPP to define what is *substantial* in regard to a short-term emergency savings buffer. Then, we use the 2014 SIPP as an out-of-sample test of whether low-income households with that emergency savings buffer incur less financial distress three years later.[2] The out-of-sample test is composed of 21,398 households, tracked once a year for four years, from 2013 (Wave 1) to 2016 (Wave 4).

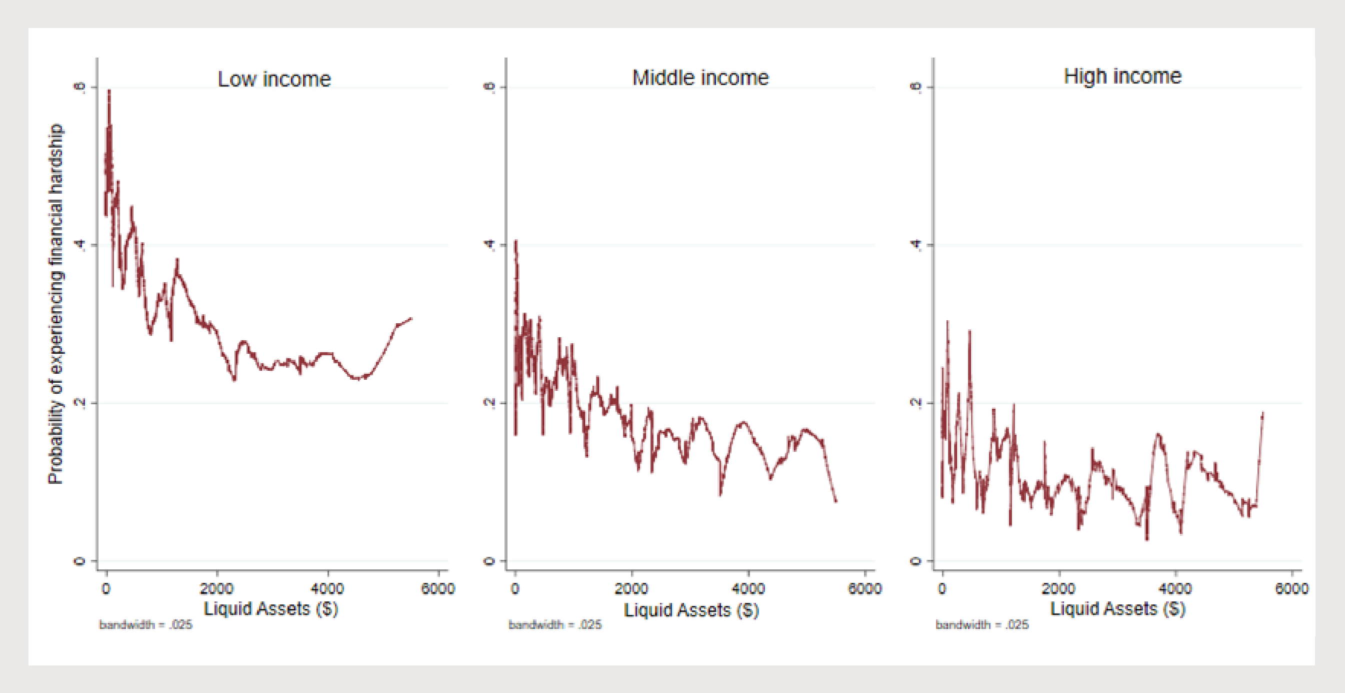
DEFINING A SHORT-TERM EMERGENCY SAVINGS BUFFER

We begin by defining a short-term emergency savings buffer. Descriptive evidence tells us that the relationship between initial liquid savings and experiencing financial hardship within the next few months is nonlinear for low-income households. Using the 2008 SIPP, in inflation-adjusted terms,[3] figure 1 plots the fraction of households that enter into financial hardship (defined as skipping rent, bills, meals, or medical care) over the near term at different levels of initial liquid savings. Savings is captured at time $t = 0$ and hardship is captured over the four-month period ending at time $t + 8$ (eight months after savings is captured). The sample is split into terciles along the income distribution.

THE RELATIONSHIP BETWEEN SAVINGS AND HARDSHIP

For low-income households, the correlation between savings and near-term hardship is negative and large in magnitude at low levels of savings, and almost flat at high levels of savings. The same relationship is both more linear

Figure 1
Locally Weighted Scatterplot Smoothing—Hardship versus Liquid Assets by Income Level



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[2] In this brief, the sample is a low-income population defined as households with annual income less than two times the federal poverty line.

[3] All dollar values in this brief are inflation adjusted to 2019 dollars.

and comparatively flatter at middle- and high-income levels. Conceptually, one can imagine that this convex shape will arise for any group of households with limited access to credit that subsists close to their expense absorption floor, meaning that there is little room to absorb an expense or unemployment shock by lessening everyday expenses. Instead, an unexpected financial shock can be absorbed only through a savings buffer. For example, a household cannot change to a cheaper cell phone plan if it is already on the lowest-cost plan. Without a savings buffer, an expense shock will translate fairly directly into hardship for such a household.

In contrast, facing an unexpected expense, a higher-income household may be able to put that expense on credit, collect an insurance payout, or take actions to reduce the cost of living, leading to a flatter relationship between current savings and near-term hardship.

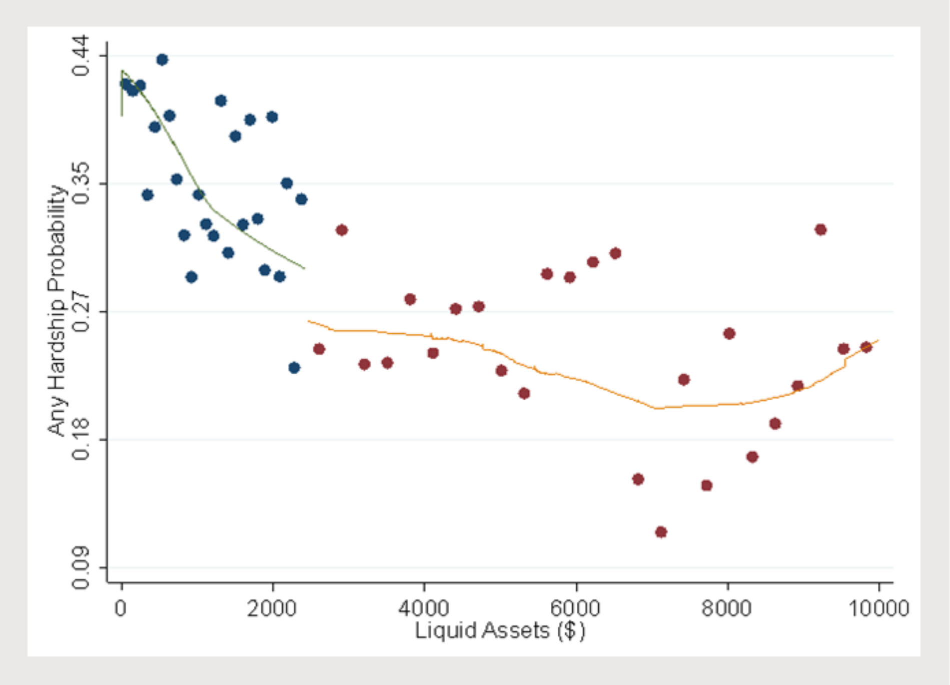
Figure 1 suggests that, at least among low-income households, there are points in the savings distribution where an additional dollar of liquid savings has sharply different returns in terms of reducing the probability of financial hardship. There may also be a *threshold level* of savings that best separates a regime of low-savings and high-hardship probability from that of a regime of high-savings and low-hardship probability.

ESTABLISHING A SAVINGS LIQUIDITY THRESHOLD AT $2,452

Sabat and Gallagher (2019) estimate a threshold level of liquid savings of $2,452 for the average low-income household in the 2008 SIPP that best separates the probability of financial hardship. In particular, they look for the level of household liquidity that is associated with the sharpest change in the conditional probability of entering into any form of financial hardship.[4] They find the threshold to be about $2,452. This amount, which is visually displayed in figure 2, represents roughly one month of income for the average and median low-income household in our sample. Therefore, an approximate minimum-savings

Figure 2

The Mean Probability of Experiencing Any Form of Near-Term Financial Hardship with Bins of Initial Liquid Savings



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[4] They fit a regression kink specification to the observed data and search for the location of the unknown kink using the *grid-search* procedure (Hansen 2017). This technique is similar to a structural change model in time-series analysis as it involves finding the savings threshold that maximizes the *R*-squared across a prespecified search grid.

rule for the average low-income household would be to hold the greater of the inflation-adjusted equivalent of about $2,452 (in 2019 dollars) or roughly one month of income.

We must emphasize that this threshold may change over time as prices update or as shocks change in frequency. For example, expense shocks, like a car breakdown, might become less frequent but costlier, particularly relative to wages, causing the threshold to shift. Moreover, different types of households may generate smaller or larger threshold points. Sabat and Gallagher (2019) document heterogeneity in the threshold estimate based on two subsamples—single mothers and households without health insurance—for which we would expect greater exposure to expense shocks and, hence, a higher threshold point. The threshold point for both subsamples is about $1,000 higher than for the average low-income household.

The kink in the savings–hardship relationship at $2,452 (see figure 2) offers a useful definition of what constitutes a *substantial* emergency savings buffer for the average low-income household. Low-income households with less than $2,452 in emergency savings are much more likely to fall into financial hardship over the near term than are low-income households with more than $2,452 in emergency savings.

Methods

In this brief, we ask whether, among low-income households, having an emergency savings buffer of at least $2,452 (in 2019 inflation-adjusted dollars) at any point during the time of the study also correlates with having a reduced likelihood of longer-term financial hardship.

To assess this question, we begin by constructing a measure of a household's financial well-being that can be compared over various time periods. In particular, we construct a multidimensional measure of financial hardship[5] based on a principal component analysis (PCA) of the following dummy variables. Each variable is an indicator of distress:

- $Food_1$: The food you bought did not last?
- $Food_2$: Could not afford balanced meals?
- $Food_3$: In the previous year, did you ever cut the size of your meals or skip meals because there wasn't enough money for food?
- *Utilities*: Was . . . unable to pay the utility bills?
- *Housing*: Was . . . unable to pay rent or mortgage?
- *Health*: During the month(s) . . . was not covered by any health insurance, did he/she go to a doctor, nurse, or other medical provider?

CREATING AND ANALYZING A HOUSEHOLD FINANCIAL WELL-BEING INDEX

From the first principal component of these variable groups, we create an index—a continuous measure of the degree of financial hardship experienced by the household. We take this index and transform it in two ways. First, we discretize it by cutting the index into terciles, such that $HighHardship_4 = 1$ if a household is in the highest tercile of the hardship index as of Wave 4. Second, we calculate a change in the percentile of hardship over time. This latter calculation is performed by first ranking households according to their index value in a given wave. Then, we take the Wave 4 minus Wave 1 change in the household's percentile rank ($\Delta Hardship_{4-1}$). For example, a household with the highest degree of financial hardship, according to our index, will have a percentile rank of 100, while the household with the lowest degree of hardship will have a percentile rank of 0 in a given wave. A household with a hardship rank at the 75th percentile in Wave 1 and at the 50th percentile in Wave 4 is assigned a value of $\Delta Hardship_{4-1} = -25$, indicating that the household dropped 25 percentiles in its degree of hardship over the three years between Wave 1 and Wave 4. Negative values indicate a household's financial state has improved, relative to its peers, over time.

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[5] This measure is analogous to the multidimensional poverty measure of Alkire et al. (2015), only it captures overall degree of financial hardship (distress).

ECONOMETRIC ESTIMATION: THE LONG-TERM EFFECT OF HAVING A LIQUID SAVINGS BUFFER OF MORE THAN $2,452

Within our sample of low-income households, we estimate the long-term effect on financial hardship of having a savings buffer that is higher than the threshold point estimated by Sabat and Gallagher (2019) of $2,452. The threshold point is constructed as described above using the 2008 SIPP sample and then applied to the 2014 SIPP sample. Therefore, this can be seen as an out-of-sample analysis, comparing households with a savings buffer above versus below our definition of a "substantial" savings buffer. We estimate ordinary least squares (OLS) regressions of the following forms:

$$(1)\ HighHardship_4 = \alpha + \beta_1 I(LiqAssets_1 > 2452) + \pi Log(1 + LiqAssets_1) + Controls + \epsilon$$

$$(2)\ \Delta Hardship_{4-1} = \alpha + \beta_k I(LiqAssets_k > 2452) + \pi Log(1 + LiqAssets_k) + Controls + \epsilon$$

It is worth noting that we use a linear probability model (OLS) to estimate the marginal effect of a threshold in liquid assets holdings on a binary outcome that measures households' financial health. Econometrically, this is widely accepted. Wooldridge (2010) shows that the estimated marginal effect obtained by a linear probability model might have a smaller bias than marginal effects produced by Probit or Logit regressions. In addition, OLS marginal effects are more computationally tractable.

The first dependent variable is $HighHardship_4$, which is a dummy variable that takes a 1 if the household is in the high-hardship tercile of the PCA index at Wave 4 (2016). We are also interested in whether there is any correlation between having a savings buffer of $2,452 and changes in the household's degree of hardship over time. Thus, $\Delta Hardship_{4-1}$ is the Wave 4 minus Wave 1 change in the percentile value of the individual's index level of hardship.

$LiqAssets_1$ is a continuous variable that measures household liquid assets at Wave 1. The key explanatory variable, $I(LiqAsset_k > 2452)$ indicates that the household had a savings buffer of at least $2,452 as of Wave *k*. Emergency savings is intended to be drawn down as needed and then built back up. A one-time snapshot of a household's savings buffer might appear small because of a recent expense shock, despite the fact that the household usually holds a larger buffer. Therefore, we test the correlation between the four-year change in the hardship index and an indicator for whether the individual had an emergency savings buffer of $2,452 or more in any proceeding Wave $k \in 1\ to\ 3$.

Control variables include log-transformations of a household's balance sheet characteristics as of Wave 1 (liquid assets and hard assets), as well as log-changes between Wave 1 and Wave 4, on household income and total debt.[6] We also control for changes in access to social programs, marital status, and household size. Finally, we control for households' financial hardship as of Wave 1, based on our continuous measure.

Results

Table 1 presents the estimates recovered by running the regression models as specified in equations 1 and 2. Both specifications test if having a liquidity buffer larger than $2,452 predicts lower levels of hardship in the future. The estimated marginal effects (β_1), along with their 95 percent confidence intervals, are also displayed in table 1.

The estimate produced by equation 1 captures the correlation between high hardship in Wave 4 and whether the household had liquid savings of at least $2,452 in Wave 1. In column (1) the coefficient is negative and highly statistically significant. A coefficient of 0.095 means that having an emergency savings buffer of at least $2,452 as of Wave 1 is associated with a 9.5 percentage point reduction in the likelihood of being in the high-hardship tier as of Wave 4, three years later.

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[6] We add 1 to the balance sheet value before taking the natural logarithm to deal with the undefined logarithm of zero values. The idea of using a logarithm transformation is standard for interpretation purposes, as changes in logs are interpreted as percentage changes.

Table 1
Linear Regression *(robust standard errors in parentheses)*

Regression equation	(1)	(2)	(3)	(4)	(5)
Dependent variable	$HighHardship_4$	$\Delta Hardship_{4-1}$	$\Delta Hardship_{4-1}$	$\Delta Hardship_{4-1}$	$\Delta Hardship_{4-1}$
β	-0.095 (0.02)	-3.77 (1.60)	-7.43 (2.12)	-5.64 (2.57)	-6.18 (2.65)
Sample	All	All	High Hardship at Wave 1	Mid Hardship at Wave 1	Low Hardship at Wave 1
Savings measured at	Wave 1	Wave 1, 2, or 3			
N	4,590	4,590	2,544	1,063	983

The remaining estimate of β comes from the model in equation 2. Here, the dependent variable is the three-year change in a household's hardship index percentile rank. A negative value indicates that this household has fallen in its hardship ranking, suggesting an improvement in its financial well-being, relative to its peers over time. The estimate captures the effect on this outcome of having a savings buffer of at least $2,452 as of Wave 1, Wave 2, or Wave 3.

The negative and statistically significant estimates of β_1 for equation 2 signal that having an emergency savings buffer of at least $2,452 is associated with a lower hardship ranking and, hence, an improvement in relative financial well-being over time. In particular, we find that having an emergency savings buffer of at least $2,452 as of Wave 1, Wave 2, or Wave 3 is associated with dropping roughly 3.8 percentiles in the hardship index ranking. These results indicate that households with at least $2,452 of emergency savings tend to see improvements in their financial well-being over time, as evidenced by a lower financial hardship ranking up to three years later.

In columns (3) to (5), we repeat the analysis presented in column (2) in order to further study any different effect by the level of household financial hardship as of Wave 1. Households with savings above $2,452 that were in the high-hardship group as of Wave 1 are 7.4 percentiles lower in their hardship ranking three years later. Similarly, households with savings above the threshold that were in the mid-range of hardship, or the lower-hardship group, see improvements in relative terms that are equivalent to 5.6 and 6.2 percentiles, respectively. This additional analysis suggests that financial well-being improvements, because of savings above $2,452, would be balanced across households that had different levels of financial hardship as of Wave 1. This result suggests that savings would be acting more as a buffer than as a remedy to current financial problems.

Applying the estimated models to observed households as of Wave 1, we compute the transition probabilities for households with savings above or below the $2,452 threshold. In table 2, we estimate the percentage of low-income households that transition from one financial well-being tier to another. During the studied period, the probability that a low-income household transitions from a high-hardship to a low-hardship state is 32 percent for households with more than $2,452 in savings. This estimate compares with an 18 percent probability for households with less than $2,452 in savings (see figure 3). In other words, high-hardship households that achieved the savings goal at any point in time over the period studied have nearly twice the likelihood of improving their financial well-being to low hardship compared with households that did not achieve the savings goal. Another observation is that the majority (57 percent) of households that started in the high-hardship tier but did not reach the savings threshold saw no improvement in their financial well-being.

Table 2

Financial Well-Being Transition High- versus Low-Savings Households, among Low-Income Households *(2013–16)*

Savings above $2,452 in Wave 1, 2, or 3

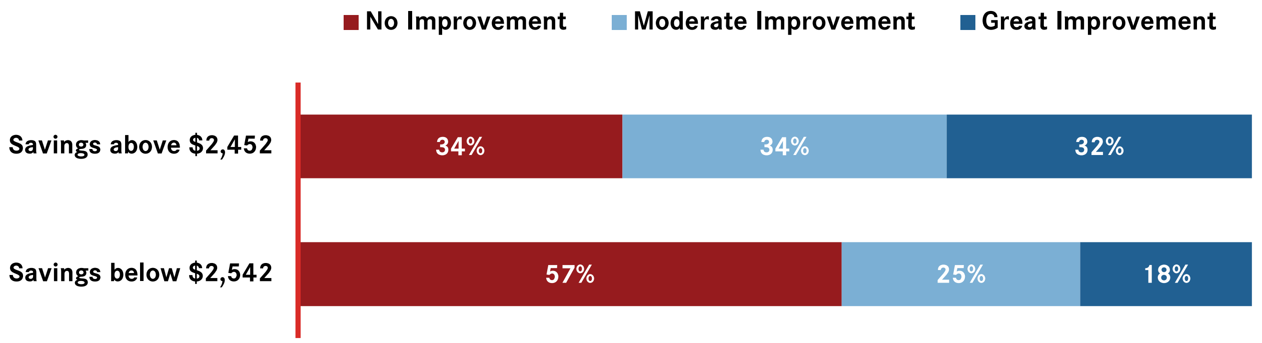
		2016			
	% Households Transition	**High Hardship**	**Mid Hardship**	**Low Hardship**	**Total**
2013	**High Hardship**	34%	34%	**32%**	100%
	Mid Hardship	26%	30%	43%	100%
	Low Hardship	60%	33%	7%	100%

Savings below $2,452 in Wave 1, 2, or 3

		2016			
	% Households Transition	**High Hardship**	**Mid Hardship**	**Low Hardship**	**Total**
2013	**High Hardship**	57%	25%	**18%**	100%
	Mid Hardship	47%	25%	28%	100%
	Low Hardship	68%	29%	3%	100%

Figure 3

Change in Financial Well-Being between 2013 and 2016 of Low-Income Households above and below the $2,452 Savings Threshold



% = Probability of Transitioning from the High-Hardship Tier to High-Hardship (No Improvement), Mid-Hardship (Moderate Improvement), or Low-Hardship (Great Improvement) Tiers, between 2013 and 2016

Conclusion

Liquidity is an important predictor of financial hardship. Emergency savings can be drawn upon to handle unexpected financial shocks and then built back up over time. Using a sample of low-income households, in this brief we show that emergency savings is not only predictive of experiencing financial trouble over the next few months but also predictive of longer-term financial well-being.

We begin by defining what constitutes a "substantial" emergency savings buffer for the average low-income household, using the empirical relationship between liquid assets and whether such a household experiences any form of financial hardship over the next few months. We define a "substantial" buffer to be one that is at least $2,452.

Then, we derive an index of financial hardship and document that households with an emergency savings buffer in excess of $2,452 experience significantly less financial hardship, even up to three years after achieving this target buffer. Notably, controlling for smooth functions of all components of a household's balance sheet, we find that having liquid assets of at least $2,452 is linked to a 9.5 percentage point decline in the probability of being in the highest tercile of households, in terms of an index of financial hardship, three years later. A liquidity buffer is also associated with significant improvements in a household's financial well-being ranking, relative to its peers, over time.

It is important to note that this brief speaks to correlation and not causation. It is possible that improvements in financial well-being—due to, for example, getting a more stable job—is the underlying factor that permits a household to both accumulate a savings buffer and experience less hardship over time. If this is the case, the savings buffer may not be contributing to the long-term decline in hardship. Nonetheless, even in a situation of improved financial well-being, the act of building a savings buffer is a choice. A household could, instead, choose to consume any extra discretionary income. Our brief shows that the choice to hold a savings buffer is correlated with lower hardship, both contemporaneously and at least three years in the future.

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Appendix

The following table presents the weights applied to each individual financial hardship measure to assign each sample participant to a position along this index of financial hardship. A respondent who answers "yes" is given a value of one for each variable. These values are multiplied by the associated weight such that a respondent who answers "yes" to all of the above questions would be in the far right tail of the index, whereas a respondent who answers "no" to all questions would have an index value of zero.

Hardship	Weights
$Food_1$	0.51
$Food_2$	0.50
$Food_3$	0.45
Utilities	0.32
Housing	0.38
Health	0.21

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