

**Housing Crisis and Family Well-being:
Examining the Effects of Foreclosure on Families**

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Abstract

The housing market crash in the mid-2000s was characterized by unusually high rates of mortgage delinquencies and foreclosures. Thus, many families faced the prospect of losing their homes. In this paper, I use a unique dataset linking the 2008 Survey of Income and Program Participation with individual foreclosure event records from RealtyTrac to examine the effects of foreclosure on changes in family well-being. Results from random-effects models suggest that families that experience foreclosure have lower incomes, experience greater hardship and food insecurity, have higher odds of accessing the public safety net and were less likely to receive support from private safety nets than their counterparts. Further, changes in foreclosure status are associated with reduced economic well-being, increased hardship and food insecurity.

The housing market crash in the mid-2000s was characterized by unusually high rates of mortgage delinquencies and foreclosures. Thus, many families faced the prospect of losing their homes. Although there have been a spate of studies that examine the effects of foreclosures on property values and neighborhood conditions, and recent research examining the association effects of foreclosure on health, only a few recent studies have examined the effects of the foreclosure process on families. Taking a qualitative approach, Kingsley, Smith and Price (2009) suggest that foreclosure results in displacement and housing instability among families but offer little empirical evidence. Other studies find that families experiencing foreclosure had a higher propensity to move (Molloy and Shan 2011; O'Donnell and Coulsen 2012). Some studies focus on the effects of foreclosure not on families, but on children, and highlight associations between foreclosure and adverse educational outcomes, such as changing schools and increased truancy (Isaacs 2012), lower economic well-being and less positive parent-child interaction (Mykyta 2014).

In general, the literature examining the effects of foreclosure on family well-being has been sparse since these families are hard to identify and track in household surveys (Kingsley, Smith and Price 2009). Using a unique data set that links the U.S. Census Bureau's 2008 Panel of the Survey of Income and Program Participation to foreclosure event data collected from local government sources by

RealtyTrac, I explore the effects of the foreclosure process on several facets of family well-being.¹ As SIPP is a panel survey, I am able to follow families and their members through the foreclosure process. Specifically, I address the following research questions:

- (1) Do families experiencing foreclosure have lower well-being (in terms of family economic well-being, hardship, food insecurity and access to social support) than those who do not experience foreclosure?
- (2) Is experiencing foreclosure associated with changes in family well-being?

Background

The housing market crash in the mid-2000s was characterized by unusually high rates of mortgage delinquencies and foreclosures. Thus, many families faced the prospect of losing their homes. Descriptive studies have revealed that those facing foreclosure tend to be younger homeowners and are more likely to belong to a minority race/ethnic group. Individuals losing their homes to foreclosure are also more likely to report job loss or a health crisis (Niedt and Martin 2013; Pollack and Lynch 2009). Moreover, those who knew someone that experienced foreclosure were also more likely to report economic distress, suggesting that assistance from private safety nets may be limited (Niedt and Martin 2013).

In addition to describing the characteristics of the foreclosed population, researchers have also been interested in the effects of foreclosure on neighborhoods and families. Yet the literature examining these effects on families has been sparse since these families are hard to identify and track in household surveys (Kingsley, Smith and Price 2009).

Much of the extant research on foreclosure effects has focused on the neighborhood effects of foreclosure, such as nearby property values (see for example, Frame 2010; Immergluck and Smith 2006;

¹ The estimates in this paper are based on responses from a sample of the population. As with all surveys, estimates may vary from the actual values because of sampling variation and other factors. All comparisons made in this paper have undergone statistical testing and are significant at the 90-percent confidence level unless otherwise noted. For information on confidentiality protection, sampling error, non-sampling error, and definitions see [http://www.census.gov/sipp/sourceac/S&A08_W1toW11\(S&A-16\).pdf](http://www.census.gov/sipp/sourceac/S&A08_W1toW11(S&A-16).pdf).

Schuetz, Been and Ellen 2008; Wassmer 2011) or crime (see for example, Arnio, Baumer and Wolff 2012; Ellen, LaCoe and Sharygin 2013; Williams, Galster and Verma 2014). In general, although higher foreclosure rates in a given area tend to reduce property values and sales prices, studies that examine the effects of foreclosure rates and crime have yielded mixed results. Most of these studies focused on a specific geography, and did not use nationally representative data.² Further, since the focus of these studies is on neighborhood effects, they do not address the effects of foreclosure on individuals and families.

To the extent that studies have examined the effects of foreclosures on individuals, these studies have focused on health effects or effects on children. For example, higher foreclosure rates were associated with higher suicide rates (Houle and Light 2014), worse mental health outcomes (Alley et al. 2011; Houle 2014b; Pollack and Lynch 2009) and higher rates of uninsurance (Pollack and Lynch 2009). However, results of studies examining the effect of foreclosures on health care utilization have been mixed. For example, Currie and Tekin (2011) found increases in foreclosure rates were associated with an increase in unscheduled hospital visits, even after controlling for economic conditions, migration, other changes in health care utilization or other factors. In contrast, Pollack and Lynch (2009) and Alley et al. (2011) found that individuals experiencing foreclosure were more likely to forgo care. These contrasting results may be explained by the level of analysis – Currie and Tekin (2011) analyzed the effects of *neighborhood* foreclosure rates in four states whereas the Pollack and Lynch (2009) and Alley et al. (2011) studies examined *individuals* facing foreclosure.

Other recent studies have examined the effects of foreclosure on children. For example, Isaacs (2012) estimates that more than 8 million children are at risk of foreclosure, including children facing eviction from foreclosed rental properties. However, this estimate is based on applying summary state foreclosure and delinquency rates to household estimates by tenure and mortgage status from the American Community Survey, rather than on a household's (and their members) actual experience of foreclosure events. Much of the focus of research on the effects of foreclosure on children has been on

² However, Arnio, Baumer and Wolff conduct a county-level analysis of foreclosures and crime in the United States.

educational outcomes. For example, Comey and Grosz (2011) and Been, Ellen and Schwartz (2011) find that children facing foreclosure were more likely to move, and were more likely to change schools. Further, these moves tended to be to lower-performing and lower-quality schools. Both of these studies were focused on experiences in specific metropolitan areas – New York City and Washington, DC respectively. Mykyta (2014) uses individual foreclosure event data linked to the Survey of Income and Program Participation to examine the effects of foreclosure on child well-being. Although children whose families experienced foreclosure had lower levels of economic well-being and participation in extra-curricular activities, more schooling mobility, and less frequent praise and time spent with parents, changes in foreclosure status were only associated with changes in poverty status and receipt of non-cash assistance from public safety net programs.

Despite the spate of research on the effects of foreclosure on health outcomes and educational outcomes for children, there has been little examination of how foreclosure affects family well-being. Several studies have found that families experiencing foreclosure have a higher propensity to move (Molloy and Shan 2011; O'Donnell and Coulsen 2013; Kachura 2012) or to double up in a shared household (Mykyta 2013). However, evidence is mixed as to whether families that move as a result of foreclosure end up in lower quality neighborhoods (Molloy & Shan 2011; O'Donnell & Coulsen 2013; Kachura 2012; Petit and Comey 2012). A notable recent study by Brevoort and Cooper (2010) notes the adverse and lasting effects of mortgage delinquencies on defaulting homeowners' credit scores, but for the most part researchers have limited knowledge about the how foreclosures affect families. Using a unique data set that links the Census Bureau's 2008 Panel of the Survey of Income and Program Participation to foreclosure event data collected from local government sources by RealtyTrac, this paper explores the effects of the foreclosure process on several facets of family well-being.

Data

In this analysis, I use data from the Census Bureau's 2008 Panel of the Survey of Income and Program Participation (SIPP) merged with individual foreclosure event data from RealtyTrac, a company that maintains a database of foreclosure events based on local government records.³ Records in the RealtyTrac file consist of foreclosure events for properties experiencing such events from calendar years 2005 through 2011. See Appendix A-1 for more information about the process of merging SIPP data to the foreclosure event data from RealtyTrac.

The 2008 Survey of Income and Program Participation (SIPP) is a panel survey based on a nationally representative sample of the civilian, non-institutionalized population and includes approximately 50,000 eligible households.⁴ The SIPP contains information about the income and program participation (e.g. Social Security, Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), Medicaid, housing and energy assistance) of individuals and households in the United States and also contains additional information in topical modules concerning real estate, assets and liabilities, health expenditures, work-related expenditures, child support and adult and child well-being (U.S. Census Bureau 2006). All adults in sampled households were interviewed once every four months from September 2008 through November 2013. SIPP's longitudinal design follows household members over time, even if the individuals move out of the original household. In this analysis, I use data from Waves 1 through 16 of the core SIPP files and the Adult Well-Being Topical Modules fielded in Waves 6 and 9 (covering May-August 2010 and May-August 2011, respectively).

The commingled SIPP-RealtyTrac data set created for this analysis is particularly appropriate for analyzing the effect of foreclosure on family well-being because it enables me to examine changes in

³ Prior to linking the survey data to the foreclosure data, SIPP households who opted out from having their data linked with administrative data were removed.

⁴ Households may consist of families, a single individual or a group of unrelated individuals.

foreclosure status as well as changes in well-being over the course of the panel, controlling for a host of individual, family and household characteristics that may also influence family well-being.

In this paper, the analytic sample includes householders interviewed at wave 1 and followed through November 2013.⁵ When weighted, my sample represents about 117.0 million householders (unweighted, there are 18,713 householders in the analytic sample).⁶ I include householders who owned their home at the start of the sample as well as renters, since the latter could experience adverse effects of foreclosure and be forced to move if their landlord defaults. Recent estimates suggest that rental properties comprise about 38 percent of all foreclosures. Therefore, it is likely that the foreclosure crisis displaced a number of renters (Wardrip & Pelletiere 2008).

Methods

Defining Foreclosure Events

Foreclosure is a process and foreclosure events are classified as one of three types of events recorded in the RealtyTrac database:

- (1) *Notice of Default/Lis Pendens*: The Notice of Default/Lis Pendens is the first stage of foreclosure. The Notice of Default/Lis Pendens represents the date that the lender adds a Notice of Default to the deed to indicate that the foreclosure process has begun. Sixteen states do not require a Notice of Default to be filed.
- (2) *Notice of Foreclosure/Trustee Sale*: This indicates the date that a Notice of Sale of the property was posted. It does not represent the actual auction or sale date. In the sixteen

⁵ This analysis focuses on family well-being. Since some of the dependent variables are measured only at the household level, I measure family outcomes of the householder's family and individual-level controls reflect the characteristics of the householder.

⁶ Attrition is an issue in any longitudinal survey and SIPP is no exception. At wave 1 of the 2008 SIPP Panel, there were 42,030 householders representing 117.8 million householders when weighted. Thus, the householders in my analytic sample represent about 45 percent of original householders interviewed at Wave 1 of the survey. On average, those remaining in sample householders were significantly less likely to be aged 65 or older at Wave 1, and were significantly more likely to be married and employed at Wave 1, and were significantly less likely to experience foreclosure during the panel.

states that do not require a Notice of Default to be filed, the Notice of Foreclosure/Trustee Sale is the first recorded foreclosure event.⁷

(3) *Real Estate Owned*: If the lender cannot find a buyer for the property, the lender takes possession of the property. The recorded event indicates the date that the lender took possession of the foreclosed property. Herein, I refer to this foreclosure event as “Notice of Lender Ownership”.

In this analysis, I test two measures of foreclosure, both operationalized with a four month lag, as the key independent variables. The first measure – whether or not the household has experienced any foreclosure event -- employs a dummy variable coded as 1 if the household has received *any* foreclosure notice and 0 otherwise. Second, I operationalize the foreclosure process as a categorical variable coded as 0: Did not receive any foreclosure notice; 1: Received Notice of Default; 2: Received Notice of Sale; 3: Received Notice of Lender Ownership. I use a categorical measure of foreclosure to distinguish among these stages. Not all families that enter the foreclosure process (i.e., receive a Notice of Default or Notice of Sale) lose their home to foreclosure. Some families may lose their home while others may be able to renegotiate or receive additional support enabling them to pay their mortgage. While the stress of undergoing any stage of the foreclosure process likely affects families, actually losing one’s home or having to move may have differential effects than experiencing the earlier stages of foreclosure.

Measures of Well-Being

In this analysis, I explore the effects of foreclosure on several facets of family well-being, including economic well-being, participation in public safety net programs, sharing a household (doubling up), hardship, food insecurity and social support. Dependent variables reflecting economic well-being, program participation and household composition (doubling up) are reported in the core SIPP data file for each wave; dependent variables reflecting hardship, food insecurity and social support are reported in the Adult Well-Being topical module fielded in Wave 6 and Wave 9.

Economic well-being

⁷ Conversation with Tyler White, RealtyTrac, November 2011.

In order to assess the association between foreclosure and family economic well-being, I incorporate several measures, including continuous measures of the family income-to-poverty ratio, family total income, family earned income, family transfer income and family income from other sources. I also include two dichotomous variables indicating whether or not the household received noncash benefits and cash benefits from government transfer programs.

I expect that foreclosure will be associated with lower levels of economic well-being, and that changes in foreclosure status will be associated with reductions in economic well-being, as measured by total and earned income. However, because families experiencing foreclosure may have fewer resources or have depleted their resources, I expect that there may be a positive association between foreclosure and reliance on public safety net programs. Likewise, changes in foreclosure status may increase the likelihood of participation in government transfer programs.

Doubling up

One potential response to high housing costs and foreclosure risk is to double up, or share a household. Although families may share their household with others for various reasons, research has demonstrated that doubling up, or household sharing, is associated with economic disadvantage (Mykyta and Macartney 2012; Macartney and Mykyta 2012). I define a shared household as any household that includes at least one additional adult. An additional adult is a person aged 18 years or older who is not enrolled in school and is not the householder, spouse or cohabiting partner of the householder.

I expect an ambiguous relationship between foreclosure and household sharing. On the one hand, foreclosure may be associated with a higher likelihood of household sharing as both may reflect economic hardship and disadvantage. On the other hand, sharing a household may bring additional resources to afford housing costs, and thus there may be a negatively association between doubling up and foreclosure. However, changes in foreclosure status be positively associated with changes in household sharing, as families facing foreclosure may bring in additional household members and their resources in an attempt to forestall or prevent disclosure.

Hardship

In order to assess the association between foreclosure and hardship, I include several measures of material hardship drawn from the Adult Well-Being topical modules fielded in Wave 6 (May through August 2010) and Wave 9 (May through August 2011). The SIPP adult well-being module asks a series of questions relating to household hardship. Specifically, householders are asked with reference to the previous 12 months whether they have had difficulty: (1) meeting essential expenses; (2) paying rent or housing costs; (3) paying their gas bill and/or other utility expenses. Respondents are also asked with reference to the previous 12 months whether they: (4) had their phone cut off at any time; (5) had difficulty seeing a doctor when needed; and (6) had difficulty seeing a dentist when needed. Consistent with prior research, I summed the responses to these six questions to obtain an index of hardship ranging from 0 to 6, with greater values indicating more severe hardship (Zilanwala and Pilkauskas 2012). In addition, we also tested the association between foreclosure and dichotomous measures indicating whether or not the householder reported difficulty in the previous 12 months: (1) paying rent or housing costs, (2) paying their gas and/or other utility bills, or (3) seeing a doctor or dentist when needed.

I expect that foreclosure will be positively associated with material hardship. Specifically, families facing foreclosure may experience higher levels of hardship and have greater difficulty paying housing and utility costs in the previous 12 months than their counterparts. Indeed, missing housing payments is likely to result in foreclosure. I do not expect a strong association between foreclosures and access to medical care. Further, I expect that changes in foreclosure status will be associated with increased hardship.

Food insecurity

Food insecurity represents another dimension of hardship. I test one continuous and one dichotomous measures of food insecurity. The first measure indicates food hardship and is represented by the sum of responses to the following statements: (1) The food we bought did not last and we did not have enough money to buy more; (2) We could not afford to buy balanced meals; (3) We had to cut the size of meals or skip meals; (4) Adults in the household ate less food than needed because there was not enough

money; (5) Adults in the household did not eat for a whole day because there was not enough money. I recoded responses to these statements as 1, representing “Sometimes true” or “Often true”, and 0, representing “Never true”, and summed these responses. The values ranged from 0 to 5, with higher values indicating greater food hardship. For the second measure, I coded households as experiencing food insecurity if they responded “Sometimes true” or “Often true” to two of any of the previous statements. (See Schaefer and Gutierrez 2013)

Families facing foreclosure may transfer resources to afford housing costs and prevent losing their homes. Therefore, I expect that there will be a positive, although weak, association between foreclosure and food insecurity. Likewise I expect a weak and positive relationship between *changes* in foreclosure status and *changes* in food insecurity.

Social support

Private safety nets may alleviate the risk of losing one’s home to foreclosure. Therefore, I include measures indicating whether householders received any support to address hardships as a dependent variable. Among those experiencing any hardship in the previous 12 months, I define several dichotomous variables indicating whether or not householders received: (1) any support from any source; (2) any support from family and/or friends; and (3) any support from other sources. Similarly, for householders experiencing difficulty paying housing costs in the previous 12 months, I define several dichotomous variables indicating whether or not householders received: (1) housing support from any source; (2) housing support from family or friends; or (3) housing support from other sources.

Although householders may seek assistance from their social network in affording housing costs, particularly from kin, we expect that foreclosure will be negatively associated with having received support. Changes in foreclosure status, however, may result in increased support if families are able to access their social networks for assistance.

Predicting the effects of foreclosure on well-being

In order to examine the effects of foreclosure on family well-being, I estimate random effects models for each dependent variable described above. In order to answer the second research question, i.e.,

to examine the effects of foreclosure on *changes* in family well-being, I estimate fixed effects models for each dependent variable.

First, I estimate a set random-effects regression models on the pooled SIPP data, controlling for the foreclosure status and the additional control variables described below. I use random-effects models in order to correct standard errors for correlation of error terms for the same individuals across waves. Standard errors are further adjusted for sample design effects. These models provide estimates of the association between experiencing foreclosure and the measures of well-being described above. In the models, I also control for householder characteristics (age, sex, race, nativity status, marital status, educational attainment, employment status, disability, and number of children in family), household characteristics (metropolitan residence, housing tenure, and state) and a dummy variable indicating whether the state does not require a Notice of Default.

In order to analyze how *changes* in foreclosure status affect *changes* in reported well-being, I estimate logit models controlling for individual fixed effects for each dependent variable. In these models, the sample is necessarily restricted to those who experienced a change in foreclosure status. The fixed-effects models predicting changes in well-being are specified as follows:

$$(W)_{it} = \beta_1 F_{it-1} + \beta_2 Z_{it} + \theta_{it} + \varepsilon_{it}$$

where W_{it} represents the change (or change in log odds for logit models) in economic well-being for individual i between waves; F_{it} represents change in (lagged) foreclosure status between waves⁸; Z_{it} represents a vector of time-varying characteristics, including age, employment status, marital status, number of children in family, etc. In these models, θ_{it} represents an individual fixed effect controlling for time-invariant characteristics of individuals (such as sex, race and nativity) as well as any unobserved characteristics that might influence both the time-varying predictors and changes in household income.

The fixed effects regression models can be thought of as modeling within-person changes in well-being.

⁸ Foreclosure status is lagged for models which use all waves of the panel, i.e., those predicting economic well-being, shared household status and program participation; foreclosure status is not lagged in models using data from the Adult Well Being modules, i.e., model predicting hardship, food insecurity and social support. Questions regarding hardship and support refer to the previous 12 months.

They control for unobserved characteristics of individuals and use only within-individual variation in the independent variables to predict coefficients. Thus, these models are well suited to estimate changes in well-being that result from a change in foreclosure status. However, a limitation of fixed effects models is that they do not estimate coefficients for time-invariant characteristics, such as race/ethnicity, sex and nativity.

Results

Descriptive results

Table 1 reports sample characteristics for all householders at Wave 1 and for householders by foreclosure status during the panel. As shown, 58.7 percent of householders were between the ages of 35 and 64 and about 71 percent were non-Hispanic white. About one-half (51.8 percent) of all householders at Wave 1 were married. About 65 percent had at least some college education or were employed at the time of interview. Moreover, 68.8 percent of householders owned their home at Wave 1.

Comparing the Wave 1 characteristics of householders experiencing foreclosure at any point during the panel reveals demographic differences as well as differences in economic well-being between these two groups. The proportion of foreclosed householders who were young adults (i.e., younger than 34 years) was greater than the proportion of non-foreclosed householders ages 18 to 34. For example, 26.8 percent of foreclosed householders were 18 to 34 years of age, whereas only 20.6 percent of non-foreclosed householders were 18 to 34 years of age. However, only 4.7 percent of householders experiencing foreclosure were 65 years or older compared to 20.9 percent of their counterparts who were not foreclosed upon (20.9 percent). About 39.5 percent of those who experienced foreclosure during the panel were between 50 and 64 years old. Consistent with prior research, those experiencing foreclosure were more likely to be of minority race/ethnicity (48.0 percent) than their counterparts who did not receive any foreclosure notice (28.6 percent). Hispanics were particularly hard hit by foreclosure. Hispanics comprised 11.6 percent of householders at Wave 1, yet 24.4 percent of householders who experienced foreclosure during the panel were Hispanic. In addition, there were some differences in

educational attainment by foreclosure status. For example, among those experiencing foreclosure, just 24.1 percent of householders held a bachelor degree. In contrast, 30.2 percent of householders that did not receive any foreclosure notice held a bachelor degree. Further, a higher proportion of householders (8.5 percent) experiencing foreclosure at any time during the panel reported that they were unemployed at Wave 1 compared to just 4.2 percent of householders who were not foreclosed upon.

In Table 2, I report measures of well-being by foreclosure status. Measures representing economic well-being, program participation and household composition are based on Wave 1 responses; measures reflecting hardship, food insecurity and social support are based on responses to the Wave 6 adult well-being topical module. As shown in Table 2, with few exceptions, there were significant differences in well-being by foreclosure status. Householders experiencing foreclosure had lower family income-to-poverty ratios (3.44) than householders who did not face foreclosure (3.87). However, total family income was not significantly different for those who experienced foreclosure and those who did not (\$5,432 and \$5,416 respectively). Yet, among those householders who faced foreclosure family earnings were significantly *higher* compared to those who did not face foreclosure (\$5,005 v. \$4,391 respectively).

For the most part, those facing foreclosure were significantly more disadvantaged than their counterparts in terms of hardship and other measures of well-being. For example, householders in families who received any foreclosure notice also reported higher levels of material hardship than their counterparts who did not experience foreclosure (1.10 v. 0.46 respectively). A higher proportion of householders facing foreclosure reported being food insecure (13.8 percent) than those who did not experience foreclosure (5.9 percent). Further, a higher proportion of those facing foreclosure reported receiving benefits from noncash transfer programs (34.3 percent) than their counterparts who received no foreclosure notices (24.0). About 32.6 percent of householders facing foreclosure were doubled up, i.e. sharing a household compared to just 21.1 percent of those who did not experience foreclosure during the panel. However, a smaller proportion of householders facing foreclosure reported receiving any support from family and/or friends (3.6 percent) compared to their counterparts who did not receive any

foreclosure notice (10.0 percent). Similarly, a smaller proportion of householders facing foreclosure reported receiving help from family or friends for paying housing costs (6.1 percent) than their counterparts who did not face foreclosure (17.5 percent).

Results from Models Predicting Family Well-being

Table 3 reports results from random and fixed effects models predicting family well-being for all Wave 1 householders in the sample and for those owning their home in Wave 1. In general, results for homeowners mirror results for all householders in the analytic sample reported in Table 3.

As shown in Table 3, results from random effects models suggest that families experiencing foreclosure had lower earned income, as well as a lower family income-to-poverty ratio, than families not facing foreclosure in models controlling for individual and household characteristics. However, experiencing foreclosure was significantly associated with *higher* family income from government transfers and other sources in random effects models. Not surprisingly then, Table 3 also reveals a positive association between foreclosure and participation in government transfer programs. Specifically, those facing foreclosure had 1.15 times the odds of receiving noncash benefits and 1.17 times the odds of receiving cash benefits from government transfer programs.⁹ In addition, experiencing foreclosure was positively associated with sharing a household, or doubling up, for all householders.

In terms of other measures of well-being, householders facing foreclosure also experienced higher levels of hardship, including difficulty accessing medical care than their counterparts. In addition, they were *four* times more likely than those who received no foreclosure notice to report experiencing food insecurity ($\exp^{1.382} = 3.983$).

There was little association between experiencing foreclosure and receiving support. Strikingly, those facing foreclosure reported less support in affording housing costs from any source, as well as less housing support from family and friends.¹⁰ Indeed, families at risk of losing their homes and needing the

⁹ For noncash transfers, the odds are $\exp^{0.140}=1.150$; for cash transfers, the odds are calculated as $\exp^{0.157}=1.170$.

¹⁰ There was no significant association between experiencing foreclosure and receiving support for *homeowners* however.

most support had about half the odds of receiving support with housing costs from family in friends than their counterparts ($\exp^{-0.703}=0.495$).

Results from fixed effects models in Table 3 suggest how changes in foreclosure status might affect *changes* in family well-being. In general, results from the fixed effects models echo those from random effects models for economic well-being. For example, receiving any foreclosure notice was associated with declines in a family's income- to-poverty ratio and in income from earnings. However, as in the random effects models, receiving any foreclosure notice was associated with an *increase* in family income from government transfer programs and other sources. Similarly, receiving a notice of foreclosure was associated with an increase in the likelihood of participating in government transfer programs. Receiving any foreclosure notice was also positively associated with doubling up.

With respect to hardship, results from fixed effects models suggest that receiving a foreclosure notice was significantly associated with an increase in housing hardship, including difficulty paying housing costs. This result is not surprising. However, there was no significant association between changes in foreclosure status and changes in food insecurity. Similarly, as with the random effects models, there was little association between receiving a foreclosure notice and changes in social support. In contrast to results for the random effects models, receiving a foreclosure notice *increased* the odds of receiving support for housing costs from family and friends for all householders.

In Table 4, I report results from random and fixed effects models predicting family well-being by foreclosure stage. Random effects models highlight the association between the stage of foreclosure and well-being; fixed effects models highlight the association between changes in foreclosure stage and changes in well-being.

As shown in Table 4, families who lost their home to foreclosure (i.e., received a notice of lender ownership) had lower total family income as well as lower income from earnings in random effects models. However, there was no significant association between the earlier stages in the foreclosure process and total family income and income from earnings. Families who lost their home to foreclosure were also more likely to access the public safety net's noncash transfer programs. However, neither

income from government transfer programs nor income from other sources was significantly associated with any foreclosure stage. Those receiving a notice of sale were also more likely to share their household with others.

Results from random effects models in Table 4 further indicate a positive association between stages of foreclosure and hardship. Families that received a notice of default or sale experienced higher levels of hardship, reported more difficulty paying utility costs and accessing medical care in the previous year. Not surprisingly, families that received any notice of foreclosure reported more difficulty paying housing costs in the previous year. Only families who experienced the earliest stage of foreclosure, that is receiving a notice of default, had significantly higher odds of food insecurity than their counterparts.

Finally, there were few significant associations between foreclosure stage and social support in the random effects models. Families that had received a notice of default were significantly less likely to report receiving any support or receiving support for housing costs. However, the later stages of foreclosure (i.e., receiving a notice of sale or notice of lender ownership) were not significantly associated with receipt of support, with few exceptions. Specifically, families that had received a notice of sale or a notice of lender ownership were more likely to report support from other sources, while those who received a notice of default or ultimately lost their home to foreclosure were less likely to report assistance with housing costs from family and friends.

In contrast to results from Table 3, results from fixed effects models predicting the association between changes in foreclosure status and changes in economic well-being did not mirror the results from random effects models. Indeed, with few exceptions, changes in foreclosure stage were not significantly associated with changes in family income or participation in government transfer programs. Receiving a notice of sale was associated with a decline in family total income, whereas losing one's home to foreclosure was associated with a decline in earned income. Receiving a notice of sale however doubled the odds of doubling up, or sharing a household (e.g., $\exp(0.739)=2.09$).

Although foreclosure stage was not associated with changes in economic well-being, the fixed effects results in Table 4 suggest that receiving a notice of default increased hardships, including housing hardship, and difficulties paying utility costs. However, moving into the latter stages of foreclosure was not significantly associated with any change in hardship. Changes in foreclosure stage were also not significantly associated with changes in food insecurity or social support.

Discussion

In this analysis, I use the 2008 Survey of Program Participation merged with foreclosure event data from RealtyTrac to examine the effects of foreclosure on a range of measures of family well-being, including economic well-being, program participation, doubling up, material hardship, food insecurity and social support. Results from random-effects models suggest that families that experience foreclosure are worse off than their counterparts. For example, they have lower income-to-poverty ratios, experience greater hardship and food insecurity and have higher odds of accessing the public safety net. Consistent with earlier findings (Niedt and Martin 2013), private safety nets offer little recourse against the adverse impact of foreclosure. Further, changes in foreclosure status are associated with reduced earnings, increased use of public safety net programs and increased material hardship.

The stage of foreclosure also affects well-being. Families who have lost their home (i.e., received a notice of lender ownership) had lower incomes and were more likely to access the public safety net through noncash transfer programs than their counterparts. This is not surprising, as these families are likely have fewer of their own resources to marshal into saving their home. Families that received a notice of sale were more likely to be doubled up than those who were not facing foreclosure. Doubling up and accessing the public safety net may provide strategies to forestall foreclosure. Similarly, families that received a notice of default were more likely to report food insecurity than their counterparts; these families may forgo other necessities in order to pay their housing costs. Families facing foreclosure who have not yet lost their home had higher levels of hardship, reflecting their relative disadvantage. Families that received a notice of default were less likely to receive support to pay housing costs, even from

family or friends. Again, this suggests the inadequacy of private safety nets for families at risk of losing their home.

The lack of significant effects in the fixed effect models are not surprising. Foreclosure is a process that begins only when a household has missed their mortgage payments over a series of months. Thus, families may experience hardship, income shocks or other vulnerabilities months before they receive their first notice. Thus, the results reported here suggest that receiving a notice of default increased hardship, but any other change in foreclosure status did not result in a significant change in well-being. Families facing foreclosure are likely to have experienced such changes well before the foreclosure process began.

This analysis has several limitations. First, attrition is an issue in any longitudinal data set, and the SIPP is no exception. By the end of the panel, less than one-half of original sample householders remained in the panel. Moreover, those who experienced foreclosure were more likely to leave the panel. In future analyses, I plan to conduct robustness checks by not limiting the sample to those followed through the course of the panel. In addition, I will expand the sample to include all persons, not just heads of household.

Further, in examining the effects of foreclosure on well-being, it is difficult to tease out temporal order and causation. For example, in this analysis, I examine the effects of foreclosure on income. Yet, job loss might lead to income decline and hardship, including difficulty meeting housing costs. Missing mortgage payments may result in delinquency and ultimately, foreclosure. I address temporal order by implementing a lag in foreclosure, so that foreclosure status in the previous wave predicts current wave outcomes. In the fixed effects models, prior changes in foreclosure status affect current wave outcomes. I will also explore the use of lags in models predicting hardship and food insecurity. However, results from residual change models predicting these outcomes were consistent with results presented here.

It should also be noted that the adult well-being topical modules are collected only twice in the course of the panel, and are collected just one year apart. This provides the ability to examine short-term, but not longer-term effects of foreclosure on hardship and other facets of family well-being.

In addition, although I include renters, I do not directly compare the experiences of renters facing landlord foreclosure and homeowners at risk of losing their homes to foreclosure. It is likely that these families face different outcomes through the foreclosure process. I plan to examine these differences as well as to examine additional facets of family well-being in future analyses.

Despite these limitations, this paper adds to the literature on the effects of foreclosure on families by using a unique data set linking panel survey data with foreclosure event data. Following families facing foreclosure across time, my findings suggest that foreclosure is associated with lower levels of economic well-being, greater hardship and food insecurity, whereas changes in foreclosure status are associated with a decrease in economic well-being and increased hardship.

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Table 1. Sample Characteristics of Householders at Wave 1

	Total		Never experienced foreclosure event		Ever experienced foreclosure event		<i>p</i>
Unweighted n	18,713		18,191		522		
Weighted N	116,996,757		113,100,016		3,896,741		
	%	SE	%	SE	%	SE	
Age							
Less than 18 years	0.0	0.0	0.0	0.0	--		
18 to 34 years	20.8	0.2	20.6	0.2	26.8	2.3	**
35 to 49 years	19.6	0.2	30.0	0.2	28.9	2.4	
50 to 64 years	39.1	0.2	28.4	0.3	39.5	2.8	***
65 years and older	20.4	0.2	20.9	0.2	4.7	1.0	***
Male	47.6	0.3	47.6	0.3	49.8	2.1	
Race/ethnicity							
White non-Hispanic	70.8	0.2	71.4	0.2	52.0	2.4	***
Black non-Hispanic	11.9	0.2	11.7	0.2	17.9	2.0	***
Hispanic	11.6	0.2	11.2	0.2	24.4	2.3	***
Other non-Hispanic	5.7	0.1	5.7	0.1	5.7	1.0	
Foreign born	13.7	0.3	13.3	0.3	23.7	1.8	***
Marital status							
Married	51.8	0.2	51.6	0.2	57.4	2.3	**
Separated, divorced or widowed	28.4	0.3	28.6	0.3	22.7	2.0	***
Never married	19.8	0.3	19.8	0.3	19.8	2.2	
Educational attainment							
Less than high school	12.1	0.3	12.1	0.3	9.8	1.3	+
High school graduate	22.6	0.3	22.5	0.3	23.6	2.1	
Some college	35.4	0.4	35.1	0.4	42.5	2.2	***
Bachelor degree or higher	30.0	0.4	30.2	0.4	24.1	2.0	**
Employment status							
Employed	65.0	0.4	64.6	0.4	77.5	2.1	***
Unemployed	4.3	0.2	4.2	0.2	8.5	1.4	***
Not in labor force	30.7	0.3	31.3	0.3	14.1	1.6	***
Ever in the armed forces	12.1	0.2	12.3	0.2	8.0	1.4	**
Disabled	11.6	0.2	11.6	0.2	9.6	1.3	
Metropolitan residence	79.1	1.1	78.8	1.2	88.6	1.4	***
Owned house	68.8	0.4	68.3	0.4	83.9	1.9	***

Note: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Source: 2008 Survey of Income and Program Participation

Table 2. Measures of Family Well-being^A (Percentages reported unless otherwise specified)

	Total		Never experienced foreclosure event		Ever experienced foreclosure event		<i>p</i>
	Estimate	SE	Estimate	SE	Estimate	SE	
Economic well-being							
Family income-to-poverty ratio ^B	3.86	0.03	3.87	0.03	3.44	0.11	***
Family total income ^B	5,416	44	5,416	45	5,432	179	
Family earned income ^B	4,411	42	4,391	43	5,005	175	***
Family income from government transfer payments ^B	42	2	42	2	37	9	
Family income from other sources ^B	812	8	828	9	351	31	***
Program participation							
Received noncash benefits from government transfer programs	24.3	0.4	24.0	0.4	34.3	2.2	***
Received cash benefits from government transfer programs	6.6	0.1	6.6	0.2	6.2	1.0	
Household composition							
Sharing a household	21.5	0.3	21.1	0.3	32.6	2.3	***
Hardship							
Material hardship index ^B	0.50	0.01	0.46	0.01	1.10	0.06	***
Unable to pay rent or mortgage in past 12 months	6.8	0.2	6.0	0.2	28.8	1.8	***
Unable to pay utility bills in past 12 months	10.2	0.2	9.5	0.2	22.3	1.8	***
Had difficulty getting to doctor/dentist in past 12 months	11.1	0.2	11.0	0.3	16.9	1.7	***
Food insecurity							
Food hardship index ^B	1.73	0.03	1.77	0.03	2.05	0.13	*
Food insecure	6.1	0.2	5.9	0.2	13.8	1.4	***
Activated social support							
Received any support	17.3	0.2	17.7	0.8	14.0	2.4	
Received any support from family or friends	9.6	1.0	10.0	0.5	3.6	1.1	***
Received any support from other sources	8.5	0.5	8.3	0.6	9.9	2.1	
Received support affording housing costs	24.7	1.1	25.7	1.3	17.9	3.3	*
Received support affording housing costs from family or friends	16.2	1.0	17.5	1.1	6.1	1.8	***
Received support affording housing costs from other sources	9.4	0.7	9.5	0.8	11.8	2.7	

Note: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

^A Measures representing economic well-being, program participation and household composition are based on Wave 1 responses; other measures of well-being are based on Wave 6 responses.

^B Means reported

Source: 2008 Survey of Income and Program Participation

Table 3. Results from Random Effects and Fixed Effects Models Predicting Family Well-being
Dependent variable (1: Experienced any foreclosure event; 0: Did not experience any foreclosure event)

	All family reference persons heading household				Owned home at Wave 1			
	Random Effects		Fixed Effects		Random Effects		Fixed Effects	
	β	SE	B	SE	β	SE	β	SE
Economic well-being								
Family income-to-poverty ratio	-0.051***	0.013	-0.033*	0.013	-0.067***	0.017	-0.058***	0.018
Family total income	-30.314	18.936	-14.332	19.334	-44.817+	24.189	-47.613+	24.667
Family income from earnings	-40.950*	18.287	-69.563***	18.745	-64.453**	23.470	-116.049***	23.888
Family income from government transfers	2.199*	0.947	2.570**	0.965	2.262*	0.977	2.718**	0.997
Family income from other sources	26.797***	5.277	59.572***	5.339	39.151***	6.806	75.247***	6.873
Program participation								
Received noncash benefits from transfer programs	0.140***	0.035	0.071*	0.036	0.144***	0.043	0.090*	0.045
Received cash benefits from transfer programs	0.157**	0.053	0.202***	0.055	0.243***	0.074	0.280***	0.061
Shared a household	0.097*	0.046	0.082+	0.048	0.016	0.058	0.232***	0.061
Hardship								
Material hardship index	0.562***	0.064	0.325+	0.181	0.580***	0.063	0.327+	0.175
Experienced difficulty paying housing costs	0.207***	0.015	0.076*	0.032	0.223***	0.014	0.065+	0.035
Experienced difficulty paying utility costs	0.128***	0.025	0.123	0.068	0.116***	0.024	0.031	0.073
Experienced difficulty accessing medical care	0.107**	0.036	0.111	0.121	0.105**	0.038	0.111	0.134
Food insecurity								
Food hardship index	0.332+	0.173	1.127	0.819	0.404*	0.190	1.239	0.850
Experienced food insecurity	1.382***	0.378	-0.152	1.370	1.576***	0.455	-0.220	0.169
Activated social support								
Received any support	-0.030	0.314	-1.059	1.924	-0.096	0.348	-1.175	1.951
Received any support from family or friends	-0.346	0.451	0.133	1.886	-0.276	0.486	0.123	0.239
Received any support from other sources	0.245	0.364	0.768	2.279	0.101	0.388	-1.165	3.068
Received housing support	-0.378+	0.205	-0.414	1.579	-0.392	0.345	0.191	0.166
Received housing support from family or friends	-0.703*	0.333	0.615+	0.345	-0.523	0.501	1.790	1.964
Received housing support from other sources	0.098	0.361	-0.119	1.622	-0.055	0.389	-0.592	2.013

Note: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors adjusted for design effects

All models control for householder characteristics (age, sex, race, nativity status, marital status, educational attainment, employment status, disability, and number of children in family), household characteristics (metropolitan residence, housing tenure, and state) and a dummy variable indicating whether the state does not require a Notice of Default.

Source: 2008 Survey of Income and Program Participation

Table 4. Results from Random Effects and Fixed Effects Models Predicting Family Well-being: Economic Well-being and Program Participation

	All family reference persons heading household			
	Random Effects		Fixed Effects	
	B	SE	β	SE
Economic well-being				
Family income-to-poverty ratio				
Received notice of default	-0.145	0.150	-0.037	0.158
Received notice of sale	-0.020	0.135	-0.129	0.142
Received notice of lender ownership	-0.348*	0.152	-0.213	0.162
Family total income				
Received notice of default	-259.669	210.045	-129.420	219.620
Received notice of sale	-216.082	188.367	-355.018+	197.797
Received notice of lender ownership	-517.077*	211.817	-295.180	225.586
Family earned income				
Received notice of default	-180.864	203.956	-122.585	212.487
Received notice of sale	-269.260	182.962	-336.159	217.760
Received notice of lender ownership	-456.747*	205.897	-338.297+	191.871
Family income from government transfers				
Received notice of default	-4.610	10.276	-4.161	6.472
Received notice of sale	-4.985	9.222	-6.060	5.829
Received notice of lender ownership	6.652	10.389	4.512	6.648
Family income from other sources				
Received notice of default	-68.772	56.147	-23.732	57.526
Received notice of sale	-38.125	50.436	36.533	51.820
Received notice of lender ownership	32.447	56.945	35.133	59.100
Program participation				
Received noncash benefits from transfer programs				
Received notice of default	-0.158	0.200	-0.392	0.337
Received notice of sale	0.160	0.181	0.121	0.301
Received notice of lender ownership	0.456*	0.217	0.033	0.388
Received cash benefits from transfer programs				
Received notice of default	0.544	0.506	0.640	0.557
Received notice of sale	0.188	0.460	0.231	0.495
Received notice of lender ownership	0.394	0.496	0.681	0.536
Shared a household				
Received notice of default	0.744	0.530	0.339	0.563
Received notice of sale	1.157*	0.454	0.739*	0.293
Received notice of lender ownership	-0.274	0.583	-0.066	0.668

Note: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors adjusted for design effects
 All models control for householder characteristics (age, sex, race, nativity status, marital status, educational attainment, employment status, disability, and number of children in family), household characteristics (metropolitan residence, housing tenure, state) and a dummy variable indicating whether the state does not require a Notice of Default.

Source: 2008 Survey of Income and Program Participation

Table 4. Results from Random Effects and Fixed Effects Models Predicting Family Well-being: Household Composition and Hardship

	All family reference persons heading household			
	Random Effects		Fixed Effects	
	β	SE	B	SE
Hardship				
Material hardship				
Received notice of default	0.790***	0.161	0.573**	0.208
Received notice of sale	0.549***	0.152	0.114	0.136
Received notice of lender ownership	0.226	0.172	-0.218	0.218
Experienced difficulty paying housing costs				
Received notice of default	0.275***	0.047	0.136*	0.056
Received notice of sale	0.214***	0.046	0.045	0.060
Received notice of lender ownership	0.086+	0.052	-0.125	0.096
Experienced difficulty paying utility costs				
Received notice of default	0.183**	0.063	0.181*	0.089
Received notice of sale	0.128*	0.058	0.093	0.097
Received notice of lender ownership	0.047	0.072	-0.095	0.154
Experienced difficulty accessing medical care				
Received notice of default	0.123*	0.057	0.144	0.102
Received notice of sale	0.112*	0.055	0.082	0.110
Received notice of lender ownership	0.076	0.068	0.039	0.176
Food insecurity				
Food hardship index				
Received notice of default	0.441+	0.266	0.929	0.984
Received notice of sale	0.346	0.273	1.697	1.068
Received notice of lender ownership	0.107	0.373	0.330	1.019
Experienced food insecurity				
Received notice of default	2.141***	0.311	0.258	0.948
Received notice of sale	0.687	0.498	-1.031	1.291
Received notice of lender ownership	0.792	0.511	0.414	1.591

Note: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors adjusted for design effects
 All models control for householder characteristics (age, sex, race, nativity status, marital status, educational attainment, employment status, disability, and number of children in family), household characteristics (metropolitan residence, housing tenure and state) and a dummy variable indicating whether the state does not require a Notice of Default.

Source: 2008 Survey of Income and Program Participation

Table 4. Results from Random Effects and Fixed Effects Models Predicting Family Well-being: Social Support

	All family reference persons heading household			
	Random Effects		Fixed Effects	
	β	SE	β	SE
Activated social support				
Received any support				
Received notice of default	-0.571+	0.321	-1.447	1.308
Received notice of sale	0.289	0.275	-0.206	0.505
Received notice of lender ownership	0.275	0.400	1.395	2.203
Received any support from family and friends				
Received notice of default	-0.459	0.421	0.166	0.144
Received notice of sale	-0.038	0.391	-0.176	0.178
Received notice of lender ownership	-0.890	0.705	-0.152	0.169
Received any support from other sources				
Received notice of default	-0.599	0.432	-1.660	2.374
Received notice of sale	0.533+	0.310	0.012	0.164
Received notice of lender ownership	0.863*	0.429	0.066	0.479
Received any housing support				
Received notice of default	-1.047***	0.333	-0.817	1.229
Received notice of sale	0.173	0.283	0.966	1.299
Received notice of lender ownership	-0.242	0.505	1.558	3.638
Received any housing support from family and friends				
Received notice of default	-1.258**	0.485	1.700	4.335
Received notice of sale	-0.040	0.395	0.794	5.227
Received notice of lender ownership	-1.591+	0.945	-0.188	1.453
Received any housing support from other sources				
Received notice of default	-0.610	0.393	-1.568	1.683
Received notice of sale	0.443	0.301	1.286	1.427
Received notice of lender ownership	0.707	0.471	0.640	3.875

Note: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Standard errors adjusted for design effects
 All models control for householder characteristics (age, sex, race, nativity status, marital status, educational attainment, employment status, disability, and number of children in family), household characteristics (metropolitan residence, housing tenure and state) and a dummy variable indicating whether the state does not require a Notice of Default.

Source: 2008 Survey of Income and Program Participation

Appendix A-1: Matching the 2008 SIPP Panel and the RealtyTrac Foreclosure Event Files

In this analysis, I use data from the U.S. Census Bureau's 2008 Panel of the Survey of Income and Program Participation (SIPP) merged with individual foreclosure event data from RealtyTrac. Prior to merging the SIPP data with the foreclosure data, SIPP households who opted out of having their survey responses linked to administrative data were excluded.

The 2008 SIPP Panel file and the RealtyTrac foreclosure event database were matched on the address of the property.¹¹ To match the data, we use a "crosswalk" file, the Master Address File (MAF). The MAF is a dynamic inventory of addresses for all known living quarters in the United States and Puerto Rico. Data in the MAF includes address listings from Decennial Censuses, the U.S. Postal Service and residential construction permits. The MAF is the source of all samples for Census surveys. The MAF file includes a variable that provides a unique ID for every residential unit listed (MAFiD). RealtyTrac foreclosure event data are matched with the MAF using address information and assigned an MAFiD. After the foreclosure data are matched to the MAF, these data are merged with the 2008 SIPP Panel data using the MAFiD variable.

Matching the RealtyTrac foreclosure event data with the 2008 SIPP Panel data is a three-stage process. First, all foreclosure event data is matched to SIPP household data using the MAFiD as described above. Next, foreclosure event data matched to rental units and residential units not interviewed in Wave 1 are removed from the matched file so we retain foreclosure event data only for households interviewed in Wave 1. Finally, we compare the foreclosure event dates and the date that the homeowner moved into the home in order to identify individuals residing in households in Wave 1 that were purchased in a foreclosure auction. We remove

¹¹ The name of the property owners was not included in the RealtyTrac foreclosure event file.

foreclosure event data for homeowners who moved into their Wave 1 household after foreclosure. The matched records that remain represent those households interviewed at Wave 1 who experienced any stage of the foreclosure process.

The matched foreclosure event data are incorporated into 2008 SIPP file. The resulting commingled file used in this analysis includes both households interviewed at Wave 1 who experienced any stage of the foreclosure and household interviewed at Wave 1 who did not experience foreclosure.