



ISSN: 1051-1482 (Print) 2152-050X (Online) Journal homepage: https://www.tandfonline.com/loi/rhpd20

Why Low-Income Households Become Unstably Housed: Evidence From the Panel Study of Income **Dynamics**

Seungbeom Kang

To cite this article: Seungbeom Kang (2019): Why Low-Income Households Become Unstably Housed: Evidence From the Panel Study of Income Dynamics, Housing Policy Debate, DOI: 10.1080/10511482.2018.1544161

To link to this article: https://doi.org/10.1080/10511482.2018.1544161



Published online: 11 Feb 2019.



🕼 Submit your article to this journal 🗗





🕖 View Crossmark data 🗹



Check for updates

Why Low-Income Households Become Unstably Housed: Evidence From the Panel Study of Income Dynamics

Seungbeom Kang

City and Regional Planning, The Ohio State University, Columbus, USA

ABSTRACT

Because of a severe shortage of affordable housing in the United States, an increasing number of low-income households suffer from housing instability. However, little evidence exists as to why they experienced housing instability, although they were stably housed at other times. By applying hybrid models to the Panel Study of Income Dynamics data, this study estimates the effects of potential household-level predictors on the likelihood of experiencing housing instability. The results show that changes in family employment structure, job insecurity, automobile ownership, and the number of adult family members within a household correlate with housing instability after controlling for changes in household income and housing costs. Moreover, I find that households with children are particularly vulnerable to housing instability. These results contribute to identifying valid household-level predictors of housing instability and developing preventive policy interventions that help unsubsidized low-income households achieve housing stability.

ARTICLE HISTORY

Received 19 February 2018 Accepted 31 October 2018

KEYWORDS

Housing instability; low-income households; hybrid logistic regression models; Panel Study of Income Dynamics

In the United States, housing instability that occurs among low-income unsubsidized households have not received much attention from housing policy researchers, despite the fact that only 24% of the 19 million families eligible for federal housing assistance receive any type of housing support (Joint Center for Housing Studies of Harvard University [JCHS], 2013). Housing policy researchers have investigated various involuntary forms of residential mobility, but their focus has largely been on subsidized households' residential moves. Numerous policy studies have examined (a) public-policy-driven residential displacement caused by housing redevelopment projects, or (b) mobility patterns among subsidized households in particular policy contexts, such as spatially constrained location outcomes among voucher holders (Galvez, 2011), HOPE VI relocatees (Kleit & Galvez, 2011), or participants in the Moving to Opportunity demonstration (Rosenblatt & DeLuca, 2012). Given the long-lasting federal housing policies on dispersing concentrated urban poverty (Goetz, 2003), this focus is reasonable. However, outside of the focus on subsidized households, millions of unsubsidized low-income households increasingly struggle to maintain housing stability—even well before they consider moving to neighborhoods with greater opportunities.

Although there is no universal agreement on what housing instability is or how it should be measured (Frederick, Chwalek, Hughes, Karabanow, & Kidd, 2014), housing instability generally refers to a wide range of housing circumstances in which households do not have sufficient *control* over their residential environments (Beer, 2011; Grier & Grier, 1978; Newman & Owen, 1982; Wiesel, 2014). The lack of control is often represented by situations in which households experience involuntary residential moves and continue to be exposed to precarious housing conditions, such as being severely housing cost burdened or living in overcrowded or doubled-up housing

(S. Clark, 2010; Desmond, 2016; Kingsley, Jordan, & Traynor, 2012; Phinney, 2009; Skelton, 2002). To clarify the conceptual dimension of housing instability, in this study, I define housing instability as various forms of highly constrained residential moves to precarious housing conditions.

To understand what predicts housing instability, an increasing number of studies have sought to identify household-level conditions that place low-income households at a heightened risk of involuntary residential moves as a symptom of housing instability (Cohen & Wardrip, 2011; Desmond, 2012; Desmond, An, Winkler, & Ferriss, 2013; Desmond & Gershenson, 2016b; ICPH, 2013). For example, Desmond and his colleagues investigate who is more likely to be evicted based on the rental housing market in Milwaukee, Wisconsin, and they suggest that job loss and the presence of children can be significant predictors of eviction (Desmond, 2012; Desmond et al., 2013; Desmond & Gershenson, 2016b). Research on the predictors of housing instability is growing; however, its scope remains largely limited.

Most research on housing instability has been largely limited in generalizability because it has heavily focused on examining only a small fraction of low-income populations. The literature has well demonstrated the unstable housing circumstances of low-income households: a variety of circumstances under which low-income households have to move out (S. Clark, 2010), various types of shared living arrangements (Skobba & Goetz, 2013), formal or informal conflicts between tenants and their landlords (Desmond, 2012), and screening practices against households with eviction records (Desmond, 2016). However, these findings have heavily relied on interviews or surveys based on a small number of households, mostly those already suffering from severe degrees of housing instability such as temporary or chronic homelessness or those living in homeless shelters. These studies do not fully explain how typical their sample households are, to what extent their findings can be generalized to all low-income households, or, more importantly, why certain low-income households experience housing instability in the first place, which could aid the development of preventive policy interventions that target all low-income households that are placed at the risk of housing instability.

Furthermore, existing studies have paid little attention to changes in housing instability over time. Housing instability dynamically occurs in the lives of low-income households as their economic circumstances change over time—such as changes in household income. They often move into and out of high housing-cost burdens (Wood & Ong, 2011), or they often fall behind on rent (or mortgage) payments but then are able to afford their housing costs as their employment status and work hours change or as someone they live with becomes willing to co-pay housing costs (Desmond, 2016). Given the dynamic nature of housing instability, a cross-sectional examination may not fully explain what changes within a household are associated with housing instability. To take such within-household aspects into account, predictors of housing instability need to be evaluated from the longitudinal perspective. Moreover, in the context of policy, a longitudinal examination could inform policymakers about the trigger events of housing instability and may point to possible preventive interventions that help unsubsidized low-income households achieve housing stability. Despite the importance of employing a longitudinal approach in understanding the mechanisms of housing instability, however, few empirical studies have examined the roles of within-household changes in increasing the risk for housing instability.

To fill the research gaps introduced above, in this study I estimate the effects of potential household-level predictors on the likelihood of experiencing housing instability, indicated as churning and nonprogressive residential moves, by analyzing the nationally representative panel data of the Panel Study of Income Dynamics (PSID). To estimate the effects of both household-level predictors that change over time and those that do not, this study employs a unique type of fixed-effects models, hybrid logistic regression models that analyze the variations within a household and the variations between households simultaneously. The primary contribution of this study is to examine the household-level predictors of housing instability by applying a longitudinal analysis to the nationwide data set, with a particular focus on the distinction between housing instability as highly constrained residential mobility and other stable housing circumstances. The results will

inform housing researchers, policymakers, and local practitioners who seek valid predictors of housing instability and the most effective interventions to prevent housing instability and its negative consequences, which becomes more crucial given the recent budget cuts in federal housing programs (Parrott et al., 2018).

Rising Concerns About Housing Instability

Because of rising housing costs, stagnant or declining incomes, and the relative scarcity of federal housing assistance, millions of households suffer from severe housing-cost burdens (Desmond, 2015). In 2014, 49% of all renters were cost burdened, paying more than 30% of their household income for housing, whereas 24% of renters were severely cost burdened, spending more than half of their household income on housing (JCHS, 2015). Although the lack of affordable housing is common, federal housing assistance is insufficient; only 24% of the 19 million families eligible for federal housing assistance receive any type of housing support (JCHS, 2013), and the remaining 14 million families have to fend for themselves in the private housing market.

In these market and policy environments, housing instability has become prevalent among lowincome households (Coulton, Theodos, & Turner, 2009; Desmond & Shollenberger, 2015; Phinney, 2009). For example, in Milwaukee, from 2009 to 2011, more than one in every eight renters experienced forced moves because of formal or informal eviction, landlord foreclosure, or building condemnation (Desmond & Shollenberger, 2015). Evidence from the Women's Employment Study shows that among female welfare recipients with children, one in every five families moved six or more times during a 6-year period and nearly 40% of these families experienced forced moves during the same period (Phinney, 2009). The prevalence of housing instability matters because housing instability works as a key mechanism of reproducing many problems that the poor face. Previous studies have pointed out that housing instability can negatively influence employment and job performance (Desmond & Gershenson, 2016a), physical and mental health (Burgard, Seefeldt, & Zelner, 2012; Desmond & Kimbro, 2015; Rollins et al., 2012), social relationships, subjective well-being (Oishi, 2010), and children's educational environments (Cohen & Wardrip, 2011; Crowley, 2003). At the neighborhood level, housing instability is associated with high rates of school turnover, neighborhood and community instability, and concentration of poverty (Desmond, 2016). Given the prevalence of housing instability and its detrimental impacts, housing instability becomes increasingly recognized as a key mechanism of poverty, and understanding why housing instability occurs becomes an important policy question about how best to alleviate housing instability (Lubell, 2015).

The Duality of Residential Mobility Among Low-Income Households

In the current housing market circumstances, in which the number of low-income households who suffer from high housing-cost burdens has surged beyond precedent, researchers have emphasized the importance of distinguishing residential mobility as a symptom of housing instability from residential mobility as a process of adjusting housing needs (Coulton et al., 2009; Desmond, Gershenson, & Kiviat, 2015; Kleit, Kang, & Scally, 2016; Phinney, 2013; Skobba & Goetz, 2013). For several decades, after Rossi's (1955) influential book *Why Families Move*, a large body of literature has viewed residential mobility as an event that occurs voluntarily, and as an instrumental goal in generating well-being (Dieleman, 2001; Quercia & Rohe, 1993; Rossi, 1955; Speare, 1974). From this perspective, residential mobility has been regarded as "the process by which families adjust their housing to the housing needs that are generated by the shifts in family composition that accompany life cycle changes" (Rossi, 1955, p. 9). This perspective still explains a large portion of residential moves that entail seeking improved residential environments, such as changing from being a renter to a homeowner, or transitioning from a low-quality to a high-quality unit (W. Clark, Deurloo, & Dieleman, 2003).

4 👄 S. KANG

However, compared with the general population, low-income households' moves tend to be not progressive but responsive to their housing-related problems (Skelton, 2002). According to the residential instability perspective Desmond et al. (2015) proposed, as households' incomes decline, they are more likely to be displaced because they cannot afford their current dwellings and have to move, whereas as their incomes increase, they are likely to have sufficient control over their residential decisions, to either stay or voluntarily move. Empirical evidence supports the opposite meanings of residential mobility among low-income households (S. Clark, 2010; Coulton et al., 2009; Desmond & Shollenberger, 2015; Skobba & Goetz, 2013). Evidence from the Annie E. Casey's Making Connections Initiative—which focuses on low-income communities in 10 cities—suggests that although 46% of all low-income renters who relocated during a 3-year period were "churning movers," who moved frequently because of financial stress or problems in their rental housing arrangements, 30% were "up-and-out movers" who moved to neighborhoods with low poverty rates (Coulton et al., 2009, p. 12). Such duality of residential mobility suggests that for researchers who seek to understand mechanisms of housing instability, the distinction between residential mobility as a symptom of housing instability and other stable housing circumstances, including voluntarily moving or staying, is more important than the conventional distinction between staying and moving. With a focus on this distinction, in this study I develop unique measures for housing instability for my analysis (see the Dependent variable subsection for further discussion).

Potential Determinants of Housing Instability, and Research Hypotheses

Because housing scholars have pointed out that the housing affordability crisis is a major source of housing instability (Desmond, 2015), some may assume that housing instability is a simple consequence of an increasing housing-cost burden that constitutes a decline in household income and/or an increase in housing costs at the individual household level. Although these two changes can be undoubtedly pivotal for maintaining housing stability, the more important question might be: If housing instability is not a simple consequence of an increasing housing-cost burden, what are the causes? In this section, with a focus on housing instability that occurs in private rental housing markets, I review the existing literature on the potential determinants of housing instability that could force low-income renter households to relocate, or make it hard for them to find somewhere to live stably. The possible mechanisms driving housing instability are summarized in Table 1.

Economic Security

Hypothesis 1a. All else being equal, a low-income household will be more likely to experience housing instability if the householder (or a household head) is employed unstably. Job security can be an essential condition for most low-income households to maintain housing stability. Many of them work entry-level, low-wage jobs, so their financial conditions tend to be insecure because of irregular working hours or insecure employment (Kalleberg, 2009). Evidence from the Milwaukee Area Renters Study suggests that job loss is a valid predictor of eviction, in that renters who have lost their jobs are approximately twice as likely to be evicted than is the average Milwaukee renter (Desmond & Gershenson, 2016b). The authors provide two explanations for this effect. First, low-income renters who have lost their jobs have to move out of their housing because of the loss of predictable future income. They may believe that they cannot recover their incomes in the short term, so they move out. Second, from a landlord's perspective, falling behind in rent because of job loss is perceived differently than other reasons for missing rent payments. Landlords may be uncertain how their insecurely employed tenants will be able to catch up or pay their rent the next month, and they may push laid-off tenants to relocate more firmly than they do similar tenants who fall behind for other reasons. Furthermore, in searching for housing units, a lack of household income combined with unemployment and job insecurity may make it even harder for them to reside in decent housing units which in the near future may become affordable once their income loss is recovered. Landlords often request tenants to verify prospective income, which is another stressor in the equation.

Table 1. Potential mechanisms c	of housing instability among low	v-income renters.	
		Potential mechanisms dri	ving housing instability
Potential predictors		Pushing residents to relocate	Constraining options in searching for stable housing
Potential within-household triggers	Job insecurity	 Renters who have lost their jobs may have to move out because of the loss of predictable future income. Landlords who dislike the uncertainty of whether their laid-off tenants will be able to pay their rent the next month may force their unemployed tenants to relocate when they miss rent anonts. 	 Renters who have lost their jobs may confront screening practices asking them to verify prospective income and thus fail to reside in housing units that they desire.
	Health	 Renters who have experienced a deterioration in health may predict that they will not recover from their economic circumstances soon and thus decide to relocate. Landlords may force renters who have experienced a deterioration in health to relocate when they miss rent payments because they predict their tenants' income will a deterioration and they predict their tenants' income will a deterioration and they predict their tenants' income will a deterioration and they predict their tenants' income will a deterioration and they predict their tenants' income will a deterioration and they predict their tenants' income will a deterioration and they predict their tenants' income will a deterioration and they are a deterioration and they predict their tenants' income will a deterioration and they are a deterioration and the area deterioration and they area deterioration and the area deterioration a	 As a discriminatory practice, landlords may conceal their available units from renters who have experienced a deterioration in health.
	Savings, wealth and debts	 Renters soon. Renters may not be able to maintain housing stability because of a lack of financial resources derived from savings accounts and the sale of possessions when they confront financial shocks. 	·
	Automobile ownership Shared living arrangements with family or nonfamily	 Renters who cannot maintain their automobiles cannot maintain their daily activities, in particular commuting to jobs, and have to relocate. If renters rely on weak and unreliable social relationships, shared living arrangements can be easily disturbed by small relationship conflicts, and renters are forced to 	• Renters without automobiles cannot access affordable housing options located outside of areas accessible by public transit.
Personal vulnerabilities	members Racial or ethnic minorities	 move out unexpectenty. Racial or ethnic minorities, when they fall behind on rent payments, may be forced to relocate by landlords who assume that racial or ethnic minorities are less reliable tensits. 	 Landlords may refuse to rent their units to racial or ethnic minorities, providing different reasons for their rejections.
	Presence of children	 Renters with children are more likely to violate tenants' regulations, particularly occupancy standards imposed by private landlords. Renters with children can be forced to relocate when they fall behind on rent payments by landlords who prefer not 	Landlords may refuse to rent their units to renters with children because they may assume that children can cause problems, such as noise, increased risk of damage to property, or annoying neighbors.
	Immigrants	 to rent their units to tenants with children. Immigrants may have fewer financial and social resources that enable them to maintain housing stability in response to financial shocks than do citizens. 	 Landlords may refuse to rent their units to seemingly foreign families and may discriminate against them based on accent, name, appearance, or other ethnic markers.



Hypothesis 1b. All else being equal, a low-income household will be more likely to experience housing instability if the householder experiences a deterioration in health that limits his/her type of work or the amount of work s/he can perform. A deterioration in health can work as another trigger of housing instability. Conventionally, health has been regarded as human capital (Becker, 1964; Currie & Madrian, 1999) and a deterioration in health often entails additional medical expenditures. Therefore, those who experience a deterioration in health may not recover from their economic circumstances quickly and thus may have to relocate. Similar to the logic of the effect of job insecurity, from a landlord's perspective, these families may be unable to pay their rent because of their health, and thus the landlord may force these families to relocate when they miss rent payments. In their relocation process, landlords may be less likely to inform renters who have experienced a deterioration in health about their available units as a discriminatory practice. Although the Fair Housing Act explicitly prohibits housing discrimination against disabled people, it occurs frequently (Hammel, Smith, Scovill, & Duan, 2017; Levy et al., 2015; Turner, Herbig, Kaye, Fenderson, & Levy, 2005).

Hypothesis 1c. All else being equal, a low-income household will be less likely to experience housing instability if the householder possesses more savings and wealth and fewer debts. Wealth can undoubtedly serve as a financial cushion to sustain low-income households' lives during economic downturns and can help them take advantage of the wide array of opportunities in society (McKernan & Sherraden, 2008; Rosenheck, Bassuk, & Salomon, 1998; Sherraden, 1991). In the context of housing instability, wealth may help low-income households cope with soaring housing-cost burdens in the short term and they may be able to cover a sudden rent increase. They may also be able to maintain housing stability via financial resources derived from saving accounts and the sale of possessions. A lack of wealth may place families at greater risk for housing instability.

Automobile Ownership

Hypothesis 2. All else being equal, a low-income household without a car will be more likely to experience housing instability. Having a car can be a vital condition for housing stability. On a national scale, 42% of units that rent for less than \$400 a month are located outside metropolitan areas and 27% are in the suburbs of metropolitan areas (JCHS, 2015). However, in many U.S. metropolitan areas, regional public transportation systems do not sufficiently serve areas outside the central city. Under these market and transportation environments, having a personal vehicle can be central to expanding the housing options available to low-income households. Moreover, by using their automobiles, they can maintain their daily activities, in particular commuting to jobs (Blumenberg & Pierce, 2016; Rosenblatt & DeLuca, 2012). Numerous studies have shown that having a vehicle is substantially beneficial to low-income households because they are able to overcome a *modal* mismatch (Blumenberg & Manville, 2004; Grengs, 2010; Kawabata, 2009). Thus, automobile ownership may enhance the ability of low-income households to maintain housing stability just by having more options for affordable housing and decent jobs.

Shared Living Arrangements

Hypothesis 3a. All else being equal, the more adult family members there are within a low-income household who are neither household heads nor marriage partners, the less likely the household is to experience housing instability.

Hypothesis 3b. All else being equal, the more nonfamily members there are within a low-income household who are neither household heads nor marriage partners, the more likely the household is to experience housing instability.

The role of shared living arrangements is crucial for maintaining housing stability. To reduce housing costs, low-income households often choose to reside in shared living accommodations for example, living with parents, relatives, or friends. During the recent financial crisis, for young adults, living with parents can be one option to maintain housing stability if they expect they cannot afford housing costs by themselves (Mykyta & Macartney, 2011). Some low-income households may have to live with relatives or friends (Mutchler & Krivo, 1989), whereas those with weaker or less resourceful social networks are likely to be homeless (Rossi, 1989). Many qualitative studies have confirmed that supportive relationships with families and friends are crucial to achieving housing stability in rental housing markets with few affordable housing options (Skobba & Goetz, 2013). However, these shared living arrangements do not always play a positive role in providing stable housing, especially when they rely heavily on weak social relationships. Low-income families sometimes decide to live with strangers and to share furniture, and rely on informal agreements to reduce their housing or living costs (Desmond, 2016; Skobba & Goetz, 2013). In this case, informal shared living accommodations are easily disturbed by small relationship conflicts and can cause low-income families to move out unexpectedly. Furthermore, one recent work points out that households living with adult family members tend to receive support and benefits more often than do those who were doubled up with nonfamily members after episodes of homelessness (Bush & Shinn, 2017), which implies that living with family members may provide stronger or more resourceful social networks than living with nonfamily members does. This finding leads me to hypothesize the two generalizable patterns.

Personal Vulnerabilities

A group of scholars have emphasized several sociodemographic characteristics, so-called *personal vulnerabilities*, that rarely change over time and could systematically lead those with vulnerabilities to housing instability as constrained residential mobility in part because of discriminatory practices (Burt, 2001; May, 2000; Pendall, Theodos, & Franks, 2012; Pendall, Theodos, & Hildner, 2016; Rosenheck et al., 1998).

Hypothesis 4a. All else being equal, a low-income household comprising members of a racial or ethnic minority will be more likely to experience housing instability. Racial or ethnic minorities, if they fall behind on rent payments, may be forced to relocate by landlords who assume that they are less reliable tenants. Racial or ethnic minorities often have higher levels of unemployment and fewer financial and social resources compared with their nonminority counterparts and often have multiple vulnerabilities associated with precarious housing conditions, such as living in overcrowded or unaffordable housing (Pendall et al., 2012), that could force them to relocate. Furthermore, as a consequence of the long history of structural racism in housing markets (Massey & Denton, 1993), many African Americans often face racial discrimination in searching for housing (Galster & Godfrey, 2005), which for a long time has contributed to racial segregation in many American cities (Logan, Stults, & Farley, 2004). If landlords generally prefer not to rent their homes to racial minorities, then the housing options of racial minorities may be much more limited than those of their counterparts in their relocation processes.

Hypothesis 4b. All else being equal, the more children there are within a low-income household, the more likely that the household will experience housing instability. The number of children in a household can be a significant predictor of housing instability. Although deemed illegal by the Fair Housing Act, landlords often refuse to rent to families with children because of concerns about

economic costs attributable to overcrowding, such as wear and tear, the increased risk of damage to property, increased management costs, noise, increased demands for parking, and so on.¹ Some landlords believe that children can cause problems by annoying neighbors or attracting unnecessary attention from police and state agencies (Desmond, 2012). Empirical evidence shows that the two-persons-per-bedroom standard—the occupancy standard used and followed widely by private landlords since the U.S. Department of Housing and Urban Development (HUD) included it in the Keating Memo (see Iglesias, 2012)—substantially limits the housing choices of families with children. Twenty-eight percent of U.S. families who are renters include three to five members, and 71% of rental apartments are studio, one-bedroom, or two-bedroom units. As a result, families with children would violate the occupancy standard more than 20 times as often as other households (Iglesias, 2012). Moreover, Desmond et al. (2013) showed that among Milwaukee tenants who appeared in eviction court, a household with children was more likely to receive an eviction judgement than one without children.

Hypothesis 4c. All else being equal, an immigrant low-income household will be more likely than a citizen low-income household to experience housing instability. Several studies have indicated that immigrants, particularly those who migrated to the United States after 1990, are more likely than American citizens to suffer from housing instability (McConnell, 2017; Oliveri, 2009; Pendall et al., 2012). This is because immigrants are more likely to be renters and tend to have fewer financial and social resources than citizens do (McConnell, 2017). Thus, when they experience financial shocks, they may become more vulnerable to housing instability. As Oliveri (2009) states, to avoid any difficulty in checking potential tenants' legal status, landlords sometimes refuse to rent to seemingly foreign families, and discriminate against them based on accent, name, appearance, or other ethnic markers. According to the Fair Housing Act, nation of origin is a protected class, so these discriminative practices against immigrant households are clearly illegal. However, it is challenging to prove that landlords reject immigrants' applications because of their origins.

Adding to the sociodemographic characteristics introduced above, one factor that is noteworthy is gender. Desmond (2012) argues that the gender of a tenant can be a significant factor predicting eviction. He reveals that in Milwaukee, female African American tenants living in neighborhoods consisting disproportionally of racial minorities tend to show higher eviction rates than their male counterparts—whereas women and men in White neighborhoods were evicted at fairly equal rates. To explain this pattern, Desmond points out that female-headed households in inner-city neighborhoods not only have smaller incomes than male-headed households but also have higher expenses. Moreover, female tenants are less likely than male tenants to be allowed to work off the rent. Although there should be further studies examining the net effect of a tenant's gender on housing instability, a heightened risk for housing instability may exist among female-headed households, especially those with children.

There are several other groups that could be systematically led to housing instability, such as veterans, or Native Americans, or those with low educational attainment (Pendall et al., 2012; Rosenheck et al., 1998). To narrow the focus of this study, however, I focus on examining the roles of three personal vulnerabilities (i.e., race, immigrant status, and number of children) in heightening the risk of housing instability.

Data and Methods

This study employs longitudinal data from the Panel Study of Income Dynamics (PSID), a nationally representative survey of households in the United States. The PSID began in 1968 with approximately 5,000 households (approximately 18,000 individuals) and has followed them and their descendants over time. These longitudinal data are suited to achieve the objectives of this study for three reasons. First, the PSID provides detailed information on within-household changes, such as residential mobility,

changes in family composition, and socioeconomic transitions. Second, the panel structure of the PSID data enables researchers to apply longitudinal statistical approaches and examine causal relations by utilizing variations within a household under weak statistical assumptions. Third, because the PSID data oversampled low-income families at the beginning, the data may be appropriate for poverty-related studies given the focus of this study on low income.²

I select from among the PSID sample in the following ways. First, among all PSID surveys collected from 1968, I use the observations from 1999 to 2015, which constitute nine surveys with 2-year gaps, including 37,013 individuals in total. I collect the PSID surveys from 1999 because in 1997, a large portion of the PSID sample was dropped and a new sample of immigrants—who constitute one group of interest in this study—began to enter the sample. In addition, information on utility costs for housing units and wealth-related variables of PSID households were not collected before 1999.

Second, following a sample selection method developed by Elliott and Howell (2017), I include all PSID individuals (male or female) who were either household heads or marriage partners in 1999, which is the beginning of the entire study period. Many previous researchers have adopted a sample selection method that only includes individuals designated as household heads (e.g., South, Crowder, & Chavez, 2005), but this method has some limitations (Elliott & Howell, 2017). One limitation comes from the fact that a male individual, if present, is always designated as a household head. Because of this coding rule, selecting only household heads can be problematic because all married and cohabiting female individuals are excluded. Thus, analyses would compare all male individuals with only female individuals who are household heads (either single or marriage dissolved). Furthermore, female-headed households are not regarded as consistent over time when male individuals move in and out of their residences. Theoretically, this household-head-based approach also dismisses previous research indicating that housing instability can be highly gendered (Desmond, 2012). One possible alternative would be randomly selecting individuals designated as either household heads or their marriage partners. However, as Elliot and Howell point out, if only one partner within a household is selected to be followed through time and the household then splits, information about the unselected partner would be lost. This approach also loses information about how marriage dynamics—continued and truncated—affect housing instability differently for male and female individuals. Thus, I include all PSID individuals who were either household heads or marriage partners in 1999, and I analyze male and female individuals separately to avoid double-counting households' housing instability experiences. For both genders, respondents are limited to individuals who were present in the PSID at the beginning and end of the entire period (1999 and 2015, respectively) and who participated in at least six of the nine possible interviews or waves.³ By adopting this selection rule, the total sample includes 6,830 individuals; the male subsample includes 2,895 respondents (42%) and the female subsample constitutes 3,935 (58%).

Third, given my focus on low-income households, I include the households whose annual household incomes were below 80% of the area median income (AMI) for their housing market at least once during panel periods. For example, if a household's income was below 80% of the AMI in 2005, my analysis includes all possible observations for the household at different times—that is, all household-period intervals.⁴ HUD annually estimates the median family income for an area and adjusts that amount for different family sizes. By using the restricted geospatial PSID data, I merge the public PSID data with the HUD Income Limits data including the AMIs from 1999 to 2015 at the core-based statistical area (CBSA) level or county level if PSID households were not in any CBSA. By using this sample selection rule, I separate out 2,369 individuals (818 males, 1,551 females, and 21,384 household-period intervals) that had an income below 80% of the AMI at least once over their panel periods.

This study includes low-income homeowners as well as renters. After the financial crisis in 2007, low-income homeowners have extensively experienced foreclosure, which can be viewed as housing instability. Millions lost their homes (Isaacs, 2012) and—unlike the common assumption

that former homeowners may have more resources and can easily find places to rent—they have also struggled with searching for affordable housing because of their financial hardships and reduced credit rates after experiencing foreclosure. As a result, a significant portion of these former homeowners suffer from precarious housing conditions, such as having to stay with family and friends (Kingsley, Smith, & Price, 2009). In the worst cases, some former homeowners may become homeless if they have no affordable housing option in rental housing markets after experiencing foreclosure. Moreover, the mechanisms reviewed in the previous section can be similarly applied to low-income homeowners, for example in their relationships with their mortgage companies or with real estate agents. The inclusion of homeowner cases also helps to preserve the panel structure of the selected PSID individuals.

Fourth, I drop observations of households that refused or were unable to complete key questions, such as questions about household income, housing and utility costs, employment status, and so on. Further, respondents who were living in foreign countries or serving in the military abroad are dropped. As a result, the analytic sample comprises 2,363 individuals, including 814 male individuals and 1,549 female individuals, each of which corresponds to one PSID household (in total, 19,593 individual-period intervals). Descriptive Statistics for respective subsamples are presented in Table 2.

Dependent Variable: Housing Instability Experience

My analysis is designed to explain one binary outcome, which is whether a household experienced housing instability between two sequential PSID surveys. In past research, scholars have incorporated a wide range of housing instability measures that indicate housing-related problems that may push low-income households to relocate involuntarily. These risks include simply not being housed, severe housing-cost burdens, self-reported difficulty in paying housing costs, delayed housing payment, overcrowding, or reported doubling up (Bailey et al., 2016; Desmond & Shollenberger, 2015; Kushel, Gupta, Gee, & Haas, 2006; Pavao, Alvarez, Baumrind, Induni, & Kimerling, 2007; Phinney, Danziger, Pollack, & Seefeldt, 2007; Reid, Vittinghoff, & Kushel, 2008). One limitation of these single-point-intime measures is that they may not fully reflect various situations where households have to relocate, they have a lack of options for stable residence, and they suffer from ongoing housing-related problems, which have been described in some previous studies (Desmond, 2016; Desmond et al., 2015; Skobba & Goetz, 2013). Moreover, simply using these retrospective single-point-in-time measures may regard some housing circumstances that can be viewed as a stable housing situation as an experience of housing instability, such as voluntarily paying a significant portion of income for housing costs to reside in a good school district or being fortunate enough to live with parents or other families who are willing to pay all housing payments.

Another group of scholars have examined longitudinal patterns of residential moves, which allow them to capture the lack of options for stable residence. Scholars have used various measures related to residential moves, including the number of residential moves within a short period (Fowler, Henry, & Marcal, 2015) or the length of stay at the current residence (Coley, Leventhal, Lynch, & Kull, 2013). However, these measures have also some limitations because moving frequently may reflect certain voluntary residential moves that occur in response to typical educational, employment, and family changes (Burgard et al., 2012). Thus, to minimize potential measurement problems from regarding stable housing situations as housing instability, recent studies have developed more comprehensive measures of housing instability by combining multiple variables associated with housing-related problems and residential mobility depending on their data availability (Burgard et al., 2012; Geller & Curtis, 2011; Geller & Franklin, 2014; Rollins et al., 2012).

Following the recent studies, I develop two unique measures for housing instability. The first measure I call *churning residential mobility*, indicating situations where households move as a response to housing-related problems, gain little by moving because of a lack of options for stable residence and suffer from housing-related problems after moving (Coulton et al., 2009). To

Table 2. D	escriptive	statistics fo	r respondents	for the entire	time period,	1999-2015,	by gender.

			en .		5	Wom	en	
Variable	Maan	<u> </u>	Min	Max	Maan	50	Min	Max
Valiable	Mean	30	wiin.	IVIdX.	Mean	30	wiin.	IVIdX.
Housing instability, 1999–2015	0.057				0.071***			
Housing cost burden and housing tenure status			_				_	
Housing costs (unit: \$1,000)	0.728	0.887	0	22.69	0.685***	1.245	0	57.84
Annual household income (unit: \$1,000)	50.971	121.092	0	6317.099	41.207***	96.953	0	6317.099
Being a homeowner (yes = 1)	0.577				0.555***			
Family employment structure								
No-income households	0.339				0.430***			
Single-income households	0.433				0.418***			
Dual-income households	0.228				0.152***			
Housing policies								
Receiving housing assistance	0.048				0.097***			
Economic insecurity								
Job insecurity	0.107				0.085			
Limiting health condition	0.319				0.333***			
Nonsaving wealth (unit: \$1,000,000)	0.128	0.577	0	15.28	0.081***	0.380	0	15.28
Savings (unit: \$1,000,000)	0.014	0.058	0	1.3	0.013***	0.069	0	2.5
Debts (unit: \$1,000,000)	0.012	0.111	0	1	0.011	0.103	0	1
Automobile ownership								
Car ownership (yes $= 1$)	0.855				0.816***			
Marital status								
Single	0.191				0.176***			
Married (yes $=$ 1)	0.561				0.396***			
Marriage dissolved (yes $= 1$)	0.248				0.427***			
Shared living arrangements								
The number of additional adult family members	0.326	0.672	0	6	0.364***	0.698	0	6
The number of nonfamily members	0.277	0.893	0	10	0.287	0.891	0	11
Personal vulnerability								
White (yes $= 1$)	0.650				0.598***			
African American (yes $= 1$)	0.159				0.230***			
Latino (yes $= 1$)	0.134				0.110***			
Asian	0.020				0.020*			
Other racial minorities	0.024				0.023*			
Immigrant (yes $= 1$)	0.159				0.137***			
Number of children within a household	0.594	1.104	0	9	0.684***	1.157	0	11
N		6.7	05			12,88	80	

Note. SD = standard deviation. Descriptive statistics are weighted by using the Panel Study of Income Dynamics (PSID) family weights. Households who return to the PSID study after skipping one or more surveys, so-called reappearers, have no weight value, so that six male and 10 female individuals are dropped. Chi-squared or *t*-tests are used to compare men with women. + p < .05. **p < .05. **p < .01.

operationalize this, as a first step I created a binary variable of whether a household was in precarious housing conditions when the household responded to a certain PSID survey (Pendall et al., 2012). Precarious housing conditions refer to (a) living in unaffordable housing—a household was paying more than half of household income for housing costs; (b) overcrowding—a household was living in a housing unit in which the persons per room (PPR) was more than two; and (c) living in doubled-up housing—a household lived with another family or another nonfamily household without paying rent (Blake, Kellerson, & Simic, 2007; Kleit et al., 2016). Living in unaffordable housing is a binary variable that indicates whether the ratio of rent and utility costs per month to a total household income per month is over 0.5. Overcrowding is measured by the number of people living in the same housing unit—including family and nonfamily members—divided by the number of rooms. Because the PSID data has no direct measure for the extent to which a household was contributing to paying rent, I regard two situations as living in doubled-up housing: (a) where a household did not own or rent a house and lived with at least one adult family member who was neither a householder nor a marriage partner, or one nonfamily member; and (b) where a household rented a house but paid no rent for the house and lived with at least one adult family member or nonfamily member. Based on these single-point-in-time measures,

I regard a household as being in precarious housing conditions in a certain PSID survey year if the household has at least one of these three problems.

As a second step, I assess the lack of options for stable residence by regarding a residential move as an experience of housing instability when a household moved at least once during a 2-year period and lived in at least one type of precarious housing condition at both the beginning and end of that period. Specifically, this measure is based on the following three questions: (a) was the household in at least one type of precarious housing conditions at the beginning of the period, (b) did the household move, and (c) was the household still in at least one type of precarious housing conditions at the end of the period? By using this measure, the risk of counting possible voluntary and positive forms of residential mobility can be minimized.

As a supplementary measure for housing instability, I separate nonprogressive residential moves from other residential moves by incorporating information about reasons for residential mobility. Because of the 2-year gaps in the PSID data, a household's circumstances can dramatically change from one period to another—this frequently happens among low-income households—and housing instability can occur in the middle of a 2-year period. Thus, adopting Freeman's (2005) measure for residential displacement, I regard the following three types of reasons for residential mobility as nonprogressive reasons that push households to relocate: (a) households moved because they defined themselves as homeless; (b) households moved because of outside events, including demolition, eviction, health-related reasons, divorce, or other involuntary reasons; and (c) households moved for less rent or less space.⁵ Freeman's measure may capture the mechanisms that push households to relocate involuntarily, but it may not be able to fully address constrained options for stable residence. Thus, I combine this information about the nonprogressive reasons for residential mobility with the information about a household's housing circumstances after moving. Specifically, if a household moved for any of the nonprogressive reasons above and moved to at least one precarious housing condition at the end of a 2-year interval, I consider the case an experience of housing instability. By this rule, this measure can minimize any possible exceptional mobility cases that could be viewed as positive or voluntary moves, such as the residential moves of empty nesters.⁶

Based on the two measures for housing instability, churning and nonprogressive residential mobility, I identify 1,301 household-period intervals that indicate an experience of housing instability between two subsequent PSID surveys (years t and t + 2; approximately 7% of the analytic sample and 22% of all residential moves); 712 intervals show churning moves, 236 cases indicate nonprogressive moves, and 353 observations are applied to both types.⁷

Independent Variables

To assess possible causal relationships between independent variables and the subsequent experience of housing instability, all independent variables are measured at the beginning of a 2-year period (year t) and are included in analytic models as forms of lagged variables. This setting can help reduce potential biases from reverse correlations between independent variables and housing instability—for example, housing instability triggers job insecurity (Desmond & Gershenson, 2016a).

First, to estimate the effects of economic conditions associated with economic security, I include the following variables: (a) a binary variable that measures whether a householder had been unemployed and was looking for work at least once during years t - 1 and t (*job insecurity*); (b) a binary variable that measures whether either a householder or a marriage partner had any health condition that limited the type or amount of work she/he could perform (*limiting health condition*); and (c) numeric variables that measure the amounts of all account savings (*savings*), other wealth (*nonsaving wealth*), and debts (*debts*). Savings include cash assets in all accounts, nonsaving wealth indicates all assets other than savings (e.g., value of individual retirement account [IRA]/annuity, non-IRA stock, and business/farm), and debts cover those for the entire household (e.g., credit card/ store debt, student loans, and medical bills). Moreover, I include two dummy variables that measure the household employment structure: (a) whether both a householder and a marriage partner were employed (*dual-income household*), and (b) whether either a householder or a marriage partner was employed (*single-income household*). No-income households (i.e., none of the household members has income from paid employment or self-employment) serve as a reference group.

I include a binary variable that measures whether a household owned or leased a car or other vehicle for personal use (*car ownership*). I include numeric variables that measure the number of additional adult family members, if any, who were living together and were neither householders nor marriage partners (*number of additional adult family members*); this may include children over the age of 18 living with their parents, parents of householders or their spouses, or other relatives. The number of nonfamily members counts those who were living in the same dwelling but were not members of PSID families in year t (*number of nonfamily members*).⁸

Moreover, I include variables that measure personal vulnerability characteristics. First, I include four dummy variables that account for an individual's race: (a) African American, (b) Latino, (c) Asian, and (d) other racial minorities. Being a white individual serves as a reference group. Second, all households in the immigrant sample of the PSID are assigned to the immigrant group, which is indicated by a dummy variable (*immigrants*). I include a numeric variable that measures the number of children in a household under the age of 18 (*number of children within a household*).

To estimate unbiased and consistent estimates of the variables, several time-varying factors need to be controlled. First, I control for two financial components of a housing-cost burden: household income and monthly housing costs. Household income is measured by the total amount of annual income from all income sources (*annual household income*). Monthly housing costs indicate the total amount of rent or mortgage interests, and utility costs for electricity, heating, water, sewer, and others per month (*housing costs*).⁹ To control for differences in housing circumstances between homeowners and renters (e.g., relationships with landlords vs. with mortgage officers), I include a dummy variable indicating being a homeowner (*being a homeowner*).

Moreover, given the prior research emphasizing the importance of changes in marital status, such as separation or divorce, as factors causing involuntary forms of residential mobility (S. Clark, 2010; Desmond & Perkins, 2015), I include two dummy variables that measure the marital status of a householder: (a) whether a householder was married (*married*), or (b) whether a householder's marriage was dissolved (*marriage dissolved*), including being widowed, divorced, annulled, and/or separated. Whether a householder was single serves as a reference group (*single*). Increasing evidence has shown that receiving housing assistance significantly reduces the risk of housing instability, such as homelessness or overcrowding (Kim, Burgard, & Seefeldt, 2017; Skobba, Bruin, & Yust, 2013; M. Wood, Turnham, & Mills, 2008). Thus, I control for the effects of housing assistance by including a variable that indicates whether a household stated that it was living in a housing unit that was subsidized or owned by a local housing authority or other public agency (*receiving housing assistance*). I control for potential year-specific effects, such as the effects of the financial crisis that began in 2007 or the effects of regime change, by including dummy variables for each year. Moreover, I control for possible state-specific effects, such as different landlord-tenant policies at the state level (Hatch, 2017), by including dummy variables for states.

Analytic Approach: Hybrid Logistic Regression Analysis

Although many empirical studies have sought to connect various household-level conditions to housing instability, to my knowledge, few have attempted to control for unobserved preexisting differences between households that may influence both housing instability and various household-level conditions. For example, preexisting household-specific risk factors, such as criminal records, which rarely change over time among low-income adult individuals, may undermine financial stability and contribute to causing subsequent housing instability. Control variables may capture some of these between-household differences, but it may not be possible to fully measure

many of the between-household differences. Thus, without considering such unobserved preexisting differences between households, researchers may have to overstate the effect of householdlevel conditions on housing instability.

To address this concern about omitted variable biases, this study incorporates hybrid logistic regression models, a particular type of fixed-effects (FE) model, which allow me to estimate the effects of within-household changes and the differences between households simultaneously.¹⁰ Hybrid logistic models differ from conventional FE models, in that they provide additional information on the relations between time-invariant household characteristics and housing instability rather than controlling for those characteristics, as do conventional FE models (see the detailed information in Appendix A).

In the hybrid model approach, each variable is decomposed into two parts: (a) deviations from household-specific means (so-called *within components*), and (b) household-specific means of timevarying variables (so-called *between components*). This decomposition allows the estimation of the between-subject effects derived from variations across households, as well as the within-subject effects derived from variations within each household, as the FE approach also does. To specify hybrid models, all independent variables, except for the variables associated with race and immigrant status, are decomposed into two parts: within components ($x_{ij} - \overline{x_j}$ in Equation 1) and between components ($\overline{x_j}$ in Equation 2). After the decomposition, the set of deviations from household-specific means is used to estimate the within-subject effects of the independent variables whereas the set of household-specific means is used to estimate the contextual effects of those variables (Bell & Jones, 2015). The basic model structure is as follows:

$$y_{ij} = \beta_{oj} + \beta_1 \left(x_{ij} - \overline{x_j} \right) + e_{ij} \tag{1}$$

$$\beta_{oj} = \beta_o + \beta_2 z_j + \beta_3 \overline{x_j} + u_j \tag{2}$$

where y_{ij} is the dependent variable for an observation *i* of a household *j* (in this study, whether a household experienced housing instability during a 2-year period), x_{ij} refers to a series of the timevarying independent variables other than race and an immigrant status, $\overline{x_j}$ is household-specific means of the independent variables other than race and an immigrant status, z_j indicates race and immigrant status, β_o is an intercept, β_1 refers to coefficients that indicate the within-subject effects of x_{ij} , β_2 refers to coefficients that indicate the effects of race and immigrant status, β_3 refers to coefficients that indicate the between-subject effects of x_{ij} , u_j is a random coefficient for household *j*, and e_{ij} is a residual.

On one hand, between-household coefficients indicate how households that are in a certain condition differ from different households not in that condition in terms of housing instability, on average, across all years—after controlling for other conditions included in analytic models. Average differences between these two groups do not lend themselves to causal interpretation because they may be derived from preexisting differences between the households. Thus, researchers should interpret between-household coefficients in noncausal ways. On the other hand, the within-household coefficients—the primary focus of this study—indicate how changes in certain conditions within a household are associated with changes in housing instability. Because the within-household coefficients are derived from within-household changes, they are not influenced by preexisting differences between different households. Therefore, the within-household coefficients allow the approximation of the causal effects of certain conditions on housing instability.

The hybrid approach is widely recognized to be much more flexible and efficient for analyzing unbalanced panel data compared with conventional panel approaches (Luke, 2004). Given the unbalanced structure of the sample in this study because of several sample selection rules applied, this approach is a more flexible and efficient method to achieve the study's purpose. Moreover, unlike the standard hybrid model, I apply the hybrid model as a form of a logistic model to avoid

any statistical problems generated by the nonlinear outcomes. Compared with linear hybrid models, nonlinear hybrid models may not work well under certain conditions, but the expected bias would be marginal in most common data situations (Allison, 2014).

Hybrid Model Results

The PSID data show that approximately 6% of the male subsample and 7% of the female subsample experienced housing instability between 1999 and 2015. Supplemental statistics indicate that male individuals (hereafter, men) experienced an average of 0.475 times compared with 0.599 times for female individuals (hereafter, women), with a range of 0 to 7 for each individual, which corresponds to each household in my analysis. Additionally, Table 2 indicates that women in my analysis tend to be more disadvantaged compared with men. On average, men tend to have higher incomes, are more likely to own their houses, are more likely to be in dual-income households, are more likely to have larger amounts of wealth and savings, and are more likely to have personal vehicles, whereas women are more likely to receive housing assistance, and are more likely to have a family member with health problems that limit work performance. These differences between men and women provide another justification for analyzing these two groups separately.

Table 3 presents results from hybrid logistic models, predicting the likelihood of experiencing housing instability. I begin my analysis with a hybrid model that includes a set of control variables associated with housing costs, income, family employment structure, and housing assistance (see Model 1 in Table 3). I examine the between-household coefficients, which provide explanations for how between-household variations of the variables, averaged across all time periods, correlate with the likelihood of experiencing housing instability. Results indicate that for women, between-household differences in housing costs, household income, homeownership, and receiving housing assistance correlate significantly with housing instability in expected directions. For men, between-household differences in housing costs, homeownership, being a single-income household, and being a dual-income household correlate significantly with housing instability in expected directions, but household income and receiving housing assistance do not.

The within-household coefficients, which are my primary interest, indicate the changes in housing instability within a household (from housing stability to instability or vice versa) that follow from changes in independent variables. Results show that for women, all control variables significantly correlate with housing instability in expected directions—as their housing costs decline, as their household incomes increase, as they become homeowners, as they change from single-income to dual-income households, or as they receive housing assistance, they are less likely to experience housing instability. Although not my primary interest, it is worth noting that within-household changes in housing costs and household income significantly correlate with housing instability among women, but not among men. For men, only housing tenure, family employment structure, and receiving housing assistance correlate with housing instability. Furthermore, the dummy variables for each survey year indicate that for women, was more likely to occur from 2003 to 2011 and the year-specific effects decline slightly after 2011 (not presented in the table) and the year-specific effects decline slightly after 2011.

Next, I include a set of variables related to economic insecurity, automobile ownership, marital status, shared living arrangements, and personal vulnerabilities (Model 2). Results indicate that on average and across all time periods, those who have no car, live with more nonfamily members, or have more children within a household are more likely to experience housing instability than their counterparts. Moreover, for women, being unstably employed and having a member with health problems correlate significantly with housing instability, whereas no such relationships exist among men. Among the personal vulnerability variables, in contrast to my expectations, being a racial minority and being an immigrant exhibit no statistically significant effect on housing instability.

Turning to the within-household coefficients, results indicate that for both men and women, job insecurity significantly increases the likelihood of experiencing housing instability, even after

		Mod	el 1			Μοα	lel 2	
	W	ua	Wor	nen	Me	en	Wom	ien
Variable	Between	Within	Between	Within	Between	Within	Between	Within
Dependent variable: whether a household experienced housing instability between year t and t + 2 (yes = 1)								
Housing cost burden and housing tenure status Housing costs (unit: \$1,000)	0.360*	0.148	1.032***	0.368***	0.500**	0.131	1.065***	0.367***
Annual household income (unit: \$1,000)	(0.179) 0.000	(0.091) 0.000	(0.183) - 0.034***	(0.091) - 0.010**	(30.185) 0.003	(0.087) 0.000	(0.186) - 0.027***	(0.100) - 0.007*
Being a homeowner (yes $= 1$)	(0.001) - 2.890***	(0.001) - 1.194*** (0.257)	(0.005) - 2.812***	(0.003) - 0.449** /0.157)	(0.002) - 2.265***	(0.001) - 1.065*** (0.250)	(0.005) - 2.239***	(0.003) - 0.427* (0.171)
Family employment structure (reference: no-income households) Single-income households	(0.297) - 1.538***	(102.0) - 1.308***	(622.0) -	(0.107) - 0.884***	(/1C.U) - 1.278**	(0.239) - 1.233***	0.210	- 0.875***
Dual-income households	(0.362) - 1.064*** (0.300)	(0.292) - 0.839*** (0.183)	(0.350) - 0.334+ (0.197)	(0.229) - 0.390** (0.120)	(0.437) - 1.094** (0.345)	(0.309) - 0.794*** (0.190)	(0.401) - 0.126 (0.225)	(0.240) - 0.367** (0.122)
Housing policies Receiving housing assistance	- 0.741 (0.454)	- 0.722* (0.299)	- 1.116*** (0.275)	- 0.425** (0.148)	- 1.125* (0.481)	- 0.789** (0.303)	- 1.067*** (0.281)	- 0.442** (0.149)
Economic insecurity Job insecurity					0.246	0.472*	1.429***	0.278*
Limiting health condition					(0.439) 0.077	(0.189) 0.144 (0.202)	(0.325) 0.505*	(0.122) - 0.050
Nonsaving wealth (unit: \$1,000,000)					(0.336) 0.305 (7 775)	(0.203) - 5.563 (6 5 40)	(0.237) 2.986 (5.753)	(0.135) 0.088 (202.5)
Savings (unit: \$1,000,000)					(c///) - 2.204+	(0.50) - 0.650 (1.100)	(107.c) - 0.317 (27.c)	(562.5) 0.681
Debts (unit: \$1,000,000)					(267.1) 000.0 (200.0)	0.001	(0./00) 0.001 0.001)	0.000 0
Automobile ownership Car ownership (yes = 1)					(0.002) - 0.713*	- 0.020	(0.001) - 0.530*	(0.000) - 0.297*
Marital status (reference: single) Married (yes = 1)					(0.310) - 0.528+	(0.211) - 0.527	(0.205) - 0.299	(0.136) - 0.194
Marriage dissolved (yes $= 1$)					(0.282) - 0.406+	(0.408) - 0.470	(0.225) - 0.061	(0.264) - 0.244
					(0+2-0)	(++++-0)	(0.0.1.0)	(Continued)

Table 3. (Continued).								
		Mod	el 1			Mod	el 2	
	Mer	F	Wom	en	Me	E	Wome	en
Variable	Between	Within	Between	Within	Between	Within	Between	Within
Shared living arrangements Number of additional adult family members					0.164	- 0.212	- 0.176	- 0.240**
~					(0.163)	(0.136)	(0.116)	(0.083)
Number of nonfamily members					0.367**	- 0.033 (0.065)	0.476***	- 0.086+
Personal vulnerability (reference: White)					(0.120)	(600.0)	(000.0)	(0.044)
African American (yes $= 1$)					0.007		- 0.118	
					(0.211)		(0.157)	
Latino (yes = 1)					- 0.908		- 0.537	
					(0.551)		(0.357)	
Asian					- 0.672		0.664	
					(0.696)		(0.488)	
Other racial minorities					- 1.182+		- 0.208	
					(0.712)		(0.446)	
Immigrant (yes $= 1$)					0.381		0.092	
					(0.529)		(0.320)	
Number of children within a household					0.320*** (0.084)	0.155+ (0.000)	0.243*** (0.051)	- 0.046 (0.055)
Year dummy variables	Includ	led	Incluc	led	Inclue	ded	Includ	ed
State dummy variables	Includ	led	Incluc	led	Inclue	ded	Includ	ed
Intercept (β_0)	- 1.784 (0	.648)**	- 1.133 (1.426)	- 1.624 ((0.757)*	- 1.309 (1.356)
Random coefficient (u_i)	0.841 (0	.228)	1.130 (0.165)	0.587 (0.199)	0.910 ((0.146)
ICC	0.204 (0	.044)	0.256 (0.028)	0.151 (0.043)	0.217 ((0.027)
Log likelihood	- 996.	765	- 2297	.079	- 962	.730	- 2231	.360
AIC	2113.5	530	4716.	150	2099.	461	4638.7	19
Ν	5,39	6	10,39	94	5,35	96	10,39	1
Note. AIC = Akaike information criterion. ICC = interclass correlation.	$\beta_0 = \text{constant. } u_i$	o = a random	coefficient. The	variables asso	ciated with race	e and immigrar	nt status are me	asured at an

Note. AlC = Akaike information criterion. ICC = interclass correlation. $\beta_0 = cc$ individual level, and all other variables are measured at a household level. $^+p < .10. *_p < .05. **_p < .01. ***_p < .001.$

ف 17

HOUSING POLICY DEBATE

controlling for changes in household income and family employment structure. This means that low-income households tend to experience more housing instability not only when household heads lose their jobs—as explained by the effects of family employment structure variables—but also when they (have to) work in insecure jobs. For women, the odds of experiencing housing instability are about 32% [(exp(0.28)—1) × 100] higher when they have job insecurity than at other times, and the odds for men are about 60% [(exp(0.47)—1) × 100] higher when they have job insecurity than at other times. However, I find no significant within-subject effects of health conditions, savings, debts, or other types of nonsaving wealth.

Model 2 presents the within-household effect of owning a car and indicates that among women, having a car significantly reduces the likelihood of experiencing housing instability; the odds of experiencing housing instability are approximately 25% [(1—exp(0.30) × 100) lower when they have automobiles than at other times over their panel periods. Model 2 also demonstrates that for women, the greater the number of additional adult family members within a household, the less likely the household is to experience housing instability, whereas the number of nonfamily members does not significantly correlate with housing instability. Moreover, changes in the number of children—such as leaving parents' houses or having more children—do not significantly correlate with housing instability.

One advantage of using hybrid models is that differences between the estimated within- and between-household coefficients can provide additional information about the robustness of certain household-level conditions as predictors of housing instability. The estimated coefficients of several independent variables indicate statistically significant between-household effects, but insignificant within-household effects. For example, among women, the between-households effect of limiting health conditions significantly increases the likelihood of experiencing housing instability, indicating that households that have a member with limiting health conditions are more likely on average over their panel periods to experience housing instability. In contrast, its within-subject effect is statistically insignificant, indicating that within-household changes in the presence of such members do not significantly correlate with housing instability. In other words, the observed positive relationship is largely derived from preexisting differences between different households, not from the status itself. The estimated coefficients of the numbers of nonfamily members and children can be interpreted in a similar way. Living with more nonfamily members or more children is positively related to housing instability on average, indicating that individuals who tend to live with more nonfamily members or more children on average over panel periods—in other words, chronically living with a relatively large number of nonfamily members or children—tend to experience more housing instability. However, within-subject changes in the number of nonfamily members or children are not significantly associated with housing instability.

To assess the robustness of the findings above, first, I estimate two additional models to address the concern about the possibility that the positive effect of car ownership originates from selling the car (see Appendix B). A household can avoid housing instability by selling the household's car, not by using the car itself. To control for various situations related to changes in automobile ownership, I include two variables that indicate whether a household sold a car in the 2-year period —specifically, a within component of selling a car and its between component. For both men and women, the result shows that selling a car actually increases the likelihood of experiencing housing instability, suggesting that instead of achieving housing stability by giving up cars, selling a car may reflect various situations where households cannot achieve housing stability and also cannot afford their cars. More important, for both men and women, the positive effect of having a car remains significant after controlling for the effect of selling a car.

Second, I estimate two hybrid models based on another dependent variable that probably indicates more severe forms of housing instability (see Appendix B): whether a household experienced housing instability that corresponds to both churning and nonprogressive residential moves, which I call *severe housing instability*. Although the significance levels of the estimated coefficients decrease, probably because of the reduced number of cases that indicate this type of housing instability (N = 353, approximately 2% of the entire sample), the estimated coefficients are similar to those in Model 2, suggesting that potential biases from unmeasurable variations that originate from the operationalization of the dependent variable may not be substantially large. One noteworthy finding in this model is that for men, the within-subject effects of housing costs, household income, and having health conditions that limit work performance are significant, suggesting that changes in these conditions significantly correlate with relatively more severe forms of housing instability.

Third, I additionally estimate conventional random-effects and fixed-effects models (based on the form of Model 2) and check the robustness of the findings from the hybrid models above (see Appendix C). The results show that, although the significance levels of estimated coefficients vary according to the different statistical approaches, probably because of different sample sizes, the potential biases in selecting appropriate statistical models are not meaningfully large. Lastly, although some statisticians are skeptical about whether weighting actually improves panel analyses based on the PSID data, I estimate weighted hybrid logistic models by using family weights (Himelein, 2014), and I find no meaningful differences in the estimated coefficients of the key independent variables.

Discussion and Policy Implications

As housing instability becomes a key mechanism of poverty in the United States (Desmond, 2016), understanding its mechanisms becomes crucial in designing appropriate strategies to alleviate it—especially following the recent huge budget cuts to federal housing programs. This study contributes to expanding the knowledge on diverse underlying mechanisms through which household-level conditions influence the likelihood of experiencing housing instability among low-income households. I believe this study is the first that evaluates the roles of various household-level predictors in heightening the risk for housing instability by incorporating sophisticated longitudinal analytic approaches, with a particular focus on the distinction between housing instability as constrained residential mobility and other stable housing circumstances.

This article identifies several patterns that could overturn the presumption that housing instability is a simple consequence of an increasing housing-cost burden within households, although that is a big part of the picture. First, an increasing housing-cost burden, indicated by changes in household income and housing costs, is crucial. Some previous studies have pointed out a somewhat complicated relationship between a housing-cost burden and residential mobility; living in unaffordable housing units does not significantly trigger residential mobility (Harkness & Newman, 2005), and living in affordable housing units by receiving housing assistance is positively associated with residential mobility (M. Wood et al., 2008). By focusing on the unique distinction between housing instability and other, stable housing circumstances, this study finds that an increasing housing-cost burden does heighten the likelihood of experiencing housing instability, especially among women. Among men, I only find a significant relationship between an increasing housing-cost burden and housing instability when I apply the alternative measure for housing instability indicating more severe forms of housing instability among men (see Model 3 in Appendix B). This finding can be viewed as largely consistent with Desmond's qualitative findings (2012): women tend to be much more vulnerable to housing instability triggered by an increasing housing-cost burden.

Second, the findings consistently support the argument that low-income households are more likely to experience housing instability when an increasing housing-cost burden is combined with both the absence of an income source and absence of secure employment. This finding implies that housing instability is closely correlated with the *stability* of income as well as its amount. However, the role of savings and other wealth in alleviating housing instability is greatly limited, probably because most low-income households suffering from housing instability have deficient wealth in the first place (Ratcliffe & Zhang, 2012).

Third, my findings consistently support the argument that automobile ownership can serve as a crucial condition that helps low-income households avoid housing instability. After controlling for the variable of selling a car, which is intended to capture various situations where households can no longer maintain their cars, the evidence shows the positive within-household effect of automobile ownership among both men and women. Although there should be further studies to examine exactly how car ownership alleviates housing instability, one possible explanation is that those who have a car may be able to choose housing units that they can afford more easily. In contrast, if they cannot maintain their vehicles anymore, then they may have to choose housing units near existing public transit lines for commuting and daily activities, even though they may not be able to afford those units, which eventually heightens the risk for housing instability (Boschmann, 2011).

Fourth, to some extent, the findings support the argument that housing stability depends on the stability of social relationships (Skobba & Goetz, 2013). The results reveal that within-household changes in the number of additional adult family members significantly correlate with housing instability, whereas I find no significant between-household effect of it. This result implies that living with additional adult family members may help low-income households avoid housing instability temporarily, but this positive role is not maintained in situations where they chronically live with adult family members over their panel periods. In contrast, chronically living with nonfamily members positively correlates with housing instability, even though I find no evidence supporting the within-household effect of the number of nonfamily members. These findings imply a more complicated picture of the role of shared living arrangements in alleviating housing instability, rather than the simple conclusion that living with more family members is helpful, whereas living with more nonfamily members is not. Although there should be further studies on this issue, living with more family members may help avoid housing instability only when this type of shared arrangements continues temporarily, and living with more nonfamily members may heighten the risk for housing instability only when it continues chronically. This finding can be viewed as being consistent with pathways to homelessness: low-income households may have to live with relatives or friends first, and rely on weaker or less resourceful social networks next; and if they lack all social networks, they are likely to be homeless (Rossi, 1989; Skobba & Goetz, 2013). This implies that researchers should carefully take into account the residential histories associated with shared living arrangements when investigating and measuring low-income households' ability to maintain housing stability.

Fifth, I find a generalizable pattern that households with children are likely to experience housing instability on average—even though I find no evidence supporting that within-household changes in the number of children correlate with housing instability. This finding implies that there are still potential barriers that hinder larger households from achieving housing stability in private rental housing markets. One possible explanation is that their rental housing options are substantially limited. Households with children may have to continue living in larger apartments even though they cannot afford them (Iglesias, 2012), or they may have to violate occupancy limits created and enforced by landlords, which puts them in even weaker positions with their landlords (Desmond, 2012) and gets them strictly evicted because of their children (Desmond et al., 2013). Although the Fair Housing Act explicitly prohibits landlords from refusing applicants because of family composition, particularly the presence and/or number of children, as Desmond's study (2012) demonstrated, discrimination still occurs implicitly and frequently.

This study has several limitations. First, the estimated within-household coefficients may not be completely free of omitted bias attributable to time-varying factors. This remaining variation can be explained by various events—that occur during the study period—that affect a landlord's screening process, such as a being evicted, having credit problems, or starting to live with an individual with a criminal record—that were not included in the analytic models. As Desmond's (2016) work shows, landlords often use inexpensive online services to check applicants' criminal, eviction, or legal records, or their credit histories. However, because of a lack of data available on these topics, the empirical models cannot take these events into account. Second, because the PSID data have 2-year gaps, the analytic models do not consider all moves that occurred in the time between the

two survey waves. This limitation may underestimate the severity of housing instability among some low-income households that have to move multiple times within a year. Third, as this study focuses primarily on examining the effects of household-level changes, potential spatial variations in housing instability are largely controlled out by applying hybrid models, even though those variations could indicate where renters are more likely to experience housing instability.

Despite these limitations, this study responds to the policy need to understand the diverse mechanisms of housing instability. It underscores the need for housing researchers and policymakers to attend to detailed changes within households as indicators of unsubsidized households' ability to maintain housing stability. Given the prevention-oriented framework that is designed to prevent new cases of homelessness (Culhane, Metraux, & Byrne, 2011), this study supports the notion that a wide array of policy interventions can work to prevent homelessness if implemented at an earlier stage. Housing researchers and policymakers may need to consider the noted conditions that heighten the risk of housing instability when developing strategies to alleviate housing instability. Such conditions can be measured by detailed questions asking about changes in the number of household members who are able to work; security of employment; car ownership; household composition including adult family, children, and nonfamily members; and past residential histories related to shared living arrangements.

The positive effect of having an automobile is noteworthy, as supporting car ownership can be a more actionable tool compared with the other predictors. Policymakers may need to consider improving access to vehicles as an alternative way of providing stable housing. Having a car may provide housing stability by stabilizing household income and employment (Dawkins, Shen, & Sanchez, 2005). Although few housing policy studies have examined the relationship between automobile ownership and housing options in private markets, having a car has been regarded as a crucial condition for subsidized renters to live in a better neighborhood, as they are more likely to live and remain in areas with lower poverty rates, higher social statuses, stronger housing markets, and fewer health risks (Pendall et al., 2014). Moreover, as a policy tool, the role of having a car in reducing housing instability needs to be understood as a trade-off relationship between transportation and housing costs. Recently, housing researchers have increasingly examined these relations using the Location Affordability Index (LAI), which provides information about the combined cost of housing and transportation (e.g., Greenlee & Wilson 2016). The development of LAI could help in understanding precisely whether or how car ownership helps low-income households achieve housing stability.

Many questions remain unanswered as to why housing instability occurs. First, it is possible that household characteristics not measured in this study, such as a criminal or eviction record, or credit problems, predict housing instability. Second, more thought should be given to the trade-off relations between transportation and housing costs that could affect housing instability. For example, if low-income renters move to affordable housing units by bearing more transportation costs, does that decision enable them to maintain housing stability? Third, although some researchers have examined spatial variation in the rental housing market, most of which was controlled for or not measured in this study, housing researchers have little evidence about the way in which local housing market characteristics—such as market restriction, unit size diversity, or renter protections, all of which reflect market circumstances that intensify housing instability—affect housing instability. Fourth, to improve homeless prevention services, more studies should be conducted to examine whether the predictors of housing instability identified in this study can reliably predict homelessness. Fifth, further studies are needed to explore the dynamics associated with various housing statuses in the context of housing instability—for example, positive moves versus negative moves.

Notes

1. According to the Fair Housing Act, this type of discriminatory practice against households with children under the age of 18 is illegal.

- 22 👄 S. KANG
 - When the PSID began to be collected in 1968, it included two samples, the Survey of Economic Opportunity (SEO) and the Survey Research Center. Of these, the SEO was designed to provide a sample adequate to study poverty-related topics. This SEO portion may contribute to including descendants of low-income people in 1968.
 - 3. Despite the efforts to minimize potential problems from the sample selection rules applied in this study, two limitations still remain. First, this approach has to exclude households newly formed after 1999 by individuals who were neither a household head nor a marriage partner in 1999—probably adolescents. As some prior studies have pointed out (McDonald, 2011), youth may be more vulnerable to housing instability and this approach may not count particular types of housing instability that frequently occur among youth. Second, because the analytic sample includes only individuals who remain in the PSID data until 2015, it has to exclude individuals who were dropped in the middle of the study period. If these individuals were not tracked because of housing instability, this approach may not count individuals suffering from severe forms of housing instability, for example homelessness. Despite these two limitations, however, I believe that this approach is the best possible way to minimize any foreseeable problems derived from establishing the panel structure of the PSID. Moreover, given the possibility that my analytic sample may include only individuals who are relatively more likely to avoid housing instability, the effects of key household-level factors on housing instability may be likely to be underestimated, not overestimated.
 - 4. Low-income households are often defined by the applicant's income level in relation to the AMI. For example, to be eligible for the Housing Choice Voucher program, an applicant's family income should be below 50% of the AMI, which is annually updated after adjusting for family size, with some exceptional cases allowed to have incomes of up to 80% of the AMI.
 - 5. The PSID data provide nine different reasons for a move. These are: (a) purposive productive reasons, such as to take another job; (b) job-related reasons, such as to get nearer to work; (c) expansion of housing, such as more space; (d) contraction of housing, such as less rent; (e) other housing-related reasons, such as to want to own home; (f) neighborhood of housing, such as better neighborhoods; (g) involuntary reasons, such as eviction; (h) ambiguous reasons, such as to save money; and (i) homelessness.
 - 6. Given the focus of this study on low-income households below 80% of the AMI, this measure for nonprogressive moves limits empty nesters who did not successfully end up living in small and affordable housing units, presumably in which they had wanted to reside. This measure only counts the cases that after their moves were still exposed to housing-related risks that reflect highly constrained options in their relocation processes.
 - 7. One potential limitation of this approach is that if households experience multiple moves during any 2-year interval, those moves may reflect more severe degrees of housing instability than would one single move. However, because the number of moves between sequential PSID surveys is not available, this binary measure of housing instability cannot distinguish different degrees of housing instability severity, which is thus one limitation of this study.
 - 8. Although it is better to measure only nonfamily adults for the number of nonfamily members living together, the PSID does not collect detailed information about the age of nonfamily members living together.
 - 9. In the analytic models explained below, the variable of rent is decomposed into two variables: householdspecific means of monthly rent and deviations from the household-specific means. The mean captures levels of rental market segments to which the household belongs overall (e.g., overall housing and neighborhood qualities) and the deviation reflects a household's changes in monthly rent over time.
 - 10. The hybrid model approach (Allison, 2009) is also called *group mean centering* in the hierarchical modeling literature (Raudenbush & Bryk, 2002), or the *within-between random effects model* in some studies (Bell & Jones, 2015).

Acknowledgments

The author would like to thank Drs. Rachel Garshick Kleit, Bernadette Hanlon, Jason Reece, and John Casterline (The Ohio State University, USA) for their comments on an earlier draft. The author also expresses his appreciation to the anonymous reviewers for their constructive comments on improving this paper.

Disclosure Statement

No potential conflict of interest was reported by the author.

Notes on Contributor

Seungbeom Kang is a PhD candidate in the City and Regional Planning program at The Ohio State University. His research interests include housing instability, affordable housing policies, residential mobility, and urban poverty. He has a master's degree from Yonsei University in Korea.

ORCID

Seungbeom Kang (D) http://orcid.org/0000-0002-8924-6415

References

Allison, P. D. (2009). Fixed effects regression models. Thousand Oaks, CA: Sage Publications.

- Allison, P. D. (2014). Problems with the hybrid method. Retrieved from http://statisticalhorizons.com/problems-withthe-hybrid-method
- Bailey, K. T., Cook, J. T., Ettinger de Cuba, S., Casey, P. H., Chilton, M., Coleman, S. M., ... Frank, D. A. (2016). Development of an index of subsidized housing availability and its relationship to housing insecurity. *Housing Policy Debate*, 26(1), 172–187.
- Becker, G. S. (1964). Human capital: A theoretical and empirical analysis, with special reference to education. New York: National Bureau of Economic Research: Distributed by Columbia University Press.
- Beer, A. (2011). Housing transitions through the the life course : Aspirations, needs and policy. Bristol: Policy Press.
- Bell, A., & Jones, K. (2015). Explaining fixed effects: Random effects modeling of time-series cross-sectional and panel data. *Political Science Research and Methods*, 3(01), 133–153.
- Blake, K., Kellerson, R. L., & Simic, A. (2007). *Measuring overcrowding in housing*. Washington, DC: Department of Housing and Urban Development, Office of Policy Development and Research.
- Blumenberg, E., & Manville, M. (2004). Beyond the spatial mismatch: Welfare recipients and transportation policy. *Journal of Planning Literature*, 19(2), 182–205.
- Blumenberg, E., & Pierce, G. (2016). The drive to work: The relationship between transportation access, housing assistance, and employment among participants in the welfare to work voucher program. *Journal of Planning Education and Research*, *37*(1), 66–82.
- Boschmann, E. (2011). Job access, location decision, and the working poor: A qualitative study in the Columbus, Ohio metropolitan area. *Geoforum*, 42(6), 671–682.
- Burgard, S. A., Seefeldt, K. S., & Zelner, S. (2012). Housing instability and health: Findings from the Michigan recession and recovery study. Social Science and Medicine, 75(12), 2215–2224.
- Burt, M. R. (2001). Homeless families, singles, and others: Findings from the 1996 national survey of homeless assistance providers and clients. *Housing Policy Debate*, 12(4), 737–780.
- Bush, H., & Shinn, M. (2017). Families'Experiences of doubling up after homelessness. Cityscape: A Journal of Policy Development and Research, 19(3), 331–356.
- Clark, S. L. (2010). Housing instability: Toward a better understanding of frequent residential mobility among America's urban poor. Washington, DC: The Center for Housing Policy.
- Clark, W. A. V., Deurloo, M., & Dieleman, F. (2003). Housing careers in the United States, 1968–93: Modelling the sequencing of housing states. *Urban Studies*, 40(1), 143–160.
- Cohen, R., & Wardrip, K. (2011). Should I stay or should i go? Exploring the effects of housing instability and mobility on children. *Journal of Housing Economics*, *11*, 381–417.
- Coley, R. L., Leventhal, T., Lynch, A. D., & Kull, M. (2013). Relations between housing characteristics and the well-being of low-income children and adolescents. *Developmental Psychology*, 49(9), 1775–1789.
- Coulton, C., Theodos, B., & Turner, M. A. (2009). Family mobility and neighborhood change. Washington, DC: Urban Institute.
- Crowder, K., & South, S. J. (2005). Race, class, and changing patterns of migration between poor and nonpoor neighborhoods. *American Journal of Sociology*, *110*(6), 1715–1763.
- Crowley, S. (2003). The affordable housing crisis: Residential mobility of poor families and school mobility of poor children. *The Journal of Negro Education*, 72(1), 22–38.
- Culhane, D. P., Metraux, S., & Byrne, T. (2011). A prevention-centered approach to homelessness assistance: A paradigm shift? *Housing Policy Debate*, *21*(2), 295–315.
- Currie, J., & Madrian, B. C. (1999). Health, health insurance and the labor market. In Orley C. Ashenfelter & David Card (Eds.), *Handbook of labor economics* (Vol. 3, pp. 3309–3416). North Holland, Amsterdam: Elsevier Science.
- Dawkins, C., Shen, Q., & Sanchez, T. W. (2005). Race, space, and unemployment duration. *Journal of Urban Economics*, 58(1), 91–113.
- Desmond, M. (2012). Eviction and the reproduction of urban poverty. American Journal of Sociology, 118(1), 88–133.

24 👄 S. KANG

- Desmond, M. (2015). Unaffordable America: Poverty, housing, and eviction. *Fast Focus: Institute for Research on Poverty*, 22, 1–6. Retrieved from http://www.irp.wisc.edu/publications/fastfocus/pdfs/FF22-2015.pdf
- Desmond, M. (2016). Evicted : Poverty and profit in the American city. New York: Crown Publishers.
- Desmond, M., An, W., Winkler, R., & Ferriss, T. (2013). Evicting children. Social Forces, 92(1), 303-327.
- Desmond, M., & Gershenson, C. (2016a). Housing and employment insecurity among the working poor. Social *Problems*, 63, 46–67.
- Desmond, M., & Gershenson, C. (2016b). Who gets evicted? Assessing individual, neighborhood, and network factors. Social Science Research, 62(4), 362–377.
- Desmond, M., Gershenson, C., & Kiviat, B. (2015). Forced relocation and residential instability among urban renters. Social Service Review.
- Desmond, M., & Kimbro, R. T. (2015). Eviction's fallout: Housing, hardship, and health. Social Forces, 94(1), 295-324.
- Desmond, M., & Perkins, K. L. (2015). Housing and household instability. Urban Affairs Review, 52(3), 421-436.
- Desmond, M., & Shollenberger, T. (2015). Forced displacement from rental housing: Prevalence and neighborhood consequences. *Demography*, 52(5), 1751–1772.
- Dieleman, F. M. (2001). Modelling residential mobility; a review of recent trends in research. *Journal of Housing and the Built Environment*, 16(3–4), 249–265.
- Elliott, J. R., & Howell, J. (2017). Beyond disasters: A longitudinal analysis of natural hazards' unequal impacts on residential instability. *Social Forces*, *95*(3), 1181–1207.
- Fowler, P. J., Henry, D. B., & Marcal, K. E. (2015). Family and housing instability: Longitudinal impact on adolescent emotional and behavioral well-being. *Social Science Research*, *53*, 364–374.
- Frederick, T. J., Chwalek, M., Hughes, J., Karabanow, J., & Kidd, S. (2014). How stable is stable? Defining and measuring housing stability. *Journal of Community Psychology*, 42(8), 964–979.
- Freeman, L. (2005). Displacement or succession?: Residential mobility in gentrifying neighborhoods. Urban Affairs Review, 40(4), 463–491.
- Galster, G., & Godfrey, E. (2005). By words and deeds: Racial steering by real estate agents in the U.S. in 2000. Journal of the American Planning Association, 71(3), 251–268.
- Galvez, M. M. (2011). Defining "choice" in the housing choice voucher program: Understanding the role of market constraints and household preferences in location outcomes. New York: New York University.
- Geller, A., & Curtis, M. A. (2011). A sort of homecoming: Incarceration and the housing security of urban men. Social Science Research, 40(4), 1196–1213.
- Geller, A., & Franklin, A. W. (2014). Paternal incarceration and the housing security of urban mothers. *Journal of Marriage & Family*, 76(2), 411–427.
- Goetz, E. G. (2003). Housing dispersal programs. Journal of Planning Literature, 18(1), 3-16.
- Greenlee, A. J., & Wilson, B. K. (2016). Where Does location affordability drive residential mobility? An analysis of origin and destination communities. *Housing Policy Debate*, 26(4–5), 583–606.
- Grengs, J. (2010). Job accessibility and the modal mismatch in Detroit. Journal of Transport Geography, 18(1), 42–54.
- Grier, G., & Grier, E. (1978). Urban Displacement: A Reconnaissance. Bethesda, Maryland: The Grier Partnership.
- Hammel, J., Smith, J., Scovill, S., & Duan, R. (2017). *Rental housing discrimination on the basis of mental disabilities: Results of pilot testing.* Washington, DC: U.S. Department of Housing and Urban Development.
- Harkness, J., & Newman, S. J. (2005). Housing affordability and children's well being: Evidence from the national survey of America's families. *Housing Policy Debate*, *16*(2), 223–255.
- Hatch, M. E. (2017). Statutory protection for renters: Classification of state landlord-tenant policy approaches. *Housing Policy Debate*, 27(1), 98–119.
- Himelein, K. (2014). Weight calculations for panel surveys with subsampling and split-off tracking weight calculations for panel surveys with subsampling and split-off tracking. *Statistics and Public Policy*, 1(1), 40–45.
- ICPH. (2013). Housing instability: A continuum of risk. New York, NY: The Institute for Children, Poverty, and Homelessness.
- Iglesias, T. (2012). Moving beyond two-persons-per-bedroom: Revitalizing application of the federal fair housing act to private residential occupancy standards. *Georgia State University Law Review*, 28, 3.
- Isaacs, J. B. (2012). The ongoing impact of foreclosures on children. Washington, DC: Brookings Institution.
- Joint Center for Housing Studies of Harvard University. (2015). America's rental housing: Expanding options for diverse and growing demand. Cambridge, MA: Author.
- Joint Center for Housing Studies of Harvard University (JCHS). (2013). America's rental housing: Evolving markets and needs. Cambridge, MA: Author.
- Kalleberg, A. L. (2009). Precarious work, insecure workers: Employment relations in transition. *American Sociological Review*, 74(1), 1–22.
- Kan, K. (1999). Expected and unexpected residential mobility. Journal of Urban Economics, 45(1), 72-96.
- Kawabata, M. (2009). Spatiotemporal dimensions of modal accessibility disparity in Boston and San Francisco. *Environment and Planning A*, 41(1), 183–198.
- Kim, H., Burgard, S. A., & Seefeldt, K. S. (2017). Housing assistance and housing insecurity: A study of renters in southeastern Michigan in the wake of the great recession. *Social Service Review*, *91*(1), 41–70.

- Kingsley, G. T., Jordan, A., & Traynor, W. (2012). Addressing residential instability: Options for cities and community initiatives. *Cityscape*, 14(3), 161–184.
- Kingsley, G. T., Smith, R., & Price, D. (2009). The impacts of foreclosures on families and communities. Washington, DC: Urban Institute.
- Kleit, R. G., & Galvez, M. (2011). The location choices of public housing residents displaced by redevelopment: Market constraints, personal preferences, or social information? *Journal of Urban Affairs*, 33(4), 375–407.
- Kleit, R. G., Kang, S., & Scally, C. P. (2016). Why do housing mobility programs fail in moving households to better neighborhoods? *Housing Policy Debate*, 26(1), 188–209.
- Kushel, M. B., Gupta, R., Gee, L., & Haas, J. S. (2006). Housing instability and food insecurity as barriers to health care among low-income Americans. Journal of General Internal Medicine, 21(1), 71–77.
- Lee, K. O. (2014). Why do renters stay in or leave certain neighborhoods? The role of neighborhood characteristics, housing tenure transitions, and race. *Journal of Regional Science*, 54(5), 755–787.
- Levy, D. K., Turner, M. A., Santos, R., Wissoker, D., Aranda, C. L., Ritingolo, R., & Ho, H. (2015). Discrimination in the rental housing market against people who are deaf and people who use wheelchairs: National study findings. Washington, DC: U.S. Department of Housing and Urban Development.
- Logan, J. R., Stults, B. J., & Farley, R. (2004). Segregation of minorities in the metropolis: Two decades of change. *Demography*, 41(1), 1–22.
- Lubell, J. M. (2015). Laying the foundation for the next generation of rental housing policies. *Housing Policy Debate*, 25 (4), 799–801.
- Luke, D. A. (2004). Multilevel modeling. Thousand Oaks, CA: Sage Publications.
- Massey, D. S., & Denton, N. A. (1993). American apartheid: Segregation and the making of the underclass. Cambridge, MA: Harvard University Press.
- May, J. (2000). Housing histories and homeless careers: A biographical approach. Housing Studies, 15(4), 613-638.
- McConnell, E. D. (2017). Rented, crowded, and unaffordable? Social vulnerabilities and the accumulation of precarious housing conditions in Los Angeles. *Housing Policy Debate*, *27*(1), 60–79.
- McDonald, L. (2011). Examining evictions through a life-course lens. Canadian Public Policy, 37, S115–S133.
- McKernan, S.-M., & Sherraden, M. W. (2008). Asset building and low-income families. Washington, DC: Urban Institute Press. Mutchler, J. E., & Krivo, L. J. (1989). Availability and affordability: Household adaptation to a housing squeeze. Social Forces, 68(1), 241.
- Mykyta, L., & Macartney, S. (2011). The Effects of Recession on Household Composition: "Doubling Up" and Economic Well-Being (SEHSD Working Paper Number 2011–4). Washington, DC: Social, Economic, & Housing Statistics Division (SEHSD) of U.S. Census Bureau.
- Newman, S. J., & Owen, M. S. (1982). Residential displacement: Extent, nature, and effects. *Journal of Social Issues*, 38(3), 135–148.
- Oishi, S. (2010). The psychology of residential mobility: Implications for the self, social relationships, and well-being. *Perspectives on Psychological Science Perspectives on Psychological Science*, 5(1), 5–21.
- Oliveri, R. C. (2009). Between a rock and a hard place: Landlords, latinos, anti-illegal immigrant ordinances, and housing discrimination. *Vanderbuilt Law Review*, 62(1), 53.
- Parrott, S., Aron-Dine, A., Rosenbaum, D., Rice, D., Floyd, I., & Romig, K. (2018). Trump budget deeply cuts health, housing, other assistance for low- and moderate-income families. Washington, DC: Center on Budget and Policy Priorities.
- Pavao, J., Alvarez, J., Baumrind, N., Induni, M., & Kimerling, R. (2007). Intimate partner violence and housing instability. *American Journal of Preventive Medicine*, 32(2), 143–146.
- Pendall, R., Hayes, C., George, A., McDade, Z., Dawkins, C., Jeon, J. S., ... Smart, M. (2014). Driving to opportunity: Understanding the links among transportation access, residential outcomes, and economic opportunity for housing voucher recipients. Washington, D.C.: Urban Institute.
- Pendall, R., Theodos, B., & Franks, K. (2012). Vulnerable people, precarious housing, and regional resilience: An exploratory analysis. *Housing Policy Debate*, 22(2), 271–296.
- Pendall, R., Theodos, B., & Hildner, K. (2016). Why high-poverty neighborhoods persist: The role of precarious housing. *Urban Affairs Review*, 52(1), 33–65.
- Phinney, R. (2009). Residential Mobility, Housing Problems, and Child Outcomes in the Women's Employment Study. Washington, DC: Center for Housing Policy.
- Phinney, R. (2013). Exploring residential mobility among low-income families. Social Service Review, 87(4), 780–815.
- Phinney, R., Danziger, S., Pollack, H. A., & Seefeldt, K. (2007). Housing instability among current and former welfare recipients. American Journal of Public Health, 97(5), 832–837.
- Quercia, R. G., & Rohe, W. M. (1993). Models of housing adjustment and their implications for planning and policy. *Journal of Planning Literature*, 8(1), 20–31.
- Ratcliffe, C., & Zhang, S. (2012). U.S. asset poverty and the great recession. Washington, DC: Urban Institute.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models : Applications and data analysis methods*. Thousand Oaks, CA: Sage Publications.

- Reid, K. W., Vittinghoff, E., & Kushel, M. B. (2008). Association between the level of housing instability, economic standing and health care access: A meta-regression. *Journal of Health Care for the Poor and Underserved*, 19(4), 1212–1228.
- Rollins, C., Glass, N. E., Perrin, N. A., Billhardt, K. A., Clough, A., Barnes, J., ... Bloom, T. L. (2012). Housing instability is as strong a predictor of poor health outcomes as level of danger in an abusive relationship: Findings from the SHARE study. *Journal of Interpersonal Violence*, *27*(4), 623–643.
- Rosenblatt, P., & DeLuca, S. (2012). "We don't live outside, we live in here": Neighborhood and residential mobility decisions among low-income families. *City & Community*, *11*(e), 254–284.
- Rosenheck, R., Bassuk, E., & Salomon, A. (1998). Special populations of homeless Americans. In L. Fosburg & D. Dennis (Eds.), *Practical lessons: The 1998 national symposium on homelessness research* (pp.46–76). Washington, DC: U.S. Department of Health and Human Services.
- Rossi, P. H. (1955). Why families move: A study in the social psychology of urban residential mobility. Glencoe, IL: Free Press.
- Rossi, P. H. (1989). Down and out in America: The origins of homelessness. Chicago, IL: University of Chicago Press.

Sherraden, M. W. (1991). Assets and the poor: A new American welfare policy. Armonk, NY: M.E. Sharpe.

- Skelton, I. (2002). Residential mobility of aboriginal single mothers in Winnipeg: An exploratory study of chronic moving. *Journal of Housing and the Built Environment*, *17*(2), 127–144.
- Skobba, K., Bruin, M. J., & Yust, B. L. (2013). Beyond renting and owning: The housing accommodations of low-income families. *Journal of Poverty*, 17, 234–252.

Skobba, K., & Goetz, E. G. (2013). Mobility decisions of very low-income households. Cityscape, 15, 155-172.

- South, S. J., Crowder, K., & Chavez, E. (2005). Exiting and entering high-poverty neighborhoods: Latinos, blacks and anglos compared. *Social Forces*, 84(2), 873–900.
- South, S. J., & Crowder, K. D. (1997). Escaping distressed neighborhoods: Individual, community, and metropolitan influences. *American Journal of Sociology*, *102*(4), 1040–1084.

Speare, A. (1974). Residential satisfaction as an intervening variable in residential mobility. Demography, 11, 173–188.

- Turner, M. A., Herbig, C., Kaye, D., Fenderson, J., & Levy, D. (2005). *Against persons with disabilities barriers at every step*. Washington, DC: U.S. Department of Housing and Urban Development.
- Wiesel, I. (2014). Mobilities of disadvantage: The housing pathways of low-income Australians. Urban Studies, 51(2), 319–334.
- Wood, G., & Ong, R. (2011). Factors shaping the dynamics of housing affordability in Australia 2001–06. *Housing Studies*, 26(7–8), 1105–1127.
- Wood, M., Turnham, J., & Mills, G. (2008). Housing affordability and family well being: Results from the housing voucher evaluation. *Housing Policy Debate*, *19*(2), 367–412.
- Wooldridge, J. M. (2010). Econometric analysis of cross section and panel data (pp. 58). Cambridge, MA: MIT Press.

Appendix A. Hybrid modeling approach

Researchers who analyze panel data most frequently apply several methodological approaches, such as pooled Ordinary Least Squares (OLS), random effect, or Fixed-Effects (FE) models. Two modeling approaches have been widely used in previous studies that analyzed the Panel Study of Income Dynamics (PSID) data to examine household-level dynamics: robust pooled regression models (Crowder & South, 2005; Lee, 2014; South & Crowder, 1997), and random effects models (Kan, 1999). However, these studies rarely present statistical justifications for determining which model is most appropriate to address research questions associated with dynamics at the household level. This study performs the Breusch–Pagan Lagrange Multiplier (BPLM) and Hausman tests (Wooldridge, 2010) and confirms that the FE approach yields the most unbiased and consistent estimators.

However, applying the FE approach has its costs. By controlling for the higher level variance (i.e., variations across PSID households), FE models necessarily lose a large amount of important information obtained from higher level variance. Moreover, with the FE approach, researchers cannot estimate the general between-subject effects of variables that do not change or change rarely over time. These costs associated with using the FE approach are critical in the context of this study, because some personal vulnerability characteristics, such as being an African American household, or an immigrant, do not change over time. More importantly, even if there are changes in personal vulnerabilities, such as changes in the number of children within a household, these changes often reflect particular life transitions, such as having another child, which are not primary interests of this study. One objective of this study is to estimate the effects of being a racial or ethnic minority or of having more children in a household on the likelihood of experiencing housing instability compared with those without those characteristics. Thus, to estimate contextual effects of the personal vulnerabilities, between-household variations should not be dropped in this study.

g instability.
housing
experiencing
s of
model
regression
logistic
hybrid
. Additional
endix B.

		Model 3: Model	2 + Selling a car		~	Aodel 4: DV = Severe	e housing instability	
	Me	L	Wor	nen	~	1en	Won	len
Variable	Between	Within	Between	Within	Between	Within	Between	Within
Dependent variable: Whether a household experienced housing instability between years t and $t + 2$ (yes = 1)								
Housing cost burden and housing tenure status								
Housing costs (unit: \$1,000)	0.670***	0.133	1.088***	0.389***	0.967**	0.381**	1.072***	0.496**
	(0.186)	(0.088)	(0.188)	(0.102)	(0.348)	(0.125)	(0.271)	(0.149)
Annual household income (unit: \$1,000)	0.002	0.000	- 0.027*** (0.005)	- 0.007*	- 0.046***	- 0.035***	- 0.027**	- 0.023***
-	(0.002)	(100.0)	(cnn.n)	(200.0)	(210.0)	(600.0)	(0.008)	(0000)
Being a homeowner (yes = 1)	- 2.115*** (0.319)	- 1.081*** (0.263)	- 2.182*** (0.230)	- 0.422* (0.171)	- 2.225*** (0.548)	- 1.641** (0.528)	- 2.144*** (0.358)	- 0.262 (0.328)
Family employment structure (reference: no-income households)								
Single-income households	- 1.280**	- 1.164***	0.231	- 0.850***	0.409	- 0.469	0.655	- 0.094
	(0.445)	(0.312)	(0.403)	(0.241)	(0.776)	(0.574)	(0.614)	(0.430)
Dual-income households	- 1.041**	- 0.783***	- 0.065	- 0.362**	- 0.727	- 0.685*	- 0.337	- 0.315
	(0.349)	(0.192)	(0.226)	(0.122)	(0.574)	(0.347)	(0.329)	(0.225)
Housing policies								
Receiving housing assistance	- 1.072*	- 0.767*	- 1.046***	- 0.427**	- 1.595+	- 0.516	- 1.602***	- 0.468
	(0.481)	(0.303)	(0.282)	(0.150)	(0.834)	(0.491)	(0.433)	(0.286)
Economic insecurity								
Job insecurity	0.319	0.456*	1.378***	0.249*	1.264+	0.868**	1.125*	0.190
	(0.440)	(0.190)	(0.327)	(0.123)	(0.705)	(0.319)	(0.463)	(0.219)
Limiting health condition	0.110	0.111	0.520*	- 0.085	- 0.042	0.716*	0.794*	0.421+
	(0.340)	(0.203)	(0.239)	(0.136)	(0.569)	(0.346)	(0.345)	(0.231)
Wealth (unit: \$1,000,000)	2.578	- 5.124	3.775	0.339	19.823*	2.679	0.645	3.114
	(7.362)	(6.266)	(5.732)	(3.209)	(8.942)	(5.206)	(10.378)	(5.244)
Savings (unit: \$1,000,000)	- 2.450+	- 0.701	- 0.387	0.698	- 5.457	- 5.189	- 1.715	0.035
	(1.317)	(1.179)	(0.781)	(0.446)	(4.169)	(3.777)	(2.073)	(1.224)
Debts (unit: \$1,000,000)	0.000	0.001	0.001	0.000	- 0.001	0.000	0.001	0.000
	(0.002)	(0.001)	(0.001)	(0000)	(0.003)	(0.001)	(0:002)	(0.001)
Automobile ownership								
Car ownership (yes $= 1$)	- 0.724*	- 0.468*	- 0.536**	- 0.673***	0.161	- 0.003	- 0.121	- 0.510*
	(0.318)	(0.237)	(0.206)	(0.154)	(0.487)	(0.377)	(0.295)	(0.243)
								(Continued)

(Continued).								
		Model 3: Model 2	+ Selling a car			Model 4: DV = Severe l	housing instability	
	Me	Ę	Won	nen		Men	Wom	ien
Variable	Between	Within	Between	Within	Between	Within	Between	Within
Selling a car (yes = 1)	2.453** (0.937)	0.974*** (0.245)	1.595* (0.644)	0.897*** (0.166)				
Marital status (reference: single)								
Married (yes = 1)	- 0.534+	- 0.385	- 0.291	- 0.236	- 0.536	- 0.409	- 0.606+	0.382
	(0.283)	(0.416)	(0.226)	(0.265)	(0.472)	(0.757)	(0.351)	(0.511)
Marriage dissolved (yes $= 1$)	- 0.422+	- 0.332	- 0.095	- 0.302	- 0.373	- 0.382	0.011	0.064
	(0.246)	(0.452)	(0.157)	(0.251)	(0.388)	(0.810)	(0.226)	(0.485)
Shared living arrangements								
Number of additional adult family members	0.123	- 0.190	- 0.187	- 0.248**	0.244	- 0.292 (0.274)	- 0.105	- 0.200
	(col.0)	(0.130)	(0.117)	(0.084)	(767.0)		(0.172)	(1 < 1 . 0)
Number of nonfamily members	0.349** (0.121)	- 0.023 (0.065)	0.479*** (0.081)	- 0.079+ (0.044)	0.112 (0.187)	0.046 (0.115)	0.440*** (0.099)	– 0.099 (0.077)
Personal vulnerability								
African American (ves = 1: reference: White)	- 0.091		- 0.076		0.565		0.252 (0.24)	
	(0.214)		(0.158)		(0.362)			
Lating (ves $= 1$)	- 0.774		- 0.445		0.205		0.440	
	(0.563)		(0.360)		(0.916)		(0.551)	
Asian	- 0.541		0.608		- 0.270		1.197	
	(0.700)		(0.490)		(1.389)		(0.765)	
Other racial minorities	- 1.318+		- 0.178		- 0.373		0.687	
	(0.736)		(0.449)		(1.298)		(0.579)	
Immigrant (yes $= 1$)	0.332		- 0.007		- 0.699		- 1.035* (0.520)	
	(2+C·U)		(676.0)		(116.0)		(020.0)	
Number of children within a household	0.290** (0.085)	0.169+ (0.090)	0.233*** (0.051)	- 0.043 (0.056)	- 0.123 (0.154)	0.508** (0.188)	0.207** (0.073)	- 0.124 (0.105)
Year dummy variables	Inclu	ded	Inclu	ded	Ē	cluded	Inclue	ded
State dummy variables	Inclu	ded	Inclu	ded	ц Ц	cluded	Inclue	ded
Intercept (β_0)	- 0.200	(1.044)	- 1.784	(1.225)	- 3.1	43 (1.416)*	- 3.702 (0	***(066')
Random coefficient (u_j)	0.564 (0.	201)***	0.911 (0.	.147)***	0.400	(0.410)***	0.390 (0.3	256)***
ICC	0.146 (0.	044)***	0.217 (0.	.027)***	0.108	(0.099)***	0.106 (0.0	062)***
Log likelihood	- 945	.235	- 221	1.450	I	339.856	- 805	.443
AIC	2068	.470	4608	899	8	29.711	1768.	886
Z	5,3	57	10,4	131		4,799	10,0	05
Note. AIC = Akaike information criterion. ICC = interclass co	orrelation. $DV = De$	pendent Variable	$\beta_0 = \text{constant}$.	$u_0 = a random c$	befficient. The v	ariables associated w	vith race and imn	nigrant status

are measured at an individual level, and all other variables are measured at a household level. $^+p < .10$. $^*p < .05$. $^{**}p < .01$.

28

S. KANG

Appendix C. Random- and fixed-effects logistic regression models of experiencing housing instability.

	Model 5: Rando	m-effects models	Model 6: Fixed	-effects models
Variable	Men coeff. (SE)	Women coeff. (SE)	Men coeff. (SE)	Women coeff. (SE)
Dependent variable: Whether a household experienced housing instability between years t and $t + 2$ (yes = 1)				
Housing cost burden and housing tenure status				
Housing costs (unit: \$1,000)	0.250 (0.068)***	0.454 (0.071)***	0.286 (0.153)+	0.370 (0.118)**
Annual household income (unit: \$1,000)	0.001 (0.001)+	- 0.012 (0.003)***	0.000 (0.001)	- 0.003 (0.003)
Being a homeowner (yes $=$ 1)	- 1.699 (0.195)***	- 1.332 (0.129)***	- 0.857 (0.265)**	- 0.260 (0.165)
Household employment structure (reference: no-income households)				
Single-income households	- 1.245 (0.252)***	- 0.630 (0.209)**	- 1.176 (0.331)***	- 0.842 (0.245)**
Dual-income households	- 0.838 (0.162)***	- 0.296 (0.105)**	- 0.690 (0.193)***	- 0.339 (0.120)**
Housing policies				
Receiving housing assistance	- 0.889 (0.254)***	- 0.532 (0.128)***	- 0.705 (0.292)*	- 0.378 (0.147)*
Economic insecurity				
Job insecurity	0.464 (0.168)**	0.446 (0.112)***	0.415 (0.196)*	0.281 (0.122)*
Limiting health condition	0.151 (0.161)	0.063 (0.111)	0.104 (0.206)	– 0.082 (0.135)
Nonsaving wealth (unit: \$1,000,000)	– 4.681 (5.655)	- 2.663 (3.005)	– 4.278 (6.894)	0.68 (2.616)
Savings (unit: \$1,000,000)	– 1.720 (1.139)	- 0.032 (0.367)	– 0.115 (1.509)	0.561 (0.640)
Debts (unit: \$1,000,000)	0.000 (0.001)	0.000 (0.000)	0.000 (0.001)	0.000 (0.000)
Automobile ownership				
Car ownership (yes $= 1$)	- 0.322 (0.171)+	- 0.493 (0.110)***	0.042 (0.212)	- 0.283 (0.136)*
Marital status (reference: single)				
Married (yes $=$ 1)	- 0.605 (0.216)**	- 0.321 (0.158)*	- 0.804 (0.45)+	- 0.336 (0.269)
Marriage dissolved (yes $=$ 1)	- 0.424 (0.203)*	- 0.304 (0.125)*	- 0.834 (0.491)+	- 0.287 (0.249)
Shared living arrangements				
Number of additional adult family members	- 0.037 (0.108)	- 0.149 (0.067)*	- 0.223 (0.141)	- 0.262 (0.082)**
Number of nonfamily members	0.070 (0.055)	0.049 (0.038)	- 0.021 (0.066)	- 0.079 (0.044)+
Personal vulnerability				
African American (yes = 1; reference: White)	- 0.035 (1.237)	- 0.378 (0.452)		
Latino (yes $= 1$)	0.411 (1.304)	0.629 (0.557)		
Asian	- 0.268 (1.317)	0.040 (0.522)		
Other racial minorities	0.832 (1.122)	0.086 (0.346)		
Immigrant (yes = 1)	0.512 (0.517)	0.204 (0.307)		
Number of children within a household	0.948 (1.125)	0.165 (0.336)	0.196 (0.098)*	- 0.026 (0.056)
Year dummy variables	Included	Included	Included	Included
State dummy variables	Included	Included	Included	Included
Intercept (β_0)	- 0.509 (1.497)***	- 1.356 (1.212)***		
Log likelihood	- 973.511	- 2312.900	- 422.833	- 1053.599
AIC	2089.022	4775.799	955.665	2233.198
Ν	5,357	10,431	1,440	3,163

Note. coeff. = coefficient; SE = Standard error; AIC = Akaike information criterion.

 $^{+}p < .10. \ ^{*}p < .05. \ ^{**}p < .01. \ ^{***}p < .001.$