The views expressed are those of the authors and should not be attributed to the U.S. Department of Housing and Urban Development (HUD), Alisha Coleman-Jensen is an employee of the Economic Research Service of the U.S. Department of Agriculture (USDA).

**Research Questions**

1. What is the relationship between housing cost burden and food insecurity?
2. To what extent do these types of hardship overlap within different geographic areas?

**Motivation**

Food insecurity affects a portion of U.S. families each year with consequences on health and children’s development. The U.S. Department of Agriculture defines food-insecure households as “those that, at times, unable to acquire adequate food for one or more household members because of lack of money or other resources at any time of year.” (Coleman-Jensen et al. 2017). In 2016, 22.5 percent of U.S. households and 10.5 percent of nonmetropolitan households struggled to put enough food on the table (Coleman-Jensen et al. 2017). Food insecurity has declined nationally from a peak of 14.6 percent in 2011, but remains above the 11.1 percent pre-recession level in 2007.

Severe housing cost burdens are increasingly prevalent. In recent decades, the U.S. Department of Housing and Urban Development has reported large increases in the prevalence of severe housing cost burden, defined as total housing costs that exceed half of household income.

- In 2015, 9.9 million very low-income renters (those with income less than 50 percent of Median Area Income) had severe cost burdens (Wotton et al., 2017).
- Severe cost burdens affect 31.5 percent of very low-income renters and 62.9 percent of very low-income homeowners (Wotton et al., 2017).
- Since 2001, the prevalence of severe cost burdens has increased by 11.1 percent points amongst all very low-income homeowners (Wotton et al., 2017; IRS, 2005).
- Severe housing cost burdens plague very low-income households into a position of shelter poverty that leaves too little income for other necessities such as food and personal care.
- Severe cost burdens also directly contribute to housing insecurity, leading to missed rent, utility, child support, eviction, foreclosures, homelessness, and food insecurity.

There is a high correlation between food insecurity and housing insecurity for low-income families with children. The housing insecurity scale is defined as inability to make housing payments or being driven out of a neighborhood because of employment (Norton 2016). In the 2002 National Survey of America’s Families, households with children had housing insecurity, and 60.9 percent of those with housing insecurity were food insecure.

Among those with food insecurity, only 16.7 percent had housing instability (Mc. Gee and Kuehl 2005).

There is reason to suspect that the relationship between housing cost burden and food insecurity may be different in rural areas. Rural areas vary widely but are often characterized by lower incomes, greater rates of homelessness, greater reliance on manufactured housing rather than site-built single family housing and multifamily housing types of urban areas, limited access to emergency food assistance, and varied food access (Coleman-Jensen and Steffen 2017).

**Data**

The American Housing Survey (AHS) is the largest, most comprehensive, longitudinal housing survey in the United States. Collected by the U.S. Census Bureau for HUD, the AHS is a key source of data on housing characteristics, costs, and quality. The survey employs two types of housing samples—a national sample of both occupied and vacant housing samples, and follows the housing units over time. In 2015, the AHS retired the national sample and has surveyed since 2015 and all metropolitan sample, and follows the sampling unit data. The sample size for the 2015 AHS is 50,000.

This study analyzes data from the 2015 National AHS Internal Use File (IU).

**Methods**

**Wageing and Estimation of Variance.** The AHS food security data come from a split sample in which 30,236 households were interviewed from the National AHS sample of 64,495 households. The American Housing Survey uses a complex stratified sample design. To estimate standard errors, the Census Bureau produces 160 replicate weights for each sample unit using Fay’s method of Balanced Repeated Replication (BRR), for the national sample, and for each of the split sample groups. We used the SURVEYLOGISTIC procedure with the BRR(Fay) option in the SAS application to produce the logistic regression models using the replicate weights for Split 1 sample.

Non-Disclosure and Rounding Procedures. This research used internal Use Files available on a restricted basis to Census Bureau employees and other individuals with equivalent Special Sworn Status. All analytical output was reviewed and cleaned by the Census Bureau Data Review Board to protect the confidentiality of personal information. The Census Bureau has established rounding procedures that were applied to the tables presented here. Because of these non-disclosure rounding rules, the estimates presented here do not necessarily sum to the totals shown.

**Estimates Housed by Subgroup**

**Measurements Concepts**

**Food Security.** In 2015, the AHS contained the 10-item 30-day Adult Food Security Survey Module to assess food insecurity as part of a validated USDA food security scale. The questions ask about conditions or behaviors that characterize households that are facing difficulty meeting basic food needs. All questions reference the 30 days before the survey and stipulate that the condition occurred because of a lack of money or other resources for food households that respond affirmatively to 2 or more items are classified as food insecure.

**Housing Cost Burden.** Housing cost burden is a household’s monthly housing cost (sometimes referred to as gross rent for renters), which includes rent or mortgage, utilities, and other housing costs, divided by their monthly household income. Severe rent burden means a renter household’s paying more than one half of their income for gross rent (net of utilities).

**Metropolitan-Geography.** Metropolitan geography is measured at the county level using 2013 Census Urban Continuum Codes (CUC) developed by USDA. 2003 classified metropolitan counties by population size and nonmetropolitan counties by degree of urbanization and adjacency to a metro area. For this research, 2013 CUC categories are collapsed into large metro counties (population 1,000,000+; category 1), Small/Medium metro counties (categories 2–4), and nonmetro counties (both urbanized and rural areas; categories 4–9).

**Relative Income.** In this study, relative income is measured using household income as a percentage of the HUD Adjusted Area Median Income (AMI). HUD annually calculates AMI and income limits (exactly 30 percent (AMI), very low income (50 percent (AMI), low income (80 percent (AMI), and below (90 percent (AMI) for all metropolitan and nonmetropolitan counties. Income limits are adjusted for the number of persons in the household because HUD program eligibility rules allow larger households to have higher incomes, reflecting their need for larger housing units.

Food Assistance Participation. Participation in the Federal Supplemental Nutrition Assistance Program (SNAP formally known SNAP) is determined by respondent self-report.

**Findings**

In both models, neither region nor metropolitan status has a statistically significant relationship with food insecurity. For both models, race/ethnicity, education, and presence of children are significantly related to food insecurity. Hispanics and non- Hispanic Black are more likely than non-Hispanic Whites to be food insecure. Similarly, those who have completed at least a Bachelor’s degree are less likely to be food insecure, and those lacking a high school diploma are more likely to be food insecure. Children with adults who are employed are more likely to be food insecure than those with adults who are not employed.

In Model 1, those with severe housing cost burdens were twice as likely to be food insecure than those with no cost burdens (OR = 2.2). When interactions are included in Model 2, housing cost burden is no longer significantly related to food insecurity, and relative income is significantly related to food insecurity. Households with incomes less than 50 percent of area median income are about 3 times more likely to be food insecure than households with incomes greater than 50 percent of area median income (OR = 3.1). Model 2 model run with household relative income relative to poverty threshold is essentially the same as Model 2.

**Discussion**

Based on the logistic regression models, it appears that housing cost burden is a function of income and does not contribute to food insecurity over and above the effects of low income. These results do not support the shelter poverty hypothesis, and support that increasing incomes may serve the real goal of reducing food insecurity and housing cost burden. No significant differences are found for households in nonmetropolitan locations.

Further work will attempt to better address the interactions between housing burden and food insecurity. While the low income households make up a high proportion of these nonmetropolitan households, severe housing cost burden may not adequately capture the tradeoffs that low income households make between paying for housing and paying for food. Future work using measures of shelter poverty may help us understand these tradeoffs better.

**References**


