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Working for Peanuts:
Food Insecurity among Nonstandard Workers' Households

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ABSTRACT

Nonstandard work arrangements affect household functioning in many ways, but the relationship between nonstandard work and household food insecurity has not been explored. Utilizing the 2003, 2004 and 2005 Food Security Supplements to the Current Population Survey I investigate the effects of household head's work form (by considering number of hours worked and multiple job holding) on household food security status. I find that households where the head is employed in multiple jobs, work with varied hours or part-time work are more likely to be food insecure than households with a head in a regular full-time job even when controlling for income and other sociodemographic characteristics. Because the odds of food insecurity vary across household types, models are estimated separately for married couple, cohabiting, male headed, female headed and single person households. In the household specific models, the coefficients for head's work form in married couple and single person households are consistent with the overall models. For cohabiting households, only multiple job holding is significantly different from full-time employment. For male headed and female headed households, only varied hour work is significantly different from full-time work.

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Introduction

With the sustained movement to a 24/7 U.S. service economy researchers must continue to investigate the myriad of ways that nonstandard work arrangements affect not only workers but also other household members. Although the impacts on households of nonstandard work arrangements have been documented (Presser 2003; Winson and Leach 2002), the effect of nonstandard work on food insecurity has not been considered. The potential relationship between nonstandard work and food insecurity is clearly important in terms of household well-being but is also relevant for U.S. public policy.

In this study, I utilize the Current Population Survey (CPS) Food Security Supplement to document the effect of household head's work form on food insecurity. I consider how the likelihood of food insecurity varies across households with heads that are not employed, have multiple jobs, work full-time, part-time, or have varied hours. Because the prevalence of food insecurity varies across household types, I examine the effect of head's work in household specific models, controlling for the head's partner's work when a partner is present. This study contributes to a greater understanding of both predictors of household food insecurity as well as the effects of nonstandard work arrangements on household functioning.

Nonstandard Work and Food Insecurity

Food insecurity is defined as households that "were, at times, uncertain of having, or unable to acquire, enough food for all household members because they had insufficient money and other resources for food" (Nord, Andrews, and Carlson 2004:3). Hunger is a severe form of food insecurity. Food security is related to household income but not as strongly as one may

suspect (Hamilton et al. 1997a). Income is not the only determinant of food security. As Nord (2000) explains, "Measured food insecurity contains a great deal of variation that is not associated with income: measures of fit are moderately high at best, even with controls for race/ethnicity and household structure" (p. 123). It may be that type of work is also influencing food security status.

Nonstandard work arrangements are defined in different ways. Sometimes the term refers to nonstandard schedules, such as work hours that fall outside "typical" business hours (i.e. the nine to five workday), including shift work and the night shift (Presser 2003). Nonstandard work has also been defined as work that is part-time, has varied hours, or is temporary (Kalleberg, Reskin, and Hudson 2000). Due to data limitations, nonstandard schedules and temporary employment cannot be determined. Here nonstandard work refers to employment that is part-time or has varied hours or when a worker holds more than one job. Standard work is full-time employment in a single job. Household heads that are not employed are also included in the analyses, but because this paper focuses on the effect of various work forms, I do not discuss the effect of not being employed.

Understanding how nonstandard work relates to food insecurity is important given that nonstandard work is becoming more prevalent. In explaining why food insecurity declined in the late 1990s, Nord and Andrews (2002) suggest that the declines were due to strong economic growth and rising incomes. If job growth in general leads to a decline in food insecurity we must ask how different types of job growth will relate to food insecurity rates. Nonstandard work arrangements are increasing in part because segments of the labor market that utilize nonstandard workers, such as the service sector, are accounting for an increasing share of employment (Herzenberg, Alic, and Wial 2000). As the U.S. moves to a more service oriented economy, where many jobs are typified by low-wages, lack of benefits, and part-time or varied hours, an

increase in the number of jobs available may not result in a decline in food insecurity. Further, jobs that were typically considered secure, such as those in manufacturing, are losing institutions like labor unions that protected against nonstandard employment (Herzenberg et al. 2000). Therefore, if food insecurity is related to these different work forms, it may be that as these work forms increase so too will food insecurity. There are obvious public policy implications if this occurs; strengthening of safety net programs and changes in work laws would be vital.

Gunderson and Gruber (2001) find that food insecure households, while having low-incomes are also more likely to have episodes of income loss and are less able to borrow funds to make up for sudden income losses or high expenditures. Food insecurity is not necessarily a constant condition, but often a temporary one that may result from unexpected income loss. This finding suggests a potential effect of nonstandard work on food insecurity. For instance, if workers are in jobs with varied hours, in which the minimum hours worked can vary substantially from week to week, the household may be susceptible to food insecurity because of the wide variation in income.

Nonstandard work arrangements are often unstable in nature (Kalleberg et al. 2000; Winson and Leach 2002). This instability in employment may contribute to food insecurity because food is a malleable piece of the household budget. Fixed expenses, such as rent and utility bills must be paid regularly even when income fluctuates. However, food expenses are left to the discretion of the household. Food costs can be lessened in times of economic strain by relying on especially low-cost food items, by depleting the household stores of food or by reducing intake. Poor households may use these food budgeting techniques to make it through times of reduced income or higher expenses (DeVault 1991; Fitchen 1981). Therefore, the unstable income associated with many forms of nonstandard work may relate directly to food insecurity. Household coping mechanisms used to manage unstable income may result in

household food insecurity. These coping mechanisms, although detrimental to household food consumption and nutrition, may be an almost necessary consequence of low-income household heads engaging in these unstable work arrangements.

Further, households headed by nonstandard workers may experience difficulty managing a household and food needs on a chaotic schedule. Work schedules often dominate the daily activities of households and parents often must plan their caregiving and household activities around the time demands of work (Roy, Tubbs, and Burton 2004). Part-time workers, even if they work the same number of hours each week, may not have the same schedule each week. Workers with varied hours may not know how many hours they will work from week to week, let alone what their schedule will be. Workers in multiple jobs may face a frenetic schedule just getting from job to job, it may be difficult to meet family feeding responsibilities and other household tasks (Scott et al. 2004). The chaotic schedules of parents and children will likely impact shopping, meal planning, consumption and expenditures. Planning and budgeting for household food consumption takes significant time and organization (DeVault 1991). It may be that households with heads in these work arrangements are more likely to be food insecure because they are unable to purchase, utilize and prepare low-cost food due to scheduling and time constraints. Therefore, household food expenditures may be higher than they would have been if workers had standard jobs and the household may experience greater risk for food insecurity. Households may not have the time to intentionally stretch their food dollars and so may experience food insecurity that is related to their type of employment rather than their income.

Single parents working in nonstandard jobs will likely face even greater challenges in meeting their children's (as well as their own) food needs. Household structure is related to food insecurity status even when controlling for other household characteristics. In particular, single

mother households are more likely to report food insufficiency than all other households (Alaimo et al. 1998). Single men and women heading households will not have partners to help meet family food needs, something that may exacerbate the effect of nonstandard work on food insecurity. Research on nonresident fathers suggests that when fathers visit their children frequently their children in the single mother household are less likely to experience food insecurity (Garasky and Stewart 2007). However, monetary child support payments have less consistent effects on food insecurity. The authors suggest that fathers that visit more may provide in-kind support to children as well as buy food and pay for eating out. Thus the support of nonresident fathers may affect food insecurity in single mother households, but unfortunately this factor cannot be included in the study. It is important to note though that mothers in nonstandard jobs when possible may rely on nonresident fathers or other family members to help care for their children's feeding needs.

If difficult schedules are contributing to food insecurity among nonstandard work households, single male or single female headed households may be most affected because these household heads do not have spouses or partners to help consistently with shopping and meal preparation. If fluctuating income explains part of the effect of nonstandard work, married couple or cohabiting households may have the advantage of a partner working in a standard job where income is stable, thus weakening the effect of the employment of the household head. In single male or single female headed households, the household may not have other income sources that can smooth fluctuations in income from the head's work and public assistance may be unavailable to the household. In recent years, female headed households with children may have become especially vulnerable to food insecurity because these households were most affected by welfare reform. Declining public assistance usage, including Food Stamp participation, among these households may lead to greater food insecurity if they do not reach

economic stability (Bartfeld 2003). Employment in nonstandard work arrangements may not provide enough stable income to meet these households' food needs.

Due to recent changes in welfare policy, low-income household heads may have to work regardless of the type of job they can find and so examining the link between nonstandard work and food insecurity seems especially timely. Changes in welfare policy may have fueled the rise in nonstandard employment by creating a large reserve pool of labor that needs work, and may have little employment experience (Peck and Theodore 2000). Empirical evidence provides some support for this view. People leaving welfare have flooded the labor market (Howell 2002; Jensen and Chitose 1997), greatly increasing employer power to offer low wages, no benefits, varying hours, part-time work and tenuous links with employees. Reducing the welfare rolls by increasing the number of workers in nonstandard jobs may not reduce food insecurity. Research suggests that welfare leavers do have greater odds of entering nonstandard work than do workers with similar characteristics but who were not welfare recipients and that these jobs often do not reduce poverty (Bansak and Amuedo-Dorantes 2003). Many of these former welfare recipients entering nonstandard jobs are likely to be single mothers, so understanding how food insecurity relates to nonstandard work differently for various household types is important for policy development.

Compounding the problem further, some of these recent welfare leavers may incorrectly believe that they no longer qualify for Food Stamps because they have left TANF (McConnell and Ohls 2001; Nord 2000b). Further complicating the problem, nonstandard workers are likely to experience frequent changes in income that change their eligibility for food assistance programs. As a result, households may cycle in and out of programs or become discouraged and decline assistance altogether (Newman 2006). A sample of rural low-income households identified irregular incomes from month to month as a barrier to participating in the Food Stamp

Program (Anderson and Swanson 2002). A safety net meant to provide for these workers may not be utilized to the extent that it could be.

Food Stamp benefits may attenuate the relationship between work type and food insecurity. Part-time workers are more likely than full-time workers to apply for and receive Food Stamp benefits even when controlling for income. Increased work hours measured intervally relates to declines in Food Stamp use when adjusting for income (Jensen 2002). Food Stamps can help other nonstandard workers as well. Research suggests that Food Stamp benefits can help low-income households in maintaining food purchasing and consumption during periods of sudden income loss (Blundell and Pistaferri 2003), but these households must qualify for and receive Food Stamps to benefit from them.

It is important to note that households receiving Food Stamps actually experience higher odds of food insecurity than do households not receiving Food Stamps when other characteristics are controlled. While this finding may seem contrary to expectations, there are several explanations. Analysis of Food Stamp participation and food insecurity that utilizes the longitudinal nature of the CPS finds that transitions to Food Stamp use were related to transitions into food insecurity. Further, households previously using Food Stamps that stopped receiving them were more likely to become food secure (Wilde and Nord 2005). This indicates that rather than Food Stamps contributing to food security, food security may lead to decreased Food Stamp use. Likewise, food insecurity may result in application for and receipt of Food Stamps.

Another explanation is that Food Stamp benefit levels are too low to meet household needs. Households often exhaust their Food Stamp benefits before the end of the month (Hess and Weill 2003; O'Brien and Aldeen 2006). Some research highlights the potential effectiveness of the Food Stamp Program. Researchers surveyed clients of food pantries and other emergency food programs. They found that of these emergency food users, households utilizing Food

Stamps had larger per capita food expenditures than households that did not utilize Food Stamps (Clancy and Bowering 1992). A similar study found that Food Stamps contributed to a greater degree than WIC or food pantry use to a household meeting the thrifty food plan budget (Daponte, Haviland, and Kadane 2004). This research suggests that among households with similar need, the Food Stamp Program is effective in increasing household food expenditures even though these increased expenditures may not be enough to ensure household food security because the benefit levels are often too low to meet household needs.

Household Characteristics and Food Insecurity

Several important control variables have been identified in the food insecurity literature. Because the following factors have been identified as predictors of food insecurity, it is important to account for them when examining the effect of head's work on food insecurity. First, there is an obvious relationship between income and food insecurity. As income increases, food insecurity declines substantially (Nord 2000a; Rose 1999). However, as noted above, income does not perfectly predict food insecurity. High household expenses, or sudden increases in expenses as well as changes in household income can result in food insecurity (Olson, Kendall, and Frongillo 1997; Rose 1999).

Age of household head is also related to food insecurity, but is confounded by the presence of children. Households with children have higher rates of food insecurity so younger and middle-aged household heads may have higher food insecurity rates as related to the presence of children in the household (Nord et al. 2004). But when presence of children is controlled, as it is in this analysis, these younger and middle-aged households may not have a higher likelihood of food insecurity. Elderly households have lower rates of food insecurity, but it is unclear whether this is because older adults are less willing to admit that they are

experiencing food insecurity or if they are indeed less likely to be food insecure (Alaimo et al. 1998; Rose 1999).

Previous research that asked survey participants whether they had enough food to eat found that even when controlling for income, race and ethnicity were significantly related to food insufficiency (Alaimo et al. 1998). In general, research finds that minority headed households, especially non-Hispanic Blacks and Hispanics, are more likely to be insecure than non-Hispanic white households (Nord et al. 2004).

Even controlling for income and other household factors, low education is significantly related to food insecurity (Olson et al. 2004; Olson et al. 1997). It is unclear why education is significant even when controlling for income. It may be that household heads with low education are more likely to have fewer financial budgeting and household management skills, which are negatively associated with food insecurity (Olson et al. 2004).

Research suggests that 1996 changes in public assistance eligibility for vulnerable immigrant populations have had negative impacts on food insecurity levels (Borjas 2004). Stringent eligibility criteria for public assistance for immigrant populations caused increases in food insecurity. Many non-U.S. citizens do not qualify for federal public assistance benefits, although some states have elected to use state funds for assistance to immigrants.

Region of the country in which a household resides may impact food insecurity as well. Research suggests that food deserts and access to low-cost food retailers vary by region. Households in the West have the least accessibility to large lower-cost food retailers, followed by the Midwest, South, and Northeast (Blanchard and Lyson 2002). It is not clear whether or not these regional variations in food deserts will impact household food insecurity.

Previous research indicates that residence is related to food insecurity. Central city households have higher rates of food insecurity, followed by nonmetro households. Suburban

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households have the lowest rates of food insecurity (Nord et al. 2004). Poor communities n central cities and rural areas have reduced access to low cost food in general and may face especially high costs for fresh fruits, vegetables and meats (Blanchard and Lyson 2002; Chung and Myers 1999; Morris, Neuhauser, and Campbell 1992; Topolski, Boyd-Bowman, and Ferguson 2003).

Hypotheses

Hypothesis 1: Controlling for income and other characteristics, households with heads employed in multiple jobs, part-time work, or varied hour employment will experience higher odds of food insecurity than heads employed in standard work.

Hypothesis 2: Controlling for income and other characteristics, female headed households will experience the highest odds of food insecurity.

Hypothesis 3: In household specific models, the effect of head's work form will be strongest for male and female headed households. The effect on food insecurity will be weaker in married couple and cohabiting households where other workers and caregivers are present.

Data and Methods

Data

I use Current Population Survey data from December's 2003, 2004 and 2005 Food Security Supplement. Approximately 50,000 households are interviewed each month for the CPS and are chosen to represent the U.S. civilian population at both the state and national level. Because a larger sample size was desired to separate the data by household structure and work form, the three years were pooled. A subset of the CPS sample is followed for two years, so in the initial combined data file, some households had more than one observation. This analysis does not utilize the longitudinal nature of the CPS data. Therefore, all households from the 2004 sample were used. Households that were interviewed in both 2003 and 2004 were dropped from

the 2003 sample. Households that were interviewed in both 2004 and 2005 were dropped from the 2005 sample. This procedure ensures that all observations are truly independent. All results reported in the text and tables were obtained from this combined or pooled data file.

Food Security is measured at the household level. A household level data file was created in which information for the household head and all other household members were appended onto the household information. Sociodemographic information is based on data for the household head. The primary independent variable is household head's work form.

Measurement

Dependent Variable. Households are determined to be food insecure according to their response to the ten item Food Security Core Module (households with children answer eighteen items; see appendix). According to the USDA food insecurity definition, households that answer affirmatively to any three or more items indicating food insecure conditions are considered food insecure. Households answering positively to zero to two conditions are considered food secure. An example is: "'We worried whether our food would run out before we got enough money to buy more.' Was that often, sometimes or never true for you in the last twelve months?" If a household responded that this was often or sometimes true, the household would be classified as responding affirmatively to that food insecure condition (Nord, Andrews, & Carlson, 2004, p. 2-4). Households with children answer additional questions to determine if the children in these households are likely to be experiencing hunger; defined as food insecure with hunger among children. This analysis focuses on the relatively less severe form of household food insecurity that does not require a documentation of hunger. To be defined simply as food insecure, households must answer affirmatively to three or more questions regardless of answering the ten or eighteen item module as per USDA and CPS guidelines (Bickel et al. 2000; Carlson,

Andrews, and Bickel 1999; CPS 2004; Frongillo 1999; Hamilton et al. 1997a; Hamilton et al. 1997b; Nord et al. 2004).

The questions included in the food security core module in the CPS have withstood many tests of reliability and validity (Andrews, Bickel, and Carlson 1998). The scale has also proven valid across different household types and across different sample groups (Carlson et al. 1999; Derrickson, Fisher, and Anderson 2000).

Independent Variables. Nonstandard work is the key independent variable in this study. Generally, work that is part-time, has varied hours, is temporary, or is contract work is considered nonstandard (Kalleberg et al. 2000). Often nonstandard jobs also have nonstandard schedules as well. For this study, I approximate nonstandard work by considering the number of hours worked and the number of jobs worked. A five category variable is created with the following classifications: not employed, multiple jobs, full-time, part-time and varied hours. The same classifications are used for spouse's work form and cohabiting partner's work form (controls included in the married couple and cohabiting couple models).

For the CPS data, interviewers ask respondents about their job status (not working or employed) during the week in which they were interviewed. If the respondent is currently employed they are asked if they currently have more than one job. Respondents are also asked how many hours they usually work at their main job and so their hourly status (full-time, part-time, varied hours) is based on how many hours they usually work.

The categories are mutually exclusive. Workers in the multiple jobs category can be employed in jobs that are full-time, part-time or varied hours. The not employed category includes those individuals that are unemployed, discouraged workers, retirees and those not in the labor force. Because this paper does not focus on not employed household heads, I do not consider their reason for not working in paid employment.

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This definition of nonstandard work is limited in that it does not include nonstandard schedules or hours. It also does not measure whether the job is temporary, another defining characteristic of many nonstandard jobs. Some full time jobs in this data may actually be temporary, but the expected duration of employment cannot be determined. Because the data source focuses on food insecurity rather than nonstandard work arrangements, the development of a measure of nonstandard work is somewhat restricted.

The work form of household head variable is categorical. For the regression models multiple dummy variables are created. Holding a single full-time job is considered the "norm" or reference category. All other work forms are compared to single full-time job holding. Multiple job holding, part-time and varied hour work are considered nonstandard.

Household income will be included in the analyses; I use the income variable provided by the CPS. This variable is limited in several ways. First, because the income variable included in the CPS is categorical and household income is provided only within broad ranges, household income is an approximation. There are fourteen income categories. Each of the category ranges is not equal. The first income category is less than 5,000 dollars. From 5,000 to 14,999 dollars in household incomes there are four categories, each with a range of 2,500 dollars. From 15,000 to 39,999 dollars there are five income categories, each with a range of 5,000 dollars. There are two categories with 10,000 dollar increments: 40,000 to 49,999 and 50,000 to 59,999. There are two final income categories 60,000 to 74,999 and 75,000 and above.

Second, the income variable is annual income during the year prior to the interview. If fluctuating income related to nonstandard work is affecting food insecurity, these fluctuations in income would not be reflected in these data. Also, if a respondent recently changed jobs, the change in job would be recorded, but concomitant changes in income may not be reflected in the data.

Third, twenty percent of the sample has no data on income. These households refused to provide the information or did not know their income. Missing income data was imputed using the multiple imputation procedure in SAS ("proc mi"). Imputing this missing data did not change the result. In analyses performed before imputation (not shown) the results are the same substantively as those reported here. After the imputation, the coefficients for income were somewhat more robust.

Household structure is measured with five classifications: married couple, cohabiting couple, male headed, female headed and single person. Cohabiting households are those headed by a man or woman who is unmarried but identifies another household member as their partner. Male headed and female headed households are those headed by single men or women with other family members in the household. Single person households are those individuals living alone. Married couple households are the reference category.

Households are differentiated by whether or not there are children in the household. A dummy variable is included in the analysis, where households without children are the reference category.

Household size is included in the analysis as a categorical variable. Households of one or two individuals are the reference category. Other categories include households with three, four, and five (or more) household members.

The age of the household head is included as another control variable. The variable is categorical with the following age ranges: less than 25, 25 to 34, 35 to 44, 45 to 54, 55 to 64, and 65 and above. For the regression models, 45 to 54 is the reference category.

Households are also classified by the race or ethnicity of the household head. Race is cross classified by Hispanic origin so that individuals of Hispanic descent are in one category regardless of race. Non-Hispanic Blacks, non-Hispanic Whites, and Hispanics are distinguished

from all other race/ethnic groups. Thus a four category race/ethnic classification is created. The

fourth category of all other race/ethnic groups includes Native Americans and Asians. For

regression models, non-Hispanic Whites serve as the reference category.

I distinguish households headed by an individual that is not a U.S. citizen from all other

households. Households headed by a citizen that was not born in the U.S. are not distinguished

from households headed by a U.S. born citizen. The reference category for the regression is

households headed by a citizen with the comparison group being those households headed by a

non-U.S. citizen.

Education of household head is based on the highest level of education attained at the

time of the interview. The variable has four categories: those with less than a high school

education, those with a high school degree, those with some college, and those with a bachelors

degree or more. The reference category is high school.

I define residence by using the categories of metropolitan status available in the CPS.

Metropolitan areas are those that contain a place with at least 50,000 population or a Census

Bureau-defined urbanized area and a total metropolitan area population of 100,000 or more, or

75,000 or more in New England. Metropolitan areas also can include nearby counties that have

close economic and social ties with the central county of the metropolitan area. The largest place

in a metropolitan area is designated as the central city, although some metropolitan areas may

have more than one central city. Areas outside the central city in the metropolitan area, I call

suburban. Nonmetropolitan areas are those not classified as metropolitan. There are some

households for which residence cannot be determined. The lack of identification by residence

may occur if residence identification would conflict with confidentiality restrictions. Using this

four category classification of nonmetro, central city, suburban and not identified is preferable to

a dichotomous classification of nonmetro and metro, because the characteristics of central city and suburban households are quite different from one another.

The region of the country in which the household resides is divided into four categories: Northeast, Midwest, South and West. The reference category is the Northeast.

Household Food Stamp participation is included in the analyses as a dummy variable indicating whether or not the household is receiving Food Stamps at the time of the interview. In the analyses, the reference is households that do not receive Food Stamps. The amount of Food Stamps received is not considered. Food Stamp participation is included in the models as the only food assistance program because it is the most widely available to all household types and the least restrictive. Food Stamp participation is self reported and is not verified with administrative data from the Food Stamp Program records. There is some concern as to whether respondents accurately report participation in the Food Stamp Program. Scholars generally agree that there is likely to be some underreporting of Food Stamp use (Nord et al. 2004), but the degree of underreporting is unknown.

I include a dummy variable in the regression models to indicate from which sample year the household was included. In the regression models, 2005 is the reference year.

Methods

I will begin by providing a description of the percentage of households in the U.S. that are food insecure. I then estimate logistic regression models predicting the likelihood that households with particular characteristics are food insecure. Three sets of models are reported, the first includes household head's work form and income, household variables are added n the second set of models (household structure, presence of children and household size), and all other control variables are added in the final model. Finally, to assess whether the household/individual characteristics associated with household food insecurity vary by

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household structure I estimate separate logistic regression models of food insecurity by household type (married couple, cohabiting couple, male headed, female headed and single person households). These household specific models include all control variables. The mechanisms by which nonstandard work affects household food security may differ by family types, the presence of other adult caregivers and other workers may mediate the relationship between head's work form and household food security.

Results

Descriptive Statistics

Table 1 provides both the distribution of the sample across the study variables (Column 1) as well as the percentages of households that are insecure by each of the independent variables (Column 2). The percentages for the sample distribution are unweighted. The percentages of households that are food insecure in each category have been weighted to represent the population. The reader is referred to Table 1 to note the distribution of the sample. The total sample N is 89,377 households. The descriptive characteristics regarding household food insecurity are described next.

Approximately fifteen percent of households with heads that are not employed is food insecure (see Table 1, Column 2). A smaller percentage of households is insecure in each of the other work categories, with the lowest prevalence of food insecurity among heads employed in full-time work. Of the work forms considered nonstandard, the highest prevalence of food insecurity is among part-time workers (14%) while approximately eleven percent of multiple job holding heads of households and twelve percent of households with heads working part time are food insecure.

Food insecurity is closely related to income. Roughly one-third of households in the lowest income categories are food insecure. In contrast, only about one percent of households in the highest income category are food insecure.

Married couple households have the lowest food insecurity rates (8%) while female headed households have the highest insecurity rates (27%). The prevalence of food insecurity is much higher among households with children. Approximately 17 percent of these households are food insecure while nine percent of households without children are insecure. As household size increases, generally the prevalence of food insecurity increases as well.

Households headed by those less than 25 have higher food insecurity rates. The percentage of insecure households declines as the age of the household head increases. Non-Hispanic Blacks have the highest insecurity rates, followed closely by Hispanics. Non-Hispanic whites have the lowest percentages of insecure households. Households headed by a non-U.S. citizen have higher rates of food insecurity (19%) compared to those headed by citizens (11%). A large minority of households headed by someone with low educational attainment (less than high school) is insecure (23%). The percentage of households that is insecure declines as head's educational attainment increases.

Approximately fourteen percent of central city households are food insecure and twelve percent of nonmetro households are insecure. Food insecurity is less prevalent in suburban areas (9%). The Northeast and Midwest have a somewhat lower percentage of insecure households than the South and West.

The majority of households that receive Food Stamps is insecure (51%), while only nine percent of households not receiving Food Stamps is insecure. Food insecurity was slightly more prevalent in 2004 than in 2003 or 2005 (11.9% vs. 11.1% and 11.2% of households respectively).

Overall Logistic Regression Models

The results of the logistic regression analyses are displayed in Table 2. In Model 1, food insecurity is predicted from household head's work form and household income.[1] Heads in multiple jobs and work with varied hours both have higher odds of food insecurity compared to heads in full-time jobs. There is no significant difference between heads employed in part-time and full-time work. As income increases, the odds of food insecurity decline. Model 1 accounts for 14.1% of the variance in food insecurity.

In Model 2, household controls are added. The coefficients for head's work are similar to those in Model 1, only the differences between full-time work and multiple jobs and varied hours become more highly significant. Also, the coefficient for part-time work is significant in this model. Households headed by a part-time worker are more likely to be food insecure than households headed by a full-time worker, even when income is accounted for. All household structures have higher odds of food insecurity than the reference of married couple households. Female headed households are 1.7 times more likely to be food insecure than married couple households. Households with children and larger households have higher odds of food insecurity. Households with children are twice as likely to be food insecure as households without children. Model 2 accounts for 18.6% of the variance in food insecurity.

All other control variables are added to Model 3. Here all work forms have significantly higher odds of food insecurity than full-time work and each coefficient is highly significant. Multiple job holding has the highest odds relative to full-time work; these households are 1.5 times more likely to be food insecure. Employment in work with varied hours increases the likelihood of food insecurity by an odds ratio of 1.3 and part-time work has an odds ratio of 1.2. It is important to note that as more independent factors are controlled, the relationship between

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[1] In a base model where food insecurity was predicted only from head's work form, the parameter estimates and odds ratios were as follows: not employed 0.58 (1.78); multiple jobs 0.26 (1.30); part-time 0.54 (1.72); varied hours 0.29 (1.34). All these coefficients were highly significant ($p < .001$).

nonstandard work and food insecurity becomes stronger. The relationship is not explained by these other predictors; rather it is suppressed when they are not controlled.

The household controls added in Model 2 change little when the other controls are added in Model 3. In Model 3, male headed households are not significantly different from married couple households in their likelihood of food insecurity. There does not seem to be a consistent effect of age on food insecurity when other factors are controlled. Non-Hispanic Blacks and Hispanics experience a greater likelihood of food insecurity than non-Hispanic Whites. Citizenship is not a significant predictor of food insecurity. Households headed by a person with less than high school education have higher odds of food insecurity than those with a high school degree. Households headed by someone with a bachelors or more are less likely to be food insecure. Central city households are more likely to be food insecure than are nonmetropolitan households. Households in the west are less likely to be food insecure than households in the northeast. Receiving Food Stamps predicts a much higher likelihood of food insecurity (odds ratio of 2.7). These findings are consistent with prior research on food insecurity. Households in 2004 were somewhat more likely to be food insecure than households in 2005. Model 3 accounts for 22.9% of the variance in food insecurity.

Household Specific Logistic Regression Models

The results of the household specific models are displayed in Table 3. These models include all the control variables included in Model 3 above. The models estimated for married couple and cohabiting households also include controls for the partner's work form.

There does appear to be an interaction between household head's work form and household structure. However, it is not clear that the differences by household are substantively meaningful. In married couple and single person households, household head's work has the same effect as it does in the overall models (this is expected given that these two household types

constitute the majority of households). In these models, head's in all nonstandard work forms are significantly more likely to be food insecure than head's in full-time employment. For cohabiting households, only multiple job holding is significantly different from full-time work (odds ratio of 1.88). For both male and female headed households varied hour employment results in significantly higher odds of food insecurity (odds ratio of 1.71 and 1.38 respectively). In cohabiting, male and female headed households, some of the coefficients for work form may not have been significant due to small cell sizes in some of the work categories (see Table 1 in the appendix for a distribution of the sample across household structure and head's work form).

In married couple households, the only nonstandard work form of the spouse that is significantly different from regular full-time work is multiple job holding. Spousal employment in multiple jobs increases the odds of food insecurity (odds ratio of 1.35). For cohabiting households, partner's employment in any nonstandard work form is not significantly different from being employed in full-time work. It seems that a partner's employment in any time of employment may be protective against household food insecurity.

In considering the other household control variables, there are both similarities and other differences by household type. Lower income predicts higher food insecurity across the models. The presence of children consistently predicts a higher likelihood of food insecurity, but this variable is not significant in the cohabiting household model. Household size is a significant predictor for only the married couple households.

There are some inconsistencies across the models for the other control variables as well. Age does not consistently predict food insecurity across the household types. For married couple and single person households, non-Hispanic Blacks and Hispanics have higher odds of food insecurity than non-Hispanic Whites. For cohabiting households, only Hispanics have significantly higher odds of food insecurity. For male headed households, only non-Hispanic

Blacks are significantly more likely to be food insecure. Race/ethnicity is not a significant predictor among female headed households. Married couple households where the head is not a citizen experience significantly higher odds of food insecurity. Low education tends to increase the odds of food insecurity (not significant in the cohabiting or female headed model) and high education decreases the odds of food insecurity (not significant in the male headed model). Single persons that lack citizenship have lower odds of food insecurity than single persons with citizenship. Central city residence predicts a higher probability of food insecurity in married couple and female headed households. Region is not a strong predictor of food insecurity. Receiving Food Stamps predicts greater food insecurity across all the households. Married couple and single person households were more likely to be food insecure in 2004 than in 2005.

In sum the overall model shows that employment in multiple jobs, part-time or varied hour work relates to a higher likelihood of food insecurity. These same findings hold in the married couple and single person household models. There is some variation in the strength of the effect of head's work in the cohabiting, male and female headed households. However, employment in any of these three types of nonstandard work tends to relate to greater odds of food insecurity.

Conclusions

The findings (see Tables 1 and 2) support hypothesis one, that even when controlling for household income and other characteristics, head's work form is significantly related to food insecurity. Households with heads in multiple jobs, part-time work, and varied hour employment all show greater odds of food insecurity than households headed by a full-time worker. As more independent variables were added to and controlled in the models, the effect of work form became stronger. This indicates that the important relationship between work form and food insecurity was somewhat suppressed when other household characteristics were not accounted

for. Characteristics of the household and the household head do not explain why head's work form relates to food insecurity.

Hypothesis two was also supported; female headed households experience the highest odds of food insecurity. This is consistent with prior studies on food insecurity. This relationship is not accounted for by household income or other characteristics of the household head. Some characteristics of female headed households that were not controlled in this study places them at greater risk for food insecurity. Simply lacking another adult wage earner and caregiver does not explain the higher odds of food insecurity for female headed families because cohabiting couples also are significantly more likely to be food insecure than married couple families.

Hypothesis three was not fully supported. In household specific models I expected the effect of head's work to be strongest in male and female headed households and weakest in married couple households. The effect of head's work on food insecurity was strongest among married couple households; each type of nonstandard work was related to significantly higher odds of food insecurity. However, in male and female headed households only varied hour employment was significantly related to higher odds of food insecurity. This finding may be due to sample size for male and female headed families. Alternatively, the findings likely suggest that the effect of head's work is dependent on household structure. Multiple job holding does predict higher odds of food insecurity in both male and female headed households, but this difference is not statistically significant. Part time work predicts higher odds of food insecurity in male headed households but again this effect is not statistically significant.

It may be that the process by which work affects food insecurity is different in different household types. For male headed and female headed families, where varied hour employment significantly predicts higher odds of food insecurity, it appears that the effect of work on food

insecurity is related to household scheduling and time management. This is expected given that these household heads are more likely to face difficulty in meeting feeding needs because they do not have a spouse or cohabiting partner to help with these caregiving activities. Varied hour work is also significant for married couple and single persons, but not for cohabiting households. This type of work seems disruptive to household functioning even when a spouse is present and when the head is not responsible for other household members. These findings indicate that varied hour employment may be detrimental to American families of many types.

Part-time work is only a significant predictor of food insecurity for married couple and single person households. Although it is not the case with all part-time jobs, many part-time jobs are in the service and retail sector where workers may be required to work during evening or night shifts. The evening hours are often a primary time for preparing meals and eating together as a household (DeVault 1991). When heads are working during these hours a disruption in household eating patterns may result.

The effect of head's work form in cohabiting couple households again shows the differences in the effect of nonstandard work across different household types. This is the only type of nonstandard work that is a significant predictor among cohabiting households. This household type is distinct from married couple households even when income and other characteristics are taken into account. Multiple job holding also predicts significantly higher odds of food insecurity among married couple and single person households. This finding may also relate to household scheduling as a causal mechanism since holding multiple jobs may lead to a frenetic schedule. Alternatively, food insecurity may actually be predictive of multiple job holding. In cases where households are food insecure and are having difficulty balancing their household budgets, heads may decide to engage in nonstandard work out of economic necessity.

This possible causal direction as food insecurity predicting nonstandard work arrangements highlights the limitations of the data. Food insecurity is measured over the prior twelve month period while head's employment is determined by the work held in the week prior to the interview. In terms of time, food insecurity may have preceded the household head's current work form. Also, income is measured over the prior twelve months, so fluctuations in income due to nonstandard work are not controlled. In some cases the current earnings of the household may be substantially less than or more than earnings over the prior year.

Another limitation of the study is that the selection of specific workers into nonstandard jobs cannot be controlled. The potential confounding selection effects are certainly not unique to this study. If certain characteristics would predict both nonstandard job holding *and* household food insecurity then both of these would be outcomes of a single factor rather than predictors of one another. It may be the case that inability to find and keep full-time employment would relate to food insecurity because of reduced job readiness or employment skills that may also relate to fewer household management skills. However, the same selection argument would not apply to different nonstandard work forms. If a head is able to manage working two jobs it would seem that they might also be proficient in household management skills. Therefore the possible effect of poor job skills and poor household skills would not explain the effect of multiple job holding on higher food insecurity.

Future research should investigate why work form relates to household food insecurity. Data should be collected to directly address this question. Research should not only include the work forms discussed here, but should also consider the effects of temporary employment as well as nonstandard schedules. Applied research must address the ways in which the Food Stamp Program can better meet the needs of households with irregular incomes. In addition, studies could be conducted that specifically focus on household heads entering nonstandard jobs

after leaving TANF and how these work arrangements affect food insecurity among these disadvantaged households. All of these possible research projects will be important in understanding how nonstandard work households can better meet household food needs.

Although the results reported here cannot be fully explained by prior research surrounding work and food insecurity, the findings are important for both developing a greater understanding of the predictors of food insecurity and for understanding how work affects households. The finding that work relates to household food insecurity in ways beyond income and may attenuate the effect of income contributes to the food insecurity literature and can help to inform food assistance program policy. In addition, this study highlights the need for continued research regarding the effects of nonstandard employment arrangements on household functioning. This analysis emphasizes that work is important beyond the income it provides households. Job quality impacts not only workers but their households as well. Paid employment does not always protect households from experiencing food insecurity; these findings suggest that households where heads are working in multiple jobs, part-time work or varied hour employment may face a higher likelihood of experiencing food insecurity. This study is especially important in light of welfare programs that emphasize work as the mechanism for household well-being.

Table 1. Descriptive Statistics for Characteristics of Sample Households and Percentage of Households that are Food Insecure

	Column 1: Sample Distribution (%) of all Households	Column 2: Percent of all Households that are FOOD INSECURE
All Households	-	11.6
Food Security Status		
Food Secure	88.9	-
Food Insecure	11.1	-
Household Head's Work Form		
Not Employed	35.6	14.7
Multiple Jobs	4.7	11.1
Full-time	46.5	8.8
Part-time	7.7	14.2
Varied Hours	5.4	11.5
Household Income		
Less than $5,000	3.9	32.3
5,000-7,499	2.8	35.7
7,500-9,999	3.0	28.7
10,000-12,499	3.8	26.5
12,500-14,999	3.4	25.3
15,000-19,999	5.2	20.7
20,000-24,999	6.7	17.7
25,000-29,999	6.5	14.8
30,000-34,999	6.9	12.1
35,000-39,999	5.9	9.7
40,000-49,999	9.9	7.2
50,000-59,999	9.4	4.8
60,000-74,999	10.8	3.5
75,000+	21.8	1.4
Household Structure		
Married Couple	52.5	7.6
Cohabiting	6.0	15.8
Male Headed	3.3	14.3
Female Headed	10.4	26.6
Single Individual	27.8	11.5
Presence of Children		
Households with Children	34.7	16.9

Households without Children	65.3	8.6
Household Size		
1 or 2	60.5	9.8
3	15.9	13.0
4	14.0	12.4
5 or more	9.6	19.0
Age of Household Head		
Less than 25	5.7	18.3
25-34	16.3	15.6
35-44	20.7	13.7
45-54	20.9	11.5
55-64	15.6	8.9
65+	20.8	5.9
Race/Ethnicity of Household Head		
Non-Hispanic White	77.5	8.3
Non-Hispanic Black	9.1	22.9
Hispanic	8.1	20.9
All Other	5.3	10.4
Citizenship		
US Citizen	94.8	11.0
Not a US Citizen	5.2	19.1
Educational Attainment of Household Head		
<High School	13.7	22.6
High School	30.8	13.0
Associates/Some College	27.8	11.8
Bachelors or more	27.7	3.7
Residence		
Nonmetropolitan	26.0	12.3
Central City	37.7	13.9
Suburban	35.5	9.1
Not Identified	0.8	12.9
Region		
Northeast	21.6	10.0
Midwest	25.0	10.7
South	30.7	12.6
West	22.7	12.2
Household Food Stamp Participation		
Does not receive Food Stamps	93.6	8.8
Receives Food Stamps	6.4	51.1
Year		
2003 (N=21253)	23.8	11.1

2004 (N=47838)	53.5	11.9
2005 (N=20286)	22.7	11.2
Spouse's Work (married couple households only; N=46979)		
Not Employed	33.2	9.2
Multiple Jobs	3.9	7.8
Full-time	47.8	6.6
Part-time	9.7	6.9
Varied Hours	5.4	7.1
Cohabiting Partner's Work (cohabiting households only; N=5417)		
Not Employed	24.4	25.7
Multiple Jobs	4.5	11.6
Full-time	55.9	12.2
Part-time	9.4	15.1
Varied Hours	5.8	13.5

*Total Sample N = 89377. Sample distribution percentages are unweighted (Column 1). Percentages Food Insecure have been weighted to represent the population (Column 2).

Table 2. Logistic regression models predicting the likelihood of household food insecurity

	Model 1		Model 2		Model 3	
	Parameter Estimates	*Odds Ratios*	*Parameter Estimates*	*Odds Ratios*	*Parameter Estimates*	*Odds Ratios*
Intercept	-4.26***		-5.08***		-4.32***	
Household Head's Work Form (Reference: Single Full-time)						
Not employed	-0.24***	0.79	0.02	1.02	0.27***	1.32
Multiple Jobs	0.21***	1.24	0.30***	1.34	0.38***	1.46
Part-time	0.06	1.07	0.09*	1.09	0.16***	1.18
Varied Hours	0.12*	1.12	0.22***	1.25	0.26***	1.30
Income (Reference: $75,000+)						
Less than $5,000	3.66***	39.02	3.69***	40.16	2.94***	19.00
5,000-7,499	3.86***	45.95	3.89***	48.99	3.09***	22.03
7,500-9,999	3.50***	32.96	3.59***	36.38	2.97***	19.56
10,000-12,499	3.37***	29.09	3.46***	31.72	2.95***	19.13
12,500-14,999	3.29***	26.93	3.37***	28.97	2.93***	18.76
15,000-19,999	3.02***	20.51	3.07***	21.65	2.66***	14.34
20,000-24,999	2.81***	16.64	2.89***	17.91	2.56***	12.96
25,000-29,999	2.58***	13.25	2.64***	13.99	2.32***	10.17
30,000-34,999	2.34***	10.38	2.38***	10.85	2.13***	8.42
35,000-39,999	2.08***	7.98	2.13***	8.38	1.87***	6.47
40,000-49,999	1.75***	5.74	1.81***	6.09	1.59***	4.90
50,000-59,999	1.32***	6.74	1.35***	3.85	1.19***	3.27
60,000-74,999	0.97***	2.64	0.98***	2.66	0.87***	2.39
Household Structure (Reference: Married Couple)						
Cohabiting			0.48***	1.61	0.28***	1.32
Male Headed			0.27***	1.31	0.08	1.09
Female Headed			0.53***	1.69	0.29***	1.34
Single Person Household			0.14***	1.15	0.16***	1.18
Household with Children			0.72***	2.05	0.39***	1.48
Household Size (Reference: 1 or 2)						
3			0.23***	1.26	0.09*	1.09
4			0.34***	1.41	0.13*	1.14
5 or more			0.78***	2.18	0.42***	1.52
Age of Household Head (Reference: 45-54)						
Less than 25					-0.37***	0.69
25-34					-0.10*	0.91
35-44					0.00	1.00
55-64					-0.37***	0.69

65+			-1.32***	0.27
Race of Household Head (Reference: Non-Hispanic White)				
Non-Hispanic Black			0.39***	1.48
Hispanic			0.19***	1.21
All Other			-0.03	0.97
Household Head NOT a Citizen			-0.04	0.96
Education of Household Head (Reference: High School)				
<High School			0.27***	1.31
Some College			0.09**	1.10
Bachelors or more			-0.48***	0.62
Residence (Reference: Nonmetropolitan)				
Central City			0.15***	1.16
Suburban			0.05	1.06
Not Identified			0.09	1.10
Region (Reference: Northeast)				
Midwest			0.03	1.03
South			0.00	1.00
West			-0.18***	0.84
Household Receives Food Stamps			1.01***	2.74
Year (Reference: 2005)				
2003			0.01	1.01
2004			0.13***	1.13
-2LL, (df)	54994.39, (17)	64026.45, (25)	49353.68, (46)	
R^2_L	0.141	0.186	0.229	
N=89377				

* Indicates the coefficient is statistically significant at p < .05

** Indicates the coefficient is statistically significant at p < .01

*** Indicates the coefficient is statistically significant at p < .001

Table 3. Logistic regression models predicting the likelihood of household food insecurity by household structure

	Married Couple Households		Cohabiting Households		Male Headed Households		Female Headed Households		Single Person Households	
	Parameter Estimates	Odds Ratios	Parameter Estimates	Odds Ratios	Parameter Estimates	Odds Ratios	Parameter Estimates	Odds Ratios	Parameter Estimates	Odds Ratios
Intercept	-4.68***		-3.65***		-5.11***		-2.89***		-4.23***	
Household Head's Work Form (Reference: Single Full-time)										
Not employed	0.28***	1.32	0.36***	1.43	0.31*	1.37	0.13*	1.14	0.33***	1.39
Multiple Jobs	0.26*	1.30	0.63***	1.88	0.12	1.13	0.15	1.17	0.57***	1.76
Part-time	0.24**	1.27	0.23	1.26	0.19	1.21	-0.07	0.94	0.34***	1.41
Varied Hours	0.22*	1.25	-0.16	0.86	0.54*	1.71	0.32*	1.38	0.37***	1.45
Partner's Work Status										
Unemployed	0.11*	1.12	0.41***	1.51	-	-	-	-	-	-
Multiple Jobs	0.30**	1.35	0.20	1.22	-	-	-	-	-	-
Part-time	0.01	1.01	-0.06	0.94	-	-	-	-	-	-
Varied Hours	-0.01	0.99	-0.15	0.86	-	-	-	-	-	-
Income (Reference: $75,000+)										
Less than $5,000	2.72***	15.15	2.66***	14.30	2.98***	19.74	1.99***	7.33	3.29***	26.94
5,000-7,499	2.94***	18.83	2.49***	12.09	3.33***	27.88	2.10***	8.20	3.39***	29.69
7,500-9,999	2.59***	13.31	2.61***	13.65	3.16***	23.62	2.19***	8.94	3.24***	25.47
10,000-12,499	3.00***	20.08	2.30***	9.99	3.15***	23.27	1.94***	6.97	3.25***	25.68
12,500-14,999	2.89***	17.95	2.45***	11.60	2.91***	18.34	2.20***	9.01	3.10***	22.18
15,000-19,999	2.63***	13.85	2.48***	11.98	2.61***	13.54	1.86***	6.42	2.78***	16.16
20,000-24,999	2.52***	12.45	2.05***	7.80	2.98***	19.62	1.76***	5.83	2.65***	14.09
25,000-29,999	2.34***	10.38	1.86***	6.45	2.02***	7.55	1.67***	5.30	2.34***	10.41
30,000-34,999	2.17***	8.76	1.65***	5.20	2.45***	11.59	1.33***	3.77	2.11***	8.22
35,000-39,999	1.86***	6.41	1.88***	6.53	2.04***	7.68	1.23***	3.42	1.63***	5.13
40,000-49,999	1.56***	4.76	1.51***	4.54	1.96***	7.07	0.88***	2.42	1.53***	4.60

50,000-59,999	1.16***	3.18	1.48***	4.38	1.69***	5.41	0.51*	1.66	0.80**	2.24
60,000-74,999	0.86***	2.37	0.73*	2.07	1.27**	3.56	0.30	1.35	0.90**	2.46
Household with Children	0.16*	1.17	0.25	1.28	0.55***	1.73	0.59***	1.81	-	-
Household Size (Reference: 1 or 2)										
3	0.25**	1.29	0.21	1.23	0.03	1.03	0.12	1.13	-	-
4	0.44***	1.55	0.02	1.02	-0.16	0.85	0.15	1.16	-	-
5	0.79***	2.20	0.32	1.37	0.19	1.15	0.16	1.18	-	-
Age of Household Head (Reference: 45-54)										
Less than 25	-0.16	0.85	-0.33*	0.72	-0.22	0.80	-0.55***	0.58	-0.30*****	0.74
25-34	0.06	1.06	-0.38**	0.68	0.07	1.07	-0.15	0.86	-0.01	0.99
35-44	0.02	1.02	-0.02	0.98	0.05	1.06	-0.03	0.97	0.05	1.05
55-64	-0.41***	0.66	-0.60**	0.55	-0.19	0.83	-0.11	0.90	-0.42***	0.66
65+	-1.26***	0.29	-1.52***	0.22	-0.63**	0.53	-0.75***	0.48	-1.55***	0.21
Race of Household Head (Reference: Non-Hispanic White)										
Non-Hispanic Black	0.58***	1.79	0.06	1.07	0.58***	1.80	0.10	1.11	0.54***	1.71
Hispanic	0.20**	1.22	0.47***	1.60	0.25	1.29	-0.05	0.95	0.23**	1.26
All Other	0.07	1.07	0.08	1.08	0.05	1.05	-0.19	0.83	-0.15	0.86
Household Head NOT a Citizen	0.19**	1.21	-0.17	0.85	-0.08	0.92	-0.21*	0.81	-0.50***	0.61
Education of Household Head (Reference: High School)										
<High School	0.28***	1.33	0.12	1.12	0.37**	1.45	0.13	1.14	0.36***	1.43
Some College	-0.13**	0.14	-0.09	0.92	-0.06	0.94	0.06	1.06	0.10	1.10
Bachelors or more	-0.64***	0.53	-0.72***	0.49	0.07	1.08	-0.40***	0.67	-0.35***	0.71
Residence (Reference: Nonmetropolitan)										
Central City	0.14**	1.16	0.02	1.02	0.06	1.07	0.29***	1.34	0.10	1.11
Suburban	0.01	1.01	-0.05	0.95	0.23	1.26	0.08	1.09	0.07	1.07
Not Identified	-0.16	0.85	0.47	1.59	0.77	2.17	-0.46	0.63	0.33	1.38
Region (Reference: Northeast)										
Midwest	-0.01	0.99	0.13	1.14	0.28	1.32	0.03	1.03	-0.03	0.97
South	-0.01	0.99	-0.13	0.88	0.01	1.01	0.05	1.05	0.05	1.05

West	-0.07	0.93	0.02	1.02	-0.02	0.98	-0.32***	0.73	-0.28***	0.75
Household Receives Food Stamps	1.20***	3.32	0.90***	2.45	1.09***	2.98	0.82***	2.28	1.25***	3.48
Year (Reference: 2005)										
2003	0.06	1.06	-0.12	0.88	0.07	1.08	0.02	1.02	-0.05	0.95
2004	0.13*	1.14	0.18	1.20	0.20	1.22	0.07	1.07	0.11*	1.12
-2LL, (df)	18600.93, (46)		3754.60, (46)		2214.17, (42)		9868.71, (42)		14240.06, (36)	
R^2_L	0.240		0.197		0.182		0.161		0.200	
Sample N	46951		5356		2908		9287		24875	

* Indicates the coefficient is statistically significant at p < .05

** Indicates the coefficient is statistically significant at p < .01

*** Indicates the coefficient is statistically significant at p < .001

Appendix

Food Security Core Module

Food Security Core Module: Questions used to assess the Food Security of households in the Current Population Survey

1. "We worried whether our food would run out before we got money to buy more."
   Was that often, sometimes, or never true for you in the last 12 months?

2. "The food that we bought just didn't last and we didn't have money to get more."
   Was that often, sometimes, or never true for you in the last 12 months?

3. "We couldn't afford to eat balanced meals."
   Was that often, sometimes, or never true for you in the last 12 months?

4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn't enough money for food?
   Yes/No

5. (If yes to Question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months.

6. In the last 12 months, did you ever eat less that you felt you should because there wasn't enough money for food?
   Yes/No

7. In the last 12 months, were you ever hungry, but didn't eat, because you couldn't afford enough food?
   Yes/No

8. In the last 12 months, did you lose weight because you didn't have enough money for food?
   Yes/No

9. In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?
   Yes/No

10. (If yes to Question 9) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months.

Questions 11-18 are asked only if the household includes children under 18 years old.

11. "We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food."
Was that often, sometimes, or never true for you in the last 12 months?

12. "We couldn't feed our children a balanced meal, because we couldn't afford that."
Was that often, sometimes, or never true for you in the last 12 months?

13. "The children were not eating enough because we just couldn't afford enough food."
Was that often, sometimes, or never true for you in the last 12 months?

14. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?
Yes/No

15. In the last 12 months, were the children ever hungry but you just couldn't afford more food?
Yes/No

16. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food?
Yes/No

17. (If yes to Question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months.

18. In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food?
Yes/No

SOURCE: (Nord, Andrews, & Carlson, 2004, p. 9)

Appendix Table 1. Sample Distribution, Head's Work Form by Household Structure,
N (percent of column total)

Household Head's Work Form		Household Structure			
	Married	Cohabiting	Male Headed	Female Headed	Single Person
Not employed	14,993 (31.9)	1,202 (22.4)	893 (30.7)	3,318 (35.7)	11,441 (46.0)
Multiple Jobs	2,249 (4.8)	316 (5.9)	110 (3.8)	450 (4.9)	1,087 (4.4)
Full-time	23,312 (49.7)	3,003 (56.1)	1,533 (52.6)	4,152 (44.7)	9,554 (38.4)
Part-time	3,586 (7.6)	516 (9.6)	202 (7.0)	992 (10.7)	1,617 (6.5)
Varied Hours	2,811 (6.0)	319 (6.0)	170 (5.9)	375 (4.0)	1,176 (4.7)
N =	46,951	5,356	2,908	9,287	24,875

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