Family Structure, Work Patterns and Time Allocations: Potential Mechanisms of Food Insecurity among Children

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FINAL REPORT

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EXECUTIVE SUMMARY

Project Goals. Over 469 thousand households in the U.S. experienced very low food security among children, a severe condition characterized by reductions in food intake due to an inability to afford enough food. But food insecurity is not simply about economic resources. There exists a paradox in which some poor households with children are food *secure* while some non-poor households with children are food *insecure*. This study moves beyond a singular focus on income and considers how the family context may protect or generate risk of food insecurity for children. The goals of the proposed project were to: 1) to provide a detailed profile of an understudied group, households with children experiencing very low food security; 2) to consider the food security paradox—households that are poor but food secure, and households that are food insecure but non-poor, and 3) to examine how family context (structure and parental time allocations) is related to food security among households with children.

Data. The study uses multiple rounds of the CPS Food Security Supplement, taking advantage of new cohabitation and parent pointers to explore more refined measures of family structure from the perspective of the child. For the main analysis, data from 2007 through 2010 are pooled, excluding any households surveyed twice due to the 4-8-4 sampling structure of the CPS. The analytic sample (N= 64,860) is composed of children ages 0 to 17 with household-level child food security information and household composition from the child perspective attached. The final research question is addressed by linking multiple years of the American Time Use Survey (ATUS) to the FSS. The American Time Use Survey (ATUS), a nationally representative sample of U.S. household that collects detailed information on family and household composition as well as time diary information on how individuals allocate their time.

Methods. The analytic strategy begins with a descriptive portrait of households (using the pooled FSS) across children's food security status levels 1) high or marginal, 2) low, and 3) very low. Several sets of multinomial logistic regression models are estimated. First, the likelihood of being in a particular food security group was estimated with the full FSS sample in order to assess the independent effects of factors such as family structure and parental work patterns while controlling for other characteristics of the child and household. Further analyses limit the FSS sample to only low income households, to uncover characteristics associated with resiliency or risk, paying particular attention to parental work patterns. The final portion of the project explores the relationship between children's food insecurity (broadly measured) and parental time allocations using linked FSS and American Time Use Survey data.

Results and Implications. The results presented here indicate that children at the most risk of very low food security are more often children being raised in immigrant families. While under a quarter of all children in the United States is the child of an immigrant, a disproportionate amount (40%) comprise the population of children living under the most severe conditions of food insecurity. Results from multivariate models suggest that family structure is a key predictive factor among low-income families. Net of economic and household characteristics, children living with an unpartnered parent or living in a more complex family are at an increased risk of low or very low food security compared with children living in either a 100% biological family or a stepfamily. Notably, mother's work patterns among low-income families are much stronger predictors of children's food insecurity among stepfamilies than in 100% biological

1

families. Other results suggest that disability among adults living with children greatly increases the likelihood of the more extreme form of child food insecurity. Net of individual and household characteristics, children living with a disabled adult have almost three times the odds of living under conditions of very low food security than children living in a household without the presence of a disabled adult.

The exploratory analysis yielded limited results, possibly due to the small sample size of the combined FSS and ATUS sample. Restricting the sample to the shortest time frame between food security interview and the ATUS interview, as well as restricting the sample to include only respondents interviewed on weekdays greatly reduced the explanatory power of the models. However, several findings are worth note. It is reasonable that parents in households in which the children are completely food secure would allocate more time to work; more time spent on work among parents often yields more economic resources. Yet unadjusted differences in the time spent on food preparation and cleanup are higher among parents living with children experiencing any food insecurity regardless of family structure. Once household resources and number of children were controlled for, the relationship between time spent in food preparation and children's food insecurity became marginal at best, and only among two-parent households. Restricting the analysis to employed parents finds that time spent in the care of non-household members may be associated with a higher likelihood children's food insecurity. While these results do not imply that parental time spent in food preparation or care of non-household family members causes childhood food insecurity, it may suggest that parents in food insecure environments use their time differently than do parents in food secure households. Future research will address these issues using more inclusive measures household-level food insecurity.

INTRODUCTION

Food insecurity—the lack of consistent access to adequate amounts of food—remains a reality of many low-income American families. For example, 21.3 percent of U.S. household with children experienced food insecurity during 2009, the highest recorded level since data collection on food security began in 1995 (Nord, Coleman-Jensen, Andrews, & Carlson 2010). Furthermore, over 469 thousand households in the U.S. experienced *very low food security among children*; a more severe condition characterized by a reduction in food intake and a disruption of normal eating patterns due to a lack of resources or income needed to obtain sufficient food (Nord, et al. 2010). It is well established that inadequate financial resources are tied to food insecurity (e.g., Bickel et al. 2000; Nord et al. 2009), but food insecurity is not simply about economic resources. There exists a paradox in which about half of poor households with children are food *secure* while 16% of non-poor households with children are food *insecure* (Nord et al. 2010). Therefore, this study moves beyond a singular focus on income and considers how the family context may protect or generate risk for children.

American family life has become more complex. Children increasingly experience single parenthood, divorce, cohabitation, and re-partnering (Cherlin 2010). At the same time, families have to work more hours to maintain their standard of living, putting intense pressure on allocation of family time (Presser 2003; Grosswald 2003). A growing number of parents are working nonstandard schedules (Presser 2003; Liu, Wang, Keelser, & Schneider 2010; Hecker 2001), and are required to spend time in activities outside the home (Bianchi 2000; Gershuny 2000). Prior studies find that less stable families are linked to food insecurity among children (e.g., Alaimo, Olson & Frongillo 2001; Manning & Brown 2006). Yet, these studies do not capture the full range of family experiences. Additional indicators of family context, parental work patterns and time constraints, are associated with family functioning (Strazdins, Korda, Lim, Broom, & D'Souza 2004) and have consequences for household-level food insecurity (Coleman-Jensen 2010). However, prior studies have not considered the ways that parental time allocations may contribute to or reduce the risk of food insecurity among children. From a policy perspective, it is important to understand the possible barriers to food security imposed by parental work patterns and time allocations given current governmental efforts to eliminate childhood food insecurity by 2015.

The goals of this project are threefold: 1) to provide a detailed profile of an understudied group, children experiencing very low food security; 2) to consider the food security paradox—households that are poor but food secure, and households that are food insecure but non-poor, and 3) to examine how family context (structure and parental time allocations) is related to food security among children. This project is innovative by relying on recent data to understand the family circumstances of children in the most need (the most food insecure). At the same, this study considers resiliency in terms of assessing the family characteristics and parental time use practices of households facing material hardship (low family income), yet whose children are protected from the harsh conditions of food insecurity.

BACKGROUND

<u>Public health significance of very low food security.</u>

At least 2.6 million or nearly 7 percent of households with children experienced very low food security in 2008; a condition characterized by reductions in food intake due to an inability to afford enough food (Nord, et al. 2009). Food insecurity has been related to lower levels of general physical health (Cook, Frank, Levenson et al. 2006; Kirkpatrick, McIntyre, & Potestio 2010; Frank, Casey, Black et al. 2010) and health related quality of life (Casey, Szeto, Lensing et al. 2005) as well as a variety of poor health outcomes among children including anemia (Eicher-, Miller, Mason, Weaver et al. 2009; Skalicky et al. 2006) and asthma (Kirpatrick et al. 2010). Food insecurity among children has also been associated with delayed academic and cognitive development (Winicki & Jemison 2003; Alaimo, et al. 2001; Howard 2011; Cook & Frank 2008; Jyoti et al 2005: Rose-Jacobs et al. 2008), higher probabilities of anxiety and aggression (Whitaker et al, 2006; Slopen, Fitzmaurice, Williams & Gilman 2010), as well as increased behavioral problems (Slack & Yoo 2005; Huang, Matta Oshima, & Kim 2010; Slopen et al. 2010).

Much on the research on possible causes of food insecurity among children has focused on economic correlates (e.g., job loss, unstable income), with many studies focusing on the ameliorative effects of food programs (e.g., SNAP, school breakfast and lunch programs, food pantries) or on family characteristics (e.g., family disruption, disability). Little research has examined in detail the more severe condition of *very low food security* in children, partly because of limited samples in small data collections. A large data collection is required to provide a comprehensive assessment and capture variation among the very low food secure. As efforts are made to target and develop support programs for at-risk populations, other lines of research have focused on the work-family spillover related to food preparation and nutrition choices (Devine et al. 2009; Jabs et al. 2007), and on the relationship between nonstandard work forms and household food security (Coleman-Jensen 2010).

<u>Family Structure and Children's Food Insecurity</u>

Prior research has focused on the relationship between family structure and children's food security (e.g. Alaimo et al. 2001; Manning et al. 2006; Nord, Andrews, & Carlson 2003), establishing that children residing in single parent or cohabiting families are more likely to experience material hardship such as food insecurity than are children living in married couple families. Indeed, recent estimates provided by the USDA support this pattern. Half of all families experiencing the more severe form of food insecurity—very low food security among children— were headed by a single mother. Interestingly, a sizeable minority (40%) of these households were headed by a married couple (Nord et al. 2010). And yet, because rates of remarriage, re-partnering and multiple partner fertility are high (Kennedy & Bumpass 2008; Kreider & Fields 2002; Kreider 2006; Ventura 2009; Raley & Bumpass 2003; Stewart 2007) children are increasingly likely to live in two-parent families in which they are not the biological children of the mother's new partner (Coleman, Ganong, & Fine 2000; Hogan & Goldscheider 2001; Hofferth 2006). It is important to consider the relationship between more complex family structures (i.e., step families, complex families, etc.) and patterns of food insecurity because

4

there is some evidence that household resources are allocated to children differently based on family type (Garasky, et al. 2009; Evenhouse & Reilly 2004; Anderson, Kaplan & Lancaster 2001). For example, research by Case, Lin and McLanahan (1999) found that children in stepfamilies are at greater risk by receiving fewer food allocations than are children in biological families.

In this report, family structure considered from the perspective of the child. This is important because recent research has demonstrated that family-type categorization may depend on the unit of analysis (Brown & Manning 2009; Balistreri et al. 2009). The consideration of the relationship between the child and just the household head may indicate that children are living in a married couple family, but taken from the child's perspective, that family may be categorized as a stepfamily. The new 'cohabitation and parent pointers' on the CPS-FSS—which identifies the spouse or cohabiting partner of each adult in the household, and establishes the type of parent for each child (biological parent, step parent, adopted parent)—provides the opportunity to analyze the prevalence and depth of food insecurity among households with a more refined measure of family structure. This is a significant contribution to understanding the well-being of children who are not reared solely by their biological parents, and a possible contributing factor behind the food security paradox.

Time use and food security paradox

Not all poor children are food insecure, and not all food insecure children are poor—50% of households with food insecurity among children are not poor whereas 12% of food secure households are poor (Wight, Thampi, & Briggs 2010). While other factors such as sudden job loss (Gundersen & Gruber 2001), family change (Hofferth 2004), loss of welfare benefits (Kabbani & Kmeid 2005; Van Hook & Balistreri 2006) or a lack of health insurance (Rose 1999) have been found to increase the risk of food insecurity, recent research has suggested that nonstandard work forms (i.e., part-time, multiple jobs, etc.) may influence household-level food security beyond the effects of income (Coleman-Jensen 2010). However, the possible mechanisms that relate complex work and family schedules to food insecurity remain unclear. It may be that time constraints associated with work hours or other commitments outside of the household influence the ability of parents to procure adequate food for their children beyond the limits imposed by income.

While much sociological research on parental time constraints has focused on children's health and development (e.g., Bianchi 2000; Sayer, Bianchi & Robinson 2004, Kimmel & Connelly 2007; Hofferth 2006; Davis & You 2010; Kalenoski, Ribar & Stratton 2007), a significant body of predominately qualitative research has explored the role of parental time constraints on family food choices and management skills (e.g., Devine et al. 2009; Jabs et al. 2007). A common finding from this literature points to a trade-off between time and money—parents struggle to find ways to balance their complex work schedules with food coping strategies. Yet few studies have examined the differential allotment of time use or work patterns across family structures and what the role that may play on levels of children's food insecurity.

RESEARCH DESIGN

The current project evaluates whether complex family structure and mechanisms of time constraint are associated with the food security among children by asking several sets of research questions. First, how do the combination of individual and household characteristics and circumstances ameliorate or exacerbate the likelihood of childhood food insecurity or hunger? And second, what combination of family or child characteristics distinguishes between low-income children who experience very low food security and those who do not? And finally, are parental work schedules associated with child food insecurity?

The goal of the analysis is to evaluate whether differences are evident across family structures, controlling for the socio-demographic characteristics of children and families. Special attention is paid to work patterns among parents because they are the most proximate to economic well being and may be related to children's food security. The final stage of the research takes a unique exploratory approach by linking food security status to parental information on time allocations and work schedules. Differences are estimated in parental time spent on activities such as child care, care for family members outside of the household, transportation, and work across child food security groups, and explore whether parental time constraints may contribute to the food security among children.

Data and Sample

To address the first two sets of research questions, this project uses multiple years of the Current Population Survey, Food Security Supplement (FSS). The FSS includes a wide range of questions on food-related problems, perceived dietary inadequacy, reductions in food intake and frequency of hunger. These data are particularly well suited for studying very low food security in children because it is the only large, recently collected, national-level dataset that allows for the exploration of an important but relatively uncommon phenomenon (In 2008 just 1.2% of US households with children, one or more children experienced very low food security (Nord et al. 2010)). For the main analysis, data from 2007 through 2010 are pooled, excluding any households surveyed twice due to the 4-8-4 sampling structure of the CPS. The analytic sample is composed of children ages 0 to 17 with household-level child food security information and household composition from the child perspective attached. Children are excluded who are themselves the household head, the spouse or cohabiting partner of the household head or are foster children from the analyses. The final analytic sample includes 64,860 children with valid child food security information.

The final research question is addressed by linking multiple years of the American Time Use Survey (ATUS) to the FSS. The American Time Use Survey (ATUS), a nationally representative sample of U.S. household that collects detailed information on family and household composition as well as time diary information on how individuals allocate their time. One respondent from each household is randomly selected to complete the time diary which asks for a detailed account of the respondent's activities beginning at 4:00 am on the previous day and ending at 4:00 am on the day of interview. The ATUS was established to measure how people allocate their time across a range of activities and is well suited for examining the scheduling of work hours within family life because it captures detailed estimates of time spent in paid work,

and nonmarket activities (e.g., childcare, care of non-household members, food production, etc.). The ATUS are available annually from 2003 to 2011. Because the ATUS and the FSS are selected from the same sample, the ATUS data can be linked to a subset of responses from the FSS to obtain information on the child food security status of the household.

To be included in the linked FSS-ATUS analytic sample, the parent respondent must be a household head or the spouse or cohabiting partner of the household head with an own child under age 18 residing in the household. To have a better understanding of the relationship between children's food insecurity and parental time use, the linked file is restricted to the smallest lapse of time between the December FSS responses and the ATUS responses (i.e., only FSS respondents in the 5 through 8th month are matched). Further, only ATUS respondents that completed the diary during a weekday are included. The analytic sample includes 2,012 fathers and 2,974 mothers with valid responses on child food security status and time use data. Estimates for this analysis are weighted using replicate weights provided by the ATUS. Replicate weights supplied by the BLS are used at to correct for non-response and to adjust for over sampling of weekend days.

Measures

Children's food security status. The key dependent variables are categories of child food security status based on the number of affirmative responses to the USDA Food Security Scale child-specific questions: complete food security among children (0 affirmative responses), marginal food security among children (1 affirmative response), low food security (2-4 affirmative responses) and very low food security (5+ affirmative responses). For some analyses a dichotomous indicator of child food insecurity is constructed in which *child food insecure* is indicated by two or more affirmative responses, and *child food secure* is indicated by 0 or 1 affirmative responses.

Family Structure. Prior research on food security among children has typically measured family structure based on the current marital status of the household head (i.e. married couple, single mother), or the presence of an unmarried partner (cohabiting household) which ignores stepfamilies. The new cohabitation and parent pointers included in the CPS (beginning 2007) enable a more complete depiction of family structure from the perspective of the children. For example, children living with a mother and a step-father would have been previously identified as simply a married couple household, rather than a step family. Furthermore, the new indicator permits assessments of partial sibship structure in the household (i.e., children all with same biological mother and father, children with same biological mother but not father, etc). To identify family structure from the perspective of the child several steps were taken.

First, a child level file was constructed which includes information on each person identified as a mother or father (i.e., identifying line number, type of parent, identifying number for parent's spouse/cohabiting partner, etc).   It is relatively straightforward to consider the combination of parents for only one child (e.g., two biological parents, one biological parent and one step parent, etc), but for households with more than one child it is necessary to examine the full range of family structures experienced by all children in the household. For example, one child may be residing with two biological parents but another child in the same family may be residing with his or her biological mother and step father. In households with more than one child, it was

determined whether each child shares not only the same mother and/or the same father, but also whether each child shares the same parent type (i.e., step or biological). [For the purposes of this analysis adoptive parents are combined with biological parents]. The majority of children reside in primary families, that is, in families in which there are just one father and/or one mother.

To establish family structure categories it was necessary to establish a list of criterion for inclusion in distinct categories. When each child in the household shares the same two biological parents the household is termed a *100% biological family* or *original family*. Children are living in a *stepfamily* when at least one child in the household has an identified step mother or step father. Following Manning and Brown (2011), stepfamilies are further categorized in which children have only one identified parent (most often the mother) but that parent reports residing with a spouse or cohabiting partner. A third category of child-focused family structure includes unpartnered mothers and fathers. This includes households in which children have at least one parent who does not have a cohabiting partner or spouse listed on the household roster. A fourth category, *complex family* consists of children living in households with no parents or stepparents as well as households in which there are multiple mothers or multiple fathers. For the purposes of this report, family structure is limited to these four groups in order retain the statistical power necessary to explore the relatively rare condition of very low food security among children.

Parental work Similar to Coleman-Jensen (2010), mutually exclusive categories of work are created in the pooled FSS sample including 1) full time work, 2) part time work (less than 35 hours per week), 3) varied hours or multiple jobs, 4) unemployed, and 5) not in the labor force for reasons other than disability, and 6) not in labor force because of disability.

Time allocations To uncover how time spent in various activities influences the probability that children in the household are experiencing food insecurity, parental time use is examined. Special attention is paid to time spent on activities previously found to influence parents' subjective reports of time constraints such as commuting time, care for household and non-household members, food preparation and time spent in paid work (Mothersbaugh, et al. 1993; Hamermesh & Lee 2007; Heymann 2000; Presser & Cox 1997). To address the final research question, a person-minute file is created using the linked ATUS-FSS data indicating what each parental respondent is doing for each of the 1,440 minutes in a day. This file structure allows time intervals to be selected to explore nonstandard work schedules following research such as Presser (2003), Mills and Taht (2010), and Wight et al. (2008). Time diary data is limited to those collected on weekdays. A parent is considered working a standard schedule when the majority of work is reported to occur between the traditional hours of 8 a.m. and 6 p.m. during the week (Monday through Friday). A parent who works a majority of hours outside of those traditional hours during the week is coded as working a nonstandard job.

Covariates
Race and ethnicity of the child is measured as four mutually exclusive categories: non-Hispanic white, non-Hispanic black, non-Hispanic other and Hispanic of any race. Children are identified as the child of an immigrant if they or one of their parents are foreign born. Several household composition characteristics are included that have been found in previous research to influence food insecurity; the number of children in the household, the presence of a preschool age child, the presence of a disabled adult in the household, and education level of household head. The

presence of a grandparent is also included. This was determined in two ways: 1) if any child in the household had a parent who also had an identified parent on the household roster and 2) if a child was identified as being the grandchild of the household head on the relationship roster.

To measure parents' economic resources, reported household income to poverty ratio and household head educational attainment is used. Education was specified as having a high school degree or higher. The ratio of income to poverty indicator that is available on the public use Food Security Supplement is included as three categories: low-income with a ratio less than 185% of the poverty line, above low-income with a ratio at or above 185% for household size; and missing income.

RESULTS

What are the living arrangements of children, from their perspective?

Table 1 reports descriptive statistics for the sample of children by family structure. From the child's perspective, less than 59% of children live in 100% biological families, 13% reside in a step family, and 22% live with an unpartnered mother or father. The remaining 7% are living in what is best described as complex families in which children are often residing with only their grandparent with no parents present or they are living in a household with multiple families. Among children living in the 'traditional' family structure of biological parents and full siblings, 15% are living under conditions of marginal food security or worse, while over a quarter (26%) of children living in stepfamilies face comparable food security conditions. Roughly 60% of children in unpartnered parent or complex households live below 185% of the poverty line. Both unpartnered and complex families propose a great deal of risk for children's food security.

What are the characteristics of children experiencing very low food insecurity?

Table 2 reports descriptive statistics (frequencies, means, and standard deviations) for our sample of children (n= 64,860); providing overall means, as well as separate means by the level of child food security experienced. Over one out of five (21.6%) children experience some form of food insecurity, whether marginal, low or very low. Almost 11% of children experienced low food security and an additional 1.3% very low food security. Results in Table 2 underscore family structure as a key protective factor among children. Just over third of children living under the most severe food conditions reside in a two-parent 100% biological family compared with roughly two-thirds of children living in completely food secure homes. Children living under conditions of very low food security are more likely to reside with unpartnered parents (42%) compared with children living in more food secure households. Further, children living under conditions of any food insecurity are also more likely to live in a stepfamily or other more complex family. Clearly higher levels of economic resources are associated with better food security among children, yet it is important to note that not all children living in conditions of food risk are low income (defined here as living in a household with an income to poverty ratio of less than 185%)—13 % of children living under conditions of low food security and 10% of very low food secure children are living above the low-income cut point. On the other hand, a third of children residing in fully child-food secure households are below the 185% threshold.

What are the patterns of the food security paradox among children?

Table 3 presents the weighted descriptive statistics for the analytic sample of children separately by income and child food security groups. Given sample size constraints, children's food security is collapsed into a dichotomous indicator with *child food insecure* defined as children experiencing low or very low food insecurity, and *food secure children* defined as experiencing marginal food insecurity or complete food security. Again, children are considered *low-income* when they live in households at or below 185% of poverty. Children living in households with missing income are excluded from the analysis. Roughly 11% of children live in resilient households—low income but maintaining food security among children—yet, roughly two out of five (39%) children suffer from the combined effects of low-income and food insecurity. Just fewer than half of children in the United States live in a fully protected household with incomes above 185% of poverty and are food secure, while 2% of children live in households with comparable incomes but are experiencing low or very low food security.

Regardless of income category, children who live with unpartnered parents, children who are minorities, children living in a household with a disabled adult or in a household with higher number of persons are more likely to experience low or very low food security. Among children living in low-income households, living in an immigrant family is associated with child food insecurity. No protective factor was found among children who are living with a grandparent. These unadjusted differences suggest that among low-income families, resiliency is connected to the presence of both biological parents, however, no protective effect was found among low-income children living in stepfamilies. Yet, in higher income households, living in a stepfamily is associated with significantly higher likelihood of experiencing food insecurity.

What combinations of individual and household characteristics ameliorate or exacerbate the likelihood of childhood food insecurity or hunger?

Multinomial logistic regression was used for the multivariate analysis. The multinomial logistic regression model is appropriate for modeling categorical dependent variables with more than two possible outcomes (DeMaris 1992). These methods use maximum-likelihood estimates to predict the likelihood of being in certain categories of a given variable, relative to a reference category. The dependent variable consists of the detailed child's food security status with categories of *completely food secure, marginally food secure, low food secure* and *very low food secure*. Three models are presented in Table 4. The first model includes family structure categories and child characteristics (age, race/ethnicity and child of immigrant status); the second includes economic characteristics (ratio of income to poverty and parent or household heads education); the final model includes other household compositional characteristics (any children under age 5 in the household, the presence of a disabled adult in the household, the presence of a grandparent, and the total number of children) along with dummy indicators of survey year.

Relative odds ratios are presented which may be interpreted as the change in odds of being in one category versus the comparison category for a one-unit change in an independent variable. For example, Table 4 Model 1 shows that compared with children living in 100% biological families (the omitted category), those in stepfamilies are 2.22 times more likely to experience low food security than be completely food secure net of child characteristics of age, race/ethnicity and child of immigrant status. The corresponding figures for children living with unpartnered parents and in complex families are 3.29 and 2.59, respectively. Focusing on the more severe condition of very low food security, it can be seen that children living in stepfamilies have 59% higher odds of experiencing very low food security compared with

children in 100% biological families. Children living with unpartnered parents have odds of very low food security that are 3.36 times that of children living in their original families (100% biological).

Given that inadequate financial resources are tied to children's food security, Model 2 includes key economic indicators of parental education and ratio of income to poverty. The odds of very low food security among children living in households headed by a high school graduate are about three quarters of those experienced by children living in households headed by a non-high school graduate. The odds of very low food security are reduced dramatically when household poverty level is controlled for. The difference between stepfamilies and 100% biological families reduces to zero, yet the risks associated with living with an unpartnered parent or living in a more complex family form are still evident. Model 3 includes key household characteristics that have been found to influence household food security in prior research. Overall, the coefficient estimates associated with the socioeconomic and demographic variables are all statistically significant and are in the expected directions. Compared to children living above 185% of poverty, low income children are more likely to experience low or very low food security than be completely food secure. Older children, minority children and children living in immigrant households are more likely to experience very low food security net of household economic resources and compositional characteristics.

Children's risk of very low food security is further exacerbated with the presence of a disabled adult in the household—the odds of very low food security among children living with a disabled adult are 2.96 times higher than comparable children living without. Children living in households with higher average number of children are also at elevated risk of very low food security, yet children residing in a household with a grandparent are at reduced risk of very low food security. More specifically, children living with a grandparent in the household have odds of very low food security that are about half that of those children living in a household without a grandparent. However, prior work by Ziliak and Gundersen (2009), find that among adults ages 60 and over, the presence of a grandchild in the household is associated with a higher probability of food insecurity. It may be that this relationship is reflected in the positive association between complex family status and children's food insecurity, given that a majority of complex families are headed by grandparents. The protective effect of any grandparent in the household found in the present analysis is based on a measure of both the relationship to the household head and the relationship pointers of the child's parents. It may be that this measure is picking up some resiliency associated with the presence of an extended family. It is noteworthy that net of family structure, economic and household characteristics, children of immigrant families are 70% more likely to be living under the harshest conditions of food insecurity compared to children from native families.

Given food insecurity, what characteristics are associated with very low food security?

The last column in Table 4 presents Model 3a which presents the odds ratios for children experiencing very low food security relative to low food security.   Results suggest that, given food insecurity, children who are Hispanic are 67% more likely to live in a household characterized as deeply food insecure compared to non-Hispanic white children. Comparable figures for non-Hispanic black and other racial groups also experience 67% and 60% higher odds of being in the depths of food insecurity compared with low food security. A higher average

number of children and the presence of a disabled adult in the household increase the likelihood that a child living under conditions of food insecurity are experiencing the more severe form. For example children living with a disabled adult in a food insecure household are 50% more likely to be very low food secure compared to those children living without a disabled adult in the household. Given food insecurity and controlling for all other economic and household characteristics, children living in a stepfamily are on average 32% less likely to experience the more severe form of food insecurity than are 100% biological families. This seemingly counterintuitive result—that is, stepfamilies serving as protection against the deeper form of food insecurity compared with 100% biological families, stems from the concentration of children from immigrant families living under the most severe conditions of food insecurity along with the higher concentration of 100% biological families among immigrant families. Children living in immigrant families have a 47% higher risk of falling into deep food security given any food insecurity compared with children from native families.

What characteristics are associated with very low child food insecurity among low-income families?

To understand one dimension of the food security paradox—how do some low-income households manage to protect children from food insecurity while others do not—a parallel analysis was conducted, but restricted to only children in low-income families. Results are shown in Table 5. The results suggest similar patterns as above with minority children and children from immigrant families exhibiting higher odds of all forms of child food insecurity. Net of individual, economic (here measured with just household head education) and household characteristics, low-income children living in 100% biological families are more protected from marginal and low food security than are children in other family forms. Among low-income children, there are no statistical differences in the odds of experiencing very low food security between children living in stepfamilies and 100% biological families. A question arises from these results—do low-income children living in stepfamilies have lower risk of very low food security than children living in unpartnered or more complex families? The answer is yes. Net of individual and household characteristics (Model 3), low-income children living with unpartnered parents or in complex families have odds of very low food security that are 2.59 and 1.86 times higher than children living with stepfamilies.

The last column in Table 5 again presents the odds ratios for children experiencing very low food security relative to low food security. Given food insecurity, low-income Hispanic children, non-Hispanic black children and children of immigrants, all have significantly higher odds of experiencing the harshest form of food insecurity among children. A disabled adult in a low-income household increases the odds of very low food security among children by a factor of 1.31 relative to low food security. Net of other characteristics, children living in low-income households with a young child are somewhat protected from falling into very low food security (odds ratio = .716) relative to complete food security, and are protected from very low food security (odds ratio=.735) given any food insecurity.

How might parental work patterns exacerbate or protect children from low or very low food security?

The focus remains on low-income families but to consider a full range of parental work patterns, it is necessary to collapse the categories of low and very low food security given the relatively small population of children living in very low food secure conditions. A binary logistic regression model (Table 6) was estimated predicting whether children are food insecure (low or very low) or are marginally or completely food secure. Family structure-specific models were estimated to understand whether the association between parental work patterns and child food insecurity might vary by family structure. Work forms for mothers and fathers in 100% biological families and stepfamilies were included, but either mothers or fathers work form were included in models for children living with unpartnered parents. For models on children in complex families, the work form of the household head is included. Children living with unpartnered fathers are considered as a separate, albeit small category from children living with unpartnered mothers. Work forms are mutually exclusive categories of full-time, part-time (less than 35 hours per week), varied hours or multiple jobs, not in the labor force for reasons other than disability, and out of the labor force due to disability. These models include all other socio-demographic and economic indicators from the Model 3 in Table 5, but only the coefficients for work forms are presented.

For the most part among 100% biological families, having a father in any other work form than full-time is a strong predictor of children's food insecurity among low-income families. Among low-income 100% biological families, father's part-time employment, unemployment, non-participation in the labor force (for reasons other than disability) and his disability are related to higher odds of food insecurity among children. Having a mother who is disabled, unemployed, working part-time, or working varied hours is also associated with higher odds of food insecurity among children in comparable families. However, the odds of food insecurity are no different when having a mother who is not in the labor force (for a reason other than disability) than having a mother who works full-time, net of individual and household characteristics. Subsequent tests reveal that all work forms with the exception of full-time are associated with higher risks of food insecurity among children.

Among stepfamilies the pattern changes; mother's work patterns are much stronger predictors of child food insecurity and fathers work patterns are somewhat weaker. Children living in stepfamilies with fathers who are unemployed are significantly more likely to be food insecure than children living in stepfamilies in which the father is employed full time (odds ratios of 1.99). Mother's unemployment, varied employment, or non-participation in the labor force are all related to higher odds of food insecurity among children, but working part-time not related to children's food security.

For children living with unpartnered mothers, unemployment, disability and a mother who is not active in the labor force all increase the odds of food insecurity relative to children in comparable families with a full-time working mother. For example, low-income children living with an unpartnered mother who is unemployed face 37% higher odds of food insecurity than children whose mother is employed full-time. Among children living with an unpartnered father, few differences exist between the likelihood of food insecurity and father's work patterns. After controlling for individual and household characteristics, the odds of food insecurity among low-income children living with unpartnered fathers who are engaged in the labor force only part-time is roughly a quarter that of comparable children with father's working full time.

13

Alternatively, low-income children who are living with an unpartnered father who is not in the labor force are much more likely to experience food insecurity. The results for children living in complex families suggest that non-standard work hours, either working multiple jobs or varied work hours, leads to a significantly higher likelihood of child food insecurity. For most low-income children, living in households with a parent, stepparent or household head that is out of the labor force due to disability significantly increases the odds of food security. Overall, results suggest that children living with mothers in non-standard work forms may influence children's food security beyond the effects of income.

How are parental time allocations related to any food insecurity among children?

To move forward our understanding of child food security, an additional exploratory analysis of the linked FSS and ATUS data was conducted. Because the ATUS is a subsample of the FSS, cell sizes are too small to examine very low food security among children. Initial results indicated few observable differences in parental time allocations between low (and very low) and marginal children's food security. Consequently, the present analysis distinguishes between households with children experiencing complete food security and marginal or worse food security. The linked file contains 4,289 parent respondents living with children in complete food security, and another 697 experiencing marginal food security.

To uncover how time spent in various activities is associated with the probability that children in the household are experiencing food insecurity, parental time use is divided into categories of activities previously found to influence parents' subjective reports of time constraints such as travel time, care for household and non-household members and time spent in paid work (Mothersbaugh, et al. 1993; Hamermesh & Lee 2007; Heymann 2000; Presser & Cox 1997). Following prior research, estimates are provided for two-parent households separately from single parent households. Unfortunately, it is not possible to distinguish between step and 100% biological families due to small sample sizes of the linked sample (i.e., limiting the analysis to 2007 and later).

Table 6 presents estimates of the average hours (minutes divided by 60) spent by parents in two-parent households and single-parent households by the broad definition of child food security (marginal or worse distinguished from completely food secure). *Personal care* includes time spent on sleep, grooming, etc. A separate category of *personal health care* was distinguished from the total amount of time spent in personal care. *Household activities* are those done by parents to maintain their household such as cooking, cleaning, repairs, etc. A separate category of time spent in *food preparation*, a subcategory of household activities, is also included. *Care of household members* includes activities associated with care of adults and children in the household, while *care of non-household members* includes activities associated with caring for any adult or child who is not present in the household. *Work* captures the time spent at one's job or working in income generating activities. *Travel time* includes any time spent traveling for work or any other reason.

In both two-parent and single parent households with children, parents in food secure households spend more time at work during the week than do parents in households in which children are experiencing any food insecurity. In addition, unadjusted differences show that parents in

households characterized by food insecurity among children spend slightly more time in food preparation and clean up than do parents in food secure environments. There is an indication that among single-parent families, those living in households in which children are food insecure have more demands on their time for personal health care and other household activities.

Logistic regression models (Table 7) stratified by family structure were estimated that included parental time allocations bust controlled for gender of the parent, total number of children in the household and family income. Results suggest that time allocated toward food preparation in two-parent households has only a marginal relationship with children's food insecurity. Parent's time allocated toward their own health care is significantly related to an increased likelihood of children's food security broadly measured; however the opposite is true among two-parent households. Finally, increasing levels of personal care (non-health) time allocation is significantly related to the likelihood of children's food insecurity in two-parent families. A subsequent analysis was conducted on a restricted sample of employed parents who were sampled on a weekday and who did some paid work on their diary day. A measure of nonstandard work hours of the respondent parent was included along with controls for gender, total number of children in the household and household income. Results suggest that among two-parent households, time spent by parents on the care of non-household members is significantly related to the odds of child food insecurity.

DISCUSSION

Food insecurity—the lack of consistent access to adequate amounts of food—remains a reality of many low-income American families. Over one in five children currently experience some form of food insecurity and an additional 1.3% experience very low food security, a more severe condition characterized by a reduction in food intake and a disruption of normal eating patterns. The purpose of this study was to examine key individual and family characteristics related to the condition of very low food security among children in the United States and to understand how the increasing complexity of family life may be associated with parent's ability to provide a food secure environment for their children.

The results presented here indicate that children at the most risk of very low food security are more often children being raised in immigrant families. While under a quarter of all children in the United States is the child of an immigrant, a disproportionate amount (40%) comprise the population of children living under the most severe conditions of food insecurity. This falls in line with prior research which has found that immigrant families are more likely to experience household-level food insecurity than native families (Chilton, Black, Berkowitz, et al. 2009; Capps, Horowitz, Fortuny, et al. 2009) and that food insecurity is higher among more recently arrived immigrant parents and those who have fewer English language skills (Capps, Ku, Fix et al. 2002). Results also indicate that inadequate financial resources are tied to food insecurity among children, yet some households are resilient. Over three-quarters of children living in low-income households (at or below 185% of the poverty line) do not experience low or very low food security.

Results from multivariate models suggest that family structure is a key predictive factor among low-income families. Net of economic and household characteristics, children living with an

unpartnered parent or living in a more complex family are at an increased risk of low or very low food security compared with children living in either a 100% biological family or a stepfamily. Marital and cohabitation status of the parents is explored but was omitted from the final report because of a small comparative sample of children living with cohabiting 100% biological parents. Future research using a more broad measure of household food security status will allow for a full examination of differences by union status. The possible association that parental work patterns have with children's food security was examined. Notably, mother's work patterns among low-income families are much stronger predictors of children's food insecurity among stepfamilies than in 100% biological families. Among low-income families, having a non-disabled mother who is out of the labor force has different effects among 100% biological and stepfamilies. Future work will attempt to understand how combined patterns of parental work might influence food risk above and beyond economic resources. Future analysis will also explore if variations in marital status of original and stepfamilies is associated with low or very low food security among children, along with the presence of a biological shared child in the case of stepfamilies. Other results suggest that disability among adults living with children greatly increases the likelihood of the more extreme form of child food insecurity. Net of individual and household characteristics, children living with a disabled adult have almost three times the odds of living under conditions of very low food security than children living in a household without the presence of a disabled adult.

The exploratory analysis yielded limited results, possibly due to the small sample size of the combined FSS and ATUS sample. Restricting the sample to the shortest time frame between food security interview and the ATUS interview, as well as restricting the sample to include only respondents interviewed on weekdays greatly reduced the explanatory power of the models. However, several findings are worth note. It is reasonable that parents in households in which the children are completely food secure would allocate more time to work; more time spent on work among parents often yields more economic resources. Yet unadjusted differences in the time spent on food preparation and cleanup are higher among parents living with children experiencing any food insecurity regardless of family structure. Once household resources and number of children were controlled for, the relationship between time spent in food preparation and children's food insecurity became marginal at best, and only among two-parent households. Restricting the analysis to employed parents finds that time spent in the care of non-household members may be associated with a higher likelihood children's food insecurity. While these results do not imply that parental time spent in food preparation or care of non-household family members causes childhood food insecurity, it may suggest that parents in food insecure environments use their time differently than do parents in food secure households. Future research will address these issues using more inclusive measures household-level food insecurity.

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Table 1: Sample Frequencies and Means, by Child Family Structure.

	100% Biological	Stepfamily	Unpartnered Parent	Complex Family
All children	58.62	13.21	21.61	6.56
Child Food Security				
Completely Food Secure	85.61	74.13	64.92	67.79
Marginally Food Secure	7.02	11.95	13.93	13.82
Low Food Security	6.55	12.76	18.58	16.26
Very Low Food Security	0.82	1.16	2.58	2.13
Child Characteristics				
Race/ethnicity				
Hispanic	20.55	22.06	23.58	31.08
NonHispanic White	64.10	57.58	38.44	36.37
NonHispanic Black	6.66	12.94	32.08	23.99
NonHispanic Other	8.70	7.42	5.90	8.56
Child of Foreign Born Parent(s)	27.44	18.34	13.76	26.66
Child age	8.13	9.07	8.88	8.74
	(5.21)	(5.23)	(5.22)	(5.44)
Child is male	51.41	50.21	51.27	49.72
Economic Characteristics				
Household Income				
<$14,999	4.72	10.25	28.77	17.71
$15,000 to 29,999	9.90	15.01	22.04	19.19
$30,000 to 49,999	14.82	20.11	16.53	17.46
$50,000 to 99,999	30.67	29.73	13.41	20.68
>$100,000	25.03	11.88	3.51	7.20
Missing Income	14.87	13.01	15.73	17.76
Income to Poverty Ratio				
Below 185%	31.24	49.74	62.48	58.39
Above 185%	53.90	37.25	21.78	23.85
Missing Income	14.87	13.01	15.73	17.76
Household Head Educational Attainment				
Less than High School	11.15	16.02	19.63	30.17
High School or some college	49.95	67.59	64.92	56.44
4-year college or higher	38.91	16.40	15.45	13.39
Household Characteristics				
Average number of children	2.32	2.76	2.26	2.59
	(1.14)	(1.27)	(1.21)	(1.52)
Average number of adults 18 and over	2.24	2.30	1.58	2.69
	(.599)	(.686)	(.967)	(1.39)
Disabled adult in HH	3.58	8.08	10.43	19.36
Presence of grandparent in HH	4.05	6.74	18.34	49.85
Presence of preschool aged child in HH	51.35	52.16	47.22	55.67
Unweighed number of cases	38,642	8,878	13,307	4,033

Standard deviations on means are in parentheses. All figures are weighted by adjusted person weight.

Table 2: Sample Frequencies and Means, by Child Food Security Status (Pooled 2007-2010 FSS).

		Child Food Security Level			
	Total	Completely Secure	Marginal	Low	Very Low
Total	100	78.45	9.61	10.61	1.33
Child-perspective Family Structure					
100% Biological Family	58.62	63.97	42.82	36.22	36.13
Step Family	13.21	12.48	16.43	15.88	11.50
Unpartnered Parent	21.61	17.88	31.31	37.84	41.58
Complex Family	6.56	5.67	9.44	10.06	10.50
Child Characteristics					
Race/ethnicity					
Hispanic	22.09	18.96	30.60	35.00	42.40
NonHispanic White	55.87	60.87	42.33	35.56	21.15
NonHispanic Black	14.12	11.94	20.54	22.61	28.68
NonHispanic Other	7.91	8.23	6.52	6.83	7.76
Child is Foreign Born	3.64	3.32	4.14	4.79	9.43
Child of Foreign Born Parent(s)	23.23	21.74	25.60	30.00	40.08
Child age	8.46	8.44	8.17	8.69	9.51
	(5.25)	(5.27)	(5.13)	(5.11)	(5.3)
Child is male	51.11	51.01	51.16	52.09	48.54
Economic Characteristics					
Household Income					
<$14,999	11.50	7.67	21.07	28.43	33.42
$15,000 to 29,999	13.81	10.27	24.83	27.08	36.62
$30,000 to 49,999	16.06	14.72	22.67	20.36	13.20
$50,000 to 99,999	26.16	29.24	17.77	13.21	8.55
>$100,000	17.48	21.69	3.27	1.20	1.10
Missing Income	15.00	16.41	10.39	9.73	7.11
Income to Poverty Ratio					
Below 185%	42.22	33.24	71.32	77.08	83.43
Above 185%	42.79	50.35	18.29	13.19	9.46
Missing Income	15.00	16.41	10.39	9.73	7.11
Household Head Educational Attainment					
Less than High School	14.87	11.71	23.32	28.38	32.32
High School or some college	55.94	53.97	64.98	61.59	61.53
4-year college or higher	29.19	34.32	11.71	10.02	6.15
Household Characteristics					
Average number of children	2.38	2.30	2.58	2.73	3.03
	(1.21)	(1.18)	(1.23)	(1.29)	(1.57)
Average number of adults 18 and over	2.14	2.161	2.049	2.039	2.106
	(.835)	(.795)	(.881)	(1.01)	(1.13)
Disabled adult in HH	6.69	5.00	10.83	13.90	18.88
Presence of grandparent in the HH	10.49	10.03	12.55	11.92	11.58
Presence of preschool age child in HH	50.84	49.84	55.86	54.26	46.84
Unweighted number of cases	64,860	51,342	6,040	6,631	847

Standard deviations on means are in parentheses. All figures are weighted by adjusted person weight.

Table 3: Characteristics of children by food security and income status, weighted means and percentages.

	Household Income <185%		Household Income ≥185%	
	Food Secure	Food Insecure	Food Secure	Food Insecure
All Children	11%	39%	49%	2%
Child-perspective Family Structure				
100% Biological Family	48%	36%	75%	53%
Step Family	15%	16% ᵃ	11%	15%
Unpartnered Parent	30%	40%	10%	26%
Complex Family	9%	11%	4%	5% ᵃ
Child Characteristic				
Race/ethnicity				
Hispanic	31%	39%	11%	21%
NonHispanic White	43%	31%	72%	52%
NonHispanic Black	19%	24%	7%	19%
NonHispanic Other	8%	6% ᵃ	9%	9% ᵃ
Child of Foreign Born Parent(s)	28%	33%	17%	19% ᵃ
Child age	7.81	8.62	8.71	9.65
Child is male	51%	51%	51%	54%
Economic Characteristics				
Household Income				
<$14,999	24%	37%	-	-
$15,000 to 29,999	32%	36%	-	-
$30,000 to 49,999	34%	22%	6%	18%
$50,000 to 99,999	10%	4%	52%	72%
>$100,000	-	-	42%	9%
Household Head Educational Attainment				
High school graduate	76%	68%	97%	93%
Household Characteristics				
Average number of children	2.65	2.87	2.08	2.20
Average number of adults 18 and over	2.12	2.04	2.15	2.01
Disabled adult in HH	10%	16%	2%	5%
Any Grandparent in Home	13%	12% ᵃ	7%	8% ᵃ
Unweighed number of cases	21,485	5,913	28,995	1,028

Note: Two-talied tests of a significant difference between food secure and food insecure are noted as follows: All differences within income group are significant unless noted with a.

TABLE 4: Results from multinomial logit models (odds ratios) predicting child's food security.

Variable	Marginal Food Security			Low Food Security			Very Low Food Security			Low to Very Low
				Versus Completely Food Secure						
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 3a
Stepfamily	1.933 **	1.516 **	1.485 **	2.217 **	1.705 **	1.629 **	1.587 **	1.245	1.106	0.679 *
Unpartnered Parent	2.295 **	1.597 **	1.662 **	3.285 **	2.204 **	2.374 **	3.363 **	2.271 **	2.541 **	1.071
Complex Family	2.134 **	1.562 **	1.664 **	2.591 **	1.811 **	1.987 **	2.367 **	1.671 **	1.771 **	0.891
Hispanic (any race)	2.057 **	1.450 **	1.448 **	2.488 **	1.633 **	1.622 **	4.373 **	2.704 **	2.710 **	1.671 **
NonHispanic Black	1.817 **	1.453 **	1.443 **	2.098 **	1.621 **	1.590 **	4.342 **	3.239 **	3.128 **	1.967 **
NonHispanic Other	1.078	1.027	1.024	1.238 **	1.173 *	1.163 *	2.073 **	1.943 **	1.856 **	1.596 **
Child of Immigrant	1.065	0.920	0.936	1.317 **	1.105 *	1.155 **	1.820 **	1.536 **	1.699 **	1.472 **
Child age	0.989 **	1.001	0.998	1.008 **	1.022 **	1.016 **	1.043 **	1.058 **	1.027 *	1.012
Low Income		4.506 **	4.217 **		5.846 **	5.127 **		7.489 **	5.711 **	1.114
Income Missing		1.472 **	1.405 **		1.696 **	1.579 **		1.481	1.232	0.781
High School Graduate (head)		0.803 **	0.814 **		0.705 **	0.732 **		0.729 **	0.797 *	1.089
Any children < 5 years in HH			0.998			0.980			0.634 **	0.647 **
Disabled adult in HH			1.510 **			1.973 **			2.960 **	1.500 **
Any grandparent in HH			0.768 **			0.631 **			0.569 **	0.902
Number of Children in HH			1.054 **			1.135 **			1.368 **	1.206 **
Model Chi Square (df)	3671.7	6463.9	6889.90							
Degrees of Freddom	24	33	54							
Log pseudolikelihood	-43537.5	-40941.4	-40557.2							

Note: N=64,860 children. Marginal, low and very low compared to completely secure

p ≤.01**; p ≤ .05 *

25

TABLE 5: Results from multinomial logit models (odds ratios) predicting child's food security among low income families.

Variable	Marginal Food Security			Low Food Security			Very Low Food Security			Low to Very Low
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 3a
Stepfamily	1.333 **	1.322 **	1.309 **	1.550 **	1.531 **	1.461 **	1.024	1.012	0.909	0.622 **
Unpartnered Parent	1.371 **	1.359 **	1.407 **	1.919 **	1.891 **	2.027 **	2.173 **	2.142 **	2.357 **	1.163
Complex Family	1.403 **	1.372 **	1.498 **	1.797 **	1.729 **	1.891 **	1.769 **	1.702 **	1.690 **	0.893
Hispanic (any race)	1.365 **	1.311 **	1.318 **	1.593 **	1.487 **	1.474 **	2.312 **	2.153 **	2.119 **	1.437 *
NonHispanic Black	1.318 **	1.313 **	1.309 **	1.452 **	1.440 **	1.411 **	2.744 **	2.720 **	2.585 **	1.832 **
NonHispanic Other	0.965	0.971	0.969	1.042	1.053	1.030	1.515 *	1.530 *	1.430	1.388
Child of Immigrant	0.968	0.939	0.953	1.207 **	1.147 **	1.213 **	1.571 **	1.496 **	1.675 **	1.380 *
Child age	1.002	1.002	0.993	1.025 **	1.025 **	1.017 **	1.062 **	1.062 **	1.039 **	1.021
High school graduate (head)		0.840 **	0.841 **		0.752 **	0.777 **		0.754 **	0.822	1.058
Any children < 5 years in HH			0.899			0.974			0.716 **	0.735 **
Disabled adult in HH			1.382 **			1.995 **			2.617 **	1.312 *
Any grandparent in HH			0.742 **			0.620 **			0.671 **	1.083
Number of Children in HH			1.035 *			1.125 **			1.332 **	1.184 **
Model Chi Square (df)	756.2	809.2	1143.3							
Degrees of Freedom	24	27	48							
Log pseudolikelihood	-27066.4	-27033.5	-26762.8							

Notes: Sample restricted to those with household income to poverty ratio less than 185%, N=24,399

p ≤.01**; p ≤ .05 *

TABLE 6: Logistic regression results (odds ratio) of low-income children's food insecurity (low and very low).

	100% Biological Family	Step Family	Unpartnered Mother	Unpartnered Father	Complex Family[a]
Father's work form					
Part time	1.525 **	1.097		0.225 *	1.353
Varied/Multiple	1.114	1.149		0.293 #	2.444 *
Unemployed	1.966 **	1.989 **		1.277	1.887
NILF	1.442 **	0.927		2.570 *	1.289
NILF-disabled	3.093 **	1.301		1.526	2.536 *
(Full time- reference category)					
Mother's work form					
Part time	1.341 **	1.130	1.167		
Varied/Multiple	1.510 **	2.041 **	0.787 #		
Unemployed	1.541 **	1.875 **	1.370 **		
NILF	0.995	1.672 **	1.202 *		
NILF-disabled	4.048 **	4.995 **	1.964 **		
(Full time- reference category)					
N	11,962	4,509	7,821	695	2,412
Wald Chi Square	462.62	215.13	180.28	41.91	93.88
Degrees of freedom	24	24	18	18	18

Note: a. Household head work form.

All analyses weighted with adjusted person weights.

All models include individual and household characteristics shown in Model 3 Table 4.

$p \leq .01$**; $p \leq .05$ *; $p \leq .10$ #

TABLE 7: Parents time(hours) in select activites by household structure and children's food security status

Parents Activity	Two-Parent Family		Single Parent Family	
	Food Secure	Marginal/Low/ Very Low	Food Secure	Marginal/Low /Very Low
Personal Care	8.49	9.07 **	8.94	9.17
Personal health care	0.03	0.03	0.02	0.17 #
Household Activities	1.24	1.42	0.97	1.39 **
Food Preparation	0.64	0.84 **	0.65	0.88 **
Care of Household Members	1.36	1.29	1.33	1.47
Care of Non-Household Members	0.09	0.11	0.16	0.14
Work	5.67	4.65 **	5.19	3.68 **
Travel	1.40	1.31	1.38	1.25
Unweighted N	3,575	385	714	312

Note: Estimates from the combined 2001-2010 Food Security Supplement and 2003 to 2011 American Time Use Survey. Replicates weights are applied.

Tests of significance comparing within household groups, $p \leq .01$ **; $p \leq .05$ *; $p \leq .10$#

TABLE 8: Results from logistic regression (coefficients) of parental time use on children's food security status.

	All Parents		Employed Parents	
	Two-parent Household	Single-parent Household	Two-parent Household	Single-Parent Household
Personal Care	0.135 **	0.001	0.181 **	-0.043
Personal health care	-0.245 #	0.493 *	-0.608	0.147
Household Activities	0.005	0.099 #	-0.060	0.141
Food Preparation	0.157 #	0.059	0.196	-0.032
Care of Household Members	-0.033	-0.036	0.003	-0.011
Care of Non-Household Members	0.015	-0.086	0.395 *	-0.440
Work	-0.004	-0.045	-0.006	-0.051
Travel	0.077	-0.020	0.076	-0.052
Intercept	-5.563	-2.200	-5.696	-2.215
N	3582	914	2505	596
Log Likelihood	-938.53	-515.69	-616.20	-310.42

Note: Estimates from the combined 2001-2010 Food Security Supplement and 2003 to 2011 American Time

$p \leq .01$ **; $p \leq .05$ *; $p \leq .10$ #