Impacts of an Unconditional Cash Transfer on Household Food and Nutrition Security in Malawi

Kristen N. Brugh,¹ Gustavo Angeles,¹ Peter Mvula,² and Maxton Tsoka²

Abstract

Unconditional cash transfers are rapidly becoming a cornerstone of African social protection programs and government policies, growing in response to the intergenerational transmission of poverty, chronic hunger, and low levels of human capital accumulation. This paper contributes to the African unconditional cash transfer evidence-base by examining the impact of the Malawi Social Cash Transfer Program on household food and nutrition security. Beneficiary households are selected through a community-based targeting committee that identifies households that are ultra-poor and labor-constrained. The bimonthly transfer amount varies by household size and the number of household members enrolled in school. This study uses longitudinal data from the experimental, mixed-methods, cluster-randomized impact evaluation of the Malawi SCTP in Salima and Mangochi districts. The baseline survey was conducted in 2013 prior to village cluster randomization into treatment and delayed-entry control groups, and the first follow-up survey was completed in January 2015. We find that the program had a small impact on current economic vulnerability to food insecurity, and that program impacts on economic vulnerability were stronger for the poorest households, households with children ages 0-17, and household with transfer shares of at least 20 percent of baseline consumption. The SCTP also has a strong protective effect on diet quality during the lean season, with beneficiary households consuming more calories than control households, being less likely to be food-energy deficient, and having lower hunger gaps among households that are energy deficient. We do not find strong impacts on diet quality. Several program impacts are moderated by baseline poverty level and distance to the nearest food market, but we do not find evidence of overall heterogeneous program impacts by caregiver health knowledge. Households with higher transfer shares tend to have stronger impacts, especially for indicators of diet quantity.

Acknowledgements

The Malawi SCTP Impact Evaluation is government led, and is being executed by The University of North Carolina at Chapel Hill and the Center for Social Research at University of Malawi. The impact evaluation consists of a baseline survey with two follow-up surveys. The baseline and first follow-up are funded by UNICEF, the German Government through KfW, Irish Aid, and FAO, and the International Initiative for Impact Evaluation (3ie) and the European Union (EU) are providing additional funding for the second follow-up survey. The members of the evaluation team are Sara Abdoulayi, Gustavo Angeles, Clare Barrington, Kristen Brugh, Sudhanshu Handa, Mary Jane Hill, Kelly Kilburn, Frank Otchere, and Diana Zuskov from UNC-CH; Peter Mvula and Maxton Tsoka from CSR-UNIMA; and Luisa Natali from the UNICEF Office of Research. Thanks to the excellent research team at the Center for Social Research, and to the Malawian households that gave their time and interest to be interviewed for this study.

Draft Version: Please do not cite or distribute without permission. Prepared for APPAM Fall 2015 Research Conference. Corresponding author: Kristen Brugh (knbrugh@live.unc.edu)

¹ University of North Carolina at Chapel Hill, Chapel Hill, NC, USA
² Center for Social Research of the University of Malawi, Zomba, Malawi
1. Introduction

This year marks the conclusion of the Millennium Development Goals (MDGs) timeline and the launch of the 2015-2030 Sustainable Development Goals (SDGs). The SDGs include 17 goals and 169 targets; the first goal is to “end poverty in all its forms everywhere”, and the second goal aims to “end hunger, achieve food security and improved nutrition and promote sustainable agriculture.” While progress has been made in reducing poverty and hunger in recent decades, substantial problems persist. Globally, nearly one billion people continue to live in extreme poverty (less than US$1.25 per capita per day), and 795.6 million are undernourished. Social protection systems play a critical role in promoting household welfare and food security. In this study, we describe the impact of the Government of Malawi’s Social Cash Transfer Program (SCTP) on household food and nutrition security (FNS) among ultra-poor and vulnerable households.

2. Background

Considerable gains in poverty reduction and FNS have been made since the inception of the MDG era. The share of people living in extreme poverty in developing countries has decreased from 43 percent in 1990 to 17 percent in 2015, and the global prevalence of undernourishment declined by 216 million people (from 19 percent to 11 percent) despite a concurrent 1.9 billion increase in the global population. Yet almost one billion people still live below US$1.25 per day. Most of the extreme poor live in rural areas, and the rural poor are more likely than other rural households to rely on agriculture for. Currently, 11 percent of the global population is undernourished (795.6 million), and the majority of the undernourished live in developing regions (779.9 million, 12.9 percent). Nearly two billion people experience “hidden hunger”, or micronutrient deficiency, and 749 million are estimated to be calorie deficient. As most of the world’s regions have experienced declining poverty and undernutrition rates, sub-Saharan Africa has seen little progress. Half of the population in sub-Saharan Africa is extremely poor, and just under one in four people is undernourished (220 million). Sub-Saharan Africa has the highest regional prevalence of undernourishment, and the number of undernourished actually increased by 44 million between 1990 and 2015.

A person’s life chances are shaped from a very early age, and so poverty and early child malnutrition are of critical concern because of their mutually reinforcing relationship over the life-course. More than one-third of the global extreme poor are children under age 13, and half of all children in low-income countries live in extreme poverty. The cycle of poverty often starts with poor nutrition, particularly in early childhood. Nearly half of young child mortality can be linked to malnutrition, which is associated with an increased likelihood of death from common childhood ailments such as diarrhea, malaria, and pneumonia. Over one-third of the global burden of disease among young children is also associated with undernutrition. As highlighted by the public health community’s focus on the “first 1,000 days of life” (the 1,000 day window from conception through the first two years of life), the nutritional status of women of reproductive-age also has important implications for young child health. The health of the mother at conception and during pregnancy is critical for healthy fetal growth and development. A 2008 analysis of data from five long-standing prospective cohorts and a review of findings from many other published studies found that both maternal and child undernutrition are related to adult health outcomes and reduced human capital accumulation, with negative effects spanning up to three generations. Malnourishment in early childhood has been linked with a reduced cognitive capacity, lower levels of educational attainment, and reduced adult economic productivity. These poor initial conditions are frequently difficult to overcome.
While empirical evidence of catch-up growth among children has been inconclusive, largely because of longitudinal data limitations, recent research has found that catch-up growth among children in low-income countries is possible even after the first 24 months, and longitudinal data from Africa and Southeastern Asia demonstrate that catch-up growth can occur from ages three to five years, and again during adolescence, even in the absence of interventions. These findings suggest that improvements in FNS throughout childhood, adolescence, and even adulthood in the case of pregnant women, can reduce the burden of malnutrition and its sequela, helping to improve an individual’s life chances.

2.1. Operationalizing Food and Nutrition Security

The food security terminology currently in use was adopted from the 1996 World Food Summit to highlight the multiple facets of food security and to establish the four pillars of food security: availability, accessibility, utilization, and stability. The Food and Agriculture Organization (FAO) of the United Nations defined food security as existing when “all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” Since that time, the concept has evolved from the recognition that nutrition is an intrinsic component of food security. Frakenberger, Oshaug, and Smith defined nutrition security as “… a nutritionally adequate diet and the food consumed is biologically utilized such that adequate performance is maintained in growth, resisting or recovering from disease, pregnancy, lactation, and physical work.” The combined term “food and nutrition security” (FNS) is now the common language used by prominent international agencies, including the United Nations High Level Task Force on Global Food Security, FAO, UNICEF, and the International Food Policy Research Institute (IFPRI).

Given the complexity and multidimensionality of the concept, a range of indicators are typically employed to characterize FNS. Food security indicators reflect diet quantity, whereas nutrition security indicators tend to describe diet quality. Examples of diet quantity indicators include the number of meals eaten per day and household daily food energy available per capita. Diet quality, in addition to quantity, is increasingly recognized as a major constraint for the poor. Quality metrics include household diet diversity of the major food groups and the percent of household food energy derived from staple foods. The percent of total household expenditures on food represents a measure of current economic vulnerability to food insecurity.

2.2. Poverty and Food and Nutrition Security

The poor are particularly vulnerable to hunger and food insecurity because they often live just above or at subsistence levels, and even small shocks will move them closer towards destitution. The majority of the poor and hungry live in rural areas and tend to rely on smallholder agriculture, particularly in sub-Saharan Africa where seasonality is a major contributor to food and nutrition insecurity. Food prices follow a predictable seasonal pattern, starting low after the April-May harvest and peaking during the “hungry season” months of January-March. Strong seasonal variation in food prices have been found to be a major determinant of child malnutrition in Malawi and Niger. Poor rural smallholder households are also vulnerable to shocks including spikes in prices for agricultural inputs, declining prices of agricultural production, and adverse weather events such as floods or droughts that can cause harvest failure. Vulnerability can increase over time if
these households face repeated or multiple shocks. Inflation, high food prices, and price volatility are also significant threats to FNS.

When confronted with difficulties in purchasing food, poor households result to coping strategies which can be harmful and further exacerbate the cycle of poverty. These adverse coping strategies often include reducing diet quantity or compromising diet quality by switching towards cheaper calorie sources, or selling productive assets and taking children out of school to buy food. A key function of social safety nets is to prevent poor households from resorting to these detrimental coping mechanisms.

2.3. The Cash Transfer Response

Social protection strategies are increasingly being employed to reduce household vulnerability to extreme poverty and improve FNS. The prominence of social safety net programs in government welfare strategies grew largely in response to the negatively reinforcing relationship between poverty and low levels of human capital accumulation. Social safety net programs are those “… programs comprising of non-contributory transfers in cash or in-kind, designated to provide regular and predictable support to poor and vulnerable people.” As of 2015, every country in the world has at least one social assistance program; 130 countries are currently providing unconditional cash transfers and 63 countries are providing conditional cash transfers that include a focus in promoting FNS.

2.3.1. Cash Transfers in Latin America and the Caribbean

In late 1997, the government of Mexico launched PROGRESA (formerly Oportunidades, now Prospera), a conditional cash transfer (CCT) to alleviate immediate and short-term consumption poverty, encourage human capital development among children, and to break the intergenerational transmission of poverty. Soon after, other countries in Latin America and the Caribbean – and then around the world – began implementing national CCTs to improve poverty, food insecurity, and help households protect themselves against risks and shocks. CCTs are typically targeted towards households with young and school-age children in poor regions. They provide cash and sometimes in-kind transfers. Transfers are usually given directly to the mother or caretaker, and beneficiary households must commit to undertaking co-responsibilities to receive the transfers (e.g., keeping their children in school, attending preventive care visits, etc.). While cash transfers are demand-oriented interventions, many programs in Latin America concurrently developed the supply environment, helping to ensure that beneficiaries could meet their co-responsibilities and invest transfer money in their children and health by improving education and health service infrastructure.

The positive impacts of the CCT schemes in Latin America and the Caribbean are well-documented in large part because many of the programs were accompanied by experimental impact evaluations. These first generation evaluations demonstrated short- and long-term positive effects on consumption, poverty reduction, food security and dietary diversity, and many also led to increased use of preventive and curative health care services.

PROGRESA was found to have a positive impact on consumption and food expenditures; on average, CCT households spent 60 to 70 percent of the transfer on food and consumed 7.1 percent more calories compared to control households. Households receiving Nicaragua’s Red de Protección Social increased annual per capita food expenditures and diet diversity, and during a food
crisis the program prevented worsened food security among beneficiaries.\textsuperscript{11,32} Familias en Acción in Colombia, Bolsa Familia in Brazil, and the Family Allowance Program in Honduras were also shown to improve diet diversity.\textsuperscript{11} Cash transfer beneficiary households in Colombia, Ecuador, Mexico, and Nicaragua were found to spend more on food and health out of the transfer income than from general household income sources, even when the transfer programs were not directly linked to nutrition and health.\textsuperscript{33}

\subsection*{2.3.2. Cash Transfer Programs in Africa}

Social protection programs, particularly cash transfers, are rapidly becoming a cornerstone of African development programs and government policies. The African Union adopted the Social Policy Framework for Africa in 2008, which promotes the codification of social protection coverage into national development agendas.\textsuperscript{24} In 2010, unconditional cash transfer programs were operating in about half of the countries on the African continent. As of 2015, 40 out of 48 African countries are implementing some form of unconditional cash transfer (UCT) as a component of social safety net programming.\textsuperscript{28} Unlike their Latin American counterparts, cash transfers in sub-Saharan Africa tend to be unconditional (some programs have ‘soft’ conditions), beneficiary targeting is at the community-level, and targeting is usually linked to geographical or vulnerability-based eligibility criteria.

Despite the short time in which they have been in operation, positive impacts on consumption, food security, and health outcomes have been documented for several sub-Saharan UCT programs. A pilot social cash transfer scheme in the Kalomo district of Zambia was associated with significantly improved food security, diets, and nutritional status among beneficiaries.\textsuperscript{34} A 24-month impact evaluation of Zambia’s Child Grant Program – which is one of the largest governmental social protection programs in the country – attributed improved household consumption, food security, and diet diversity to the program. The study found that three-fourths of the increase in consumption among beneficiary households was for food, and households were substituting away from inferior foods towards protein.\textsuperscript{35} The Kenya CT-OVC Evaluation Team found that, as a result of the cash transfer program, beneficiary households had higher expenditures for food, health, and clothing, and allocated more of their food budget on meat, fish, and dairy.\textsuperscript{36,37,38} No impact on consumption was found in the evaluation of Ethiopia’s Productive Safety Net.\textsuperscript{39,40}

\section*{3. The Malawi Context}

Malawi is one of the poorest countries in the world. In 2013, the Government of Malawi (GoM) reported a per capita Gross National Income of $715 (2011 PPP$), the third lowest out of 187 countries after the Democratic Republic of the Congo and the Central African Republic.\textsuperscript{41} Poverty is widespread throughout the country, as evidenced by high poverty headcount ratios and poverty gaps. In 2010, 51 percent of Malawians were living below the national poverty line, with a poverty gap of 19 percent. At that time, 62 percent of the population was living below the international benchmark of $1.25 per day, with an associated gap of 26 percent. The percentage of people living below the national poverty line decreased by two percentage points between 2004 and 2010, but the national poverty gap increased by one percentage point;\textsuperscript{42} thus, while relatively fewer people are living in poverty, the poor are getting poorer. Undernourishment, though improving, also remains widespread. From 1990-1992, 33 percent of the population was undernourished (4.3 million people), compared to 21 percent (3.6 million) in 2014-2015.\textsuperscript{3}
Food security problems among the poor in Malawi can be largely attributed to high lean season food prices, especially for the price of maize, which is the dominant food staple. Most Malawians earn their livelihood via agriculture; over 85 percent of the population resides in a rural area, and 89 percent of the labor force works on smallholder farms or commercial estates. The HIV/AIDS epidemic in Malawi has also been a key driver of poverty and associated food insecurity. A high prevalence of HIV/AIDS increased household vulnerability and reduced coping capacities, particularly after the death of a household head or main income earner. Although Malawi still has a generalized HIV epidemic, the prevalence is declining. Among people 15-49 years of age, the prevalence has decreased from 16 percent in 1999 to 11 percent in 2010.

3.1. Previous Social Protection Programs

Several social protection programs have been implemented in Malawi since the late 1990s to improve food and nutrition security. Earlier projects tended to focus on agricultural production under the rationale that it is more cost effective and sustainable to subsidize food production than food consumption; more recent projects tend to give cash and in-kind transfers. In 1998, the GoM launched the Starter Pack program, which gave 2.8 million farmers a package containing fertilizer and maize and legume seeds. The program was found to significantly reduce the food gap. The Starter Pack program was scaled down and rebranded as the Targeted Inputs Program (TIP) in 2000. Later, in 2005, the GoM launched the Farm Input Subsidy Program, which helped vulnerable smallholders to access improved fertilizer and hybrid seeds with the aim of improving household food security.

Several small-scale cash transfer programs were introduced in 2005/2006. Oxfam implemented an unconditional cash transfer of US$26/month to 6,000 households in one district for five months as a complimentary intervention to humanitarian food aid following extreme weather events that reduced the national maize harvest by 25 percent. Households receiving the program were reported to have spent 80-85 percent of the transfer on food. The Dowa Emergency Cash Transfer Project adjusted cash transfer payments monthly based on local food prices to allow households to maintain purchasing power during a localized drought in 2006. In 2005-2006, Concern Worldwide provided a “food plus cash” package, basing transfer amounts on household size and adjusting the cash component monthly in accordance with changes in local prices. An evaluation of the program found that, in addition to food, the cash was also used to meet other non-food needs, including the purchase of productive assets. Lastly, the Malawi Cash and Food for Livelihoods Pilot provided a mixed food and cash transfer program to 11,000 households in southern Malawi from October 2008 to May 2009. Households were randomly assigned to receive cash, food, or a mixed cash/food transfer in exchange for working in the construction of community assets. The evaluation found that households receiving cash had improved food consumption and diversity.

3.2. The Malawi Social Cash Transfer Program

The Government of Malawi’s Social Cash Transfer Program (SCTP) is an unconditional cash transfer program targeted to ultra-poor, labor-constrained households. Key objectives of the program include reducing poverty and hunger and increasing school enrollment rates. The program is administered by the Malawi Ministry of Gender, Children, and Social Welfare with additional
oversight provided by the Ministry of Economic Planning and Development and technical support from UNICEF Malawi.\textsuperscript{48}

The program was first implemented in 2006 as a pilot in Mchinji district. The 2007-2008 impact evaluation of the Malawi SCT Pilot Scheme provided evidence of positive results of the pilot project on household food security, curative care seeking, and education.\textsuperscript{48,49} A 2008 prospective, longitudinal qualitative study found that – prior to the implementation of the Mchinji SCT pilot program – respondents reported lacking food and basic necessities and being destitute and frequently sick. The majority of respondents reported improved nutrition and food security and being able to provide adequate food for children after receiving the cash transfer.\textsuperscript{50} Results from the quantitative impact evaluation demonstrated that beneficiary households consumed twice as many food groups and were more likely to eat higher quality foods compared to control households.\textsuperscript{51}

The SCTP has undergone changes in targeting and operations and has experienced significant expansion since 2009, now reaching 18 out of 28 districts in Malawi. By March 2015 the SCTP was operating at full scale in 10 districts and reached over 100,000 households, with plans to enroll over 175,000 households by the end of 2015.\textsuperscript{48} Households are eligible for the program if they are ultra-poor and labor-constrained. A household is considered to be ultra-poor if it is unable to meet the most basic urgent needs, including food and essential non-food items (e.g., soap and clothing). A labor-constrained household has no ‘fit to work’ members or the ratio of ‘unfit’ to ‘fit’ is greater than three; household members are ‘unfit’ if they are younger than 18 or older than 64, or if they are age 18 to 64 but have a chronic illness, disability, or are otherwise unable to work.

A community-based approach is used to select beneficiary households. Community members are appointed to Community Social Support Committees (CSSC). Each CSSC compiles a list of households that meet the eligibility criteria, and after further screening the list is condensed to include a target coverage rate of the poorest 10 percent of households in each village cluster (VC). Oversight is provided by the District Commissioner’s Office and the District Social Welfare Office, which implements a proxy means test to impose the ultra-poor eligibility condition.\textsuperscript{48}

The cash transfer amount varies by household size and the number of household members enrolled in primary and secondary school. Prior to May 2015, a single-person household received a monthly cash benefit of Mk 1,000, a two-person household received Mk 1,500, a three-member household received Mk 1,950, and households with four or more members received Mk 2,400. The household receives an additional Mk 300 for each member age 21 years and younger enrolled in primary school and Mk 600 for members age 30 and younger enrolled in secondary school. Transfer amounts were increased starting in May 2015, after midline data collection was complete.\textsuperscript{48}

4. Theory of Change

The theoretical framework for how the Malawi SCTP can affect household FNS is guided by the basic economic theory of household demand, including insights from Engel, Bennett, and Deaton. Because they lack the resources to meet even their most basic needs on a daily basis, poor households are vulnerable to hunger and chronic poverty-related food insecurity.\textsuperscript{24} Poor households spend a larger share of their total expenditures on food and have a higher income elasticity of demand for food.\textsuperscript{52} In addition to analyzing income expenditure on food, it is also helpful to study household demand of different food groups such as cereals and tubers compared to meats and dairy products. Results from a study of food consumption patterns in Mozambique found that rural
households in the poorest quintile actually showed expenditure elasticities for staples foods such as cereals, maize, and cassava of greater than unity. Because poor households have higher expenditure elasticity for food and a higher marginal utility for calories, they are predicted to choose a diet which maximizes caloric content given their budget constraints. As staple foods are the least expensive source of calories, poor households tend to spend most of their food budget on cereals and tubers. When a poor household’s budget is increased, after meeting a critical caloric quantity threshold, purchases can be expected to shift towards more expensive foods with improved caloric quality such as fruit, vegetables, and meat.

Unconditional cash transfer programs can promote food and nutrition security by expanding the household’s budget to improve both the quantity and quality of calories consumed. The regularity and predictability of the cash transfer payment can help families to meet immediate consumption needs, and then begin investing in their children’s human capital development, access credit, and save. The exogenous inflow of cash can also bridge household consumption shortages and protect household assets from being liquidated at distress prices in order to prevent hunger, which is particularly important as poor households have difficulty replacing assets lost during a food crisis.

The Malawi SCTP enters the household demand function through its income effect on the household budget constraint; as a result of the transfer, beneficiary households will have more disposable income. Any potential impact of the transfer program on household food and nutrition security must work through the household’s spending decisions. Accordingly, the household must use transfer resources to improve levels and quality of consumption to improve FNS. Beneficiary households’ marginal propensity to consume food is a key factor in predicting the transfer’s relative effectiveness on FNS outcomes. Beneficiary households are so poor that their marginal propensity to consume is likely to be close to 100 percent, meaning that they are expected to spend all of the transfer rather than save it or use it to pay down debt. Therefore, the first round of SCTP impacts is expected to be on household consumption, particularly for basic items such as food. Over time, once households have been able to meet their basic needs, additional monthly transfers can induce households to switch to higher quality foods.

Household demand for food follows Engel’s Law, according to which as income (consumption expenditure) increases, the household decreases its budget share of food. Household demand for staple foods follows Bennett’s Law, which reflects the average household’s desire for diet diversity. As income increases, the households reduces the budget share of starchy staple foods, substituting away first from low quality towards finer grains, and then away from grains/carbohydrates toward fruits, vegetables, dairy, and especially meat. From these two theories, we expect the SCTP to induce households to increase consumption, but reduce their food share, and for households to decrease the proportion of food expenditures directed toward starchy staples and increase the proportion spent on other food groups such as fruits, vegetables, and meat. These hypotheses can be tested using indicators for household expenditures on food, the household’s food share, food group shares, a diet diversity indicator, caloric quantity, and the proportion of calories the household obtains from staple foods.

We might expect the ultra-poor (those consuming below the food poverty line) to spend almost all income on food, because food is the “first necessity”. However, this is not always the case, even when households are consuming below subsistence levels Households make trade-offs between food and other non-food essential items, health, and education. Also, while we may expect food
expenditures to increase, we may not necessarily see an improvement in caloric quality because households also care about non-nutrient characteristics of food, including taste and variety.  

4.1. Potential Effect Modification and Heterogeneous Program Impacts

Given that certain community, household, and caregiver characteristics have been shown to exert differential effects on household consumption and FNS, there are multiple reasons why we can expect heterogeneous impacts of the Malawi SCTP. The local supply environment is essential to the success of cash transfers in promoting food and nutrition security. If the poor cannot access markets or if they face volatile prices and high inflation, direct food and other in-kind transfers may be more effective than cash programs. Hoddinott and Skoufias found that PROGRESA’s impact on increased food expenditures reflected increased diet quality instead of increased caloric consumption, and attributed this to the nutrition education component of the programs conditions.  

The impacts of the SCTP on household welfare may differ by the transfer level itself. A recent World Bank review of global cash transfer programs reported that the relatively low levels of transfers provided by social safety nets are generally insufficient to allow the poor to escape poverty. On average, the transfers are 23 percent of poor households’ consumption level, but the Bank estimates that the average level of consumption among poor households globally is 34.8 percent below the international $1.24/day poverty line. Because the direct and indirect impacts of the SCTP depend upon the purchasing power of the transfer, and given that the Malawi program is not indexed with inflation (i.e., the real value of the transfer is decreasing over time), it is important to assess the level of program impacts that can be expected from current transfer levels.

5. Methods

5.1. Study Design and Data Collection

This study uses baseline and midline follow-up data from the Impact Evaluation of the Malawi SCTP in Mangochi and Salima districts, which is being conducted on a larger scale than the 2007-2008 Mchinji Pilot Scheme. Some of the key evaluation questions are whether the SCTP improves consumption, reduces food insecurity, and increases diet diversity among beneficiary households. The impact evaluation uses a mixed methods, longitudinal, experimental study design. The quantitative component is based on a difference-in-differences experimental design and uses both random selection of study locations (at the traditional authority and village cluster levels) and random assignment of village clusters into treatment and control groups.

The Malawian Ministry of Gender, Children, and Social Welfare decided to integrate an impact evaluation into the planned expansion of the SCTP into Mangochi and Salima districts, which were scheduled for scale-up in early 2013. Two traditional authorities (TAs) were randomly selected from each. Village clusters (VCs) were then randomly selected from each TA; 14 VCs were selected in Mangochi and 15 in Salima, for a total of 29 study VCs. The process for selecting households to be interviewed at baseline was slightly different between the two districts. Mangochi VCs typically had large numbers of selected households, so eligible households were randomly selected for interview. Salima VCs had smaller numbers of selected eligible households, and so all eligible households were
interviewed. A total of 1,756 households were interviewed in Mangochi and 1,775 households were interviewed in Salima, for a total baseline sample size of 3,531 SCTP-eligible households. Baseline interviews were conducted between late June and early September 2013. All study households are in rural areas.

Random assignment was conducted at the VC level after the baseline survey was completed. Half of the VCs in each TA were randomly assigned to the treatment group, which was to receive the program immediately, and the other half to a delayed-entry control group. A total of 14 VCs were in the treatment group (1,678 households) and the remaining 15 VCs were in the control group (1,853 households). Randomization was determined to have successfully created equivalent groups at baseline: treatment and control group mean characteristics across a range of program impacts were balanced. Sampling weights were calculated and adjusted to reproduce the total number of eligible households at the TA level, as well as the total number of households at the district level.

The midline follow-up survey was originally scheduled for 12 months after baseline. The first payments, however, were not administered until March and April 2014, so the decision was made to implement midline data collection in November 2014 at 17 months in order to have an adequate number of payments and time to detect early program impacts. Midline data was collected between the end of November 2014 and late January 2015, at which time treatment households had received five to six cash transfer payments every two months; as such, beneficiary households had been receiving treatment for one year as of midline data collection, so midline results should be interpreted as one year impact results. Approximately 95 percent of baseline households were re-interviewed at midline, yielding a panel of 3,369 study households (1,761 control and 1,608 treatment households). No evidence of differential or overall attrition was detected at the midline follow-up, indicating that balance was preserved between treatment and control groups and sample representativeness was maintained.

5.1.1. Ethics Approval

Study protocols, survey instruments, and consent procedures were approved by the University of North Carolina at Chapel Hill Internal Review Board (UNC IRB Study No. 14-1933) and Malawi’s National Commission for Science and Technology, National Committee for Research in Social Sciences and Humanities (Malawi NCST Study No. RTT/2/20).

5.2. Derivation of the Analytical Sample

Figure 1. depicts the derivation of the analytical sample. Of the 3,369 panel households interviewed at both baseline and midline, 3,163 were retained for analysis in this study (approximately 94 percent). The difference in the proportion of treatment and control households excluded from the panel because of missing data on outcome variables was borderline significant at the 10 percent level (F(1,3) = 5.67, p = 0.098), but the difference in the proportion of treatment and control households excluded from the original baseline sample was not significant (F(1,3) = 5.67, p = 0.10). The final sample used for analysis in this study included 1,682 households from control communities and 1,479 households from treatment communities.

5.3. Measures
5.3.1. Outcomes

The outcomes of interest are at the household-level and are grouped by FNS component.

Indicators for current economic vulnerability to food and nutrition insecurity include a binary indicator equal to one if households reported worrying that there would not be enough food in the past seven days, the household’s annualized real per capita expenditures on food, and the household’s food share (the proportion of total household expenditures devoted to food). The evaluation survey instrument included the full Malawi Third Integrated Household Survey (IHS3) consumption expenditure module, so food expenditures and the household consumption aggregate were constructed using IHS3 program files and following guidelines the World Bank’s methodology for poverty analysis in Malawi 2010-2013. Baseline nominal consumption was adjusted for spatial price differences, and midline nominal consumption was adjusted for both spatial and temporal cost-of-living differences using the Malawi National Statistical Office’s rural consumer price index to deflate midline prices and the spatial price index to reweight local prices to the national level. As such, all prices are reported in real August 2013 Malawian kwacha (MWK); the exchange rate in August 2013 was US$ 1 to MWK 330.

We include four measures of diet quantity. The first is an indicator of whether the household consumed more than one meal on a typical day during the past week. The remaining diet quantity outcomes are related to the food energy available to the household assuming light activity levels. The household’s total daily energy acquisition in kilocalories (Kcal) is calculated using data from the survey consumption module. Per capita daily energy acquisition (p.c. Kcal) is calculated by dividing the household’s total daily Kcal amount by the household size. The third measure of diet quantity is a binary indicator equal to one if the household is food energy-deficient; households are considered to be food energy-deficient if the household total daily Kcal amount is less than the household’s total energy requirement for light activity levels (adjusted for age and sex composition of the household). The final diet quantity indicator is a measure of the household’s depth of hunger, or the intensity of the household’s food inadequacy. This outcome is only defined for those households that are food energy-deficient in at least one wave, and is calculated as the difference between the household’s dietary energy intake and its minimum dietary energy requirement. The hunger depth measure is analogous to the concept of the poverty gap in that it indicates how far below the minimum energy requirement a household’s food consumption falls, with larger values indicating more severe energy deficits. We report the household’s hunger depth at the daily per capita level.

The final FNS component we investigate is diet quality. We report the household’s diet diversity score (HDDS), the proportion of household daily food energy derived from staples (cereals, grains, roots, tubers, and plantains), real annualized per capita expenditures on food groups, and household food group shares. We use the 12 food groupings recommended by the FAO to derive the HDDS, and include foods produced at home, received as gifts, and purchased but consumed at home. The HDDS ranges from one to 12, and the 12 groups include: (1) cereals, (2) white tubers and roots, (3) vegetables, including Vitamin A rich orange tubers, (4) fruits, (5) meat, (6) eggs, (7) fish and other seafood, (8) legumes, nuts, and seeds, (9) milk and milk products, (10) oils and fats, (11) sweets, and (12) spices, condiments, and beverages, including alcohol. When reporting food group expenditures and shares, we combined HDDS groups with average shares of less than five percent in either wave. This resulted in five groups: the first combines HDDS groups (1) and (2), the second combines
groups (3) and (4), the third group combines groups (5-7) and (9), the fourth groups is group (8), and the fifth group combines HDDS groups (10-12).

5.3.2. Intervention

The exposure of interest is whether the household receives the Malawi SCTP and is represented as a binary indicator equal to one for beneficiary households and zero for delayed-entry control households.

We also investigate whether there is a ‘dose’ response to the treatment level by looking at the transfer share, which is equal to the annual per capita value of the transfer as a percent of baseline annual per capita household expenditure. We simulate values for each household’s expected transfer level – for both treatment and control households – based on program assignment and transfer level rules (in real August 2013 MWK). A binary indicator is used to indicate whether a household is expected to receive a high (=1 if transfer amount is greater than or equal to 20 percent of baseline consumption expenditure) or low (= 0 if less than 20 percent) transfer share. We conduct an intention to treat (ITT) impact analysis as we use predicted transfer levels rather than actual transfer amounts from program data; because all eligible households offered treatment took it up, the ITT can be considered equal to the average treatment effect (ATE).

5.3.3. Moderators

We examine the presence of heterogeneous program impacts on household FNS based on baseline household consumption, distance from the nearest food market, and the caregiver’s health knowledge. The first impact effect moderator is a binary indicator equal to one if the household was among the poorest 50 percent of beneficiary households at baseline. The second moderator is a binary indicator equal to one if the household is within 1.5km of a food market, the median reported distance of households from the nearest food market. The third moderator is a binary indicator equal to one if the household scored in the top third of the health knowledge score. The health knowledge score was created from a series of eight questions the caregiver responded to about young child nutrition, diarrhea, malaria, and tuberculosis. The questions had multiple correct answers, so the score for each question was the sum of correct responses given for that question. The total sum of correct answers ranged from one to 19. We decided not to use the sum of the items as the score as suggested by Classical Test Theory, which implicitly assumes that all questions are equally important in contributing to the score; here, the score – or the latent construct – is “health knowledge”. Rather, we employed polychoric factor analysis to reduce the eight potentially collinear items (Bartlet’s test of sphericity chi-square = 4,427.65, df(28), p = 0.00; Kaiser-Meyer-Olkin measure of sampling adequacy = 0.73). We retained the first factor, which had an Eigenvalue of 3.26 and explained 40.80 percent of the total covariance. The health knowledge score was calculated as the household’s predicted value of the first factor. We sorted the score in increasing order, and those households scoring in the top 66.67 percent of health knowledge scores receive a value of one for the health knowledge variable. It is important to note that the health knowledge questions were only asked during the midline follow-up survey. As the SCTP does not contain an educational component, we consider health knowledge as time-invariant between the survey rounds and find no differential health knowledge scores between treatment and control groups (p = 0.26).
5.3.4. Controls

All regression models control for a vector of contemporaneous cluster-level prices, whether the household experienced a crop shock, including droughts, floods, high levels of crop and livestock pests/disease, and unusually high costs of agricultural inputs, and whether the household experienced unusually high prices for food. The models also control for household baseline characteristics, including the natural log of household size, the number of household members in five age groups (0-5, 6-11, 12-17, 18-64, and 65 and older), the household dependency ratio, whether there were any single or double child orphans residing in the household, and characteristics of the household head including sex, age, marital status, schooling, chronic illness, and disability. Lastly, we also control for whether the household had accessed credit in the 12 months prior to the baseline survey, whether they had received cash, food, labor, or agricultural inputs from friends, family, or neighbors, and whether they had participated in food or cash programs or maternal and child nutrition programs in the 12 months before the baseline interview.

Although community-level prices for some items decreased between baseline and the midline follow-up, there is no evidence that the differences in prices over time is attributable to the SCTP, and there is no significant differential price inflation across treatment and control locations.48

5.4. Empirical Approach

Calculation of descriptive statistics and bivariate analyses were undertaken to check that the balance between treatment and comparison groups was maintained in the analytical sample for the variables of interest. We report t-tests for continuous outcomes and Pearson design-based F statistics for categorical variables. Means and significance tests control for clustering at the TA level and use sample weights.

5.4.1. Main Impact Analysis

Our empirical strategy employs the difference-in-differences (DD) approach to examine the overall mean impact of the Malawi SCTP on household FNS outcomes. The DD estimator compares changes in FNS outcomes between baseline and follow-up for the treatment group with changes over the same time period in the control group. The DD approach removes any time-invariant unobserved heterogeneity from both the treatment and control groups, and thus is able to account for both observed and time-invariant unobserved differences between treatment and control groups at baseline and for general time trends. The two key assumptions of the DD approach are the ‘parallel trends assumption’ – that the outcomes of the treatment group would follow the same trajectory as those actually experienced by the control group in the absence of the SCTP, and that there is no systematic time-varying unobserved difference between treatment and control groups. Although pre-baseline data are not available, the balance observed between treatment and control groups on a wide variety of household and individual factors provides convincing evidence that no pre-treatment systematic differences existed between beneficiary and delayed-entry households.

We pool the balanced household panel, and use the generalized linear model (GLM) framework to estimate the program impact; the basic estimating equation is given in Equation (1):

\[ Y_{jkt} = g(\beta_0 + \beta_1 TREAT_k + \beta_2 TIME + \beta_3 (TREAT_k \times TIME) + \beta_4 X_{jkt}) + \epsilon_{jkt} \]  \hspace{1cm} (1)
In this framework, the inverse function of $g(\cdot)$ is the linearizing link function. $Y_{jkt}$ is the FNS outcome of interest for household $j$ in VC $k$ at time $t$. Baseline differences between treatment and control groups are given by $\beta_1$ and the change in the outcome over time among the control group is given by $\beta_2$ (general time trends in the outcome). The DD estimator of program impact is given by $\beta_3$, and $X_{jkt}$ is a vector of contemporaneous and time-invariant control variables. The control vector includes baseline characteristics to account for any pre-treatment differences between treatment and control groups and to add stability to the results and improve the precision of the estimates.

We use the GLM framework rather than ordinary least squares or basic maximum likelihood estimation because of the ease with which we can switch between models, as well as to avoid having to log-transform expenditure and Kcal outcome variables and then solve the subsequent re-transformation problem. The GLM family and link functions selected to model each outcome are listed below. Family and link decisions were made based on which models had the lowest deviance, AIC, and BIC values. We calculate and report average marginal effects (AMEs) for each model for ease of interpretation and to facilitate making comparisons across models.\textsuperscript{62-63}

- **Family (binomial), link (logit):** More than 1 meal/day; household is food energy-deficient; worried not enough food
- **Family (gamma), link (log):** Per capita Kcal; depth of hunger; per capita real annual food expenditures; per capita real annual expenditures on 5 food groups
- **Family (Gaussian), link (identity):** Food share; proportion of Kcal from staples; food share for 5 groups
- **Family (Poisson), link (log):** HDDS

All models use sample weights and standard errors are adjusted for clustering at the level of the primary sampling unit – the TA. Stata 14 was used for all analyses.

**5.4.2. Heterogeneous Impacts**

We then examine whether there are differential program impacts for the poorest 50 percent of households, households within 1.5 km of a food market, and households where the caregiver scored in the top third of the health knowledge index. Equation (1) is extended to include a triple-difference estimator that gives the differential program impact for those households that have positive values for the moderating variable of interest. The heterogeneous impact model is specified as:

$$Y_{jkt} = g \left( \beta_0 + \beta_1 TREAT_k + \beta_2 TIME + \beta_3 (TREAT_k \times TIME) + \beta_4 X_{jkt} + \beta_5 MOD_{jk} + \beta_6 (TREAT_k \times MOD_{jk}) + \beta_7 (TIME \times MOD_{jk}) + \beta_8 (TREAT_k \times TIME \times MOD_{jk}) \right) + \epsilon_{jkt} \quad (2)$$

$MOD_{jk}$ represents the effect modifier, and $\beta_8$ gives the differential impact of the program by moderator status.
5.4.3. Household with Children

We repeat the main impact analyses and the heterogeneous impact analyses for households that have one or more children ages 0-17 years at baseline and/or midline follow-up, and for households with children ages 0-5. Approximately 91 percent (2,897) of households have at least one child ages 0-17, and 51 percent (1,635) have a young child under five. The proportion of households with children does not differ significantly between treatment and control groups.

5.4.4. Transfer Share

A final fundamental issue is the value of the transfer, which is critically important for the extent of program impacts that can be expected. The cash transfer must constitute a large enough portion of the target population’s pre-program consumption in order to generate impacts. Experience from cash transfer programs around the world, including several major African programs, suggests that transfers should deliver at least 20 percent of pre-program consumption as a ‘rule of thumb’.28-48

We model the transfer share each household in the evaluation sample is likely to receive as a dichotomous indicator of whether the share is greater than or equal to 20 percent of baseline consumption. We modify Equation (1) by adding the indicator for whether the expected transfer constitutes 20 percent of baseline consumption and interacting this transfer share indicator with the DD estimator. It is important to note that Equation (3) is defined for all study households, not just beneficiaries.

\[
Y_{jkt} = g \left( \alpha_0 + \alpha_3 \text{TREAT}_k + \alpha_2 \text{TIME} + \alpha_3 \text{TXSHR}_k + \alpha_4 (\text{TREAT}_k \times \text{TIME}) + \alpha_5 (\text{TREAT}_k \times \text{TXSHR}_k) + \alpha_6 \text{X}_{jkt} \right) + \epsilon_{jkt}
\]

In Equation (3), \( \alpha_3 \) gives the mean baseline difference in \( Y_{jkt} \) between households with high and low transfer shares, \( \alpha_4 \) gives the program impact on beneficiary households with a transfer share below 20 percent, and \( \alpha_7 \) gives the differential program impact between beneficiary households with high compared to low transfer shares; the average program impact on beneficiary households with a high transfer share is equal to \( \alpha_4 + \alpha_7 \).

6. Results

6.1. Descriptive Statistics

Tables 1 and 2 present analytical sample means for study outcomes, moderators, and controls by treatment status and wave. Out of the 3,161 households that met the sample criteria, over 80 percent were consuming more than one meal per day at baseline, compared to an average of about 90 percent at midline follow-up. Daily per capita Kcal consumption declined over time for both control and treatment groups, coinciding with a general increase in the proportion of households that were food energy-deficient. Control households experienced an increase in hunger depth, while treatment households – which were slightly worse off than control households at baseline (\( p = 0.06 \)) – had a small decrease in their daily per capita Kcal shortfall. The mean HDDS and proportion of food energy derived from staples did not change much over time. Over 80 percent of households reported worrying that they would not have enough food over the past week at baseline, but at follow-up the percentage of control households worrying about food increased by five percentage
points, compared to a seven percentage point decrease among beneficiary households. Study outcomes were balanced between treatment and control groups at baseline, with the exception of hunger depth, which was marginally significant at the 10 percent level.

Contemporaneous and time-invariant controls were balanced between experimental groups at baseline, with the exception of the proportion of households that received food or other consumables from family, friends, or neighbors at baseline ($p = 0.05$). Approximately 80 percent of study households reported experiencing crop/livestock or food price shocks at baseline; fewer households reported these shocks at follow-up.

Just under half of study households received the SCTP. Among beneficiaries, the average real annual per capita value of the transfer was 7,259 MWK (US$ 22), and the mean transfer share was 23 percent of pre-program consumption.

Most households were located within 1.5 km of a food market, and caregivers from control households tended to have higher health knowledge scores than caregivers from treatment households, although the difference is not significant.

The majority of households in the analytical sample are in Mangochi district (58 percent). The average household size at baseline was between four and five members, the majority of whom were children ages 6-11 and adults ages 18-64. Approximately 40 percent of households were caring for at least one orphan. Heads of household tended to be older illiterate women with no schooling, many of whom were widowed and chronically ill. The majority of households were not using credit at baseline, but did report receiving cash and food from non-household members. Fewer than 20 percent of study households were participating in other cash or food social safety net programs at baseline.

Table 2 presents the mean expenditures and shares on food and food groups by treatment status in both waves. With the exception of spending on legumes, nuts, and seeds ($p=0.05$), these outcomes were balanced between groups at baseline. Overall consumption declined between baseline and follow-up because the follow-up survey was implemented during the lean season, just before the December/January rainy season when crops are planted and households have the least amount of food in reserve, whereas the baseline data was collected just after the 2013 harvest. At baseline, households devoted 80 percent of their total expenditures to food, and the majority of food expenditures were on staples (cereals, roots, and tubers). Nearly all households had positive expenditures on staples foods, fruits, vegetables, and other foods in both survey rounds.

### 6.2. Main Impact Results

At the time of midline data collection households had received between five and six bi-monthly payments and so had been in the program for approximately one year; as such, results should be interpreted as one year impact results.

Tables 3-7 present results from estimates of Equation (1). Table 3 presents these results for current economic vulnerability, Table 4 presents estimates for diet quantity, and Tables 5, 6, and 7 present estimates for diet quality. The tables are separated into panels by outcome. Every panel presents four models, starting with model A, which is the basic model corresponding to Equation (1). Rows
B-D present results for heterogeneous impacts by baseline poverty level (row B), distance to food market (row C), and caregiver health knowledge (row D), corresponding to Equation (2). The columns correspond to coefficients from Equations (1) and (2).

As evidenced by the second results column in Table 3 ($\beta_2$), indicators for current economic vulnerability to food and nutrition insecurity worsened between baseline and the midline follow-up survey, but the SCTP had a protective effect for beneficiary households. Program households were 11 percentage points less likely to worry about food relative to their counterparts in control VCs, although this effect is only slightly significant ($p = 0.10$). Households receiving the SCTP increased their annual per capita food expenditures by over 4,300 MWK ($p=0.10$) on average, and also experienced a slight decrease in the proportion of household expenditures devoted to food by about two percentage points ($p=0.001$).

The SCTP had a very strong protective effect against negative trends in diet quantity indicators (Table 4). The program impact on having more than one meal per day is positive, even though only marginally significant (0.11, $p=0.10$). However, the program impact on caloric quantity is quite strong. On average, beneficiary households consumed 325 more Kcal per capita per day ($p=0.001$), which represents 18 percent of baseline Kcal consumption, and were 12 percentage points less likely to be food energy-deficient ($p=0.001$) compared to control households. Among those households that were food energy-deficient, the average caloric deficit was 179 Kcal lower ($p=0.001$) than the depth of hunger among food energy-deficient control households.

There does not, however, appear to be a significant program impact on diet quality (Tables 5, 6, and 7). The DD estimator is positive for HDDS and negative for the proportion of Kcals coming from staples, suggesting that beneficiaries are consuming a slightly more diverse diet, but these results are not statistically significant. Other than expenditures on cereals, there are no program impacts on food group expenditures or shares that are significant at the five percent level or better.

Two interesting patterns between control variables and FNS outcomes are worth noting (results available from author on request). Households in Salima fared worse than those in Mangochi. On average, Salima households were seven percentage points more likely to worry about food ($p=0.01$), spent over 4,500 MWK less on food ($p=0.05$), and were 14 percentage points less likely to eat two or more meals per day ($p=0.001$). They also consumed 300 Kcal per capita per day less than households in Mangochi ($p=0.001$), were 10 percentage points more likely to be food energy-deficient ($p=0.001$) and had a larger hunger gap by about 200 Kcal ($p=0.001$). Households experiencing unusually high prices for food also fared worse. These households were 10 percentage points more likely ($p=0.001$) to worry about food, spent nearly 3,500 MWK less on food ($p=0.001$), consumed 160 fewer calories ($p=0.001$), and were six percentage points more likely to be food energy-deficient ($p=0.001$) compared to households that did not face food shocks.

6.3. Heterogeneous Impacts

Rows B, C, and D of Tables 3-7 show the results of our investigation of heterogeneous program impacts on household FNS by severity of baseline poverty, distance to the nearest food market, and caregiver health knowledge, respectively. The third results column presents the DD estimator ($\beta_3$), and the last column gives estimates for $\beta_8$, the differential impact of the program among households.
that were in the poorest 50 percent at baseline (row B), that are within 1.5 km of a food market (row C), and whose main caregiver scored in the top third of the health knowledge distribution (row D).

In general, the differential impact of the SCTP among the poorest households is mostly limited to food spending and the likelihood of consuming more than one meal per day. The program impact is slightly stronger among the poorest households for the food share (-0.01, \( p=0.05 \)) and expenditures on meats, fish, eggs, and milk products (1,281 MWK, \( p=0.001 \)), legumes, nuts, and seeds (718 MWK, \( p=0.05 \)), and other foods (460 MWK, \( p=0.05 \)). The program impact on consuming two or more meals per day is actually six percentage points weaker among the poorest beneficiary households (-0.06 MWK, \( p=0.01 \)).

Compared to beneficiary households farther away from food markets, SCTP households within 1.5 km of a food market had higher per capita expenditures on food (2,898 MWK, \( p=0.01 \)) and were seven percentage points more likely to eat more than one meal per day (\( p=0.001 \)). The differential impact of the program on households closer to markets was negative for spending on staple foods (-2,597 MWK, \( p=0.01 \)) and positive for spending on fruits and vegetables (1,199 MWK, \( p=0.05 \)).

There is no discernable pattern to the heterogeneous treatment effects among beneficiary households with high health knowledge scores. High scoring beneficiary households had a marginally larger food share (0.02, \( p=0.10 \)) than program households with scores in the bottom two-thirds. They also spent 485 MWK (\( p=0.10 \)) less on fruit and vegetables and directed more of their total food expenditures toward cereals (0.02, \( p=0.05 \)).

### 6.4. Households with Children

We extended our investigation of program impacts by repeating both the main and heterogeneous impact analyses for those households with a child age 0-17 (Appendix Tables A1-A5) in either wave and then for households with a young child age 0-5 (Appendix Tables A6-A10) in either round. Approximately 91 percent of study households had a child age 0-17 and 51 percent had a child age 0-5. Results are presented in the appendix.

Treatment effects are largely consistent across models for the full analytical sample and both subpopulations. Program impacts on per capita food expenditure are larger for households with children 0-17, but the other two measures of current economic vulnerability align with those found for the full sample. The exception is the differential impact on the probability of worrying about food detected for households with children ages 0-5 where the caregiver scored in the top third of the health knowledge distribution (-0.10, \( p=0.01 \)). The impact of the SCTP on diet quantity is larger for households with young children. Impacts in those households show higher per capita Kcal consumption, a stronger protective effect against food energy-deficiency, and a slightly smaller calorie gap than the full sample and households with children 0-17. Significant program impacts on several of the diet quality indicators – such as food group expenditures – seem to be driven by SCTP households with children 0-17, as households with young children do not demonstrate several of the heterogeneous program impacts seen in the other two samples. Patterns in food group shares are similar among all three groups.

### 6.5. Transfer Share
Lastly, we test whether beneficiary households whose transfer share is at least 20 percent of pre-program consumption experience stronger impacts than those beneficiary households with lower shares by simulating the transfer level and share for all study households (Table 8). The mean predicted transfer amount was MWK 29,763 per household per year, or an annual per capita amount of MWK 7,278, corresponding to an average expected transfer share of 24 percent of pre-program consumption. Just over half of all households had a transfer share of 20 percent or more (50.9 percent of all households; 49.4 percent of treatment households and 52.3 percent of control households \((p = 0.77)\). The average per capita transfer amount for households with high transfer shares was MWK 7,237 and MWK 7,321 for households with low transfer shares \((p = 0.72)\).

In our analysis of main program impacts on current household economic vulnerability to food insecurity we found that beneficiary households were 11 percentage points less likely than control households to report worrying about having enough food during the past week, but this results was only marginally significant. Results presented in Table 8 indicate that there was not a significant impact on worrying about food among treatment households with transfer shares below 20 percent, but households with high shares were 13 percentage points less likely to worry \((p = 0.05)\) compared to control households with expected high shares; however, the difference in the program impact on low versus high share treatment households is not significant. Likewise, there is not a significant impact on per capita food expenditures for low-share treatment households, but there is a strong and significant impact for high-share treatment households, which spend MWK 5,350 more on average than high-share control households \((p = 0.001)\), and the differential impact between beneficiary households with high and low shares is marginally significant, with high-share treatment households spending MWK 3,326 more. The significant main program impact on the household’s food share of -0.02 \((p = 0.001)\) appears to be driven by households with high shares, where food shares declined by three percentage points compared to high-share control households \((p = 0.01)\).

The only diet quantity outcome for which program impacts differed significantly between low- and high-share treatment households was per capita daily caloric intake: the SCTP had strong positive impacts for both beneficiary groups, but high-share treatment households consumed an average of 137 Kcal per capita per day more than low-share treatment households \((p = 0.001)\). Compared to control households with similar expected transfer shares, low-share treatment households were 12 percentage points more likely to eat more than one meal per day \((p = 0.01)\), and high share treatment households were 14 percentage points less likely to be food energy deficient \((p = 0.001)\). The hunger depth is significantly reduced for both treatment groups.

Heterogeneous program impacts on household diet quality by transfer share are confined to food group expenditures, with the exception of the share of food expenditures devoted to fruits and vegetables. We do not find evidence of program impacts on HDDS or the proportion of Kcal consumed from staples for either treatment group, which is in accordance with findings from the main impact analysis. The significant program impacts on cereal, meat/dairy, and oils expenditures is driven by the program impacts among high-share beneficiary households.

It is informative to consider the magnitude of program impacts relative to how households fared at baseline. Relative impacts can be expressed as the magnitude of the program impact divided by the baseline outcome level for continuous indicators.\(^3\) Among all treatment households, the program

\(^3\) Relative impacts are calculated for each household with respect to the household’s baseline values and corresponding aggregate group impact, and then averaged over all households.
impacts on annual per capita food expenditures, daily per capita caloric intake, and the hunger depth comprised 20 percent, 31 percent, and 45 percent of baseline levels, respectively. Program impacts on food expenditures and caloric intake were approximately 13 percent of baseline levels for low-share beneficiary households, but were 35 percent and 49 percent of baseline levels for high-share treatment households. It is also interesting to note that the main program impact on per capita food expenditure represented, on average, 65 percent of the predicted annual per capita transfer value.

7. Discussion

This study examined the impact of the Malawi SCTP on household food and nutrition security after one year of program exposure. We examined program impacts on three components of FNS: current household economic vulnerability to food insecurity, diet quantity, and diet quality. Based on findings from other cash transfer programs, we also examined the presence of heterogeneous impacts by the household’s baseline poverty level, distance from the closest food market, caregiver health knowledge, and whether the expected transfer amount comprised at least 20 percent of pre-program consumption expenditure.

7.1. Program Impacts on Current Economic Vulnerability to Food Insecurity

The strongest main program impacts on household current economic vulnerability were found for the food share. On average, beneficiary households decreased their food share by two percentage points ($p = 0.001$) compared to control households, from a baseline food share of 0.80. Households with children had similar impact results. There was a differential program impact on the food share among households that were in the poorest 50 percent of study households at baseline ($-0.02, p = 0.05$).

As predicted, the SCTP was associated with a decrease in the probability of worrying about food during the past week, although this impact was only significant for household with children ages 0-17 and beneficiary households with a high transfer share. Compared to beneficiary households with low levels of caregiver health knowledge, treatment household with high health knowledge were 10 percent less likely to worry about food ($p = 0.01$).

The SCTP also had a positive, though only marginally significant, impact on annual per capita food expenditures. There was a differential program impact on per capita food expenditures of MWK 2,899 ($p = 0.05$) between households in the lower and upper 50 percent of the consumption distribution at baseline, suggesting that the program impact on food spending was larger among the poorest households. The program impact of food expenditures was significant among households with children ages 0-17, where beneficiary households spent MWK 4,405 ($p = 0.05$) more than control households. Compared to baseline food expenditure levels, the program impact was 20 percent of baseline levels.

From these results, we can conclude that the program did have a small impact on current economic vulnerability to food insecurity, and that the program impacts were stronger for the poorest households, households with children ages 0-17, and households with higher transfer shares.

7.2. Program Impacts on Diet Quantity
Indicators of diet quantity included the probability of consuming two or more meals per day over the past week, daily per capita caloric intake, whether the household is food-energy deficient, and the hunger gap.

The program increased the probability of consuming more than one meal per day among beneficiary households, but this impact was only marginally significant at the 10 percent confidence level. The results for households with children are the same. Poor beneficiary households experienced lower program impacts compared to households in the upper half of the poverty distribution (differential impact of -0.06, \( p = 0.01 \)), and treatment households close to food markets were seven percentage points more likely to consume multiple meals than treatment households farther out from markets (\( p = 0.001 \)). The program impact did not differ significantly between beneficiary households with high and low transfer shares.

The SCTP had very strong and significant impacts on caloric intake. On average, beneficiary households consumed an average of 325 Kcal per capita per day (\( p = 0.001 \)) more than control households, equivalent to 30 percent of baseline caloric intake. Beneficiary households were also 12 percentage points less likely to be food-energy deficient (\( p = 0.001 \)) and among households that were energy deficient, treatment households had a smaller hunger gap by 179 Kcal per person per day (\( p = 0.001 \)). Results were nearly identical for households with children. No heterogeneous impacts by poverty, market distance, or health knowledge were detected. The program had significant impacts for both high and low transfer share treatment households, but the differential impact between the treatment groups was only significant for daily per capita caloric intake.

These findings indicate that the SCTP had a strong protective effect on diet quantity during the lean season. Beneficiary households consumed more calories than control households, and it appears that the program impact on caloric quantity translated into an increase in the probability of consuming multiple meals per day among households that were not in the poorest 50 percent at baseline.

### 7.3. Program Impacts on Diet Quality

Program impacts on diet quality are limited. We do not find program impacts on the HDDS, the proportion of calories derived from staple foods, or for food group shares. The program did have a significant impact on household expenditures on cereals, particularly for households farther away from markets and with a high transfer share. These findings correspond to program impacts of increased caloric intake, but no impact on diet diversity, suggesting that most treatment households were attempting to achieve a higher diet quantity rather than an improved diet quality, which makes sense given that the midline survey was conducted during the lean season.

We expect that, eventually, these ultra-poor households will change the composition of the foods they consume as income increases, leading to improved diet quality resulting from substitution between food groups (e.g., substituting between cereal and meat). Because study households are so poor and because midline data collection occurred well into the lean season, it may be the case that households are substituting within food groups, which the HDDS and proportion of calories from staples indicators are unable to detect.

### 7.4. Strengths and Limitations
The major strength of this study is that it investigates a comprehensive list of indicators to understand multiple components of FNS, with particular attention paid to separating program impacts on diet quantity and quality. The Malawi SCTP has key design features (unconditional, targeted to ultra-poor and labor constrained households) that are similar to programs in other sub-Saharan African countries, suggesting a high degree of external validity.

An important limitation of this study is that baseline data were collected shortly after the harvest season, but midline data were collected toward the end of the lean season. But, because we have an experimental control group, we are able to detect protective program impacts on FNS, and we conclude that the cash transfer is preventing households from falling deeper into poverty and hunger in the lean season.

Although we have used a range of indicators to examine multiple dimensions of food security, these measures are not without their limitations and criticisms. Higher levels of per capita expenditures on food do not directly translate into improved nutrition because more expensive food is not always more nutritious. Likewise, greater caloric intake does not necessarily imply better nutrition if there is not sufficient variety and micronutrient content in the diet. A frequent criticism of measures of caloric deficiency (i.e., whether a household is energy deficient and the hunger depth) is that these indicators tend to underestimate undernutrition because they are based on a caloric threshold that assumes a light level of physical activity, or a sedentary lifestyle. In the case of measuring the incidence of household energy deficiency, this is not a problem because the lower activity threshold necessarily includes persons who would not meet higher caloric requirements. The hunger deficit, however, is vulnerable to underestimation, particularly among poor people, who often operate at higher activity levels in rural and agricultural areas.3

7.5. Policy Implications

One important policy lesson that can be garnered from this study is that the purchasing power of the cash transfer has important implications for the types impacts the SCTP can have on different aspects of food and nutrition security. While beneficiary households were able to increase their caloric intake, we did not find that the transfer increased food expenditures or diet quality compared to control households. This may be due, in large part, to the erosion of the cash transfer's purchasing power between the post-harvest and lean seasons. Potential solutions could include indexing the value of the cash transfer to food prices, or simply increasing the transfer amount during the lean season.

Cash transfers alone are not enough to overcome all of the constraints poor households face, but rather need to be coupled with investments in basic service provision and supply-side interventions to insure that household demand for more and better foods can be supported. Facilitating linkages between beneficiaries and other social support services is one of the objectives of the Malawi SCTP, but this goal has yet to be realized.
References


54. Devereux S. Social protection for enhanced food security in sub-Saharan Africa. *Food Policy.* 2015;in press. doi:10.1016/j.foodpol.2015.03.009.


Figures and Tables

Figure 1. Derivation of Analytical Sample

Wave 1 (2013 Baseline)
29 VCs randomly selected from 4 TAs randomly selected from 2 districts
3,531 hh*

Control
1,853 hh (15 VCs)

Lost to Follow-Up
F(1,3)=1.43 (p=0.318)
70 hh (4.32%)

Wave 2 (2014 Midline)
1,761 hh

Wave 2 (2014 Midline)
1,608 hh

Treatment
1,678 hh (14 VCs)

Final Control Sample
1,682 hh
(90.52% of W1 C sample)

Excluded from Analysis
F(1,3)=2.99 (p=0.182)
1,479 hh
(88.44% of W1 T sample)

Final Treatment Sample
1,479 hh

NOTE: Counts are unweighted, percentages and Pearson design-based F tests use sample weights and correct for clustering at the TA level. * hh = household
Table 1. Descriptive Statistics by Wave and Treatment Status (N = 3161)

<table>
<thead>
<tr>
<th>Outcomes of Interest</th>
<th>Baseline Control</th>
<th>Baseline Treatment</th>
<th>Midline Control</th>
<th>Midline Treatment</th>
<th>p-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 1 meal/day</td>
<td>0.82</td>
<td>0.80</td>
<td>0.87</td>
<td>0.94</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>Kcal per capita</td>
<td>1858.74</td>
<td>1769.72</td>
<td>1488.52</td>
<td>1657.06</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Food energy deficient</td>
<td>0.61</td>
<td>0.64</td>
<td>0.76</td>
<td>0.68</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Depth of hunger (N = 2155)</td>
<td>487.64</td>
<td>554.07</td>
<td>653.11</td>
<td>533.58</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>HDDS score</td>
<td>5.64</td>
<td>5.61</td>
<td>5.31</td>
<td>5.78</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>Proportion Kcal from staples</td>
<td>0.83</td>
<td>0.83</td>
<td>0.82</td>
<td>0.81</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>Worried not enough food</td>
<td>0.83</td>
<td>0.84</td>
<td>0.88</td>
<td>0.77</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop shock</td>
<td>0.77</td>
<td>0.78</td>
<td>0.90</td>
<td>0.59</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>Food shock</td>
<td>0.82</td>
<td>0.84</td>
<td>0.59</td>
<td>0.67</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>0.51</td>
<td>0.49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted p.c. real annual transfer</td>
<td>7295.99</td>
<td>7259.37</td>
<td></td>
<td></td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>Predicted transfer share (%)</td>
<td>0.24</td>
<td>0.23</td>
<td>0.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predicted transfer share ≥ 20%</td>
<td>0.52</td>
<td>0.49</td>
<td>0.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poorest 50%</td>
<td>0.50</td>
<td>0.50</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market within 1.5km</td>
<td>0.52</td>
<td>0.63</td>
<td>0.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top third health knowledge score</td>
<td>0.37</td>
<td>0.32</td>
<td>0.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household size</td>
<td>4.64</td>
<td>4.68</td>
<td>0.78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number members in age group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 5</td>
<td>0.69</td>
<td>0.70</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 to 11</td>
<td>1.26</td>
<td>1.21</td>
<td>0.63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 to 17</td>
<td>0.95</td>
<td>0.96</td>
<td>0.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 to 64</td>
<td>1.19</td>
<td>1.18</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 and older</td>
<td>0.56</td>
<td>0.62</td>
<td>0.26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency ratio</td>
<td>2.81</td>
<td>2.82</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any child orphans</td>
<td>0.37</td>
<td>0.41</td>
<td>0.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household head</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.86</td>
<td>0.84</td>
<td>0.21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>56.46</td>
<td>58.43</td>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronically ill</td>
<td>0.40</td>
<td>0.47</td>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe disability</td>
<td>0.10</td>
<td>0.10</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any school</td>
<td>0.30</td>
<td>0.29</td>
<td>0.63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literate</td>
<td>0.19</td>
<td>0.17</td>
<td>0.17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widow</td>
<td>0.41</td>
<td>0.43</td>
<td>0.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>0.02</td>
<td>0.03</td>
<td>0.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any credit</td>
<td>0.44</td>
<td>0.43</td>
<td>0.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfers received from non-household members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>0.70</td>
<td>0.66</td>
<td>0.35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food/other consumables</td>
<td>0.94</td>
<td>0.90</td>
<td>0.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor or time</td>
<td>0.54</td>
<td>0.49</td>
<td>0.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural inputs</td>
<td>0.34</td>
<td>0.31</td>
<td>0.62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food/cash program</td>
<td>0.20</td>
<td>0.15</td>
<td>0.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother/child food program</td>
<td>0.16</td>
<td>0.15</td>
<td>0.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reside in Salima district</td>
<td>0.42</td>
<td>0.35</td>
<td>0.20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: P-values are corrected for complex survey design and are calculated from linear regression models for continuous variables and Pearson design-based F-statistics for categorical variables.
Table 2. Mean Spending and Shares by Food Category (N = 3,161)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Midline</th>
<th>Baseline</th>
<th>Midline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Treatment</td>
<td>p-value</td>
<td>Control</td>
</tr>
<tr>
<td><strong>Per capita real annual expenditures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>32,772.93</td>
<td>34,016.44</td>
<td>0.76</td>
<td>24,515.58</td>
</tr>
<tr>
<td>Cereals, roots, and tubers</td>
<td>18,239.65</td>
<td>18,837.57</td>
<td>0.56</td>
<td>11,856.50</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>5,258.38</td>
<td>5,504.02</td>
<td>0.35</td>
<td>6,534.66</td>
</tr>
<tr>
<td>Meat, eggs, fish, and milk</td>
<td>2,349.15</td>
<td>2,512.20</td>
<td>0.90</td>
<td>2,885.55</td>
</tr>
<tr>
<td>Legumes, nuts, and seeds</td>
<td>3,725.06</td>
<td>4,250.85</td>
<td>0.05</td>
<td>1,686.91</td>
</tr>
<tr>
<td>Other</td>
<td>3,200.68</td>
<td>2,911.80</td>
<td>0.81</td>
<td>1,551.97</td>
</tr>
<tr>
<td><strong>Shares</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td>0.80</td>
<td>0.80</td>
<td>0.50</td>
<td>0.77</td>
</tr>
<tr>
<td>Cereals, roots, and tubers</td>
<td>0.58</td>
<td>0.57</td>
<td>0.84</td>
<td>0.50</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>0.18</td>
<td>0.19</td>
<td>0.55</td>
<td>0.27</td>
</tr>
<tr>
<td>Meat, eggs, fish, and milk</td>
<td>0.05</td>
<td>0.05</td>
<td>0.93</td>
<td>0.11</td>
</tr>
<tr>
<td>Legumes, nuts, and seeds</td>
<td>0.11</td>
<td>0.12</td>
<td>0.26</td>
<td>0.06</td>
</tr>
<tr>
<td>Other</td>
<td>0.09</td>
<td>0.08</td>
<td>0.71</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Proportion with positive expenditures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cereals, roots, and tubers</td>
<td>1.00</td>
<td>1.00</td>
<td>0.57</td>
<td>0.99</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>0.99</td>
<td>0.99</td>
<td>0.11</td>
<td>0.99</td>
</tr>
<tr>
<td>Meat, eggs, fish, and milk</td>
<td>0.58</td>
<td>0.36</td>
<td>0.84</td>
<td>0.72</td>
</tr>
<tr>
<td>Legumes, nuts, and seeds</td>
<td>0.77</td>
<td>0.77</td>
<td>0.91</td>
<td>0.43</td>
</tr>
<tr>
<td>Other</td>
<td>0.99</td>
<td>0.99</td>
<td>0.51</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Note: “Other” food group includes oils, fats, sweets, condiments, spices, and beverages. Food shares report food expenditures as proportion of total expenditures, whereas group shares report group expenditure as proportion of total food expenditure. Arithmetic mean for continuous and count variables, proportion for dichotomous variables. P-values are corrected for complex survey design and are calculated from linear regression models for continuous variables and Pearson design-based F-statistics for categorical variables.
<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.01</td>
<td>0.08**</td>
<td>-0.11+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.06)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.03</td>
<td>0.08*</td>
<td>-0.13</td>
<td>0.05</td>
<td>-0.04</td>
<td>0.00</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.08)</td>
<td>(0.04)</td>
<td>(0.06)</td>
<td>(0.04)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>C</td>
<td>0.00</td>
<td>0.05</td>
<td>-0.10</td>
<td>-0.03</td>
<td>0.03</td>
<td>0.06</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.06)</td>
<td>(0.08)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.06)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>D</td>
<td>0.01+</td>
<td>0.08**</td>
<td>-0.10+</td>
<td>0.02</td>
<td>0.01</td>
<td>0.00</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.06)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>PC Food Exp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-634.42</td>
<td>-9902.18***</td>
<td>4303.27+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1074.59)</td>
<td>(2299.10)</td>
<td>(2390.10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>113.74</td>
<td>-17415.06***</td>
<td>2485.36</td>
<td>-24473.68***</td>
<td>-1205.45</td>
<td>20439.72***</td>
<td>2898.61*</td>
</tr>
<tr>
<td></td>
<td>(1034.97)</td>
<td>(1007.76)</td>
<td>(1802.50)</td>
<td>(1345.52)</td>
<td>(1900.36)</td>
<td>(765.47)</td>
<td>(1414.64)</td>
</tr>
<tr>
<td>C</td>
<td>-968.66</td>
<td>-9835.44***</td>
<td>5814.90***</td>
<td>1703.32</td>
<td>86.09</td>
<td>-272.56</td>
<td>-2147.93</td>
</tr>
<tr>
<td></td>
<td>(1849.62)</td>
<td>(2973.79)</td>
<td>(1460.15)</td>
<td>(1765.95)</td>
<td>(2747.52)</td>
<td>(1563.93)</td>
<td>(2863.26)</td>
</tr>
<tr>
<td>D</td>
<td>-936.32</td>
<td>-9272.67***</td>
<td>4239.06+</td>
<td>-178.06</td>
<td>979.91</td>
<td>-1705.53</td>
<td>-64.82</td>
</tr>
<tr>
<td></td>
<td>(955.20)</td>
<td>(2052.24)</td>
<td>(2330.42)</td>
<td>(1489.13)</td>
<td>(1745.17)</td>
<td>(1179.70)</td>
<td>(359.30)</td>
</tr>
<tr>
<td>Food Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.05***</td>
<td>-0.02***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>-0.07***</td>
<td>-0.01*</td>
<td>-0.03***</td>
<td>0.00</td>
<td>0.04***</td>
<td>-0.02*</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.00</td>
<td>-0.05***</td>
<td>-0.02***</td>
<td>-0.00</td>
<td>-0.00*</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>D</td>
<td>-0.00</td>
<td>-0.04***</td>
<td>-0.03***</td>
<td>0.01***</td>
<td>-0.01*</td>
<td>-0.02**</td>
<td>0.02+</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
</tbody>
</table>

Notes: Average marginal effects from generalized linear models. Standard errors in parentheses are corrected for clustering at the TA level and all estimates use sample weights. All control variables are included. + $p<0.10$; * $p<0.05$; ** $p<0.01$; *** $p<0.001$. 
Table 4. Impacts on Diet Quantity - Marginal Effects (N = 3161)

<table>
<thead>
<tr>
<th></th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>( \beta_3 )</th>
<th>( \beta_5 )</th>
<th>( \beta_6 )</th>
<th>( \beta_7 )</th>
<th>( \beta_8 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;1 Meal/Day</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.03</td>
<td>0.04</td>
<td>0.11+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.06)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.06</td>
<td>-0.02</td>
<td>0.14*</td>
<td>-0.15***</td>
<td>0.05+</td>
<td>0.10***</td>
<td>-0.06**</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.03)</td>
<td>(0.06)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>C</td>
<td>0.01</td>
<td>0.08**</td>
<td>0.07</td>
<td>0.06***</td>
<td>-0.08**</td>
<td>-0.08***</td>
<td>0.07***</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.06)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>D</td>
<td>-0.04</td>
<td>0.07*</td>
<td>0.10*</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.07**</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.05)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>PC Kcal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-115.93</td>
<td>-410.44**</td>
<td>325.18***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(98.10)</td>
<td>(137.07)</td>
<td>(12.48)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-83.61</td>
<td>-744.30***</td>
<td>250.59***</td>
<td>-990.76***</td>
<td>-70.80</td>
<td>837.61***</td>
<td>128.83</td>
</tr>
<tr>
<td></td>
<td>(115.18)</td>
<td>(102.31)</td>
<td>(89.60)</td>
<td>(118.73)</td>
<td>(111.77)</td>
<td>(73.71)</td>
<td>(134.20)</td>
</tr>
<tr>
<td>C</td>
<td>-48.97</td>
<td>-437.50*</td>
<td>341.88***</td>
<td>110.29</td>
<td>-123.88</td>
<td>35.43</td>
<td>43.67</td>
</tr>
<tr>
<td></td>
<td>(136.40)</td>
<td>(191.82)</td>
<td>(58.61)</td>
<td>(83.09)</td>
<td>(93.60)</td>
<td>(102.86)</td>
<td>(103.27)</td>
</tr>
<tr>
<td>D</td>
<td>-104.76</td>
<td>-386.00**</td>
<td>309.02***</td>
<td>9.59</td>
<td>-36.72</td>
<td>-69.60+</td>
<td>43.67</td>
</tr>
<tr>
<td></td>
<td>(108.17)</td>
<td>(120.28)</td>
<td>(37.02)</td>
<td>(84.89)</td>
<td>(91.21)</td>
<td>(38.90)</td>
<td>(77.90)</td>
</tr>
<tr>
<td>Energy Deficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.03</td>
<td>0.17**</td>
<td>-0.12***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.04</td>
<td>0.27***</td>
<td>-0.11</td>
<td>0.40***</td>
<td>-0.01</td>
<td>-0.34***</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>C</td>
<td>0.02</td>
<td>0.19*</td>
<td>-0.15**</td>
<td>-0.04</td>
<td>0.03</td>
<td>-0.04</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.08)</td>
<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.05)</td>
<td>(0.05)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>D</td>
<td>0.04</td>
<td>0.17**</td>
<td>-0.12**</td>
<td>0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.04)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Hunger Depth (N = 2769)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>54.62</td>
<td>251.12**</td>
<td>-179.12***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(46.89)</td>
<td>(88.65)</td>
<td>(12.76)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>114.17</td>
<td>716.11***</td>
<td>-220.29*</td>
<td>713.25***</td>
<td>-99.09</td>
<td>-730.24***</td>
<td>64.38</td>
</tr>
<tr>
<td></td>
<td>(97.21)</td>
<td>(165.63)</td>
<td>(94.18)</td>
<td>(119.11)</td>
<td>(64.85)</td>
<td>(153.73)</td>
<td>(77.07)</td>
</tr>
<tr>
<td>C</td>
<td>43.96</td>
<td>250.46*</td>
<td>-203.86***</td>
<td>-61.28</td>
<td>32.62</td>
<td>4.39</td>
<td>32.96</td>
</tr>
<tr>
<td></td>
<td>(86.03)</td>
<td>(122.15)</td>
<td>(54.00)</td>
<td>(51.18)</td>
<td>(72.71)</td>
<td>(69.10)</td>
<td>(85.20)</td>
</tr>
<tr>
<td>D</td>
<td>65.13</td>
<td>250.02**</td>
<td>-179.42***</td>
<td>43.23*</td>
<td>-25.23</td>
<td>12.61</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(60.09)</td>
<td>(85.43)</td>
<td>(28.69)</td>
<td>(21.90)</td>
<td>(52.75)</td>
<td>(11.18)</td>
<td>(64.69)</td>
</tr>
</tbody>
</table>

Notes: See notes from Table 3. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
Table 5. Impacts on Diet Quality - Marginal Effects (N = 3161)

<table>
<thead>
<tr>
<th>HDDS</th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>( \beta_3 )</th>
<th>( \beta_5 )</th>
<th>( \beta_6 )</th>
<th>( \beta_7 )</th>
<th>( \beta_8 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-0.09</td>
<td>-0.51</td>
<td>0.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td>(0.32)</td>
<td>(0.38)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.09</td>
<td>-0.99***</td>
<td>0.43</td>
<td>-1.55***</td>
<td>0.02</td>
<td>1.12***</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.19)</td>
<td>(0.28)</td>
<td>(0.18)</td>
<td>(0.09)</td>
<td>(0.19)</td>
<td>(0.14)</td>
</tr>
<tr>
<td>C</td>
<td>-0.09</td>
<td>-0.25</td>
<td>0.62*</td>
<td>0.40*</td>
<td>-0.11</td>
<td>-0.50**</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td>(0.14)</td>
<td>(0.33)</td>
<td>(0.28)</td>
<td>(0.20)</td>
<td>(0.16)</td>
<td>(0.17)</td>
<td>(0.19)</td>
</tr>
<tr>
<td>D</td>
<td>-0.09</td>
<td>-0.49</td>
<td>0.50</td>
<td>-0.07</td>
<td>-0.02</td>
<td>-0.09</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.31)</td>
<td>(0.37)</td>
<td>(0.11)</td>
<td>(0.12)</td>
<td>(0.15)</td>
<td>(0.16)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proportion Staples</th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>( \beta_3 )</th>
<th>( \beta_5 )</th>
<th>( \beta_6 )</th>
<th>( \beta_7 )</th>
<th>( \beta_8 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-0.00</td>
<td>-0.02</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.01</td>
<td>-0.00</td>
<td>-0.01</td>
<td>0.05***</td>
<td>-0.01+</td>
<td>-0.02</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.00</td>
<td>-0.03</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.01+</td>
<td>0.02+</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>0.00</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.00</td>
<td>-0.01</td>
<td>-0.00</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
</tr>
</tbody>
</table>

Notes: See notes from Table 3. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
Table 6. Impacts on Diet Quality, Per Capita Expenditures - Marginal Effects (N = 3161)

<table>
<thead>
<tr>
<th></th>
<th>β₁</th>
<th>β₂</th>
<th>β₃</th>
<th>β₄</th>
<th>β₅</th>
<th>β₆</th>
<th>β₇</th>
<th>β₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-483.36</td>
<td>-7298.76***</td>
<td>1759.49***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(550.67)</td>
<td>(547.43)</td>
<td>(407.36)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-117.63</td>
<td>-10748.14***</td>
<td>1104.22**</td>
<td>-10743.42***</td>
<td>-768.96</td>
<td>8857.36***</td>
<td>1134.89</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(318.24)</td>
<td>(179.99)</td>
<td>(369.08)</td>
<td>(916.39)</td>
<td>(1060.04)</td>
<td>(307.44)</td>
<td>(1328.34)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>-942.05</td>
<td>-7835.04***</td>
<td>3377.94***</td>
<td>770.73</td>
<td>549.59</td>
<td>898.76</td>
<td>-2597.46*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1203.80)</td>
<td>(825.67)</td>
<td>(813.69)</td>
<td>(999.07)</td>
<td>(1506.38)</td>
<td>(675.31)</td>
<td>(1234.51)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-469.08</td>
<td>-7039.51***</td>
<td>1636.10***</td>
<td>-88.10</td>
<td>-60.92</td>
<td>-735.45*</td>
<td>301.49</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(669.55)</td>
<td>(606.21)</td>
<td>(378.70)</td>
<td>(632.67)</td>
<td>(1038.73)</td>
<td>(287.63)</td>
<td>(455.46)</td>
<td></td>
</tr>
<tr>
<td>Fruit/Vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>89.01</td>
<td>1408.94</td>
<td>559.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(396.34)</td>
<td>(926.33)</td>
<td>(629.87)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-43.37</td>
<td>-175.80</td>
<td>672.74</td>
<td>-3716.72***</td>
<td>362.02</td>
<td>3754.56***</td>
<td>-347.20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(320.55)</td>
<td>(906.33)</td>
<td>(611.65)</td>
<td>(173.16)</td>
<td>(262.85)</td>
<td>(209.58)</td>
<td>(300.14)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>34.03</td>
<td>1961.62+</td>
<td>-87.77</td>
<td>497.94+</td>
<td>-41.64</td>
<td>-955.85</td>
<td>1199.37*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(270.57)</td>
<td>(1105.19)</td>
<td>(355.03)</td>
<td>(267.90)</td>
<td>(280.21)</td>
<td>(676.28)</td>
<td>(536.03)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>0.92</td>
<td>1413.37</td>
<td>707.78</td>
<td>-66.04</td>
<td>297.71</td>
<td>12.11</td>
<td>-484.71+</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(416.32)</td>
<td>(966.04)</td>
<td>(671.31)</td>
<td>(528.21)</td>
<td>(592.54)</td>
<td>(327.95)</td>
<td>(271.22)</td>
<td></td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-423.63</td>
<td>503.44</td>
<td>838.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(639.80)</td>
<td>(790.29)</td>
<td>(1045.23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-153.95</td>
<td>-485.61</td>
<td>258.22</td>
<td>-5835.41***</td>
<td>-820.92+</td>
<td>4909.19***</td>
<td>1280.81***</td>
<td>718.35*</td>
</tr>
<tr>
<td></td>
<td>(848.41)</td>
<td>(725.29)</td>
<td>(1044.05)</td>
<td>(602.53)</td>
<td>(434.63)</td>
<td>(701.95)</td>
<td>(175.60)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>-549.51</td>
<td>515.90</td>
<td>1290.52</td>
<td>274.96</td>
<td>111.83</td>
<td>-61.26</td>
<td>-663.85</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1094.53)</td>
<td>(1122.95)</td>
<td>(1435.25)</td>
<td>(526.27)</td>
<td>(1126.66)</td>
<td>(633.05)</td>
<td>(1049.02)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-540.43</td>
<td>664.90</td>
<td>787.43</td>
<td>-16.47</td>
<td>386.09***</td>
<td>-435.93</td>
<td>77.78</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(666.29)</td>
<td>(701.80)</td>
<td>(1085.73)</td>
<td>(601.86)</td>
<td>(93.47)</td>
<td>(722.88)</td>
<td>(215.67)</td>
<td></td>
</tr>
<tr>
<td>Legumes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>552.50*</td>
<td>-2086.44***</td>
<td>344.98</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(233.90)</td>
<td>(577.94)</td>
<td>(641.20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>682.36*</td>
<td>-2791.22***</td>
<td>-96.48</td>
<td>-2842.91***</td>
<td>-249.17***</td>
<td>2138.88***</td>
<td>718.35*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(280.76)</td>
<td>(431.49)</td>
<td>(492.57)</td>
<td>(356.55)</td>
<td>(39.43)</td>
<td>(325.35)</td>
<td>(289.45)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>863.97*</td>
<td>-2217.61***</td>
<td>371.52</td>
<td>142.07</td>
<td>-507.42</td>
<td>186.60</td>
<td>-62.25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(361.18)</td>
<td>(584.63)</td>
<td>(465.67)</td>
<td>(285.97)</td>
<td>(335.76)</td>
<td>(279.30)</td>
<td>(549.87)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>478.25*</td>
<td>-2023.94***</td>
<td>328.78</td>
<td>-45.91</td>
<td>230.95</td>
<td>-175.96</td>
<td>24.62</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(198.26)</td>
<td>(591.49)</td>
<td>(684.61)</td>
<td>(131.25)</td>
<td>(174.23)</td>
<td>(394.65)</td>
<td>(229.26)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-469.68</td>
<td>-2304.92***</td>
<td>1246.57+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(401.10)</td>
<td>(500.58)</td>
<td>(752.36)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-397.28</td>
<td>-2893.74***</td>
<td>896.73</td>
<td>-3005.08***</td>
<td>32.32</td>
<td>2085.40***</td>
<td>459.51*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(458.57)</td>
<td>(587.15)</td>
<td>(725.55)</td>
<td>(110.78)</td>
<td>(155.68)</td>
<td>(286.01)</td>
<td>(216.52)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>-485.80</td>
<td>-2369.96***</td>
<td>1566.18**</td>
<td>144.09</td>
<td>-14.24</td>
<td>98.07</td>
<td>-504.34</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(439.63)</td>
<td>(557.89)</td>
<td>(600.74)</td>
<td>(210.29)</td>
<td>(301.70)</td>
<td>(231.98)</td>
<td>(435.79)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-503.05</td>
<td>-2127.89***</td>
<td>1203.39+</td>
<td>55.44</td>
<td>138.64</td>
<td>-483.75*</td>
<td>57.18</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(347.68)</td>
<td>(428.92)</td>
<td>(696.59)</td>
<td>(251.94)</td>
<td>(234.37)</td>
<td>(227.60)</td>
<td>(248.86)</td>
<td></td>
</tr>
</tbody>
</table>

Notes: See notes from Table 3. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
### Table 7. Impacts on Diet Quality, Shares - Marginal Effects (N = 3161)

<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.08***</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>-0.06**</td>
<td>-0.00</td>
<td>0.05***</td>
<td>-0.00</td>
<td>-0.04***</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>C</td>
<td>-0.01</td>
<td>-0.08***</td>
<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>-0.00</td>
<td>-0.07***</td>
<td>-0.02</td>
<td>0.00</td>
<td>-0.02***</td>
<td>-0.01*</td>
<td>0.02*</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Fruit/Vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.01</td>
<td>0.09***</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.00</td>
<td>0.10***</td>
<td>-0.00</td>
<td>0.04***</td>
<td>0.01**</td>
<td>-0.02+</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>0.00</td>
<td>0.10**</td>
<td>-0.03</td>
<td>-0.00</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.04)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>0.00</td>
<td>0.09***</td>
<td>-0.00</td>
<td>0.00</td>
<td>0.01**</td>
<td>0.01***</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>0.06**</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.00</td>
<td>0.04***</td>
<td>0.00</td>
<td>-0.05***</td>
<td>-0.01</td>
<td>0.03***</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.01</td>
<td>0.06*</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.01</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>-0.01</td>
<td>0.06***</td>
<td>0.01</td>
<td>-0.00</td>
<td>0.01*</td>
<td>-0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Legumes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.02*</td>
<td>-0.03**</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.03+</td>
<td>-0.04***</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>0.04*</td>
<td>-0.03**</td>
<td>-0.02</td>
<td>-0.00</td>
<td>-0.02**</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>D</td>
<td>0.02*</td>
<td>-0.03**</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.04***</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>-0.05**</td>
<td>0.02</td>
<td>-0.03***</td>
<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.01</td>
<td>-0.05***</td>
<td>0.03*</td>
<td>-0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>D</td>
<td>-0.01</td>
<td>-0.04***</td>
<td>0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.01*</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
</tbody>
</table>

Notes: See notes from Table 3. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
Table 8. Differential Impacts by Level of Transfer Share (N = 3161)

<table>
<thead>
<tr>
<th></th>
<th>$\alpha_1$</th>
<th>$\alpha_2$</th>
<th>$\alpha_3$</th>
<th>$\alpha_4$</th>
<th>$\alpha_7$</th>
<th>$\alpha_4 + \alpha_7$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worry about food</td>
<td>0.03</td>
<td>0.07+</td>
<td>0.07*</td>
<td>-0.13</td>
<td>0.01</td>
<td>-0.12**</td>
</tr>
<tr>
<td>PC food exp.</td>
<td>727.62</td>
<td>-16044.47***</td>
<td>-23920.79***</td>
<td>2023.18</td>
<td>3326.46+</td>
<td>5349.64***</td>
</tr>
<tr>
<td>Food Share</td>
<td>-0.01</td>
<td>-0.05***</td>
<td>-0.03***</td>
<td>-0.01</td>
<td>-0.02</td>
<td>-0.03**</td>
</tr>
<tr>
<td>&gt; 1 Meal/Day</td>
<td>-0.05*</td>
<td>-0.01</td>
<td>-0.14***</td>
<td>0.12**</td>
<td>-0.01</td>
<td>0.11+</td>
</tr>
<tr>
<td>PC Kcal</td>
<td>-82.32</td>
<td>-684.66***</td>
<td>-936.12***</td>
<td>238.80***</td>
<td>137.08***</td>
<td>375.88***</td>
</tr>
<tr>
<td>Energy Deficient</td>
<td>0.04</td>
<td>0.28**</td>
<td>0.35***</td>
<td>-0.09+</td>
<td>-0.04</td>
<td>-0.14***</td>
</tr>
<tr>
<td>Hunger Depth</td>
<td>135.65*</td>
<td>635.00**</td>
<td>609.49***</td>
<td>-233.04**</td>
<td>9.49</td>
<td>-223.55***</td>
</tr>
<tr>
<td>HDDS</td>
<td>-0.06</td>
<td>-0.95***</td>
<td>-1.55***</td>
<td>0.45</td>
<td>0.20</td>
<td>0.65</td>
</tr>
<tr>
<td>Proportion Staples</td>
<td>0.01</td>
<td>0.01</td>
<td>0.06***</td>
<td>-0.02</td>
<td>0.00</td>
<td>-0.02</td>
</tr>
<tr>
<td>Per Capita Expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cereals</td>
<td>358.39</td>
<td>-9916.32***</td>
<td>-10391.84***</td>
<td>400.49</td>
<td>1936.92*</td>
<td>2337.40***</td>
</tr>
<tr>
<td>Fruit/Veg.</td>
<td>59.29</td>
<td>-265.01</td>
<td>-3741.00***</td>
<td>598.10+</td>
<td>-604.32</td>
<td>-6.21</td>
</tr>
<tr>
<td>Meat</td>
<td>184.12</td>
<td>-642.99</td>
<td>-5801.55*</td>
<td>191.90</td>
<td>1159.02**</td>
<td>1350.92</td>
</tr>
<tr>
<td>Legumes</td>
<td>381.45***</td>
<td>-2848.41***</td>
<td>-2674.02***</td>
<td>291.46</td>
<td>829.88</td>
<td>1121.33***</td>
</tr>
<tr>
<td>Oils, etc.</td>
<td>-175.61</td>
<td>-2340.36***</td>
<td>-2901.24***</td>
<td>606.06</td>
<td>869.05**</td>
<td>1475.10*</td>
</tr>
<tr>
<td>Food Group Shares</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cereals</td>
<td>-0.00</td>
<td>-0.05***</td>
<td>0.05***</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>Fruit/Veg.</td>
<td>0.00</td>
<td>0.10**</td>
<td>0.04***</td>
<td>-0.00</td>
<td>-0.03**</td>
<td>-0.03***</td>
</tr>
<tr>
<td>Meat</td>
<td>-0.00</td>
<td>0.04**</td>
<td>-0.05***</td>
<td>0.00</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Legumes</td>
<td>0.01</td>
<td>-0.05***</td>
<td>-0.01</td>
<td>0.00</td>
<td>-0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Oils, etc.</td>
<td>-0.01</td>
<td>-0.04+</td>
<td>-0.03***</td>
<td>0.01</td>
<td>0.01</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Notes: $^1 \chi^2$ value in brackets (df=1); see notes from Table 3. + $p<0.10$; * $p<0.05$; ** $p<0.01$; *** $p<0.001$. 
### Table A1. Impacts on Current Economic Vulnerability in HH w/ Children<17 - Marginal Effects (N = 2879)

<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worried about food</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.02*</td>
<td>0.08*</td>
<td>-0.12*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.04</td>
<td>0.09*</td>
<td>-0.14</td>
<td>0.06+</td>
<td>-0.04</td>
<td>-0.02</td>
<td>0.05</td>
</tr>
<tr>
<td>C</td>
<td>0.02</td>
<td>0.05</td>
<td>-0.11</td>
<td>-0.03</td>
<td>0.02</td>
<td>0.06</td>
<td>-0.02</td>
</tr>
<tr>
<td>D</td>
<td>0.02*</td>
<td>0.08*</td>
<td>-0.11+</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.05</td>
</tr>
<tr>
<td>PC Food Exp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-739.21</td>
<td>-8844.11***</td>
<td>4405.44*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-288.53</td>
<td>-16916.45***</td>
<td>3252.19*</td>
<td>-23382.83***</td>
<td>-593.81</td>
<td>19974.34***</td>
<td>1713.85</td>
</tr>
<tr>
<td>C</td>
<td>-1291.67</td>
<td>-8738.52**</td>
<td>6183.01***</td>
<td>1586.46</td>
<td>406.10</td>
<td>-324.25</td>
<td>-2527.91</td>
</tr>
<tr>
<td>D</td>
<td>-1123.35</td>
<td>-8533.24***</td>
<td>4460.54*</td>
<td>-543.90</td>
<td>1279.18</td>
<td>-895.80</td>
<td>-325.80</td>
</tr>
<tr>
<td>Food Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.04***</td>
<td>-0.02***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>-0.06***</td>
<td>-0.01+</td>
<td>-0.03***</td>
<td>0.01</td>
<td>0.04***</td>
<td>-0.02**</td>
</tr>
<tr>
<td>C</td>
<td>-0.00</td>
<td>-0.04***</td>
<td>-0.03***</td>
<td>-0.00</td>
<td>-0.00</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>D</td>
<td>-0.01</td>
<td>-0.03***</td>
<td>-0.03*</td>
<td>0.01***</td>
<td>-0.01*</td>
<td>-0.01</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Notes: Average marginal effects from generalized linear models. Sample is restricted to households with children age 0-17 years. Standard errors in parentheses are corrected for clustering at the TA level and all estimates use sample weights. All control variables are included. + $p<0.10$; * $p<0.05$; ** $p<0.01$; *** $p<0.001$. 

---

Appendices
<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>-0.02</td>
<td>0.06+</td>
<td>0.09+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>-0.04</td>
<td>0.02</td>
<td>0.12*</td>
<td>-0.13***</td>
<td>0.03</td>
<td>0.07***</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.05)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.04)</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>0.03</td>
<td>0.10**</td>
<td>0.04</td>
<td>0.06***</td>
<td>-0.09***</td>
<td>-0.07***</td>
<td>0.09***</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.03)</td>
<td>(0.05)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.00)</td>
<td>(0.02)</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>-0.04</td>
<td>0.09*</td>
<td>0.09+</td>
<td>-0.02</td>
<td>0.05***</td>
<td>-0.06**</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.03)</td>
</tr>
<tr>
<td><strong>PC Kcal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>-110.17</td>
<td>-385.09**</td>
<td>324.11***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(87.62)</td>
<td>(127.68)</td>
<td>(8.59)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>-87.09</td>
<td>-752.57***</td>
<td>269.92***</td>
<td>-956.96***</td>
<td>-51.07</td>
<td>833.28***</td>
<td>95.81</td>
</tr>
<tr>
<td></td>
<td>(101.44)</td>
<td>(94.81)</td>
<td>(69.05)</td>
<td>(107.82)</td>
<td>(110.05)</td>
<td>(60.48)</td>
<td>(127.94)</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>-63.40</td>
<td>-416.30*</td>
<td>362.76***</td>
<td>92.00</td>
<td>-90.38</td>
<td>45.40</td>
<td>-62.87</td>
</tr>
<tr>
<td></td>
<td>(125.23)</td>
<td>(183.02)</td>
<td>(87.51)</td>
<td>(92.54)</td>
<td>(103.42)</td>
<td>(95.07)</td>
<td></td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>-96.71</td>
<td>-361.29**</td>
<td>304.18***</td>
<td>22.37</td>
<td>-45.70</td>
<td>-72.67**</td>
<td>60.37</td>
</tr>
<tr>
<td></td>
<td>(91.34)</td>
<td>(117.19)</td>
<td>(77.46)</td>
<td>(95.43)</td>
<td>(22.58)</td>
<td>(86.03)</td>
<td></td>
</tr>
<tr>
<td><strong>Energy Deficient</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>0.02</td>
<td>0.17**</td>
<td>-0.12***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>0.03</td>
<td>0.28***</td>
<td>-0.11</td>
<td>0.40***</td>
<td>-0.00</td>
<td>-0.34***</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.06)</td>
<td>(0.07)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.06)</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>0.02</td>
<td>0.19*</td>
<td>-0.15**</td>
<td>-0.03</td>
<td>0.02</td>
<td>-0.03</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.08)</td>
<td>(0.06)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>0.03</td>
<td>0.17**</td>
<td>-0.13**</td>
<td>-0.00</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.01)</td>
<td>(0.04)</td>
<td>(0.02)</td>
<td>(0.07)</td>
</tr>
<tr>
<td><strong>Hunger Depth (N = 2616)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>43.02</td>
<td>231.02**</td>
<td>-159.67***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(48.50)</td>
<td>(85.25)</td>
<td>(7.28)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>85.15</td>
<td>708.01***</td>
<td>-174.62+</td>
<td>711.61***</td>
<td>-72.45</td>
<td>-725.56***</td>
<td>15.75</td>
</tr>
<tr>
<td></td>
<td>(108.15)</td>
<td>(163.39)</td>
<td>(95.63)</td>
<td>(120.13)</td>
<td>(70.37)</td>
<td>(146.18)</td>
<td>(86.74)</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>33.77</td>
<td>232.36+</td>
<td>-191.05***</td>
<td>-56.57</td>
<td>28.52</td>
<td>-0.70</td>
<td>45.16</td>
</tr>
<tr>
<td></td>
<td>(84.72)</td>
<td>(120.60)</td>
<td>(46.68)</td>
<td>(55.76)</td>
<td>(68.05)</td>
<td>(71.52)</td>
<td>(77.84)</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>56.91</td>
<td>227.12**</td>
<td>-170.70***</td>
<td>35.74</td>
<td>-43.69</td>
<td>17.86</td>
<td>37.98</td>
</tr>
<tr>
<td></td>
<td>(62.06)</td>
<td>(86.16)</td>
<td>(27.75)</td>
<td>(23.00)</td>
<td>(68.76)</td>
<td>(15.67)</td>
<td>(93.65)</td>
</tr>
</tbody>
</table>

Notes: See notes for Table A1. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
Table A3. Impacts on Diet Quality in HH w/ Children<17 - Marginal Effects (N = 2879)

<table>
<thead>
<tr>
<th>HDDS</th>
<th>β₁</th>
<th>β₂</th>
<th>β₃</th>
<th>β₅</th>
<th>β₆</th>
<th>β₇</th>
<th>β₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-0.09</td>
<td>-0.45</td>
<td>0.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.14)</td>
<td>(0.31)</td>
<td>(0.38)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.12</td>
<td>-0.99***</td>
<td>0.45</td>
<td>-1.58***</td>
<td>0.07</td>
<td>1.17***</td>
<td>0.09</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.18)</td>
<td>(0.28)</td>
<td>(0.17)</td>
<td>(0.09)</td>
<td>(0.18)</td>
<td>(0.16)</td>
</tr>
<tr>
<td>C</td>
<td>-0.10</td>
<td>-0.16</td>
<td>0.62*</td>
<td>0.42*</td>
<td>-0.11</td>
<td>-0.54***</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td>(0.32)</td>
<td>(0.28)</td>
<td>(0.19)</td>
<td>(0.12)</td>
<td>(0.13)</td>
<td>(0.19)</td>
</tr>
<tr>
<td>D</td>
<td>-0.10</td>
<td>-0.47</td>
<td>0.55</td>
<td>-0.12</td>
<td>0.03</td>
<td>0.07</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td>(0.11)</td>
<td>(0.31)</td>
<td>(0.37)</td>
<td>(0.10)</td>
<td>(0.12)</td>
<td>(0.15)</td>
<td>(0.15)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proportion Staples</th>
<th>β₁</th>
<th>β₂</th>
<th>β₃</th>
<th>β₅</th>
<th>β₆</th>
<th>β₇</th>
<th>β₈</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0.00</td>
<td>-0.02</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.01+</td>
<td>-0.00</td>
<td>-0.02</td>
<td>0.05***</td>
<td>-0.01</td>
<td>-0.03*</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.00</td>
<td>-0.03</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.01*</td>
<td>0.03*</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>0.01</td>
<td>-0.01</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.02</td>
<td>-0.01</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.03)</td>
</tr>
</tbody>
</table>

Notes: See notes for Table A1. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
<table>
<thead>
<tr>
<th>Cereal</th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-516.13</td>
<td>-6793.53***</td>
<td>1800.47***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(592.17)</td>
<td>(538.65)</td>
<td>(498.60)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-311.97</td>
<td>-10503.26***</td>
<td>1474.87***</td>
<td>-10272.93***</td>
<td>-421.87</td>
<td>8656.32***</td>
<td>546.57</td>
</tr>
<tr>
<td></td>
<td>(369.47)</td>
<td>(347.37)</td>
<td>(361.31)</td>
<td>(881.88)</td>
<td>(1000.37)</td>
<td>(406.99)</td>
<td>(1289.02)</td>
</tr>
<tr>
<td>C</td>
<td>-1052.24</td>
<td>-7340.52***</td>
<td>3577.50***</td>
<td>634.32</td>
<td>670.78</td>
<td>921.54</td>
<td>-2839.10*</td>
</tr>
<tr>
<td></td>
<td>(1209.28)</td>
<td>(795.56)</td>
<td>(957.74)</td>
<td>(980.31)</td>
<td>(1392.90)</td>
<td>(701.30)</td>
<td>(1149.62)</td>
</tr>
<tr>
<td>D</td>
<td>-473.96</td>
<td>-6532.90***</td>
<td>1570.41**</td>
<td>-29.95</td>
<td>-167.73</td>
<td>-834.32*</td>
<td>699.29</td>
</tr>
<tr>
<td></td>
<td>(661.16)</td>
<td>(599.36)</td>
<td>(483.99)</td>
<td>(534.95)</td>
<td>(955.61)</td>
<td>(333.27)</td>
<td>(469.83)</td>
</tr>
<tr>
<td>Fruit</td>
<td>A</td>
<td>-9.70</td>
<td>1414.17+</td>
<td>623.60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(354.29)</td>
<td>(844.04)</td>
<td>(524.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-251.87</td>
<td>-309.09</td>
<td>862.31+</td>
<td>-3667.83***</td>
<td>544.28*</td>
<td>3751.58***</td>
<td>-520.95**</td>
</tr>
<tr>
<td></td>
<td>(211.51)</td>
<td>(855.96)</td>
<td>(485.34)</td>
<td>(198.18)</td>
<td>(236.87)</td>
<td>(249.90)</td>
<td>(196.74)</td>
</tr>
<tr>
<td>C</td>
<td>-35.91</td>
<td>1995.07+</td>
<td>-28.73</td>
<td>599.52+</td>
<td>-113.92</td>
<td>-1013.76</td>
<td>1226.58+</td>
</tr>
<tr>
<td></td>
<td>(270.07)</td>
<td>(1014.42)</td>
<td>(382.35)</td>
<td>(346.27)</td>
<td>(384.96)</td>
<td>(694.02)</td>
<td>(711.89)</td>
</tr>
<tr>
<td>D</td>
<td>-67.84</td>
<td>1359.54</td>
<td>752.50</td>
<td>-107.76</td>
<td>206.43</td>
<td>172.38</td>
<td>-423.96</td>
</tr>
<tr>
<td></td>
<td>(358.43)</td>
<td>(846.48)</td>
<td>(579.59)</td>
<td>(447.70)</td>
<td>(457.43)</td>
<td>(256.55)</td>
<td>(503.19)</td>
</tr>
<tr>
<td>Meat</td>
<td>A</td>
<td>-390.96</td>
<td>588.01</td>
<td>786.21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(539.85)</td>
<td>(772.82)</td>
<td>(909.03)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-169.32</td>
<td>-514.90</td>
<td>368.06</td>
<td>-5547.21***</td>
<td>-613.09*</td>
<td>4835.29***</td>
<td>885.02***</td>
</tr>
<tr>
<td></td>
<td>(613.06)</td>
<td>(681.04)</td>
<td>(784.41)</td>
<td>(587.11)</td>
<td>(302.71)</td>
<td>(629.31)</td>
<td>(213.51)</td>
</tr>
<tr>
<td>C</td>
<td>-548.19</td>
<td>585.65</td>
<td>1266.57</td>
<td>266.78</td>
<td>155.85</td>
<td>-30.18</td>
<td>-701.30</td>
</tr>
<tr>
<td></td>
<td>(1021.72)</td>
<td>(1093.39)</td>
<td>(1289.86)</td>
<td>(570.41)</td>
<td>(1103.81)</td>
<td>(603.90)</td>
<td>(984.73)</td>
</tr>
<tr>
<td>D</td>
<td>-480.48</td>
<td>678.47</td>
<td>722.41</td>
<td>-112.21</td>
<td>300.16*</td>
<td>-284.67</td>
<td>171.38</td>
</tr>
<tr>
<td></td>
<td>(575.18)</td>
<td>(684.41)</td>
<td>(947.80)</td>
<td>(534.00)</td>
<td>(126.19)</td>
<td>(711.38)</td>
<td>(261.47)</td>
</tr>
<tr>
<td>Legumes</td>
<td>A</td>
<td>530.99**</td>
<td>-1762.84***</td>
<td>375.21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(189.44)</td>
<td>(485.10)</td>
<td>(572.14)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>661.08**</td>
<td>-2417.96***</td>
<td>9.44</td>
<td>-2585.75***</td>
<td>-250.09***</td>
<td>1910.62***</td>
<td>579.05+</td>
</tr>
<tr>
<td></td>
<td>(233.95)</td>
<td>(317.51)</td>
<td>(389.62)</td>
<td>(287.53)</td>
<td>(32.75)</td>
<td>(269.38)</td>
<td>(299.88)</td>
</tr>
<tr>
<td>C</td>
<td>781.43*</td>
<td>-1818.66***</td>
<td>394.17</td>
<td>127.13</td>
<td>-416.41</td>
<td>64.16</td>
<td>-30.71</td>
</tr>
<tr>
<td></td>
<td>(312.95)</td>
<td>(489.26)</td>
<td>(391.75)</td>
<td>(297.61)</td>
<td>(322.29)</td>
<td>(291.10)</td>
<td>(511.91)</td>
</tr>
<tr>
<td>D</td>
<td>377.25*</td>
<td>-1848.59**</td>
<td>529.35</td>
<td>-238.47*</td>
<td>531.10**</td>
<td>290.67</td>
<td>-512.80</td>
</tr>
<tr>
<td></td>
<td>(172.36)</td>
<td>(577.28)</td>
<td>(601.11)</td>
<td>(117.52)</td>
<td>(178.08)</td>
<td>(555.57)</td>
<td>(392.00)</td>
</tr>
<tr>
<td>Other</td>
<td>A</td>
<td>-422.02</td>
<td>-2092.60***</td>
<td>1203.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(404.58)</td>
<td>(485.62)</td>
<td>(741.97)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-334.79</td>
<td>-2700.01***</td>
<td>843.63</td>
<td>-2867.77***</td>
<td>-6.72</td>
<td>2004.05***</td>
<td>468.54***</td>
</tr>
<tr>
<td></td>
<td>(464.96)</td>
<td>(555.60)</td>
<td>(702.47)</td>
<td>(87.11)</td>
<td>(218.13)</td>
<td>(256.32)</td>
<td>(129.68)</td>
</tr>
<tr>
<td>C</td>
<td>-441.98</td>
<td>-2106.12***</td>
<td>1537.83*</td>
<td>212.59</td>
<td>-31.09</td>
<td>5.10</td>
<td>-504.48</td>
</tr>
<tr>
<td></td>
<td>(466.67)</td>
<td>(499.82)</td>
<td>(625.64)</td>
<td>(185.56)</td>
<td>(274.65)</td>
<td>(217.44)</td>
<td>(471.17)</td>
</tr>
<tr>
<td></td>
<td>(331.92)</td>
<td>(470.89)</td>
<td>(678.75)</td>
<td>(243.86)</td>
<td>(340.95)</td>
<td>(154.37)</td>
<td>(309.08)</td>
</tr>
</tbody>
</table>

Notes: See notes for Table A1. *p<0.10; **p<0.05; ***p<0.01; ****p<0.001.
Table A5. Impacts on Diet Quality, Shares in HH w/ Children<17 - Marginal Effects (N = 2879)

<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cereal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.08***</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>-0.06**</td>
<td>-0.01</td>
<td>0.05***</td>
<td>-0.00</td>
<td>-0.05***</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>C</td>
<td>-0.01</td>
<td>-0.09***</td>
<td>0.01</td>
<td>-0.00</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>D</td>
<td>0.00</td>
<td>-0.07***</td>
<td>-0.02</td>
<td>0.01*</td>
<td>-0.03***</td>
<td>-0.02***</td>
<td>0.04**</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.03)</td>
</tr>
<tr>
<td><strong>Fruit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.00</td>
<td>0.09***</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.00</td>
<td>0.10***</td>
<td>-0.00</td>
<td>0.04***</td>
<td>0.01**</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.00</td>
<td>0.10**</td>
<td>-0.03</td>
<td>-0.00</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>0.00</td>
<td>0.09***</td>
<td>-0.00</td>
<td>0.00</td>
<td>0.01***</td>
<td>-0.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.03)</td>
</tr>
<tr>
<td><strong>Meat</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>0.06**</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>0.04*</td>
<td>0.01</td>
<td>-0.06***</td>
<td>-0.00</td>
<td>0.04***</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.01</td>
<td>0.06*</td>
<td>0.02</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>-0.01+</td>
<td>0.06***</td>
<td>0.01</td>
<td>-0.00</td>
<td>0.01*</td>
<td>-0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.03)</td>
</tr>
<tr>
<td><strong>Legumes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.02*</td>
<td>-0.03*</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.03*</td>
<td>-0.03***</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.01*</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>0.04**</td>
<td>-0.03*</td>
<td>-0.02</td>
<td>-0.00</td>
<td>-0.02***</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>D</td>
<td>0.02*</td>
<td>-0.03*</td>
<td>-0.01</td>
<td>-0.01*</td>
<td>0.01***</td>
<td>0.02</td>
<td>-0.02***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.04***</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>-0.05**</td>
<td>0.02</td>
<td>-0.03***</td>
<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.01</td>
<td>-0.04***</td>
<td>0.03+</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>-0.01</td>
<td>-0.04***</td>
<td>0.02</td>
<td>-0.00</td>
<td>0.01</td>
<td>-0.00</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
</tr>
</tbody>
</table>

Notes: See notes for Table A1. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
### Table A6. Impacts on Current Economic Vulnerability in HH w/ Children<5 - Marginal Effects (N = 1635)

<table>
<thead>
<tr>
<th></th>
<th>( \beta_1 )</th>
<th>( \beta_2 )</th>
<th>( \beta_3 )</th>
<th>( \beta_5 )</th>
<th>( \beta_6 )</th>
<th>( \beta_7 )</th>
<th>( \beta_8 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worried about food</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.02</td>
<td>0.08+</td>
<td>-0.11+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.04)</td>
<td>(0.07)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.03</td>
<td>0.08+</td>
<td>-0.12</td>
<td>0.06*</td>
<td>-0.03</td>
<td>-0.00</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.04)</td>
<td>(0.08)</td>
<td>(0.02)</td>
<td>(0.06)</td>
<td>(0.02)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>C</td>
<td>0.01</td>
<td>0.03</td>
<td>-0.09</td>
<td>-0.03</td>
<td>0.01</td>
<td>0.09</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.07)</td>
<td>(0.08)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.07)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>D</td>
<td>0.02</td>
<td>0.07+</td>
<td>-0.09</td>
<td>0.04</td>
<td>-0.00</td>
<td>0.06***</td>
<td>-0.10**</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.04)</td>
<td>(0.06)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>PC Food Exp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-1003.74</td>
<td>-7476.73**</td>
<td>3764.97+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(942.27)</td>
<td>(2347.60)</td>
<td>(1927.50)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-768.60*</td>
<td>-16254.08***</td>
<td>4833.73**</td>
<td>-20425.96***</td>
<td>-431.17</td>
<td></td>
<td>90.19</td>
</tr>
<tr>
<td></td>
<td>(358.20)</td>
<td>(850.24)</td>
<td>(1016.59)</td>
<td>(1145.25)</td>
<td>(1104.24)</td>
<td>(1116.75)</td>
<td>(1678.64)</td>
</tr>
<tr>
<td>C</td>
<td>-964.46</td>
<td>-7258.85*</td>
<td>4833.73**</td>
<td>1943.35</td>
<td>-480.83</td>
<td>-450.09</td>
<td>1526.55</td>
</tr>
<tr>
<td></td>
<td>(1455.98)</td>
<td>(3330.68)</td>
<td>(1626.87)</td>
<td>(1530.95)</td>
<td>(2121.46)</td>
<td>(2486.31)</td>
<td>(3086.0)</td>
</tr>
<tr>
<td>D</td>
<td>-1267.47</td>
<td>-7563.10***</td>
<td>3864.80*</td>
<td>-1708.16</td>
<td>1048.84</td>
<td>169.52</td>
<td>-390.52</td>
</tr>
<tr>
<td></td>
<td>(899.75)</td>
<td>(2243.65)</td>
<td>(1829.47)</td>
<td>(1388.49)</td>
<td>(1425.14)</td>
<td>(1200.64)</td>
<td>(691.58)</td>
</tr>
<tr>
<td>Food Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.00</td>
<td>-0.03**</td>
<td>-0.03***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.00</td>
<td>-0.06***</td>
<td>-0.01</td>
<td>-0.01***</td>
<td>-0.00</td>
<td>0.04***</td>
<td>-0.04*</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>C</td>
<td>0.00</td>
<td>-0.03*</td>
<td>-0.04***</td>
<td>-0.01</td>
<td>-0.01*</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>-0.00</td>
<td>-0.03*</td>
<td>-0.03***</td>
<td>0.02***</td>
<td>-0.01*</td>
<td>-0.02</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
</tbody>
</table>

Notes: Average marginal effects from generalized linear models. Sample is restricted to households with children age 0-17 years. Standard errors in parentheses are corrected for clustering at the TA level and all estimates use sample weights. All control variables are included. + \( p<0.10 \); * \( p<0.05 \); ** \( p<0.01 \); *** \( p<0.001 \).
### Table A7. Impacts on Diet Quantity in HH w/ Children<5 - Marginal Effects (N = 1635)

<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>&gt;1 Meal/Day</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.04</td>
<td>0.08*</td>
<td>0.09+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.06)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.08</td>
<td>0.03</td>
<td>0.14***</td>
<td>-0.16***</td>
<td>0.06*</td>
<td>0.07***</td>
<td>-0.07</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>C</td>
<td>0.02</td>
<td>0.11***</td>
<td>0.04</td>
<td>0.04***</td>
<td>-0.10**</td>
<td>-0.07***</td>
<td>0.09***</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>D</td>
<td>-0.05</td>
<td>0.10*</td>
<td>0.12+</td>
<td>-0.02</td>
<td>0.05</td>
<td>-0.06</td>
<td>-0.07</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.07)</td>
<td>(0.02)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.06)</td>
</tr>
<tr>
<td><strong>PC Kcal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-154.27*</td>
<td>-350.50**</td>
<td>343.22***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(78.39)</td>
<td>(134.65)</td>
<td>(15.86)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-147.38</td>
<td>-763.27***</td>
<td>341.08***</td>
<td>-859.10***</td>
<td>-24.25</td>
<td>799.58***</td>
<td>11.03</td>
</tr>
<tr>
<td></td>
<td>(116.00)</td>
<td>(95.74)</td>
<td>(100.03)</td>
<td>(80.40)</td>
<td>(94.62)</td>
<td>(64.09)</td>
<td>(158.04)</td>
</tr>
<tr>
<td>C</td>
<td>-96.20</td>
<td>-385.72+</td>
<td>356.65***</td>
<td>65.72</td>
<td>-102.54</td>
<td>53.08</td>
<td>-28.18</td>
</tr>
<tr>
<td></td>
<td>(111.33)</td>
<td>(207.34)</td>
<td>(76.03)</td>
<td>(79.30)</td>
<td>(79.16)</td>
<td>(137.49)</td>
<td>(142.31)</td>
</tr>
<tr>
<td>D</td>
<td>-126.66+</td>
<td>-338.37**</td>
<td>330.92***</td>
<td>17.00</td>
<td>-103.57</td>
<td>-50.77</td>
<td>45.52</td>
</tr>
<tr>
<td></td>
<td>(76.76)</td>
<td>(131.08)</td>
<td>(18.79)</td>
<td>(94.93)</td>
<td>(119.25)</td>
<td>(44.46)</td>
<td>(81.34)</td>
</tr>
<tr>
<td><strong>Energy Deficient</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.06</td>
<td>0.20***</td>
<td>-0.14**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.08</td>
<td>0.34***</td>
<td>-0.16+</td>
<td>0.37***</td>
<td>-0.03</td>
<td>-0.35***</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>(0.09)</td>
<td>(0.06)</td>
<td>(0.10)</td>
<td>(0.04)</td>
<td>(0.09)</td>
<td>(0.05)</td>
<td>(0.11)</td>
</tr>
<tr>
<td>C</td>
<td>0.06</td>
<td>0.23*</td>
<td>-0.17+</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.06</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td>(0.10)</td>
<td>(0.09)</td>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.08)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>D</td>
<td>0.06</td>
<td>0.20**</td>
<td>-0.16*</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.02</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.07)</td>
<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.05)</td>
<td>(0.07)</td>
<td>(0.07)</td>
</tr>
<tr>
<td><strong>Hunger Depth (N = 1529)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>75.93</td>
<td>209.84*</td>
<td>-162.64***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(49.71)</td>
<td>(93.04)</td>
<td>(18.32)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>219.66</td>
<td>794.51***</td>
<td>-293.10*</td>
<td>774.04***</td>
<td>-173.18</td>
<td>-784.39***</td>
<td>135.91</td>
</tr>
<tr>
<td></td>
<td>(158.26)</td>
<td>(198.49)</td>
<td>(133.35)</td>
<td>(129.06)</td>
<td>(109.48)</td>
<td>(166.03)</td>
<td>(137.70)</td>
</tr>
<tr>
<td>C</td>
<td>69.73</td>
<td>223.61</td>
<td>-191.35*</td>
<td>-29.11</td>
<td>16.05</td>
<td>-26.90</td>
<td>50.48</td>
</tr>
<tr>
<td></td>
<td>(93.11)</td>
<td>(147.04)</td>
<td>(76.73)</td>
<td>(70.97)</td>
<td>(87.81)</td>
<td>(103.67)</td>
<td>(133.43)</td>
</tr>
<tr>
<td>D</td>
<td>84.50+</td>
<td>213.31*</td>
<td>-186.78***</td>
<td>28.92</td>
<td>-37.78</td>
<td>-13.71</td>
<td>86.92</td>
</tr>
<tr>
<td></td>
<td>(46.25)</td>
<td>(99.11)</td>
<td>(29.55)</td>
<td>(25.02)</td>
<td>(42.38)</td>
<td>(42.54)</td>
<td>(76.40)</td>
</tr>
</tbody>
</table>

Notes: See notes for Table A6. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
Table A8. Impacts on Diet Quality in HH w/ Children<5 - Marginal Effects (N 1635)

<table>
<thead>
<tr>
<th>HDDS</th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>-0.12</td>
<td>-0.46</td>
<td>0.57</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.34)</td>
<td>(0.44)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.12</td>
<td>-1.11***</td>
<td>0.65+</td>
<td>-1.52***</td>
<td>-0.00</td>
<td>1.24***</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td>(0.10)</td>
<td>(0.18)</td>
<td>(0.36)</td>
<td>(0.15)</td>
<td>(0.11)</td>
<td>(0.22)</td>
<td>(0.21)</td>
</tr>
<tr>
<td>C</td>
<td>-0.18</td>
<td>-0.13</td>
<td>0.72**</td>
<td>0.42*</td>
<td>-0.03</td>
<td>-0.61***</td>
<td>-0.11</td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(0.36)</td>
<td>(0.24)</td>
<td>(0.20)</td>
<td>(0.21)</td>
<td>(0.18)</td>
<td>(0.30)</td>
</tr>
<tr>
<td>D</td>
<td>-0.08</td>
<td>-0.46</td>
<td>0.56</td>
<td>-0.06</td>
<td>-0.16</td>
<td>-0.03</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td>(0.34)</td>
<td>(0.38)</td>
<td>(0.10)</td>
<td>(0.14)</td>
<td>(0.17)</td>
<td>(0.26)</td>
</tr>
<tr>
<td>Proportion Staples</td>
<td>$\beta_1$</td>
<td>$\beta_2$</td>
<td>$\beta_3$</td>
<td>$\beta_5$</td>
<td>$\beta_6$</td>
<td>$\beta_7$</td>
<td>$\beta_8$</td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.02</td>
<td>0.06***</td>
<td>-0.00</td>
<td>-0.04*</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.01+</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.01*</td>
<td>0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>-0.00</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.02</td>
<td>-0.00</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
</tr>
</tbody>
</table>

Notes: See notes for Table A6. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
### Table A9. Impacts on Diet Quality (PC Exp.) in HH w/ Children<5 - Marginal Effects (N = 1635)

<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-687.49</td>
<td>-5944.05***</td>
<td>1492.91**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(587.20)</td>
<td>(739.70)</td>
<td>(519.19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-578.70</td>
<td>-9876.96***</td>
<td>1422.24</td>
<td>-9125.97***</td>
<td>-249.03</td>
<td>7821.60***</td>
<td>83.73</td>
</tr>
<tr>
<td></td>
<td>(641.44)</td>
<td>(688.69)</td>
<td>(1017.06)</td>
<td>(713.11)</td>
<td>(820.82)</td>
<td>(658.00)</td>
<td>(1612.11)</td>
</tr>
<tr>
<td>C</td>
<td>-842.67</td>
<td>-6388.10***</td>
<td>2857.64*</td>
<td>856.54</td>
<td>94.89</td>
<td>739.50</td>
<td>-2256.28</td>
</tr>
<tr>
<td></td>
<td>(1056.43)</td>
<td>(1121.31)</td>
<td>(1147.37)</td>
<td>(868.15)</td>
<td>(1248.90)</td>
<td>(1006.83)</td>
<td>(1453.50)</td>
</tr>
<tr>
<td>D</td>
<td>-479.33</td>
<td>-5817.33***</td>
<td>1327.54*</td>
<td>-349.56</td>
<td>-766.57</td>
<td>-623.68*</td>
<td>619.79</td>
</tr>
<tr>
<td></td>
<td>(636.46)</td>
<td>(744.31)</td>
<td>(535.26)</td>
<td>(695.63)</td>
<td>(785.71)</td>
<td>(251.19)</td>
<td>(401.25)</td>
</tr>
<tr>
<td>Fruit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-191.15</td>
<td>1000.59</td>
<td>669.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(246.10)</td>
<td>(682.58)</td>
<td>(460.32)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-493.89**</td>
<td>-1000.21+</td>
<td>1016.41+</td>
<td>-3456.88***</td>
<td>514.55*</td>
<td>3716.83***</td>
<td>-581.17</td>
</tr>
<tr>
<td></td>
<td>(165.27)</td>
<td>(583.06)</td>
<td>(543.26)</td>
<td>(308.21)</td>
<td>(247.72)</td>
<td>(385.07)</td>
<td>(380.38)</td>
</tr>
<tr>
<td>C</td>
<td>12.43</td>
<td>1572.63*</td>
<td>-124.22</td>
<td>721.25+</td>
<td>-451.89+</td>
<td>-963.41+</td>
<td>1426.43*</td>
</tr>
<tr>
<td></td>
<td>(222.66)</td>
<td>(760.80)</td>
<td>(229.96)</td>
<td>(386.40)</td>
<td>(233.24)</td>
<td>(730.22)</td>
<td>(674.00)</td>
</tr>
<tr>
<td>D</td>
<td>-363.56</td>
<td>844.43</td>
<td>865.13+</td>
<td>-475.20</td>
<td>672.02</td>
<td>596.69</td>
<td>-746.67*</td>
</tr>
<tr>
<td></td>
<td>(281.05)</td>
<td>(635.12)</td>
<td>(513.61)</td>
<td>(532.24)</td>
<td>(474.09)</td>
<td>(378.78)</td>
<td>(356.88)</td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-362.84</td>
<td>494.66</td>
<td>602.69</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(459.66)</td>
<td>(848.13)</td>
<td>(679.54)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-102.99</td>
<td>-835.06*</td>
<td>539.90</td>
<td>-4446.09***</td>
<td>-922.61***</td>
<td>4203.46***</td>
<td>574.58</td>
</tr>
<tr>
<td></td>
<td>(432.89)</td>
<td>(406.14)</td>
<td>(538.59)</td>
<td>(880.00)</td>
<td>(160.49)</td>
<td>(1001.71)</td>
<td>(371.98)</td>
</tr>
<tr>
<td>C</td>
<td>-191.50</td>
<td>836.95</td>
<td>630.38</td>
<td>529.33*</td>
<td>-404.24</td>
<td>-599.70**</td>
<td>59.52</td>
</tr>
<tr>
<td></td>
<td>(830.21)</td>
<td>(993.64)</td>
<td>(827.13)</td>
<td>(227.05)</td>
<td>(710.68)</td>
<td>(228.32)</td>
<td>(446.29)</td>
</tr>
<tr>
<td>D</td>
<td>-367.99</td>
<td>544.46</td>
<td>461.44</td>
<td>-180.72</td>
<td>18.67</td>
<td>-259.09</td>
<td>526.15</td>
</tr>
<tr>
<td></td>
<td>(430.17)</td>
<td>(722.43)</td>
<td>(674.99)</td>
<td>(562.37)</td>
<td>(267.42)</td>
<td>(632.12)</td>
<td>(325.33)</td>
</tr>
<tr>
<td>Legumes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>488.94***</td>
<td>-1257.91**</td>
<td>302.77</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(146.84)</td>
<td>(402.82)</td>
<td>(558.67)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>609.40***</td>
<td>-2060.56***</td>
<td>179.12</td>
<td>-2048.58***</td>
<td>-222.42</td>
<td>1833.58***</td>
<td>162.79</td>
</tr>
<tr>
<td></td>
<td>(235.39)</td>
<td>(328.06)</td>
<td>(187.60)</td>
<td>(278.23)</td>
<td>(137.39)</td>
<td>(443.22)</td>
<td>(621.66)</td>
</tr>
<tr>
<td>C</td>
<td>713.16**</td>
<td>-1434.41**</td>
<td>350.61</td>
<td>114.67</td>
<td>-366.82</td>
<td>281.70</td>
<td>-115.56</td>
</tr>
<tr>
<td></td>
<td>(241.27)</td>
<td>(489.49)</td>
<td>(443.30)</td>
<td>(296.56)</td>
<td>(280.67)</td>
<td>(421.01)</td>
<td>(591.13)</td>
</tr>
<tr>
<td>D</td>
<td>397.44+</td>
<td>-1344.10**</td>
<td>463.75</td>
<td>-198.82</td>
<td>381.09</td>
<td>349.92</td>
<td>-618.36</td>
</tr>
<tr>
<td></td>
<td>(213.06)</td>
<td>(496.93)</td>
<td>(570.02)</td>
<td>(123.14)</td>
<td>(352.55)</td>
<td>(704.69)</td>
<td>(647.16)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-402.57</td>
<td>-1619.33**</td>
<td>1032.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(343.81)</td>
<td>(519.80)</td>
<td>(732.94)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-342.49</td>
<td>-2182.52***</td>
<td>711.85</td>
<td>-2367.93***</td>
<td>-11.77</td>
<td>1521.46***</td>
<td>384.07</td>
</tr>
<tr>
<td></td>
<td>(417.47)</td>
<td>(570.23)</td>
<td>(679.37)</td>
<td>(143.89)</td>
<td>(288.45)</td>
<td>(220.35)</td>
<td>(275.90)</td>
</tr>
<tr>
<td>C</td>
<td>-692.70*</td>
<td>-1662.47**</td>
<td>1549.03*</td>
<td>151.46</td>
<td>404.37</td>
<td>86.74</td>
<td>-802.62*</td>
</tr>
<tr>
<td></td>
<td>(321.45)</td>
<td>(531.38)</td>
<td>(613.29)</td>
<td>(137.32)</td>
<td>(346.10)</td>
<td>(226.25)</td>
<td>(360.60)</td>
</tr>
<tr>
<td>D</td>
<td>-532.20+</td>
<td>-1660.37***</td>
<td>1117.92+</td>
<td>-473.07***</td>
<td>525.06+</td>
<td>129.41</td>
<td>-328.52</td>
</tr>
<tr>
<td></td>
<td>(285.59)</td>
<td>(481.08)</td>
<td>(613.48)</td>
<td>(85.06)</td>
<td>(306.53)</td>
<td>(205.52)</td>
<td>(497.78)</td>
</tr>
</tbody>
</table>

Notes: See notes for Table A6. + p<0.10; * p<0.05; ** p<0.01; *** p<0.001.
<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$</th>
<th>$\beta_2$</th>
<th>$\beta_3$</th>
<th>$\beta_5$</th>
<th>$\beta_6$</th>
<th>$\beta_7$</th>
<th>$\beta_8$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.08***</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.02</td>
<td>-0.05**</td>
<td>-0.00</td>
<td>0.05***</td>
<td>0.01</td>
<td>-0.05***</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.02)</td>
<td>(0.04)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>C</td>
<td>-0.02</td>
<td>-0.09***</td>
<td>0.01</td>
<td>-0.00</td>
<td>0.01</td>
<td>0.02</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>D</td>
<td>0.00</td>
<td>-0.07***</td>
<td>-0.02</td>
<td>0.02+</td>
<td>-0.05**</td>
<td>-0.03*</td>
<td>0.03*</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Fruit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.00</td>
<td>0.08***</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>0.09***</td>
<td>-0.00</td>
<td>0.03***</td>
<td>0.01**</td>
<td>-0.01</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>0.00</td>
<td>0.09**</td>
<td>-0.03</td>
<td>0.00</td>
<td>0.00</td>
<td>-0.01</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>0.00</td>
<td>0.08***</td>
<td>-0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>Meat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>0.05*</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.01</td>
<td>0.03+</td>
<td>0.00</td>
<td>-0.05***</td>
<td>-0.02</td>
<td>0.04***</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>C</td>
<td>-0.01</td>
<td>0.07**</td>
<td>0.01</td>
<td>0.00</td>
<td>-0.00</td>
<td>-0.02**</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>D</td>
<td>-0.01</td>
<td>0.06**</td>
<td>0.00</td>
<td>-0.00</td>
<td>0.01</td>
<td>-0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Legumes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>0.02**</td>
<td>-0.02*</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>0.03*</td>
<td>-0.03*</td>
<td>-0.01*</td>
<td>-0.00</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>C</td>
<td>0.04*</td>
<td>-0.03*</td>
<td>-0.02</td>
<td>-0.00</td>
<td>-0.02</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>D</td>
<td>0.02*</td>
<td>-0.02*</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.02*</td>
<td>0.01</td>
<td>-0.02+</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.01</td>
<td>-0.04*</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>-0.01</td>
<td>-0.04+</td>
<td>0.01</td>
<td>-0.03***</td>
<td>0.00</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>C</td>
<td>-0.02</td>
<td>-0.04**</td>
<td>0.03+</td>
<td>0.00</td>
<td>0.01***</td>
<td>0.00</td>
<td>-0.02***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>D</td>
<td>-0.01</td>
<td>-0.04**</td>
<td>0.02</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.01)</td>
</tr>
</tbody>
</table>