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April 10, 2023

Structural gender disparities in food-based assistance programs: Evidence from Syrian refugee households in Lebanon

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Abstract

Food voucher programs typically provide a per-person benefit based on poverty lines or survival-minimum consumption baskets. Such uniform transfer packages do not account for variation in structural deprivations faced by households. In this study, I assess the degree to which a food voucher program for refugees in Lebanon adequately meets the food needs of female- relative to male-headed households. Using a natural experiment in which some households received an unconditional cash transfer in addition to the food voucher, I analyze spending on food, food consumption, and food coping behaviors that results from the additional cash transfer. To estimate program effects, I utilize a regression discontinuity design which restricts to a sample of households that have been assessed as equally needy by the implementing agencies. Results indicate that both programs produce positive results for all beneficiaries. However, female-headed households who qualify for the additional cash transfer increase their food expenditure, implying that the uniform food voucher benefit level systematically fell short in providing for their families' nutritional

needs. These results imply that social assistance programs concerned with addressing a specific type of deprivation should take into account structural differences in the incidence of that deprivation when setting benefit levels.

1 Introduction

Social welfare programs are often designed to identify the needy and transfer financial resources to address household shortfalls in providing basic needs. In addition to targeting recipients, one of the major design elements of such programs is the amount needed to meaningfully alleviate deprivations. In recent decades, unconditional cash transfers (UCTs) and value voucher programs have become increasingly popular in the humanitarian field to alleviate poverty in vulnerable populations (MacPherson and Sterck 2021). Many scaled programs rely on both uniformly applied definitions of poverty and static per household or per person benefit amounts. While this approach has substantial logistical benefits in program administration, it can overlook baseline structural differences across needy populations in either their assessment of need or the benefit they receive.

Across many contexts, female-headed households (FHHs) feel the sting of poverty far more than male-headed households (MHHs), and the gap is widening. In 2021, 31.9 percent of women in the world were moderately or severely food insecure compared to 27.6 percent of men – a difference of over 4 percentage points, an increase from 3 percentage points in 2020 and 1.7 percentage points in 2019 (FAO and WHO 2022). In an ideal world, programs intended to address food insecurity would reflect such structural differences. This paper investigates whether a proxy means-tested food value voucher program for Syrian refugees in Lebanon adequately addresses female-headed households’ well-documented systemic

vulnerability to food insecurity. The findings of such an inquiry could help determine whether universal poverty definitions and common benefit levels are enough to overcome structural differences in the experience of poverty. To do this, I exploit a feature of a large-scale social assistance program in which households that were already eligible for a per capita food voucher were subject to quasi-random assignment of an additional UCT program. I use a regression discontinuity design to determine whether the unrestricted cash infusion was allocated to additional food purchases, and whether this effect differed across female- and male-headed households. This provides a test of the degree to which the assessment of need and the common per capita transfer provided is adequate across household types. That is, if a significant increase in food purchases is seen after receipt of the additional cash program, it would suggest that the food vouchers benefit level is not meeting the nutritional needs of beneficiary households.

I find that FHHs spend more on food after the additional cash transfer while MHHs see no significant change in their food expenditure. Furthermore, the expenditure that does increase for MHHs after the additional cash transfer are generally for calorie-rich food groups such as meats or for inessential items such as spices and sugar. FHHs, on the other hand, use their additional cash to purchase bulk items such as pulses, despite both groups having received the voucher transfer. This suggests that FHHs are not having their nutritional needs met by the food voucher program, and are having to spend a significant amount of their cash transfer on additional food.

These findings contribute to a literature highlighting women’s systemic vulnerability to food insecurity (Addai et al. 2022; Grimaccia and Naccarato 2022; Hanmer et al. 2020). Furthermore, the factors contributing to this systemic vulnerability are not necessarily observable by something like the proxy means-test used to determine aid eligibility (Kassie et al.

(2014), Broussard (2019)). These results suggest that when designing future welfare programs interested in alleviating a specific dimension of poverty (in this case, food insecurity and nutritional intake), it would be best to take into account structural differences in the incidence of that dimension when allocating benefits.

2 Literature

2.1 Food Voucher Programs

Existing literature on voucher-based transfers suggests a positive impact on food security and consumption, decreasing out-of-pocket spending for food while increasing overall food expenditure. Hoynes and Schanzenbach (2009) concludes from an analysis of the food stamp program that total consumption of the targeted good from all sources (cash outlays and in-kind transfers) increases. Furthermore, the study indicates that providing food stamp benefits in voucher form leads to minimal distortion of the consumption choice relative to what it would be if the benefit were provided in cash. Hidrobo et al. (2014) found that while both cash-based assistance and vouchers increased food consumption variables significantly, voucher programs in particular lead to higher levels of dietary diversity and caloric intake.

2.2 Cash Assistance Programs

Some papers have already examined the effects of the Lebanese World Food Programme (WFP) cash-based assistance program in isolation from the voucher-based program. Salti et al. (2022) use a similar regression discontinuity design to this paper with the Vulnerability Assessment of Syrian Refugees in Lebanon (VASyR) data to find that multipurpose cash by itself improves total household expenditures for all treatment groups. Altındağ and O'Connell (2023) also found that the Lebanese cash transfer

improved general household consumption, food security, and reduced the frequency of harmful coping strategies in the short-term.

In relation to food, Burchi et al. (2018) showed that while cash transfers increase availability of food for vulnerable populations in Sub-Saharan Africa, the lack of supplemental nutritional information meant that dietary diversity did not see substantial increases. These findings are corroborated by other papers such as Hoddinott et al. (2018), which found that households in Niger receiving in-kind transfers saw marked increases in dietary diversity compared to households that received cash assistance. Brugh et al. (2018) and Miller et al. (2011) also found that the cash transfer program in Malawi increased food consumption and dietary diversity variables for beneficiary households. Systematic reviews such as Doocy and Tappis (2017) found that unconditional cash transfers led to greater improvements in dietary diversity and quality than food transfers. These findings combined with the previous studies on voucher programs could suggest that the food voucher and cash transfer programs working in tandem in Lebanon could provide very positive results in increasing both consumption and dietary quality.

2.3 Gender

In the context of Syrian refugees, Hanmer et al. (2020) examines the gender disparities among refugees in Jordan. After assistance from the United Nations High Commission on Refugees (UNHCR) and the WFP, poverty rates fall for all. However, the extent to which assistance reduces poverty rates varies across household types, and after assistance, a gender-poverty gap with female heads of household at a disadvantage appears. Other studies, such as Grimaccia and Naccarato (2022), have found that certain factors, such as the number of children in a vulnerable household, impact female-headed households more than they would a comparable male-led household.

Furthermore, Kassie et al. (2014) and Broussard (2019) both found that not all of the gender disparities in food security can be explained by observable factors. This suggests that a completely quantitative proxy-means test (such as the one used to determine aid eligibility in the Lebanese case) may not necessarily account for the disparity in such a way that FHHs receive enough additional aid to eliminate it.

Armand et al. (2021) examine the effects of a gender-targeted conditional cash transfer program in North Macedonia. The authors compared expenditure shares between households living in municipalities randomized to different payment modalities and found that targeting mothers had a significant effect on the share of total expenditure allocated to food (increasing by 4-5%) Notably, observed differences in budget shares are not driven by impacts on overall household expenditure statistics, which could suggest that looking at expenditure shares might produce different results in this study. However, other papers, such as Bauchet et al. (2021) examining the pediatric nutritional impacts of a gender-targeted program in the Bolivian Amazon, finds no evidence of heterogeneity in program impacts. The authors suggest that considering cultural context is imperative for determining whether a gender-targeted method is most effective.

Hanmer et al. (2020) suggests that “unless gender disadvantage is considered in the design of development policies to replace humanitarian assistance, the poverty reduction gains it achieves will not be sustained.” This paper seeks to examine this gender-poverty gap in the context of a multi-modal assistance program and through the lens of nutritional outcomes.

3 Context and Data

The civil war in Syria has led to one of the most severe refugee crises in modern history, with more than 5.5 million Syrians forced to flee the country and another 6.9 million internally displaced (UNHCR (2023b)). One of the most popular destinations for displaced Syrians has been neighboring Lebanon, in which 1.5 million Syrian refugees are estimated to have fled. An estimated 90% of Syrian refugee households live in extreme poverty (UNHCR (2023a)). Furthermore, data compiled by the UNHCR and the Lebanese government shows that about 50% of Syrian refugee households are food-insecure (UNHCR (2019)). The WFP and the UNHCR have implemented a multiple modality social assistance program that consists of both food value vouchers program and unconditional cash transfers for refugee households. In other contexts, both of these modalities have been shown to improve the overall levels of food security and caloric intake in vulnerable populations (Haushofer et al. (2018), Hoynes and Schanzenbach (2009)). In Lebanon, these programs have been shown to improve total household expenditures, including on food, as well as increase food consumption, mitigate food insecurity, and child nutritional well-being (Altındağ and O’Connell (2023), Salti et al. (2022)).

The United Nations Children’s Fund (UNICEF), the UNHCR, and the WFP undertake an annual representative survey for assistance agencies and partners to maintain a picture of the situation of refugees in Lebanon. The Vulnerability Assessment of Syrian Refugees in Lebanon (VASyR) has been conducted annually since 2013. This survey is collected through in-person questionnaires conducted by survey teams across Lebanon’s 26 districts, and usually encompasses around 5,000 households. Areas of interest for the survey teams include coping strategies, economic vulnerability, food security, education, healthcare, among many others.

3.1 Variable Construction

For this paper, 8,753 household-level observations from the 2018 and 2019 rounds of the VASyR survey provide primary outcome measures of food expenditure, food consumption, dietary diversity, and food insecurity. I measured food consumption, dietary diversity, and food security using three standardized indices: Food Consumption Score (FCS), a Dietary Diversity Score (DDS), and the Coping Strategies Index (CSI). Variable construction was as follows. I converted the food expenditure measure variables into United States Dollars (USD) using the stable pegged conversation rate of 1,500 LPB per USD from that period and adjusted to a per-capita basis before taking the natural log for analysis. I also dropped outliers that reported spending more than \$300 per household member. First defined by the World Food Program in 2008, the FCS aggregates food consumption data based on 7-day recall questions (WFP (2015)). The VASyR questionnaire asked respondents questions such as: “How many days over the last 7 days did members of your household eat: milk and other dairy products: fresh milk/sour, yogurt, lebneh, cheese, or other dairy products?” Eight food groups (starches, pulses, vegetables, fruit, meat, dairy, fats, and sugars) are then aggregated using the standard weighting scheme that results in the FCS index that ranges from 0 to 112. The DDS is a measure of dietary diversity calculated by summing up binary variables for each food group that contributes to the FCS (with the exception of sugars), where a value of 1 indicates that the household ate that food group in the last seven days. The DDS, therefore, ranges from 0 to 7. To measure food insecurity, I use the CSI, which is calculated based on the answers to the 8 food-security related questions that VASyR asked their participants (Maxwell and Caldwell (2008)). The questions asked for a 7-day recall, so each response ranged from 0 to 7, resulting in

an index that ranges from 0 to 56.¹

The other data used in this analysis comes from program administration records. The UNHCR and WFP target their major assistance programs using a proxy means test of expenditure, which results in a continuous targeting score in units of predicted expenditure per capita. Programs are allocated to households according to relative need, which yields sharp discontinuities in eligibility at specific points in the targeting score distribution for each program. The food voucher program reaches a substantially larger share of the population than the cash program, meaning that all households receiving the cash also receive vouchers, but not vice versa. I use the two thresholds to identify effects of each program in a regression discontinuity approach, with particular focus on the effect of the additional cash transfer on top of the food vouchers across both male and female-led households. For more details see Section 4.

¹The components of the CSI are derived from the following questions about whether the household: Relied on less expensive/less preferred food, Borrowed food and/or relied on help from friends/relatives, reduced the number of meals eaten per day, reduced portion size of meals, went an entire day without eating, restricted consumption of adults in order for young children to eat, sent household members to eat elsewhere, and restricted consumption of female household members.

Table 1: Summary Statistics

Statistic	N	Mean	St. Dev.	MHH	FHH
Panel A: Demographics and targeting scores					
Household Size	8,753	5.076	2.418	5.238	4.246
Age of Household Head	8,753	37.917	11.302	37.406	40.540
Proportion of Female Household Heads	8,752	0.163	0.369	0	1.0
Targeting Score	7,759	100.101	51.648	102.861	85.812
Below Cash-Assistance Threshold	7,759	0.145	0.352	0.122	0.264
Below Voucher-Assistance Threshold	7,759	0.353	0.478	0.323	0.509
Panel B: Food consumption					
Food Consumption Score	6,150	38.689	12.227	39.000	37.082
Dietary Diversity Score	6,150	5.938	1.126	5.961	5.819
Starches	8,742	4.893	1.383	4.904	4.838
Pulses	8,753	2.023	1.447	2.014	2.070
Vegetables	8,297	1.931	1.231	1.949	1.832
Fruit	6,466	0.644	0.832	0.653	0.593
Meat	7,837	0.293	0.408	0.303	0.239
Dairy	7,837	3.053	1.844	3.109	2.760
Fats	8,753	6.169	1.822	6.151	6.264
Sugar	8,753	6.298	1.844	6.275	6.414
Panel C: Coping strategies					
Coping Strategies Index	8,753	13.909	9.925	13.729	14.844
Relied on Less Expensive Goods	8,753	4.756	2.753	4.720	4.942
Borrowed Food	8,753	1.309	2.165	1.212	1.810
Reduced Number of Meals	8,753	2.867	2.953	2.835	3.031
Reduced Portion Size	8,753	2.811	2.978	2.795	2.895
Days without Food	8,753	0.108	0.577	0.107	0.118
Restricted Food Consumption	8,753	1.905	2.838	1.923	1.814
Ate Outside Home	8,753	0.153	0.706	0.137	0.235
Panel D: Food expenditure per capita					
Total	8,272	42.784	29.494	43.222	40.358
Cereals	7,155	3.722	4.004	3.681	3.949
Tubers	7,008	3.263	3.726	3.252	3.324
Pulses	6,324	3.020	3.347	2.961	3.338
Milk	6,509	5.045	6.141	5.098	4.747
Oils	6,915	3.343	3.140	3.281	3.687
Sugar	6,991	2.330	2.707	2.298	2.507
Meat	6,491	4.681	5.335	4.721	4.441
Fruit	6,294	6.732	7.079	6.764	6.529
Spices	6,301	1.313	1.589	1.293	1.431

3.2 Summary Statistics

The average household has 5.1 people, and the average household head is nearly 38 years old. About 84 percent of households are male-headed, and 16.3% of households have a female head. 35.3% of households in the sample analyzed fall under the threshold to receive voucher-based assistance, while 14.5% of sample households also fall under the threshold to receive additional cash-based assistance. Female-headed households are much more likely to qualify for aid, with 50.9% receiving food vouchers and 26.4% receiving additional cash.

The average household has a Food Consumption Score (FCS) of 38.69 out of a possible 112.0, and a Dietary Diversity Score (DDS) of 5.94 out of a possible 7.0. As far as coping strategies, the average Syrian refugee household has a Coping Strategies Index (CSI) score of 13.91 out of a possible 56.0. This data suggests that high levels of food insecurity is common amongst Syrian refugee households in Lebanon, with high-protein food groups such as meat having the lowest consumption statistics (despite making up significant portions of food expenditure). The average household reports having to reduce their number of meals 2.8 days out of the week, and rely on less expensive goods nearly every day. Total food expenditure per capita is around \$42 USD, with a large portion of that money going to items such as fruit (around \$7 per capita) and milk (\$5 per capita). The average household spends the least per capita on items such as spices and sugar.

Female-headed households in the unrestricted sample have slightly worse scores than men, though the difference for some of the constituent scores is practically insignificant. It is important to note that these differences are averages from the entire sample of households, indicating that even FHHs too wealthy to receive aid are more food insecure on average. This is consistent with the literature and suggests that female-headed beneficiary households have a structural difference in the incidence of food

vulnerability. For the purposes of analysis and interpretation, the indices were unit standardized according to

$$x_{std} = x - \frac{\mu_x}{\sigma_x}$$

.²

4 Empirical Design

I utilized a regression discontinuity design (RDD) to analyze these variables and the constituent parts of each index. This is a quasi-experimental design in which a running continuous variable is cut off by a threshold for treatment, such that comparing units of analysis on either side of the threshold can provide insight into the treatment effect. In this case, the agencies supplying both the multipurpose cash and cash-for-food programs provide strict cutoff points in the targeting score that a household must meet in order to receive benefits. These cutoffs can be seen in Figures 1 and 2. The threshold to receive food voucher assistance is higher than the threshold to receive additional cash in both years (in this case, a lower score indicates higher vulnerability).³ Because of this, every household that received multipurpose cash also received food voucher aid, allowing me to see the effects of an additional cash transfer on top of the vouchers.

²Standardized scores are utilized in linear regression models only. The indices reported in Table 1 have not been unit standardized in order to convey characteristics of the sample in terms of the original scale of the metrics used.

³Note that the thresholds for aid eligibility change year-to-year. Both thresholds were lowered in 2019, restricting eligibility to the most vulnerable subset of the population.

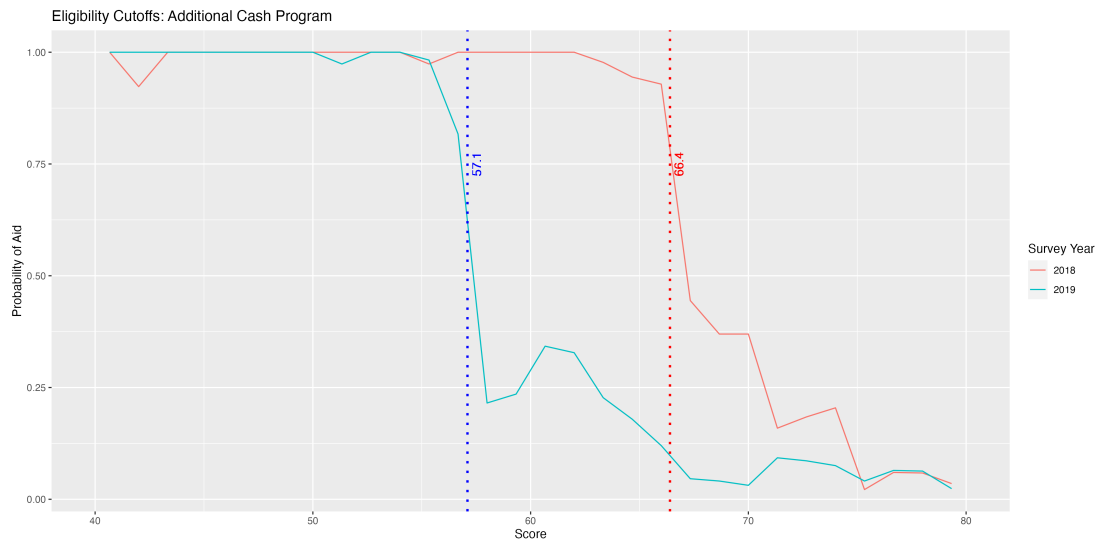


Figure 1: Eligibility schedule: additional cash program (2018-2019)

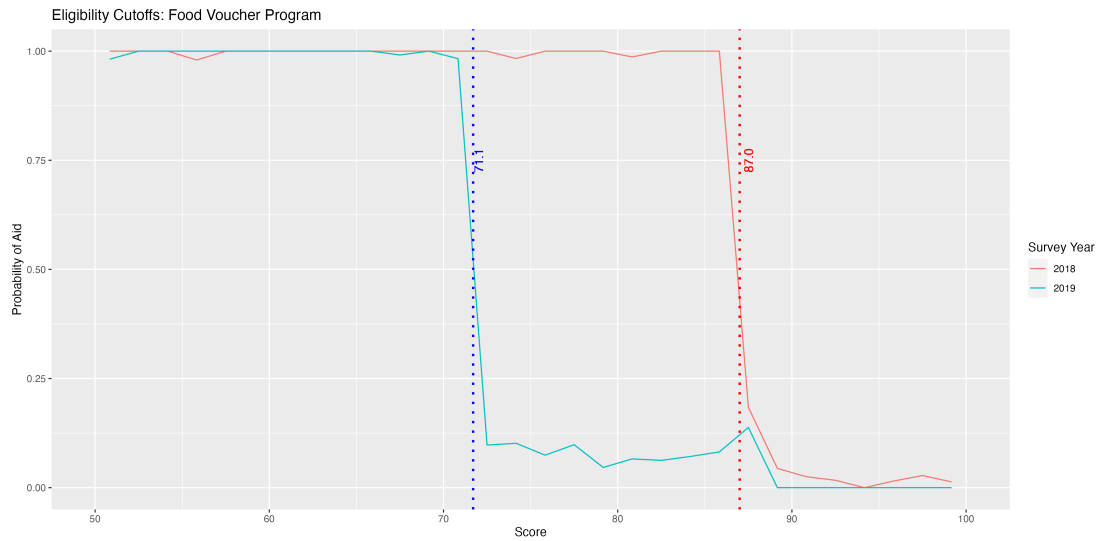


Figure 2: Eligibility schedule: food voucher program (2018-2019)

Note that the regression discontinuity approach restricts to a sample of households that have been assessed as equally needy by the implementing agencies. If the proxy-means test is effective at reducing the systemic

gender inequalities in food security, there should be little difference between male and female-led houses at the same measured vulnerability level. Therefore, my design relies on assumed quasi-random assignment of multipurpose cash assistance and cash-for-food assistance around these thresholds. The thresholds to receive aid are not explicitly stated by the WFP in their methodology, though they can be inferred by examining the targeting score in which households begin to receive a given modality. This design was first utilized to study unconditional cash programs in Altındağ and O’Connell (2023), and I adopt an otherwise similar design with a focus entirely on the estimation of effects on food-related outcomes.

Because the VASyR survey data is not longitudinal, each sample is made up of a different set of households than those surveyed in the previous year. However, since the annual assignment mechanism applies to the entire population, I am able to use random cross-sections of that population that have been subject to the same assignment mechanism for the analysis. My analysis uses VASyR data from 2018 and 2019.

Under the assumption that the assignment rule effectively randomly allocates eligibility to households around the cutoff, the following regression then recovers the reduced-form causal estimates of the program effects of cash-based interventions on my primary outcomes:

$$y_i = \alpha + \beta d_i + f(s_i) + \epsilon_i \forall s_i \in (c_t - 10, c_t + 10)$$

In this equation, y_i represents both the primary and secondary outcomes for household i . I regressed this value on a binary treatment indicator d_i that is set equal to one if the household was determined to be eligible for cash assistance. s_i represents the continuous running variable, which is the vulnerability score of a given household i . From there, two continuous local linear functions $f(s_i)$ are fit on each side of the eligibility threshold c for the given year t and the regression sample is restricted to 10 score points below and above the threshold. I selected the regres-

sion bandwidth of $h = 10$ rather than 15 or 20 to ensure that the region around the cutoff point is as small as possible. This small sampling area around the cutoff point helps to eliminate possible confounding variables that may falsely produce significant results.

$$y_i = \alpha + \beta k_i + f(s_i) + \epsilon_i \forall s_i \in (v_t - 10, v_t + 10)$$

To analyze the program effects of the voucher program, I utilize essentially the same equation, though examining eligibility for voucher-based assistance (k_i) and restricting the sample to $h = 10$ points around the voucher aid threshold v for the given year t .

To test for robustness, my design incorporates heteroskedasticity-robust standard errors as well as tests of other regression discontinuity bandwidths (including an automated bandwidth process that takes into account both sample size and program effect). See Section A.

5 Results

Before examining the results of the food voucher and additional cash programs by gender, it is important to show whether these programs are improving outcomes for the refugee population as a whole. Table 2 shows that both programs have led to positive results in all four indices. However, the nutritional effects of the food voucher program are much more statistically significant than those of the additional cash.

Most notably, food consumption increases by 0.31 standard deviations (SDs), dietary diversity increased by approximately the same magnitude, and the use of coping strategies fell 0.34 SDs. The effects of the additional cash program are much less significant overall, though a sharp increase in food consumption is still evident. Figure 1 on the following page breaks down each index into its constituent parts.

The major increases in food consumption seen in both programs are

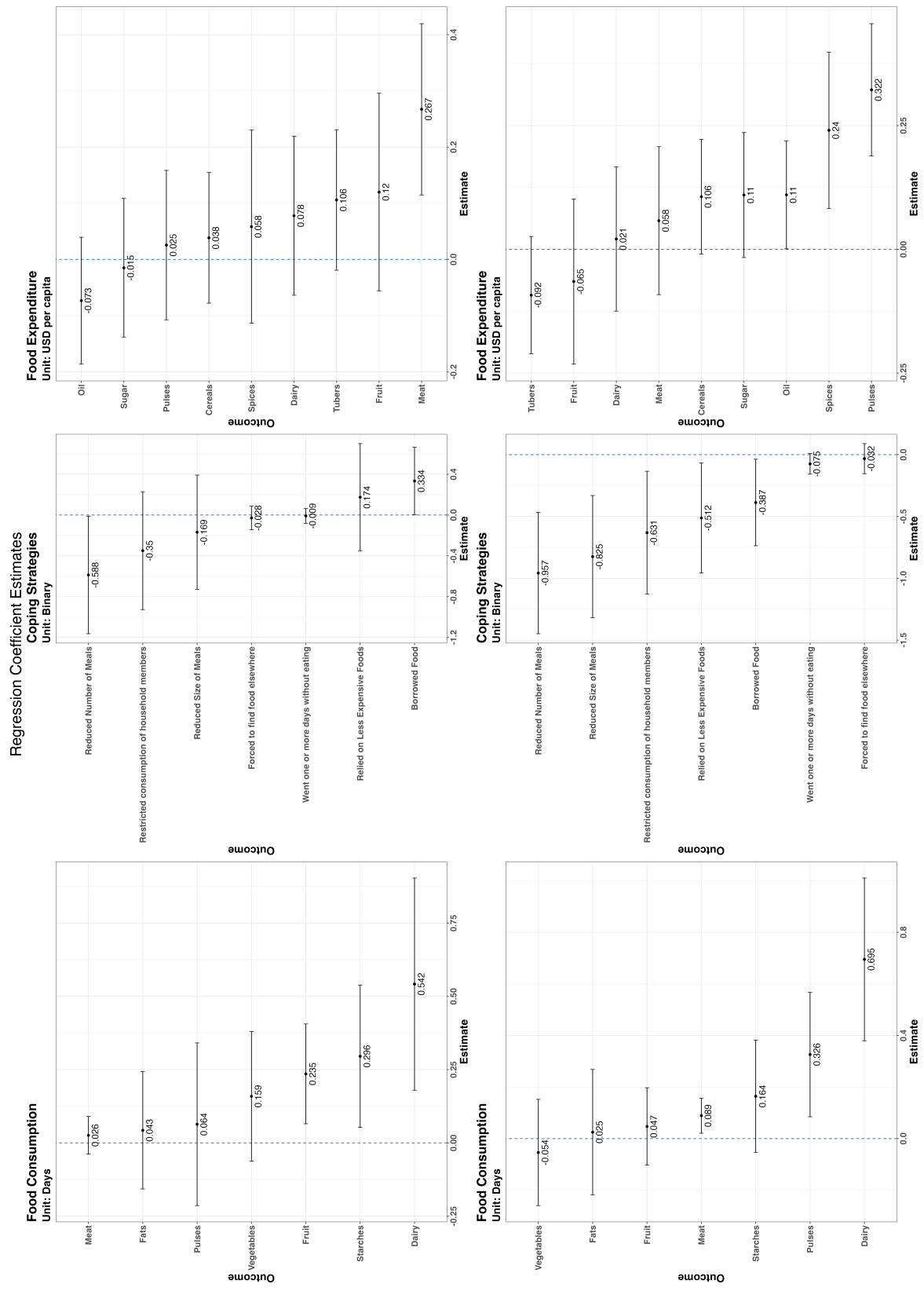


Figure 3: Voucher and cash programs impact coefficients: constituents of indices

Table 2: RD Treatment Effects

	Food Expenditure per Capita (1)	Food Consumption Score (2)	Dietary Diversity Score (3)	Coping Strategies Index (4)
Panel A: Additional UCT				
Program effect	0.09* (0.05)	0.30*** (0.10)	0.15* (0.09)	-0.07 (0.09)
N	1,455	1,151	1,151	1,474
Panel B: Food Voucher				
Program effect	0.18*** (0.05)	0.31*** (0.09)	0.30*** (0.09)	-0.34*** (0.09)
N	2,037	1,631	1,631	2,157

Note: This table reports estimates of the effect of cash and voucher-based assistance on outcomes listed in column headers, separated by programs estimated separately across panels. Program effects for expenditure per capita measures are reported in natural log points; for all index outcomes, the program effect is in units of standard deviations. The sample contains all the households within a bandwidth of 10 dollars in the targeting score on either side of the applicable threshold. All regressions include survey year fixed effects, a linear term in the poverty score as well as its interaction with the indicator for being above the detected threshold.

*p < .1; **p < .05; ***p < .01

driven largely by an increase in the amount of dairy recipient households are consuming, suggesting that dairy shifted from a rarity to a staple of the everyday diet. Households seem to consume more pulses after the food voucher transfer, while the additional cash transfer leads recipients to consume more starches and fruit. Household expenditure on food increases after the voucher transfer overall.

Table 3 shows the program effects of the food voucher program by gender. In all four indices male-led households experience a both statistically and practically significant positive effect while the impact of vouchers on FHHs is not statistically significant.

However, much of the difference in power can be contributed to the relatively small sample size for FHHs in the bandwidth. For example, despite having the same correlation coefficient for food expenditure, only MHHs display a somewhat statistically significant relationship. The only results that seem to have practical significance are food consumption and dietary diversity, which both rise significantly in male-led households yet sees little to no change in FHHs.

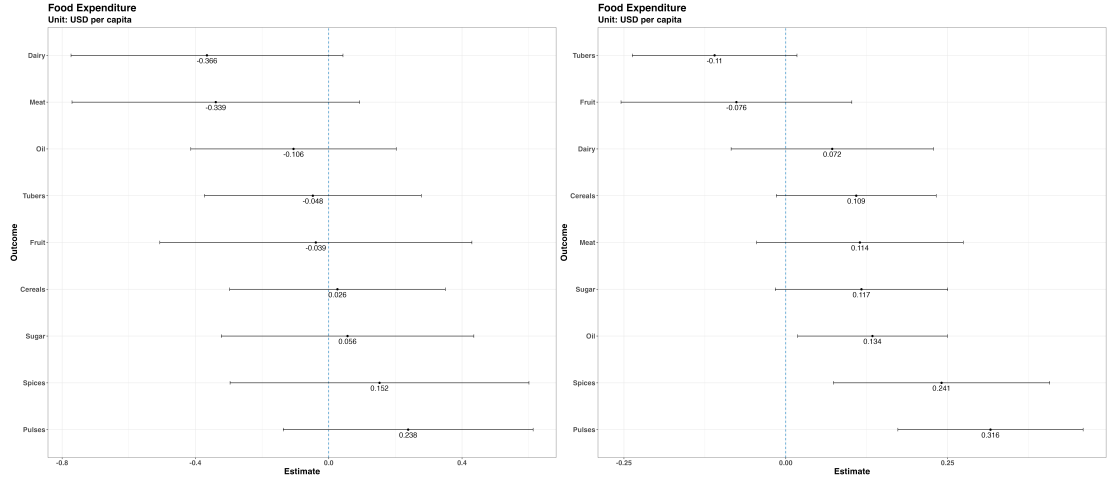
Breaking down these indices to their components in Figure 4 shows that while FHHs see a very small bump in expenditure on items like

Table 3: Food Voucher Effects by Gender

	Food Expenditure per Capita (1)	Food Consumption Score (2)	Dietary Diversity Score (3)	Coping Strategies Index (4)
Panel A: Female Household Head				
Program effect	0.09 (0.11)	0.04 (0.17)	0.10 (0.18)	-0.25 (0.16)
N	490	470	470	549
Panel B: Male Household Head				
Program effect	0.09** (0.04)	0.20** (0.08)	0.23*** (0.08)	-0.32*** (0.08)
N	2,402	2,065	2,065	2,512

Note: This table reports estimates of the effect of food voucher-based assistance on outcomes listed in column headers, separated by gender of household head estimated separately across panels. Program effects for expenditure per capita measures are reported in natural log points; for all index outcomes, the program effect is in units of standard deviations. The sample contains all the households within a bandwidth of 10 dollars in the targeting score on either side of the applicable threshold. All regressions include survey year fixed effects, a linear term in the poverty score as well as its interaction with the indicator for being above the detected threshold.
*p < .1; **p < .05; ***p < .01

sugar and spices, the primary drivers of the statistically significant jump in purchases of these luxury items are male-led households. Male-led households are also eating more dairy, starches, and meat while FHHs are primarily increasing their consumption of pulses.



(a) Female-headed households

(b) Male-headed households

Figure 4: Food expenditure after voucher program

To examine whether women-led households are experiencing the effects of these programs differently, we must look at whether this phenomenon

Table 4: Additional Cash Treatment Effects by Gender

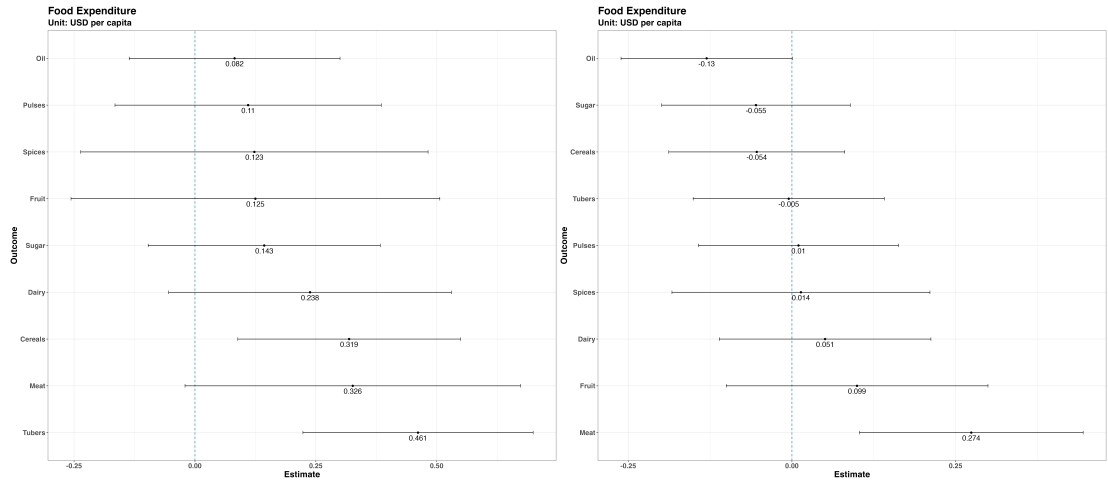
	Food Expenditure per Capita (1)	Food Consumption Score (2)	Dietary Diversity Score (3)	Coping Strategies Index (4)
Panel A: Female Household Head				
Program effect	0.23** (0.10)	0.42** (0.19)	0.35* (0.18)	0.06 (0.19)
N	352	290	290	357
Panel B: Male Household Head				
Program effect	0.05 (0.05)	0.32*** (0.11)	0.12 (0.10)	-0.12 (0.11)
N	1,103	861	861	1,117

Note: This table reports estimates of the effect of cash-based assistance on outcomes listed in column headers, separated by gender of household head estimated separately across panels. Program effects for expenditure per capita measures are reported in natural log points; for all index outcomes, the program effect is in units of standard deviations. The sample contains all the households within a bandwidth of 10 dollars in the targeting score on either side of the applicable threshold. All regressions include survey year fixed effects, a linear term in the poverty score as well as its interaction with the indicator for being above the detected threshold.

*p < .1; **p < .05; ***p < .01

of increased food expenditure after the cash program is gender-specific.

As Table 4 shows, male-led households do not see a significant change in food expenditure, while female-led households increase their expenditure by 0.23 SDs. Women also saw a slightly larger increase in their food consumption score after the transfer. Notably, food consumption score increased significantly in male-led households despite food expenditure staying relatively constant. This effect is most likely due to the nature of the food consumption score, which assigns weight to different food groups based on their caloric value.



(a) Female-headed households

(b) Male-headed households

Figure 5: Food expenditure after additional cash program

When breaking these scores down by individual food groups in Figure 5, one critically important observation is that while both male and female-headed households spend more on meat alone, female-headed households are single-handedly driving the positive impact on tuber expenditure seen in the overall program effects. While male-led households saw no significant increase in food expenditure overall, they did divert more of their money towards higher quality proteins such as meat instead of tubers and pulses. This likely explains the increase in the food consumption score seen in Table 3, since the FCS weighs high-protein food groups more heavily than carbohydrate-rich groups such as tubers.

Viewing each set of results as part of a larger picture, a story begins to emerge. When recipient households receive vouchers, only the male-led households are diverting those vouchers into a diverse and calorically-rich diet that includes luxury items like spices, while women-led households are spending most of their vouchers on pulses. This is why only male-led households see a significant difference in their dietary diversity score after the voucher program.

When the additional cash is transferred to the most vulnerable households, men spend a modest amount more on meat while women are still purchasing lower-quality proteins such as tubers. Despite this phenomenon, women see higher increases in their FCS. This suggests that women are purchasing tubers in such a large quantity (likely using nearly their entire cash transfer) that it overcomes the difference in caloric weight for the FCS construction.

6 Discussion

The World Food Programme and the UNHCR have developed a complex statistical targeting model to determine program eligibility for both the voucher program and the additional cash transfer. However, even in populations that should exhibit approximately the same level of need, I observe post-intervention consumption and expenditure patterns that imply distinct differences between male and female-led households. Women are purchasing higher quantities of lower-quality food after the additional cash transfer, suggesting that the food voucher program which satisfied the nutritional needs of male-led households are insufficient for FHHs. Women household-heads are prioritizing quantity of food over quality after they receive voucher assistance, and continuing to do so after receiving additional cash. This suggests that men and women household heads experience baseline systemic inequalities in food-related need both before the two programs, and that the programs do not meaningfully alleviate these disparities.

The underlying causes behind these differences in the incidence of deprivation are not always clear, though Kassie et al. (2014) and Broussard (2019) find that gender disparities are not always caused by immediately observable factors. It could be that discrimination plays a significant role, particularly when a woman acts as the head-of-household without a

working-age male present. For example, lenders may pursue unpaid debts more fervently or shopkeepers may be less willing to extend lines of credit to an unmarried woman.

Many different factors play a role in determining a given household's targeting score: from number of blankets in the home to the presence of running water to whether a household member has a disability. These factors are all expressed in units of predicted expenditure per capita. However, while the overall *level* of need may be more or less the same for households in the bandwidth of analysis, the *dimensions* of need differ greatly. Women-led households are more food insecure and require more food assistance even if they exhibit the same predicted expenditure as another male-led household. This is consistent with the findings of other studies such as Diab-El-Harake et al. (2022) and Felker-Kantor and Wood (2012). This suggests that a proxy means-tested program such as the one developed by the WFP and UNHCR overlook critical dimensions of need, focusing only on distilling the immensely complex situations of refugee households into one targeting score.

This is, of course, not to claim that the work of the WFP, UNHCR, and the Lebanese government have not been profoundly transformative for the lives of hundreds of thousands of Syrian refugees. As shown in Table 2, the programs themselves have strong positive impacts on food indices. Even among the women-led households in this sample, the programs increased their food consumption by nearly half a standard deviation. These gender disparities are not necessarily the result of a fault in program administration or design, but rather baseline structural differences that remain after uniform aid transfers. Any policy analysis is incomplete without an examination of who is receiving the most significant benefits from this program, and who could benefit greatly from additional help.

6.1 Limitations

While this study provides some insight into the potential inequities of proxy means-testing, it is not without its limitations. The relatively small sample size of female-led households means any comparison of program effect coefficients has to take into account the difference in statistical power. Furthermore, this study uses a running variable on each side of the regression discontinuity to simulate program effects. Longitudinal analysis of households before and after the transfers could help to eliminate any exogenous household-level effects that are not accounted for in the targeting score itself. It is unclear how much of these results (particularly any interpretation of spending on food groups) is rooted in household preferences rather than deprivation, as VASyR does not record beneficiary preferences. For example, perhaps women household-heads tend to consider perishability of the food they buy more than men, prioritizing large quantities of food that won't spoil quickly and can last through potential shocks.

While the fact that the cash program only went to voucher recipients allowed for a test of the voucher program's coverage and an analysis of the impacts of additional cash, it does not allow for a direct analysis of UCT program impacts. Program effect coefficients for the UCT program in this study should therefore not be considered as a measure of UCT effectiveness alone, but rather viewed in context alongside the food voucher program.

Future research should examine the potential benefits of a gender-based targeting model for both food voucher and UCT programs, any differences in food preferences by gender of the household-head, as well as further investigating the unobserved factors that lead to a systematic gender gap in food security.

References

- Addai, K. N., J. N. Ng’ombe, and O. Temoso. 2022, 9. “Food poverty, vulnerability, and food consumption inequality among smallholder households in ghana: A gender-based perspective.” *Social Indicators Research* 163: 661–689.
- Altındağ, O., and S. D. O’Connell. 2023, 1. “The short-lived effects of unconditional cash transfers to refugees.” *Journal of Development Economics* 160.
- Armand, A., O. Attanasio, P. Carneiro, and V. Lechene. 2021. “The effect of gender-targeted conditional cash transfers on household expenditures: Evidence from a randomized experiment.” *Economic Journal* 130: 1875–1897.
- Bauchet, J., E. Undurraga, A. Zycherman, J. Behrman, W. Leonard, and R. Godoy. 2021. “The effect of gender targeting of food transfers on child nutritional status: experimental evidence from the bolivian amazon.” *Journal of Development Effectiveness* 13: 276–291.
- Broussard, N. H. 2019, 2. “What explains gender differences in food insecurity?.” *Food Policy* 83: 180–194.
- Brugh, K., G. Angeles, P. Mvula, M. Tsoka, and S. Handa. 2018, 4. “Impacts of the malawi social cash transfer program on household food and nutrition security.” *Food Policy* 76: 19–32.
- Burchi, F., M. Scarlato, and G. D’agostino. 2018. “Addressing food insecurity in sub-saharan africa: The role of cash transfers.” *Poverty and Public Policy* 10: 564–589.
- Diab-El-Harake, M., S. Kharroubi, J. Zabaneh, and L. Jomaa. 2022, 3. “Gender-based differentials in food insecurity and well-being in arab countries.” *Global Food Security* 32.
- Doocy, S., and H. Tappis. 2017, 1. “Cash-based approaches in humanitarian emergencies: a systematic review.” *Campbell Systematic Reviews* 13: 1–200.
- FAO, IFAD, U.-W., and WHO. 2022. “The state of food security and nutrition in the world 2022. repurposing food and agricultural policies to make healthy diets more affordable..”.
- Felker-Kantor, E., and C. H. Wood. 2012, 12. “Female-headed households and food insecurity in brazil.” *Food Security* 4: 607–617.
- Grimaccia, E., and A. Naccarato. 2022, 6. “Food insecurity in europe: A gender perspective.” *Social Indicators Research* 161: 649–667.
- Hanmer, L., E. Rubiano, J. Santamaria, and D. J. Arango. 2020. “How does poverty differ among refugees? taking a gender lens to the data on syrian refugees in jordan.” *Middle East Development Journal* 12: 208–242.

- Haushofer, J., J. Shapiro, V. Isika, J. Reisinger, J. Abrams, C. Thomas, F. Diwan, C. Jang, C. Roth, A. Grigorieff, and J. Vancel. 2018. “The long-term impact of unconditional cash transfers: Experimental evidence from kenya.”
- Hidrobo, M., J. Hoddinott, A. Peterman, A. Margolies, and V. Moreira. 2014. “Cash, food, or vouchers? evidence from a randomized experiment in northern ecuador.” *Journal of Development Economics* 107: 144–156.
- Hoddinott, J., S. Sandström, and J. Upton. 2018, 7. “The impact of cash and food transfers: Evidence from a randomized intervention in niger.” *American Journal of Agricultural Economics* 100: 1032–1049.
- Hoynes, H. W., and D. W. Schanzenbach. 2009, 10. “Consumption responses to in-kind transfers: Evidence from the introduction of the food stamp program.” *American Economic Journal: Applied Economics* 1: 109–39.
- Kassie, M., S. W. Ndiritu, and J. Stage. 2014, 4. “What determines gender inequality in household food security in kenya? application of exogenous switching treatment regression.” *World Development* 56: 153–171.
- MacPherson, C., and O. Sterck. 2021, 3. “Empowering refugees through cash and agriculture: A regression discontinuity design.” *Journal of Development Economics* 149.
- Maxwell, D., and R. Caldwell. 2008. “The coping strategies index: Field methods manual.” https://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp211058.pdf.
- Miller, C. M., M. Tsoka, and K. Reichert. 2011, 4. “The impact of the social cash transfer scheme on food security in malawi.” *Food Policy* 36: 230–238.
- Salti, N., J. Chaaban, W. Moussa, A. Irani, R. A. Mokdad, Z. Jamalud-dine, and H. Ghattas. 2022, 3. “The impact of cash transfers on syrian refugees in lebanon: Evidence from a multidimensional regression discontinuity design.” *Journal of Development Economics* 155.
- UNHCR. 2023a. “Unhcr: Lebanon.” <https://www.unhcr.org/en-us/lebanon.html>. Accessed: 2023-03-20.
- UNHCR. 2023b. “Unhcr: Syria refugee crisis explained.” <https://www.unrefugees.org/news/syria-refugee-crisis-explained/>. Accessed: 2023-03-20.
- UNHCR, WFP, U. 2019. “Vulnerability assessment of syrian refugees in lebanon, 2019.”
- WFP. 2015. “Metadata for the food consumption score indicator.” <https://www.wfp.org/publications/meta-data-food-consumption-score-fcs-indicator>.

A Appendix

Table 5: Automated Bandwidths: Additional Cash Program

	Outcome	Female Household Heads	Male Household Heads
1	Food Consumption Score	9.56	4.96
2	Coping Strategies Index	8.89	9.14
3	Dietary Diversity Score	9.08	7.56
4	Food Expenditure per Capita	13.48	7.81

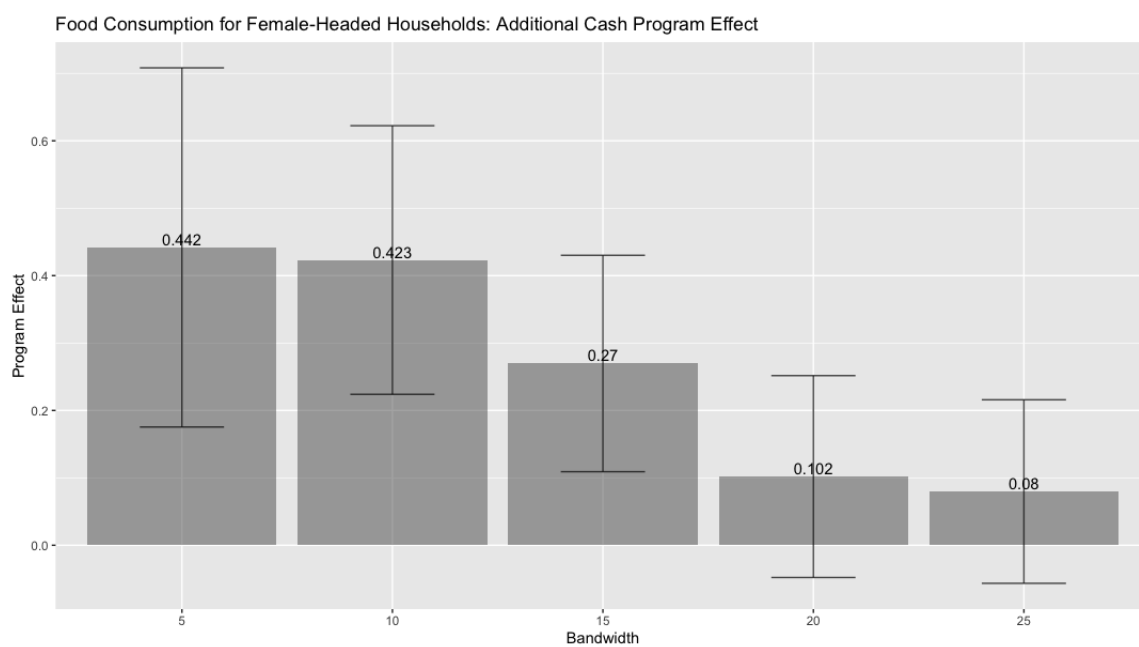


Figure 6: Multiple-bandwidth testing

Table 6: Summary Statistics: Female-Headed Household

Statistic	N	Mean	St. Dev.
Male-led Households			
Panel A: Demographics and targeting scores			
Household Size	1,424	4.246	2.356
Age of Household Head	1,424	40.540	13.093
Targeting Score	1,256	85.812	40.604
Below Cash-Assistance Threshold	1,256	0.264	0.441
Below Voucher-Assistance Threshold	1,256	0.509	0.500
Panel B: Food consumption			
Food Consumption Score	997	37.082	11.781
Dietary Diversity Score	997	5.819	1.128
Starches	1,424	4.838	1.378
Pulses	1,424	2.070	1.468
Vegetables	1,338	1.832	1.156
Fruit	1,051	0.593	0.830
Meat	1,260	0.239	0.330
Dairy	1,260	2.760	1.747
Fats	1,424	6.264	1.711
Sugar	1,424	6.414	1.661
Panel C: Coping strategies			
Coping Strategies Index	1,424	14.844	9.701
Relied on Less Expensive Goods	1,424	4.942	2.610
Borrowed Food	1,424	1.810	2.387
Reduced Number of Meals	1,424	3.031	2.948
Reduced Portion Size	1,424	2.895	3.000
Days without Food	1,424	0.118	0.545
Restricted Food Consumption	1,424	1.814	2.751
Ate Outside Home	1,424	0.235	0.802
Panel D: Food expenditure per capita			
Total	1,278	40.358	28.979
Cereals	1,093	3.949	3.170
Tubers	1,036	3.324	2.767
Pulses	991	3.338	4.363
Milk	979	4.747	5.527
Oils	1,053	3.687	2.823
Sugar	1,065	2.507	2.936
Meat	951	4.441	5.175
Fruit	867	6.529	7.326
Spices	939	1.431	1.384

Table 7: Summary Statistics: Male-Headed Household

Statistic	N	Mean	St. Dev.
Panel A: Demographics and targeting scores			
Household Size	7,328	5.238	2.396
Age of Household Head	7,328	37.406	10.848
Targeting Score	6,503	102.861	53.080
Below Cash-Assistance Threshold	6,503	0.122	0.327
Below Voucher-Assistance Threshold	6,503	0.323	0.468
Panel B: Food consumption			
Food Consumption Score	5,153	39.000	12.288
Dietary Diversity Score	5,153	5.961	1.125
Starches	7,317	4.904	1.384
Pulses	7,328	2.014	1.443
Vegetables	6,958	1.949	1.244
Fruit	5,415	0.653	0.832
Meat	6,577	0.303	0.421
Dairy	6,577	3.109	1.856
Fats	7,328	6.151	1.842
Sugar	7,328	6.275	1.877
Panel C: Coping strategies			
Coping Strategies Index	7,328	13.729	9.958
Relied on Less Expensive Goods	7,328	4.720	2.778
Borrowed Food	7,328	1.212	2.106
Reduced Number of Meals	7,328	2.835	2.953
Reduced Portion Size	7,328	2.795	2.974
Days without Food	7,328	0.107	0.583
Restricted Food Consumption	7,328	1.923	2.854
Ate Outside Home	7,328	0.137	0.684
Panel D: Food expenditure per capita			
Total	6,993	43.222	29.567
Cereals	6,061	3.681	4.135
Tubers	5,971	3.252	3.868
Pulses	5,332	2.961	3.119
Milk	5,529	5.098	6.243
Oils	5,861	3.281	3.191
Sugar	5,925	2.298	2.663
Meat	5,539	4.721	5.362
Fruit	5,427	6.764	7.039
Spices	5,361	1.293	1.622

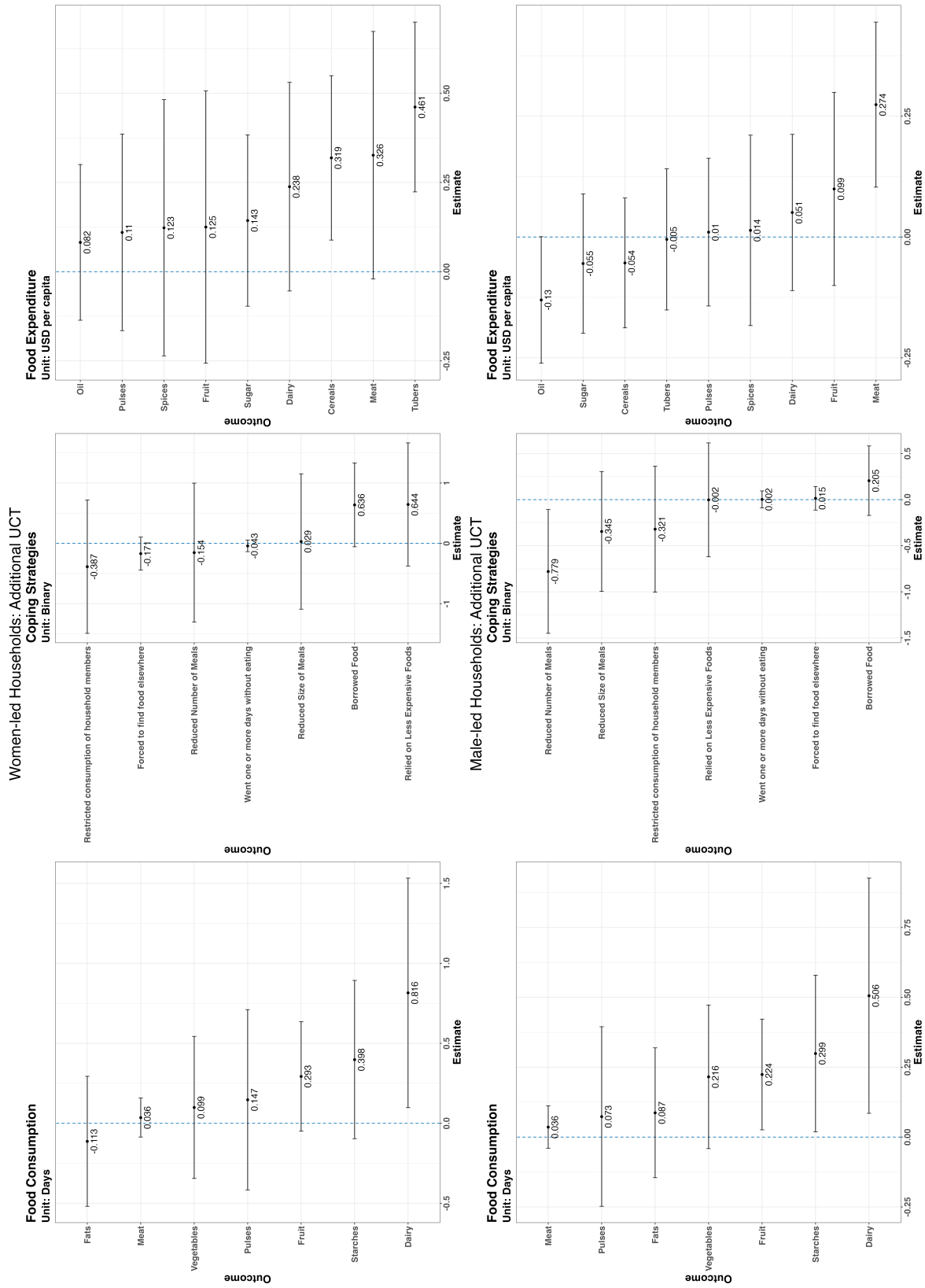


Figure 7: Cash programs impact coefficients: constituents of indices

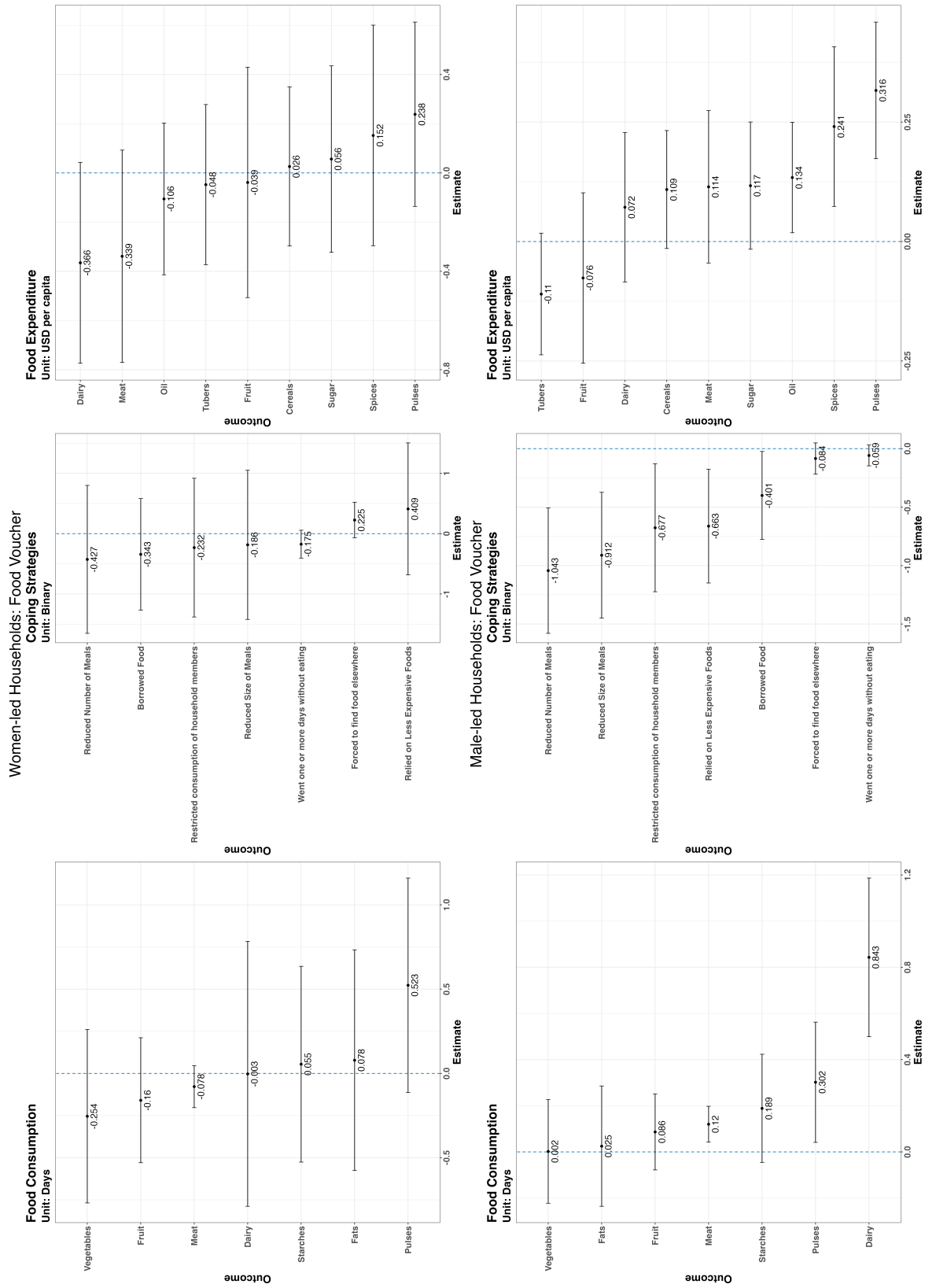


Figure 8: Voucher programs impact coefficients: constituents of indices