WFP/IFPRI

Impact Evaluation of Cash, Food Vouchers, and Food Transfers among Colombian Refugees and Poor Ecuadorians in Carchi and Sucumbíos

Final Report

Melissa Hidrobo

John Hoddinott

Amy Margolies

Vanessa Moreira

Amber Peterman

International Food Policy Research Institute
Poverty, Health, and Nutrition Division
2033 K Street, NW
Washington, DC 20006
USA

FIRST DRAFT: May 4, 2012
CURRENT DRAFT: October 17, 2012

Table of Contents

Acronyms ix

Executive Summary xi

1. Introduction 1

1.1 Background 1

1.2 Ecuador Context and Study Objectives 2

2. Intervention 4

2.1 Site Selection and Beneficiaries 4

2.2 Intervention 5

3. Evaluation Design 8

3.1 Study Design 8

3.2 Study Sample 9

3.3 Estimation Strategy 9

4. Data 12

4.1 Survey Instruments and Topics 12

4.2 Attrition Analysis 13

4.3 Baseline Analysis (by Treated and Comparison) 15

5. Experience with Program 20

5.1 Experience with Program 20

5.2 Nutrition Trainings 28

5.3 Nutrition Knowledge 28

6. Impact on Food Consumption and Dietary Diversity 31

6.1 Indicators and Descriptive Statistics 31

6.2 Impacts of Pooled Treatment on Food Consumption and Dietary Diversity 34

6.3 Impact by Treatment Arm on Food Consumption and Dietary Diversity 37

6.4 Impacts by Food Groups 39

6.5 Impacts by Nationality 43

6.6 Impacts on Nonfood Expenditure 45

7. Impact on Social Capital: Trust, Discrimination, and Participation 48

7.1 Baseline and Follow-Up Descriptive Statistics 48

7.2 Impacts on Trust, Discrimination, and Community Participation 50

7.3 Impacts on Individual Questions 52

7.4 Impacts by Nationality 55
8. Anemia 57
8.1 Indicators and Descriptive Statistics 57
8.2 Impact of Treatment on Anemia Indicators for Children 6-59 Months Old 59
8.3 Impact of Treatment on Anemia Indicators for Adolescent Females 62
9. Gender Issues 65
9.1 Decisionmaking 65
9.2 Intimate Partner Violence 73
10. Costing and Cost-Effectiveness 78
10.1 Costing Methods and Results 78
10.2 Cost-Effectiveness 81
11. Qualitative Lessons on Nutrition Training, Knowledge, and Behavior Change 83
11.1 Background 83
11.2 Methodology 84
11.3 Results 85
11.4 Qualitative Conclusion 94
12. Impact Evaluation Conclusion 96
Appendix 1: WFP Poster for Supermarkets 99
Appendix 2: Costing Methods and Definition 100
Appendix 3: Detailed Cost Tables 104
References 118

List of Tables

4.1 Modules in the baseline household questionnaire 13
4.2 Attrition rates 14
4.3 Attrition rates, by treatment and comparison groups 14
4.4 Difference in attrition rates, by treatment arms 14
4.5 Differential attrition analysis (mean values of baseline characteristics) 16
4.6 Baseline characteristics, by treatment and comparison arms 17
4.7 Baseline characteristic, by treatment arm 19
5.1 Time and cost to receive the transfer, by province 20
5.2 Time and cost to receive transfers, by modality 21
5.3 Transparency and administrative processes, by province 22
5.4 Transparency and administrative processes, by modality 22
5.5 Satisfaction with transfer modality, by treatment status 23
5.6 Difficulties experienced by voucher beneficiaries, by province 24
5.7 Difficulties experienced by food beneficiaries, by province 24
5.8 Difficulties experienced by cash beneficiaries, by province 25
5.9 Decision on how to spend or use the transfer in male headed households, by modality 26
5.10 Decision on how to spend or use the transfer in female-headed households, by modality 26
5.11 Reported uses of last food transfer, by province 27
5.12 Reported uses of last cash transfer, by province 27
5.13 Reported use of vouchers, by province 28
5.14 Nutrition training sessions 28
5.15 Baseline means, by pooled treatment 29
5.16 Follow-up means, by pooled treatment 30
6.1 Aggregate food groups and weights to calculate the Food Consumption Score 32
6.2 Baseline food consumption and dietary diversity measures, by treatment status 33
6.3 Follow-up food consumption and dietary diversity measures, by treatment status 33
6.4 Impact of pooled treatment on food consumption measures, with and without covariates 35
6.5 Impact of pooled treatment on dietary diversity measures, with and without covariates 36

6.6 Impact of treatment modalities on food consumption measures 37
6.7 Impact of treatment modalities on dietary diversity measures 38
6.8 Impact of treatment on poor to borderline food consumption 39
6.9 Impact of pooled treatment on food frequency, by food groups 41
6.10 Impact of treatment arms on food frequency, by food groups 41
6.11 Impact of treatment arms on log per capita caloric intake, by food groups 42
6.12 Impact of treatment arms on the monetary value of log per capita food consumption, by food groups ..... **Error! Bookmark not defined.**
6.13 Differential impact on food consumption with respect to nationality, by pooled treatment 43
6.14 Differential impact on food consumption with respect to nationality, by treatment arms 43
6.15 Differential impact on dietary diversity with respect to nationality, by pooled treatment 44
6.16 Differential impact on dietary diversity with respect to nationality, by treatment arms 44
6.17 Impact of pooled treatment on household expenditure (logs) 46
6.18 Impact of treatment arms on household expenditure (logs) 46
6.19 Impact of treatment arms, by nationality, on household expenditure (logs) 47
7.1 Baseline means, by pooled treatment 49
7.2 Follow-up means, by pooled treatment 49
7.3 Impact of pooled treatment on social capital measures 51
7.4 Impact of treatment modalities on social capital measures 52
7.5 Impact of treatment modalities on trust indicators 53
7.6 Impact of treatment modalities on discrimination indicators 54
7.7 Impact of treatment modalities on community participation 55
7.8 Differential impact with respect to nationality, pooled treatment 56
7.9 Differential impact with respect to nationality, by treatment arms 56
8.1 Anemia classifications 57
8.2 Baseline anemia measures among 6–59 month old children, by pooled treatment 58
8.3 Follow-up anemia measures among 6–59 month old children, by pooled treatment 58
8.4 Baseline anemia measures among adolescents aged 10 – 16, by pooled treatment 58
8.5 Follow-up anemia measures among adolescents aged 10 – 16, by pooled treatment 59
8.6 Impact of pooled treatment on anemia measures among 6–59 month old children 59
8.7 Impact of pooled treatment on anemia measures among 6–59 month old children with covariates 60

8.8 Impact of treatment modalities on anemia measures among 6–59 month old children with covariates 61
8.9 Differential impact on anemia measures among 6 - 59 month old children with covariates with respect to ethnicity, by treatment arms 61
8.10 Impact of pooled treatment on anemia measures among adolescent girls aged 10–16 62
8.11 Impact of pooled treatment on anemia measures among adolescent girls aged 10–16 with covariates 63
8.12 Impact of treatment modalities on anemia measures among adolescent girls aged 10-16 covariates 64
8.13 Differential impact on anemia measures among adolescent girls aged 10–16 with covariates with respect to ethnicity, by treatment arms 64
9.1 Baseline means of decisionmaking indicators, by pooled treatment 67
9.2 Follow-up means of decisionmaking indicators, by pooled treatment 68
9.3 Impact of pooled treatment on sole or joint decisionmaking 69
9.4 Impact of pooled treatment on sole or joint decisionmaking, with covariates 70
9.5 Impact of pooled treatment on disagreements regarding decisionmaking 71
9.6 Impact of pooled treatment on disagreements regarding decisionmaking, with covariates 71
9.7 Impact of treatment modalities on sole or joint decisionmaking, with covariates 72
9.8 Impact of treatment modalities on disagreements regarding decisionmaking domains with covariates 72
9.9 Intimate partner violence baseline means, by pooled treatment 74
9.10 Intimate partner violence follow-up means, by pooled treatment 74
9.11 Impact of pooled treatment on intimate partner violence measures 76
9.12 Impact of treatment modalities on domestic violence measures with covariates 77
9.13 Impact of treatment by gender on domestic violence measures with covariates 77
10.1 Modality-specific cost of improving food security outcomes by 15 percent 82
A3.1 Detailed budgeted costs, by modality 104
A3.2 Detailed actual costs, by modality 108
A3.3 Modality specific costs (based on actual costs) 113
A3.4 Non-modality specific costs (based on actual costs) 115

List of Figures

2.1 Map of intervention provinces 4

3.1 Illustration of the double-difference estimate of average program effect....**Error! Bookmark not defined.**

4.1 Composition (by shares) of monthly household expenditure 18

6.1 Density graphs of food consumption and dietary diversity indices, by treatment and control arms at baseline and follow-up 34

6.2 Percent increase in food security, by treatment arms 38

7.1 Percent change in social capital indicators, by treatment arms 52

10.1 Total cost to transfer $40, by modality 79

10.2 Modality-specific and nonspecific costs 80

10.3 Total cost by type (percent), by modality 81

Acronyms

ABC-I	Activity-based Costing Ingredients
ATM	Automatic Teller Machine
BDH	*Bono de Desarrollo Humano* (Human Development Grant)
CCT	Conditional Cash Transfer
CEPAR	*Centro de Estudios de Población y Desarrollo Social*
CO	Country Office
CRE	*Cruz Roja Ecuatoriana* (Ecuadorian Red Cross)
CSPro	Census and Survey Processing System
DDI	Dietary Diversity Index
DHS	Demographic and Health Survey
EFSA	Emergency Food Security Assessment
FCS	Food Consumption Score
FGD	focus group discussions
GoE	Government of Ecuador
HDDS	Household Dietary Diversity Score
HIAS	Hebrew Immigrant Aid Society
IFPRI	International Food Policy Research Institute
NGOs	nongovernmental organizations
PCA	principal components analysis
PMA	*Programa Mundial de Alimentos* (World Food Programme)
PRRO	Protracted Relief and Recovery Operation
UNHCR	United Nations High Council for Refugees
WFP	World Food Programme

Executive Summary

1. This report is the final impact evaluation of the World Food Programme's Food, Cash, and Voucher intervention and contains analysis on outcomes including food security, social capital, anemia, and gender issues. Due to the targeting of Colombian refuges and poor Ecuadorians in Northern Ecuador, it also examines whether program impacts varied by nationality. In addition, to the impact assessment, this report provides evidence surrounding participants experience with the program, conducts a costing study to examine which modality (food, cash, or voucher) provides the greatest benefit for the amount of funds invested, and presents the results from a qualitative study on the efficacy of the nutrition trainings that accompanied the transfers.

2. Chapter 2 describes the Food, Cash, and Voucher intervention. It explains how beneficiaries were selected and the different components of the program.

3. Chapter 3 presents the methods used in this study. It explains the rationale behind our use of randomization and ANCOVA impact estimates.

4. Chapter 4 describes the data used in this study. It provides information on the survey instruments and the study sample at baseline and follow-up. It conducts an attrition analysis and a baseline analysis of characteristics across treatment and comparison households and finds that randomization was relatively successful at balancing baseline characteristics.

5. Chapter 5 describes participant's experience with the program and the nutrition knowledge gained from the nutrition sessions. The main findings are as follows:

    - The cash transfer incurs the lowest costs to participants in terms of waiting times and transportation costs.
    - A higher percentage of participants prefer to receive all the transfer in cash as oppose to all in food and voucher.
    - The transparency of the program and administrative process are very clear to participants.
    - The main complaints of voucher recipients are lack of food items and higher prices in supermarkets. The main complaint of food recipients is torn food packaging, and the main complaint of cash recipients is lack of understanding on how to use the debit cards.
    - Across all three modalities the transfers are reported to be mainly used for consumption of food items; however, voucher recipients in comparison to cash recipients spend a larger percentage on food. Almost none of the food transfer or voucher is sold to buy other items. Besides food consumption, food recipients tend to share their transfer with friends or family, or save their transfer for later use. Cash recipients also report saving a small share of their cash for later use and spending a small portion on nonfood items.

- Nutrition knowledge increases from baseline to follow-up with the largest knowledge gains occurring on food items that are rich sources of iron and vitamin A, and on feeding practices for infants.

6. Chapter 6 presents the impact results of the Food, Cash, and Voucher program on food security. The main findings are the following:

   - Impact of combined transfer program on food security outcomes: Overall, program participation leads to large and significant increases across a range of food security measures, with the value of per capita food consumption increasing by 13 percent, per capita caloric intake increasing by 10 percent, Household Dietary Diversity Score (HDDS) improving by 5.1 percent, Dietary Diversity Index (DDI) by 14.4 percent, and Food Consumption Score (FCS) by 12.6 percent.
   - Impact by treatment arms on food security outcomes: All three modalities significantly increase the value of food consumption, caloric intake, and dietary diversity as measured by the DDI, HDDS, and the FCS. However, the increase on dietary diversity measures is significantly larger for the voucher modality and the increase in caloric intake is significantly larger for the food modality.
   - Impact of treatment arms on food group consumption: The food modality leads to significant increases in the number of days a household consumes 5 out of 12 food groups: cereals; roots and tubers; meat and chicken, fish and seafood; and pulses, legumes, and nuts. The cash transfer leads to significant increases in 7 food groups: roots and tubers; vegetables; meat and poultry; eggs; fish and seafood; pulses, legumes, and nuts; and milk and dairy. Finally, the voucher leads to significant increases in 9 food groups: cereals; roots and tubers; vegetables; fruits; meat and poultry; eggs; fish and seafood; pulses, legumes, and nuts; and milk and dairy. The impact of vouchers on the frequency of consumption is significantly different to that of food transfers for vegetables, eggs, and milk and dairy.
   - Impacts by nationality: Both Colombians and Ecuadorians benefit from participating in the program; however, Colombians in the food and cash group experience significantly greater gains in dietary diversity measures than Ecuadorians.
   - Impacts on nonfood expenditures: With the exception of small increases in expenditure on toys, the combined transfer program does not lead to increases in nonfood expenditures.

7. Chapter 7 presents the impact results of the program on social capital (trust, discrimination, and group participation). The main findings are the following:

   - Impact of combined transfer program: Program participation significantly increases participation in groups and it significantly decreases the probability of experiencing discrimination.

- Impact by treatment arms: Although only cash leads to a significant decrease in discrimination, the size of the impact is not different across treatment arms. Cash also leads to a significant increase in trust of institutions and decrease in trust of individuals. The increase in trust of institutions is significantly different to that of vouchers and the decrease in trust of individuals is significantly different to that of food. On the other hand, only vouchers lead to significant increases in participation in groups, and the size of the impact is significantly different to that of cash.
- Impacts by nationality: Increases in participation in groups are significantly higher for Colombians than Ecuadorians and this is mainly due to significant differential impacts from the cash arm.

8. Chapter 8 describes the data on anemia and the indicators that are used to conduct the impact analysis for children aged 6 to 59 months and for adolescent girls aged 10 to 16. The main findings from the impact analysis are the following:

    - Impact of combined transfer program: Overall participation in the program does not lead to significant changes in hemoglobin levels or anemia classifications for either young children or adolescent girls.

    - Impact by treatment arms: The program does, however, lead to a significant decrease in hemoglobin levels and increase in anemia for children in the food group, and this impact is significantly different from that of the voucher group. The program also leads to a significant increase in moderate and severe anemia for children in the cash group. For adolescent girls, there are no significant impacts across modalities.

    - Impacts by nationality: When interacted with nationality, the impact of food on hemoglobin and anemia of children is significantly larger among Colombian households.

9. Chapter 9 describes the data on women's empowerment and the indicators for household decisionmaking and intimate partner violence that are used to conduct the impact analysis. The main findings from the impact analysis are the following:

    - Impact of combined transfer program: Overall, transfers lead to a significant decrease in intimate partner violence; however, there is no impact on decision-making indicators.
    - Impact by treatment arms: The food treatment arm leads to a significant impact on experience of disagreements regarding child health. Otherwise, there are no significant impacts by treatment arm for women's decisionmaking. While all three treatment arms lead to significant decreases in physical/sexual violence, only cash and food lead to significant decreases in controlling behaviors. However, there are no significant differences across modalities in the size of the impact for any of the intimate partner violence indicators.

- Impacts by nationality: There are no significant differential impacts with respect to being Colombian on any of the household decisionmaking indicators or intimate partner violence indicators.

10. Chapter 10 presents the results from the costing study and finds that the food modality is the most costly, and the cash and voucher less costly. In terms of cost-effectiveness across food security outcomes, vouchers are the least costly means to improve these outcomes while food is the most costly means to improve these outcomes.

11. Chapter 11 presents the findings from the qualitative work which generally support and triangulate the results of the quantitative study. Beneficiary opinions of the nutrition trainings are positive, and there seems to be some evidence of behavior change, particularly in the testing and use of recipes as well as food purchase patterns. However, it is not clear whether this effect will persist without the added benefit of the transfer. In addition, the inclusion or involvement of spouses in the nutrition training and behavior change process may lead to more favorable overall outcomes.

1. Introduction

1.1 Background

Developing country governments and donors are increasingly interested in moving away from commodity-based assistance, such as food aid, and replacing it with alternative transfer modalities such as cash and vouchers. In theory, cash is preferable to in-kind transfers because it is economically more efficient (Tabor 2002). In addition, cash does not distort individual consumption or production choices at the margin (Subbarao, Bonnerjee, and Braithwaite 1997). Provided certain assumptions hold, cash transfers provide recipients with freedom of choice to make the most needed expenditures, including human capital investments, and give them a higher level of satisfaction at any given level of income than is the case with food (Hanlon, Barrientos, and Hulme 2010). Cash distribution can also stimulate agricultural production and nonagricultural activities by shifting out the demand curve for these items. Further, distributing cash is likely to be cheaper than distributing food or other commodities. For example, in-kind administrative costs can be 20-25 percent higher than that of cash transfers (Cunha 2010; Ahmed et al. 2009, 2010).

The literature on the use of alternatives to food transfers has been summarized in papers by Gentilini (2007) and Sabates-Wheeler and Devereux (2010). Both note that in contrast to the heated debates regarding the use of alternatives to food, a more careful examination of the issues suggests that both have benefits and drawbacks. In terms of their impact on beneficiaries, the impact of a food transfer compared to one received through an alternative modality depend upon at least six factors:

- In the case of a food transfer, is the size of the transfer "inframarginal" (less than what the household would have consumed without the transfer) or "extramarginal" (greater than the amount of that commodity the household would have consumed without the transfer)?
- In the case of a food transfer, is the food product a "normal" (quantity consumed rises when household income rises) or "inferior" good (quantity consumed falls when household income rises)?
- The net value of the transfer to the household after all transactions costs are taken into account. Examples that affect this value include
    - If the household sells some of the food transfer, the price they receive for that transfer relative to the value of the transfer at current market prices;
    - If the household sells a voucher, whether they receive the full value of the voucher or whether it is sold at a discount;
    - The costs of going to markets and using vouchers and/or cash to purchase food and other goods.
- The extent to which a food transfer or alternative modality is associated with the perceived obligation to use this transfer in a particular fashion (for example, food

vouchers "should" be used to purchase food; food transfers "should" be shared with extended family members).

- The interaction between the transfer modality and the gender of the recipient. For example, if food and food transfers are a "woman's" resource, while cash and cash transfers are a "man's" resource, then differences in preferences between men and women may result in different uses of transfers obtained from different modalities, even if their value is comparable.
- The extent to which beneficiaries are liquidity constrained (i.e., unable to borrow or convert goods into cash). For example, when food transfers cannot be readily resold, a "lumpy" cash transfer (unlike a similarly-valued food transfer) would be more likely to be used to make purchases of larger, nondivisible goods.

Despite substantial research into the impact of food assistance (e.g., Barrett and Maxwell 2005) and the impact of conditional cash transfers (CCTs) in many contexts (see Fiszbein et al. 2009 for review), there is almost no evidence from a rigorous evaluation directly comparing the impact and cost-effectiveness of cash transfers and food transfers in the same setting (Ahmed et al. 2009; Gentilini 2007; Webb and Kumar 1995). This evaluation study in Ecuador is one of several impact evaluations being undertaken in different countries by the World Food Programme (WFP) and the International Food Policy Research Institute (IFPRI) in which various forms of transfers will be compared to learn which modalities are most effective in different contexts.[1]

1.2 Ecuador Context and Study Objectives

Ecuador has the largest refugee population in Latin America and the vast majority of refugees are Colombians. In 2010 there were approximately 121,000 refugees and 50,000 asylum seekers living in Ecuador (UNHCR 2010). As a result of constitutional changes on immigration and refugee issues in 2008 as well as the Enhanced Registration Program in 2009, Ecuador has provided documentation to thousands of Colombian refugees in need of international protection (White 2011). However, despite programmatic action and international support, refugees remain excluded from many government services and programs, as well as discriminated against in the job market.

In order to better understand the refugee situation in Ecuador and how to respond to it, the WFP in collaboration with UNHCR conducted a study on the food security and nutrition situation of this population. They found that 27.9 percent of the Colombian refugee population is food insecure and suffers from low dietary diversity (PMA 2010). The incidence of food insecurity is higher in northern border provinces, reaching 55 percent in Sucumbíos and 44 percent in Carchi and Imbabura. In addition, 48 percent of children are anemic.

Responding to the study's findings and to a request from the Government of Ecuador (GoE) in April 2011, WFP expanded its assistance to address the food security needs of refugees and support their integration into Ecuadorian society. The new program, partially funded by

[1] The other countries are Yemen, Niger, and Uganda. These are described, along with the motivation and learning objectives for this five-country study, in Ahmed et al. (2010).

the Spanish Government, used cash, food vouchers, and food transfers to support the most vulnerable refugees as well as poor Ecuadorians in urban centers of Carchi and Sucumbíos. Both Carchi and Sucumbíos are northern border provinces that receive high influxes of Colombian refugees; however, Carchi is located in the northern highlands and Sucumbíos is located in the Amazonian lowlands.

This evaluation study is targeted at estimating the relative impact and cost-effectiveness of cash, food vouchers, and food transfers on household food security indicators; as well as complimentary indicators such as household expenditure and anemia. In addition, this report investigates the gender effects of the program and the impacts on reducing tensions and discrimination between Colombian refugees and the host Ecuadorian population. Ecuador is the only study country testing two alternatives to food assistance (rather than one) as well as the only study country implementing an urban intervention, thus the potential for learning is high. In addition to the quantitative impact evaluation, a qualitative study was conducted in order to learn more about the efficacy of nutrition trainings that accompanied the distribution of the different transfer types. The study complements the quantitative survey by exploring beneficiary preference, knowledge retention, and adoption of nutrition content.

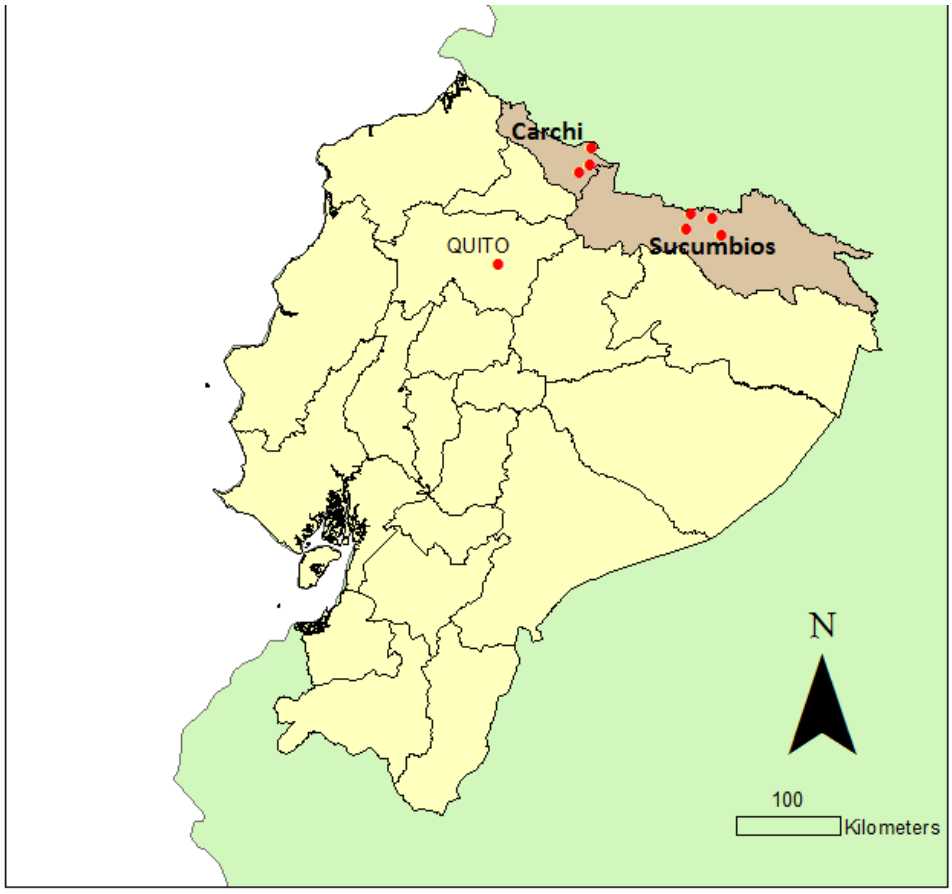
This final report describes the context for this study and presents the results. Chapter 2 introduces the WFP food, cash, and voucher transfer program and Chapter 3 describes the evaluation design. Chapter 4 describes the data and provides summary statistics. Chapter 5 describes the beneficiaries' experience with the program and nutrition knowledge gained. Chapter 6 –Chapter 9 presents the results of the impact evaluation on food security, social capital, anemia, and gender issues. Chapter 10 presents the results from the costing study, and Chapter 11 introduces the qualitative study on the efficacy of the nutrition training and presents results. Chapter 12 concludes.

2. Intervention

2.1 Site Selection and Beneficiaries

Despite sharing administrative borders, the two intervention provinces of Carchi and Sucumbíos have markedly different geographic, agro-ecological, and economic characteristics (Figure 2.1). Carchi is located in the northern highlands at high altitude, characterized by an industrial and agricultural-based economy including production of tobacco, dairy, floriculture, and staple crops such as potatoes and maize. Sucumbíos is located in the Amazonian lowlands and its economy is driven by natural resource extraction, primarily oil, making it one of the most important economic areas in Ecuador. Sucumbíos is smaller in population as compared to Carchi (128,995 versus 152,939 inhabitants); however, it is nearly five times the geographical area (7,076 versus 1,392 square miles) (WFP-Ecuador 2010).

Figure 2.1 Map of intervention provinces



Carchi and Sucumbíos were selected by WFP for the transfer program because of the high concentration of refugees and poor Ecuadorians as identified by the 2010 Emergency Food Security Assessment (EFSA). In addition, both provinces have the presence of implementing partner nongovernmental organizations (NGOs) for food transfers, financial institutions including ATM branches, supermarkets, and functioning central markets. The urban centers chosen for the study were Tulcán and San Gabriel in Carchi, and Lago Agrio (also known as

Nueva Loja) and Shushufindi in Sucumbíos. Tulcán and Lago Agrio are the capital cities of Carchi and Sucumbíos, respectively, and represent the largest urban areas within the provinces. Both cities are in close proximity to the Colombian border (for example, Tulcán is approximately 7 kilometers from the border). These urban centers were selected by WFP based on the following criteria:

- Total urban population with more than 10 percent refugees;
- Poverty index that exceeds 50 percent for the total population;
- Presence of implementing partners (NGOs and financial institutions);

In addition to these four primary urban areas, three additional smaller urban areas were included in the program target population: General Farfan, Huaca, and Pacayacu. These additional areas are suburbs close to the four primary urban areas, and share the same transfer distribution centers, financial institutions, and supermarkets.

Barrios (or "neighborhoods") within these urban centers were then pre-chosen by WFP in collaboration with local partners as areas that have large numbers of Colombian refugees and relatively high levels of poverty. Barrios are existing administrative units within the urban centers and typically headed by Presidents with oversight over social services and other administrative functions. In November and December of 2010, the *Centro de Estudios de Población y Desarrollo Social* (CEPAR) implemented a household census in these barrios. Every household in the selected barrios was visited, mapped, and administered a one-page questionnaire that consisted of basic demographic and socioeconomic questions. A proxy means test was then developed to target beneficiaries based on indicators of household demographics, nationality, labor force participation, food security, and asset ownership. Based on point scores by nationality, the decision was made to automatically include all Colombian and Colombian-Ecuadorian households as "qualifying." In addition, since WFP wanted to reach households that were not already being covered by GoE grants, the decision was made to exclude all households who reported receiving the government's social safety net transfer program, the *Bono de Desarrollo Humano* **(**BDH). Households residing in the selected barrios with low socioeconomic status that met the criteria described above formed the original sample eligible for the intervention.

2.2 Intervention

The intervention consisted of six monthly transfers of food, food vouchers, or cash to Colombian refugees and poor Ecuadorian households in selected urban centers as previously described. The transfers were distributed in coordination with local partners and the assistance of the President of each barrio. An enrollment meeting was held in March before the first transfer was distributed to issue photo ID cards as well as to sensitize beneficiaries to the program objectives and logistics. The coordination of the intervention was managed by the WFP Country Office (CO) through regional sub-offices in each province and was backstopped by staff at headquarters in Quito. In the initial enrollment and sensitization, the program was described as a poverty and food security transfer targeted toward women, and therefore, the majority of the entitlement (program identification) cardholders were expected to be women.

However, based on household demographics, men could also be entitlement holders and participate in all program activities. Overall, approximately 79 percent of cardholders in Carchi and 73 percent of cardholders in Sucumbíos were women (WFP-Ecuador 2011).

The value of the monthly transfer was standardized across all treatment arms. The total value of the cash transfer was $40 per month per household. This amount was transferred onto pre-programmed ATM cards for all cash transfer beneficiaries. Cash transfer households could retrieve their cash at any time (i.e., they could keep cash in the bank for longer than one month); however, it had to be taken out in bundles of $10. The food vouchers were also valued at $40 and were given in denominations of $20, redeemable for a list of nutritionally-approved foods at central supermarkets in each urban center. The list of approved foods is included in Appendix 1 (along with the recommended amount of food items to buy) and was composed of cereals, tubers, fruits, vegetables, legumes, meats, fish, milk products, and eggs. The food vouchers could be used over a series of two visits per month and must be redeemed within 30 days of initial receipt of the voucher. The vouchers were serialized and printed centrally, and were nontransferable. The food basket was valued according to regional market prices at $40 and included rice (24 kilograms), vegetable oil (4 liters), lentils (8 kilograms), and canned sardines (8 cans of 0.425 kilograms). The food basket was stored and distributed by local partners. The transfer size for all modalities was set to be roughly comparable to the national cash transfer scheme, the BDH, which, at the time of program design, was $35 per household.

Nutrition sensitization was a key component of the program, aimed at influencing behavior change and increasing knowledge of recipient households, especially in regards to dietary diversity. To ensure a consistent approach to knowledge transfer, a set of curricula was developed by WFP to be covered at each monthly distribution and transfers were conditional on attendance at the nutrition trainings. These topics included (1) program sensitization and information, (2) family nutrition, (3) food and nutrition for pregnant and lactating women, (4) nutrition for children aged 0–12 months, and (5) nutrition for children aged 12–24 months. Nutritional recipes were also distributed throughout the six months. During the last monthly meeting, an overview and review of lessons learned was implemented, including nutritional bingo in which participants were asked questions about previous training sessions in game format. In addition to monthly meetings, posters and flyers were developed and posted at distribution sites, including supermarkets, banks, and community centers, to further expose participants to knowledge messaging. These topics included, among others, recommended consumption of food groups, daily nutritional requirements, proper sanitation, and food preparation. An example of the posters found outside of supermarkets can be found in Appendix 1.

From a program design perspective, it is interesting to note the restrictions of specific transfer modalities. In particular, cash transfers could be categorized as unrestricted (the household has full control over expenditure decisions), while the voucher could be categorized as partially restricted (the household must spend the voucher on certain types of food, however, they have some spending decisions regarding the allocation within the specific food groups), and the food transfers fully restricted (the household receives a food basket and has no control over the composition or substitutability). The debate on benefits and drawbacks of cash versus near-cash versus in-kind benefits is ongoing within different types of transfer programs. On the one hand, classic economic theory predicts that households are better off and obtain the highest

utility from cash transfers which they can allocate towards the domain in which they have the most need. On the other hand, if certain program objectives are important to achieve, or if certain characteristics limit participants ability to allocate transfers efficiently (for example gender or other intra-household issues), then households may benefit from near-cash or in-kind transfers that are more restricted.

3. Evaluation Design

3.1 Study Design

The strategy for estimating the impacts of the cash, food voucher, and food transfer is built into the design of the program. Sample clusters were randomly assigned to one of four treatment arms: the cash transfer group, the food voucher transfer group, the food transfer group, and the comparison group (which received no transfers). Due to the distinct socioeconomic and geographic characteristics of Sucumbíos and Carchi, the randomization of cluster centers was stratified at the province level. Stratification guarantees that, within each stratum, each of the treatment arms is represented equally in each province. The rationale for doing so is that it prevents the case where, by chance, most clusters assigned to a particular treatment are located in an area that is very different from another area in which most clusters are assigned to the other treatment (in this case, location-specific characteristics would be correlated and confounded with receipt of treatment).

Randomization was conducted in two stages: first, barrios were randomized to either treatment or comparison arms; second, all treatment clusters (geographical units within barrios) were randomized to cash, food voucher, or food transfer. This measure was taken to avoid the case that a cluster assigned to the comparison group might be within the same barrio as a cluster assigned to receive a transfer and consequently cause discontent by potential beneficiaries as well as administrators. Conducting the first stage randomization at a higher level helps minimizing this possibility while still maintaining a sufficient number of randomization points. The same complications were not foreseen regarding differences in transfer type across the same barrio, and thus it was possible to randomize the treatment arms across a smaller disaggregation (clusters).

Before conducting the randomization, consultations were undertaken with WFP and CEPAR to ensure that (1) there was sufficient number of qualifying households in each cluster and (2) there was sufficient geographical distinction between clusters. This process led to 63 barrios and 128 clusters in the four urban areas over which to randomize. The number of clusters per barrio varied from one to six, with an average of approximately two per barrio. The barrios and clusters were randomized into the four treatment arms using percentages of 20/20 for comparison and food, and 30/30 for cash and food voucher. These percentages were established in consultation with WFP to meet both beneficiary target sizes by transfer type as well as sample size requirements for the evaluation design. Approximate sample size calculations were conducted across countries and can be found in Ahmed et al. (2010).

There are several reasons that we include a comparison group in this study. From an analytical standpoint, the comparison group allows us to determine whether there are *any impacts* of each of the three treatments rather than merely if there are *any differences* in the impacts between the three treatments. For example, without a comparison group, we would be unable to distinguish the case where food, voucher, and cash groups both have identical large positive impacts on our outcomes of interest from the case where food, voucher, and cash all have no impact. Moreover, the presence of a comparison group allows us to disentangle impacts of the treatment from other time trends. In particular, if both the treated groups look worse off on a range of outcomes at endline and there were no comparison group, it would be

impossible to determine whether receiving transfers somehow caused households to be worse off or whether secular trends over time that affected all households regardless of transfer receipt (e.g, weather conditions, market conditions) were responsible for the decline. The presence of the comparison group allows us to difference out the outcomes that we would counterfactually expect for the treatment groups in the absence of being treated, and therefore to isolate the change in outcomes that can be attributed exclusively to the treatments. From the practical standpoint, given that there are program funding ceilings and transfers cannot be given to all potentially vulnerable households, it is also a fair method to randomly assign which clusters and corresponding households receive transfers and which do not.

One unexpected complication in the study design was the change in beneficiary criteria implemented during the baseline survey data collection. In the process of surveying households, it was concluded that the targeting for the transfers was too broad, resulting in the inclusion of households who were relatively well off as compared to the program objectives. This led to a re-targeting process where households who were relatively well off were dropped from the study. Since there were not enough households in existing barrios to replace those that had been excluded, the decision was made to expand coverage to additional barrios on the outer circle of urban areas. These areas were subsequently re-randomized into treatment arms according to the approximate percentage lost in each treatment arm. This included ten new clusters in Sucumbíos and eight new clusters in Carchi.

3.2 Study Sample

In order to conduct an evaluation of the cash, voucher, and food transfer program, baseline and follow-up surveys were conducted. The baseline survey was conducted in March-April 2011 before the first transfers were distributed. The follow-up survey was conducted approximately 6 months later (October-November 2011) after the last of the six distributions.

The sampling for the baseline survey was conducted by CEPAR and IFPRI after receiving the beneficiary lists. Based on the distribution of clusters in the treatment arms and the required sample sizes, 27 households per comparison and food clusters and 20 households per food voucher and cash clusters were randomly selected to be interviewed in the baseline survey. In addition, since one of the main objectives of the evaluation was to compare differences across nationalities, the Colombian and Colombian-Ecuadorian households were oversampled to ensure a sufficient sample for comparative analysis. In total, 3,331 households were surveyed at baseline. However, approximately 30 percent were too rich and subsequently excluded from the program, and so we focus only on 2,357 households that were included after the retargeting period and could be matched with monitoring data. Of these households, 2,122 were re-surveyed at follow-up.

3.3 Estimation Strategy

Our estimation strategy relies on the randomized design of the cash, voucher, and food transfer program. Because the total number of clusters is relatively large, random assignment of clusters assures that, on average, households will have similar baseline characteristics across treatment and comparison arms. Such a design eliminates systematic differences between

beneficiaries and non-beneficiaries in targeted programs and minimizes the risk of bias in the impact estimates due to "selection effects" based on differences in household characteristics. As a result, average differences in outcomes across the groups after the intervention can be interpreted as being truly caused by, rather than simply correlated with, the receipt of transfers.

Moreover, we take advantage of the baseline survey and estimate the treatment effect using Analysis of Covariance (ANCOVA) which controls for the lagged outcome variable. Given the high variability and low autocorrelation of the data at baseline and follow-up, ANCOVA estimates are preferred over difference-in-difference estimates (McKenzie 2012). Intuitively, if autocorrelation is low, then difference-in-difference estimates will overcorrect for baseline imbalances. ANCOVA estimates on the other hand will adjust for baseline imbalances according to the degree of correlation between baseline and follow-up. The ANCOVA model that we estimate is the following:

$$Y_h = \propto + \beta T_h + \gamma Y_{h,pre} + \delta X_{h,pre} + \varepsilon_h$$

where Y_h is the outcome of interest for household h at follow-up and $Y_{h,pre}$ is the outcome of interest at baseline. T is an indicator for whether household h is in the treatment group, and β is the ANCOVA estimator. In other words, β represents the amount of change in outcome, Y, which is due to being assigned to the treatment group. For example, if the outcome Y is monthly household per-capita food expenditure measured in USD, and β is 3.41 and significant, the interpretation is that being in the treatment group leads to on average, a 3.41 USD increase in per capita food expenditure over the intervention period, holding other covariates constant. X is a vector of baseline covariates and δ is a vector of coefficients that correspond to each covariate. For each unit change in a specific variable x the corresponding δ represents the amount of change in outcome Y that is due to x holding other covariates constant.

Given the relative success of the random assignment, the inclusion of baseline controls is not necessary to obtain unbiased estimates of β. In most estimates, however, we account for socioeconomic characteristics from the baseline survey in order to increase the precision of the estimates and control for any minor differences between treatment and comparison arms at baseline. The core group of baseline "control" variables that we use are indicators for urban centers, an indicator for whether household head is female, and indicator for whether household head is Colombian, an indicator for whether household head has secondary education or higher, household head's age, household size, number of children 0–5 years old, number of children 6–15 years old, and household wealth quintiles (five indicators for each quintile). The household wealth quintiles were constructed from a wealth index that was created using the first principal from a principal components analysis (PCA), which is similar to the methodology used in the Demographic and Health Survey (DHS) to construct wealth scores. Variables used to construct the index are housing infrastructure indicators (e.g., type of floor, roof, toilet, light, fuel, and water source) and 11 asset indicators (e.g., refrigerator, mobile phone, TV, car, and computer). In all regressions we cluster the standard errors at the level of randomization that is the cluster.

The regression equation above can be expanded to estimate the ANCOVA estimator for each treatment arm. Specifically,

$$Y_h = \propto + \beta_f food_h + \beta_c cash_h + \beta_v voucher_h + \gamma Y_{h,pre} + \delta X_{h,pre} + \varepsilon_h$$

where $food_h$ is an indicator for whether household h is in the food treatment arm, $cash_h$ is an indicator for whether the household is in the cash treatment arm, and $voucher_h$ is an indicator for whether the household is in the voucher treatment arm. The β corresponding to each treatment arm represents the ANCOVA estimator for each arm. In order to test whether the ANCOVA estimator is statistically different by treatment arm, we conduct Wald tests of equality.

Given that we are interested in whether the impact of treatment differed by whether or not the household is Colombian, we also estimate the differential effect of treatment by creating an interaction term of the treatment indicator (T) with the indicator for whether or not the household head is Colombian (C). Specifically, we estimate

$$Y_h = \propto + \beta_1 T_h + \beta_2 T_h * C_h + \partial C_h + \gamma Y_{h,pre} + \delta X_{h,pre} + \varepsilon_h$$

β_1 now corresponds to the impact of being in the treatment arm for Ecuadorian households, while $\beta_1 + \beta_2$ corresponds to the impact of being in the treatment arm for Colombian households. Thus, β_2 is the differential impact with respect to being Colombian of the pooled treatment. Similar interaction terms are created across treatment arms to estimate the differential effect with respect to being Colombian for each treatment arm separately.

4. Data

4.1 Survey Instruments and Topics

The survey instruments used for the baseline and follow-up consisted of several components:

- *Household questionnaire*: completed for each household in the sample;
- *Hemoglobin questionnaire*: completed for children aged 6—59 months at baseline; and adolescent girls aged 10—16 years in each designated household;
- *Barrio questionnaire*: completed for each barrio;
- *Central market and supermarket price questionnaire*: completed for each urban center.

An important feature of the survey instruments was that the structure and content of the questionnaires remained largely unchanged across survey rounds. This comparability means that interpreting changes in outcomes over time is not confounded by changes in the questions used to elicit these data.

The *household questionnaire* contains household-level information as well as detailed information on individual household members. As the key objective of the study is to understand how households use the transfers, whether the use differs by transfer modality, and which household and environmental characteristics determine use, many of the modules in the household questionnaire focus on household socioeconomic characteristics and uses/sources of resources. Moreover, as an objective of the study is to understand the interplay between transfer receipt, gender, and nationality, several modules in the household questionnaire are devoted to capturing intra-household allocation of resources, decisionmaking within the household, and discrimination. The exact modules used at baseline can be found in Table 4.1. Most sections in the household questionnaire are answered by the member of the household who is most knowledgeable on the topic, which in the majority of cases is either the household head or spouse. In addition to the modules at baseline, the follow-up questionnaire contains a module on households' experience with the cash, voucher, and food transfer program.

In addition to the household questionnaire, a one-page *hemoglobin questionnaire* was completed for children 6–59 months at baseline and adolescent females age 10–16 years old. The questionnaire collected basic information, including detailed birth information, and health information relevant for calculating anemia measurements such as pregnancy and menstruation status (for adolescent girls). In addition, the hemoglobin questionnaire was designed to allow for a rapid field adjustment for altitude and pregnancy status, to properly refer children and girls who were found to be anemic, or below the cut-off 12 g/dl (adolescent girls) and 11 g/dl for children aged 6 months to 5 years, to local health clinics. All enumerators carried referral cards to local health clinics during fieldwork so that appropriate information and referrals could be made as fieldwork was conducted.

Table 4.1 Modules in the baseline household questionnaire

Module	Description	Target respondent
A	Household identification, location, and interview details	Household head
B	Household roster and demographic information	Household head
C	Education (all members aged 4–18)	Household head
D	Activities and labor force participation (all members aged 12 and above)	Household head
E	Dwelling characteristics	Household head
F	Health	Female head/spouse
G	Maternal health	Female head/spouse
H	Health and nutrition knowledge	Female head/spouse
I	Consumption habits and food security indicators	Female head/spouse
J	Consumption and food expenditure	Female head/spouse
K	Food frequency (children 6–59 months and adolescent girls aged 10–16) years	Female head/spouse
L	Markets and expenditure behavior	Female head/spouse
M	Nonfood expenditure	Household head
N	Assets (productive, durable, and credit)	Household head
O	Other transfers and income sources	Household head
Q	Budgeting behavior	Household head
R	Perceptions and discrimination	Household head
S	Migration	Household head
T	Women's status, decisionmaking, and domestic violence	Female head/spouse

Barrio questionnaires were completed for each barrio included in the sample. The instrument was administered to the barrio president, administrators, or "key informants" in the neighborhoods. The questionnaires included information on community characteristics; educational and health facilities; access to services in the community; infrastructure; livelihoods and shocks; and women's status in the community. The final component of the barrio questionnaire was a food price survey. The food price survey included a list of the main food items from the household food consumption module, to determine if food was available in barrio markets or shops, and if so, asking the unit price of the food item. This information reveals to what extent variation in availability and price of food items explains the variation in consumption patterns.

Finally, a *central market and supermarket price questionnaire* was collected, which consisted of the same price listings that were included as part of the barrio questionnaire. These questionnaires were administered in the participating supermarket and the city central market in each urban area. The objective of this exercise is to allow us to analyze the cost differentials faced by households using food vouchers, in contrast to those receiving food or cash.

4.2 Attrition Analysis

As mentioned in the section above, our analysis focuses on 2,357 households at baseline, of which we were able to resurvey 2,122, yielding an overall attrition rate of 10 percent (Table 4.2). In Carchi, attrition rates are slightly higher than attrition rates in Sucumbíos, 10.7 percent

versus 9.5 percent. A 10 percent attrition rate across survey rounds is comparable to the internal overall program attrition rate reported by WFP of approximately 8 percent over five cycles (WFP-Ecuador 2011). One reason for the fairly high attrition rate over such a short period of time is that households in our sample live near the Colombian border and are thus fairly transient. In many cases the border area is geographically adjacent to the surveyed barrios and households engage in cross-border activities such as trade and movement of goods and services. In order to find jobs, households also move to larger urban centers such as Quito and Guayaquil. The protocol for tracking households was as follows: if households lived in the same urban center however changed clusters, they were tracked with multiple visits attempted at different times during the fieldwork period. In addition, if households moved to another of the eight survey urban centers, or to Quito, they were tracked. Households that moved to a rural area or province outside the study area were not tracked.

Table 4.2 Attrition rates

	Households at baseline	Households at follow-up	Attrition rates
All	2357	2122	9.97
By province			
Carchi	916	818	10.70
Sucumbíos	1441	1304	9.51

For the purposes of our impact evaluation, if attrition is correlated with treatment assignment, then this could potentially bias our impact estimates. Table 4.3 shows that there is not a significant difference in attrition rates between the comparison arm and the pooled treatment arm. However, when we compare attrition across the comparison arm and each individual treatment arm, we do find a significant difference in rates for the food transfer arm when compared to the comparison arm (Table 4.4).

Table 4.3 Attrition rates, by treatment and comparison groups

	Comparison	Treatment	Difference
Attrition rates	0.11	0.09	0.02
	(0.01)	(0.01)	(0.01)
N	652	1,705	

Notes: Treatment refers to all treatment arms (food, cash, and voucher) combined. Standard errors reported in parentheses. Difference in means conducted using t-tests. Stars indicate the following significance levels: * p < 0.10, ** p < 0.05, *** p < 0.01.

Table 4.4 Difference in attrition rates, by treatment arms

	Means				Difference in means		
	Comparison	Food	Cash	Voucher	Comparison-food	Comparison-cash	Comparison-voucher
Attrition rates	0.11	0.08	0.09	0.11	0.04**	0.02	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
N	652	453	601	651			

Notes: Standard errors reported in parentheses. Difference in means conducted using t-tests. Stars indicate the following significance levels: * p < 0.10, ** p < 0.05, *** p < 0.01.

Attrition could bias the study results in a number of unanticipated ways. If poorer households are the ones more likely to leave the study, and significantly more households in the comparison arm left the study than in the food treatment arm, then our estimates will be underestimates of the impact of food transfers. Even across arms with similar attrition rates, differential attrition could threaten the internal validity of the study. In particular, if households that leave the treatment arms are poorer than households that leave the comparison arm, then our treatment estimates will be biased because any change in outcomes will be due to both treatment *and* differential attrition. In order to examine if differential attrition threatens the internal validity of the study, we compare baseline characteristics of households that leave the study across treatment and comparison arms. Table 4.5 reveals that in the treatment and comparison arms, there are significant differences between those that leave the study and those that stayed. For example, in both the treatment and comparison arms, Colombians are significantly more likely to leave the study. However, internal validity is only threatened if those that leave the study in the comparison arm are significantly different from those that leave the treatment arm. Consequently, we focus on columns 7 and 8 that compare the "attrited" groups across the two arms, and we find significant differences at the 5 percent level only for household head's age and ownership of agricultural plots. In particular, those that leave the treatment arm are significantly younger and less likely to own agricultural land than those that leave the comparison arm. However, baseline analysis across treatment and comparison arms for households that are left in our study (Table 4.6) reveals that differences in age and owning agricultural land are not significant; therefore, we conclude that the bias due to the differential attrition of these variables is likely to be very small.

4.3 Baseline Analysis (by Treated and Comparison)

In order to ensure that randomization was successful, we compare baseline characteristics across treatment and comparison households. We conduct the analysis on the 2,122 households that are in the baseline and follow-up surveys, however, a complete analysis for all baseline households can be found in the baseline technical report (Hidrobo et al. 2011). We first combine all three treatment arms (cash, voucher, and food transfer) and compare pooled treatment households to comparison households, and then we compare each treatment arm separately to the comparison arm.

Table 4.5 Differential attrition analysis (mean values of baseline characteristics)

	Comparison arm			Treatment Arm			Difference	
	(1) Attrited	(2) In study	(3) P-value	(4) Attrited	(5) In study	(6) P-value	(7) Col(1)-Col(4)	(8) P-value
Characteristics of the household head								
Male	0.69	0.74	0.36	0.66	0.73	0.10	0.02	0.71
Age	42.08	41.87	0.90	36.67	41.63	0.00	5.41	0.01
Has primary education	0.53	0.60	0.21	0.48	0.58	0.03	0.04	0.55
Has secondary education or higher	0.41	0.32	0.14	0.47	0.36	0.01	-0.06	0.39
Married	0.23	0.28	0.41	0.22	0.28	0.10	0.01	0.83
Colombian	0.57	0.37	0.00	0.55	0.26	0.00	0.01	0.83
Household characteristics								
Floor type: dirt	0.08	0.06	0.37	0.03	0.04	0.65	0.05	0.09
Cooking fuel: gas	0.89	0.96	0.01	0.89	0.95	0.00	-0.00	0.95
Drinking water: tap	0.59	0.49	0.08	0.57	0.46	0.01	0.03	0.67
Waste system: private toilet	0.46	0.58	0.04	0.37	0.48	0.01	0.09	0.21
Household size	3.66	4.01	0.17	3.34	3.75	0.01	0.33	0.19
Number of children 0–5 years	0.57	0.58	0.92	0.59	0.62	0.65	-0.02	0.83
Number of children 6–15 years	0.80	1.01	0.15	0.72	0.86	0.11	0.08	0.58
Household property (percent who own asset)								
Mobile telephone	0.82	0.84	0.69	0.81	0.82	0.81	0.01	0.85
TV and/or DVD	0.69	0.80	0.03	0.64	0.81	0.00	0.05	0.46
Washing machine	0.28	0.41	0.03	0.25	0.34	0.02	0.04	0.57
Car/truck/motorcycle	0.20	0.24	0.51	0.17	0.23	0.08	0.03	0.60
Agricultural plot	0.12	0.13	0.91	0.05	0.13	0.00	0.07	0.05
Monthly household expenditure	250.57	250.75	0.99	249.83	256.47	0.72	0.73	0.98

Notes: In columns (3) and (6), p-values are reported from t-tests on the equality of means for each variable between the "In Study" and "Attrited" groups. Column (7) reports the difference in means between the "Attrited" group in the comparison arm and the "Attrited" group in the treatment arm. Column (8) reports the p-values for the difference in means between the two "Attrited" groups. "In study" sample consists of households that were in the baseline and follow-up. "Attrited" refers to households that were in the baseline survey but not in the follow-up.

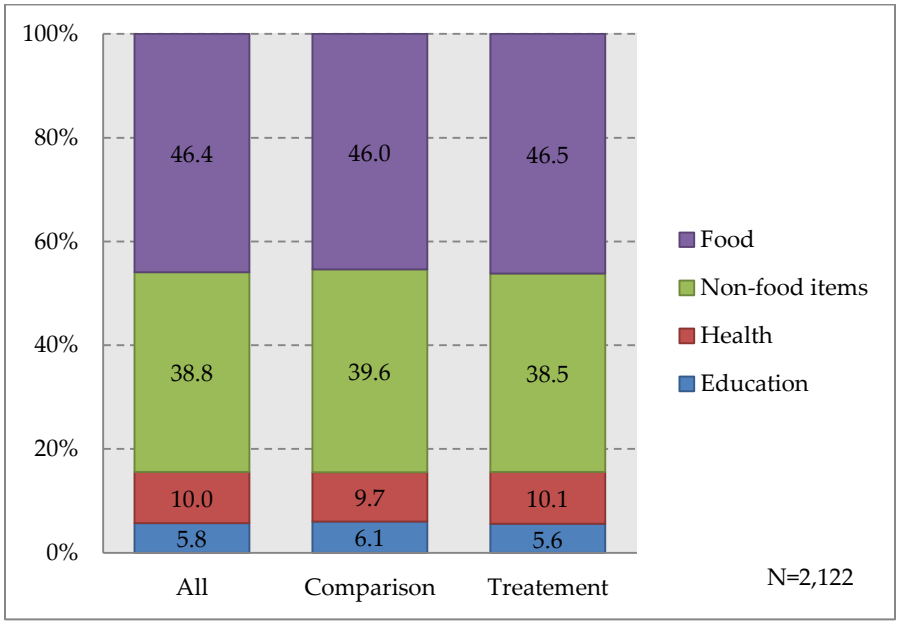
Table 4.6 Baseline characteristics, by treatment and comparison arms

Variable	All	Comparison	Treatment	Difference
Characteristics of the household head				
Male	0.73	0.74	0.73	-0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Age	41.69	41.87	41.63	-0.24
	(0.33)	(0.61)	(0.40)	(0.73)
Has primary education	0.58	0.60	0.58	-0.03
	(0.01)	(0.02)	(0.01)	(0.02)
Has secondary education or higher	0.35	0.32	0.36	0.04
	(0.01)	(0.02)	(0.01)	(0.02)*
Married	0.28	0.28	0.28	0.00
	(0.01)	(0.02)	(0.01)	(0.02)
Colombian	0.29	0.37	0.26	-0.11***
	(0.01)	(0.02)	(0.01)	(0.02)
Household characteristics				
Floor type: dirt	0.04	0.06	0.04	-0.02
	(0.00)	(0.01)	(0.00)	(0.01)
Cooking fuel: gas	0.96	0.96	0.95	0.00
	(0.00)	(0.01)	(0.01)	(0.01)
Drinking water: tap water	0.47	0.49	0.46	-0.02
	(0.01)	(0.02)	(0.01)	(0.02)
Waste system: private toilet	0.51	0.58	0.48	-0.10***
	(0.01)	(0.02)	(0.01)	(0.02)
Household size	3.82	4.01	3.75	-0.26***
	(0.04)	(0.09)	(0.05)	(0.10)
Number of children 0-5 years	0.61	0.58	0.62	0.04
	(0.02)	(0.03)	(0.02)	(0.04)
Number of children 6–15 years	0.90	1.01	0.86	-0.14**
	(0.02)	(0.05)	(0.03)	(0.06)
Family property (percent ownership)				
Mobile telephone	0.83	0.84	0.82	-0.02
	(0.01)	(0.02)	(0.01)	(0.02)
TV	0.80	0.80	0.81	0.00
	(0.01)	(0.02)	(0.01)	(0.02)
Washing machine	0.36	0.41	0.34	-0.07***
	(0.01)	(0.02)	(0.01)	(0.02)
Car / truck / motorcycle	0.23	0.24	0.23	0.00
	(0.01)	(0.02)	(0.01)	(0.02)
Agricultural plot	0.13	0.13	0.13	0.00
	(0.01)	(0.01)	(0.01)	(0.02)
Monthly household expenditure	254.91	250.75	256.47	5.71
	(4.85)	(8.66)	(5.83)	(10.44)
Number of observations	2,122	578	1,544	

Notes: Treatment refers to all treatment arms (food, cash, and voucher) combined. Standard errors reported in parentheses. Difference in means conducted using t-tests. Stars indicate the following significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4.6 reveals that household heads in our sample have a mean age of 41.69 years , most have only primary education (58 percent), only 28 percent are married (while 38 percent are in a civil union or co-habiting), 29 percent are Colombian, and nearly three-quarters are males (73 percent). Approximately 96 percent of households use gas for cooking and approximately half have a private toilet. The average household size is 3.8 and most households have cellular phones (83 percent) and televisions/DVDs (80 percent). Average monthly household expenditure is approximately $255, of which 46.4 percent is allocated to food purchases, 38.8 percent to nonfood purchases, 5.8 percent to education-related expenses, and 10 percent to health-related expenses (Figure 4.1). As discussed in the baseline report, the statistics on household size are not surprising, given the sampling procedure and inclusion criteria for the interventions. In particular, we expect these households to be relatively small, because they are households that do not qualify for the BDH, and thus are less likely to have young or school age children.

Figure 4.1 Composition (by shares) of monthly household expenditure



Across 19 difference-in-means test between the treatment group and comparison group, shown in the last column of Table 4.6, only 5 are statistically different at the 5 percent level, which reveals that randomization was, for the most part, effective at balancing baseline characteristics. In particular, comparison households are significantly more likely to be Colombian, have more children ages 6–15 years, have larger households, have a private latrine, and have a washing machine.

Table 4.7 is similar to Table 4.6; however, it conducts difference-in-means test for each treatment arm compared to the comparison arm. Results show a similar pattern where, across the 57 (19 x 3) tests, 13 have means that are significantly different at the 5 percent level (these are the same variables that are statistically different in the pooled treatment table, with the addition of the variables on floor type and household head's secondary education). Overall, these confirm previous tests by pooled treatments that indicate that the baseline randomization

was generally successful with respect to household observable characteristics. However, the few significant differences reaffirm our decision to add baseline covariates as controls in our empirical analysis.

Table 4.7 Baseline characteristic, by treatment arm

	Means				Difference in Means		
Variable	Comparison	Food	Cash	Voucher	Food - Comparison	Cash - Comparison	Voucher - Comparison
Characteristics of the head							
Male	0.74	0.75	0.72	0.71	0.01	-0.02	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Age	41.87	41.26	41.47	42.04	-0.61	-0.39	0.17
	(0.61)	(0.75)	(0.66)	(0.66)	(0.97)	(0.90)	(0.90)
Has primary education	0.60	0.58	0.58	0.57	-0.02	-0.03	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Has secondary education or higher	0.32	0.35	0.35	0.38	0.03	0.03	0.06
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)**
Married	0.28	0.30	0.28	0.26	0.03	0.00	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Colombian	0.37	0.28	0.25	0.27	-0.10***	-0.13***	-0.11***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Household characteristics							
Floor type: dirt	0.06	0.04	0.03	0.04	-0.01	-0.02**	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Cooking fuel: gas	0.96	0.96	0.95	0.96	0.00	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Drinking water: tap water	0.49	0.44	0.51	0.44	-0.05	0.03	-0.05*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Waste system: private toilet	0.58	0.52	0.46	0.49	-0.07**	-0.13***	-0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Household size	4.01	3.82	3.75	3.69	-0.18	-0.26**	-0.32***
	(0.09)	(0.09)	(0.08)	(0.07)	(0.12)	(0.11)	(0.11)
Number of children 0-5 years	0.58	0.66	0.59	0.62	0.08	0.01	0.04
	(0.03)	(0.04)	(0.03)	(0.03)	(0.05)	(0.05)	(0.05)
Number of children 6-15 years	1.01	0.89	0.88	0.82	-0.11	-0.13*	-0.18***
	(0.05)	(0.05)	(0.05)	(0.04)	(0.07)	(0.07)	(0.07)
Family property							
Mobile telephone	0.84	0.81	0.82	0.83	-0.04	-0.02	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
TV	0.80	0.81	0.78	0.82	0.01	-0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
Washing machine	0.41	0.36	0.31	0.34	-0.05*	-0.10***	-0.07**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Car / truck / motorcycle	0.24	0.22	0.23	0.25	-0.02	0.00	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Own agricultural plot	0.13	0.12	0.12	0.13	-0.01	-0.01	0.01
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Monthly household expenditure	250.75	284.22	249.16	243.35	33.47*	-1.59	-7.40
	(8.66)	(14.88)	(9.19)	(7.09)	(17.22)	(12.62)	(11.19)
N	578	418	545	581			

Notes: Standard errors reported in parentheses. Difference in means conducted using t-tests. Stars indicate the following significance levels: * p < 0.10, ** p < 0.05, *** p < 0.01.

5. Experience with Program

5.1 Experience with Program

In this section, we present indicators describing beneficiaries' experiences with the program. The tables presented in this section are descriptive and intended to provide insight on beneficiaries' costs, preferences and use of the transfer. The aim is to provide context for potential pathways through which the transfers work to achieve food security and improve social capital and gender impacts, and to be able to compare across modalities so that we can better understand the impact results presented in Chapters 6 through 9. It should be noted that these statistics are self-reported by beneficiaries when asked directly about the transfer and are not comparable to the impact evaluation measures used in Chapter 6 which are constructed from consumption modules and household aggregates and thus are more reliable, objective measures. In addition, the sample for this analysis excludes the comparison group since they did not participate in the program. Moreover, due to attrition in program enrollment and over the course of the program, not everyone who was in a treatment cluster participated in the program, and thus the sample in this section is smaller than the sample we use in the rest of our analysis.

We start by describing total costs to beneficiaries of participation in the transfer program, both in terms of time and out of pocket expenditures (Table 5.1). On average, individuals took 31 minutes to travel from their homes to distribution points, spent 44 minutes waiting at distribution points, and spent $1.72 in total to receive the transfer (equivalent to 4.3 percent of the monetized transfer value). Beneficiaries from Sucumbíos had significantly higher averages across all three costs, with, on average, 8 minutes longer travel time to the distribution points, 23 minutes longer wait times and spent an average of $1.25 more in transport costs as compared to Carchi. These differences could be explained by a number of factors, including the larger geographic spread of beneficiaries in Sucumbíos, as well as potentially larger numbers of beneficiaries assigned to each distribution point.

Table 5.1 Time and cost to receive the transfer, by province

The last time you have received the food/cash/voucher transfers:	All	Carchi	Sucumbíos	Difference
How long did it take you to get to the distribution point, from the place that you live?	31.33	26.93	34.46	-7.53***
	(0.75)	(0.81)	(1.13)	(1.39)
How long did you wait to receive your transfer, from the moment you arrived at the distribution point?	44.00	30.66	53.50	-22.85***
	(1.69)	(1.73)	(2.57)	(3.10)
How much did it cost you (total) to receive the transfer (transportation, etc.)	1.72	0.99	2.23	-1.25***
	(0.15)	(0.10)	(0.24)	(0.26)
Number of observations	***1,207***	***502***	***705***	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

When comparing across the different treatment modalities (Table 5.2), we see that for food beneficiaries, the amount of time to reach the food distributions points is significantly longer (approximately 39 minutes versus 28 minutes) as compared to cash and voucher beneficiaries. However, the average time spent waiting to receive vouchers and food was much

higher than that for cash (approximately 63 and 54 minutes for voucher and food households in comparison to 16 minutes for cash households). This difference is not surprising since cash beneficiaries could withdrawal their money at ATM machines rather than cueing at a specified time like the voucher and food households. However, the positive waiting time even for cash recipients reflects extra assistance needed for beneficiaries to withdraw money and availability of ATM machines.

Table 5.2 Time and cost to receive transfers, by modality

The last time you have received the food/cash/voucher transfers:	Food	Cash	Voucher	Food - Cash	Food - Voucher	Cash - Voucher
How long did it take you to get to the distribution point, from the place that you live?	38.87	28.39	28.34	10.48***	10.53***	0.04
	(1.67)	(1.19)	(1.02)	(2.05)	(1.96)	(1.57)
How long did you wait to receive your transfer, from the moment you arrived at the distribution point?	53.92	16.16	63.16	37.76***	-9.23*	-46.99***
	(3.56)	(1.00)	(3.21)	(3.70)	(4.80)	(3.36)
How much did it cost you (total) to receive the transfer (transportation, etc.)	2.12	1.46	1.65	0.66**	0.46*	-0.20
	(0.10)	(0.31)	(0.26)	(0.32)	(0.28)	(0.40)
Number of observations	341	425	441			

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Table 5.3 presents descriptive statistics on the transparency and administrative processes of the program and shows that, in general, the functioning was very successful. For example, on average, 97 percent of the beneficiaries report receiving sufficient information needed to understand how the program works. On average, 99 percent of beneficiaries report receiving their transfer in totality, believe the program is fair, and report program employees treated them with respect. In addition, 98 percent of beneficiaries trust their transfers will not be stolen. Slightly lower percentages of beneficiaries report that they received transfers at the scheduled times (approximately 91 percent) and that they knew how many more transfers they would receive (approximately 93 percent). There are few significant differences by province in these indicators, with beneficiaries in Sucumbíos reporting slightly lower overall understanding of how the program works (95 percent in comparison to 98 percent) and slightly lower reports of receiving the transfer on time and being treated with respect.

Table 5.4 replicates these results stratifying on treatment modality. Results show that the cash arm has a lower percentage of respondents reporting receiving the transfer on time compared to the food and voucher arms; and the food arm has the highest percentage of respondents knowing the number of transfers they would be receiving.

Table 5.3 Transparency and administrative processes, by province

Statements (true = 1, false = 0)	All	Carchi	Sucumbíos	Difference
In general, you have received all information needed to understand how the program works	0.97 (0.01)	0.98 (0.01)	0.95 (0.01)	0.03*** (0.01)
In general, you received the transfers at the scheduled time	0.91 (0.01)	0.93 (0.01)	0.90 (0.01)	0.03* (0.02)
In general, you received the transfers in its totality	0.99 (0.00)	0.99 (0.00)	0.98 (0.00)	0.01 (0.01)
In general, the program employees treated you with respect	0.99 (0.00)	1.00 (0.00)	0.99 (0.00)	0.01* (0.01)
In general, you knew how many transfers you would receive in the future	0.93 (0.01)	0.94 (0.01)	0.92 (0.01)	0.02 (0.02)
In general, you trust the program is fair and will help your family	0.99 (0.00)	1.00 (0.00)	0.99 (0.00)	0.01 (0.00)
In general, you are confident your food/money/voucher is safe and will not be stolen	0.98 (0.00)	0.98 (0.01)	0.98 (0.01)	0.00 (0.01)
Participating at the program has helped you meet and talk to people you would normally not have known	0.99 (0.00)	0.99 (0.00)	0.98 (0.00)	0.01 (0.01)
Number of observations	***1,207***	***502***	***705***	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Table 5.4 Transparency and administrative processes, by modality

Statements (true =1, false=0)	Food	Cash	Voucher	Food - Cash	Food - Voucher	Cash - Voucher
In general, you have received all information needed to understand how the program works	0.97 (0.01)	0.97 (0.01)	0.96 (0.01)	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)
In general, you received the transfers at the scheduled time	0.94 (0.01)	0.88 (0.02)	0.93 (0.01)	0.06*** (0.02)	0.01 (0.02)	-0.05** (0.02)
In general, you received the transfers in its totality	0.99 (0.01)	0.98 (0.01)	0.99 (0.00)	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)
In general, the program employees treated you with respect	0.99 (0.00)	0.99 (0.00)	0.99 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)
In general, you knew how many transfers you would receive in the future	0.97 (0.01)	0.93 (0.01)	0.88 (0.02)	0.03** (0.02)	0.08*** (0.02)	0.05** (0.02)
In general, you trust the program is fair and will help your family	1.00 (0.00)	0.99 (0.00)	0.99 (0.00)	0.00 (0.01)	0.00 (0.00)	0.00 (0.01)
In general, you are confident your food/money/voucher is safe and will not be stolen	0.98 (0.01)	0.98 (0.01)	0.98 (0.01)	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)
Participating at the program has helped you meet and talk to people you would normally not have known	0.99 (0.01)	0.99 (0.00)	0.98 (0.01)	-0.01 (0.01)	0.00 (0.01)	0.01 (0.01)
Number of observations	***341***	***425***	***441***			

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

To elicit preferences around transfer modalities, beneficiaries were asked how they would have liked to receive their transfers, in cash, voucher, or food. In general, a higher

number of respondents prefer receiving all the transfer in cash; however, the response is very influenced by what participants are actually receiving (food, cash, or voucher). In particular, the majority of individuals report preferring the way they currently receive transfers, with 55 percent of individuals in the food arm, 77 percent of individuals in the cash arm, and 56 percent of individuals in the voucher arm, choosing to receive 100 percent of their transfers in food, cash, and voucher, respectively (Table 5.5). This result, in part, signifies that beneficiaries are satisfied with the status quo, which could reflect the satisfaction of receiving something "free" in general. On the other hand, a sizable percentage of individuals report preferring to receive none of the transfer that they are currently receiving. In particular, out of the total surveyed voucher beneficiaries, 31 percent prefer not to receive any of their transfer in voucher, while for food beneficiaries, 28 percent prefer not to receive any in food and only 9 percent of cash beneficiaries prefer not to receive any in cash. Thus, it appears that, on average, cash households are the most satisfied with their transfer modality, followed by food and then voucher households.

Table 5.5 Satisfaction with transfer modality, by treatment status

How would you like to receive your transfer?	All	Food	Cash	Voucher
All in cash	0.37	0.07	0.77	0.20
	(0.01)	(0.01)	(0.02)	(0.02)
All in voucher	0.26	0.18	0.02	0.56
	(0.01)	(0.02)	(0.01)	(0.02)
All in food	0.21	0.55	0.07	0.08
	(0.01)	(0.03)	(0.01)	(0.01)
None in cash	0.49	0.77	0.09	0.66
	(0.01)	(0.02)	(0.01)	(0.02)
None in voucher	0.65	0.75	0.92	0.31
	(0.01)	(0.02)	(0.01)	(0.02)
None in food	0.68	0.28	0.83	0.86
	(0.01)	(0.02)	(0.02)	(0.02)
Number of observations	1,207	341	425	441

Note: Mean values reported with standard errors in parentheses.

The results in Table 5.5 can be in part explained by the reported difficulties experienced by beneficiaries, which were more commonly experienced by voucher beneficiaries. In particular, 79 percent of voucher beneficiaries report at least one complaint with their transfer, compared to 40 percent in the cash group and 37 percent in the food group. Table 5.6 reveals the numerous difficulties that voucher beneficiaries report, including high prices in supermarkets (66 percent), lack of food in supermarkets (48 percent), problems with payment (11 percent), and lack of understanding on how to use the voucher (10 percent). Beneficiaries in Sucumbíos were significantly less likely to cite high prices (59 percent as compared to 78 percent), but were significantly more likely to report dislike of the purchasable voucher foods (8 percent as compared to 3 percent). Approximately 10 percent of the beneficiaries noted "other" problems, which could be, among other things, restrictions on the days of the week or month that beneficiaries could utilize vouchers.

Table 5.6 Difficulties experienced by voucher beneficiaries, by province

Indicator (=1) if true	All	Carchi	Sucumbíos	Difference
Lack of food in supermarkets	0.48	0.46	0.49	-0.03
	(0.02)	(0.04)	(0.03)	(0.05)
Problems in the cashier (with payment, etc.)	0.11	0.10	0.11	-0.02
	(0.01)	(0.02)	(0.02)	(0.03)
Did not understand how to use the vouchers	0.10	0.09	0.11	-0.02
	(0.01)	(0.02)	(0.02)	(0.03)
I do not like the foods included in the coupon	0.06	0.03	0.08	-0.04**
	(0.01)	(0.01)	(0.02)	(0.02)
Prices are very high at the supermarket	0.66	0.78	0.59	0.19***
	(0.02)	(0.03)	(0.03)	(0.04)
Other problems	0.10	0.09	0.10	-0.01
	(0.01)	(0.02)	(0.02)	(0.03)
Number of observations	***435***	***156***	***279***	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Table 5.7 shows difficulties reported by the food transfer beneficiaries. One out of four food beneficiaries report problems with packing, including tearing or leakage, and this percentage is significantly higher in Sucumbíos as compared to Carchi (31 percent versus 19 percent, respectively). A relatively small percentage of beneficiaries report other problems, including food spoilage (6 percent) or infestation (1 percent), although these issues are again more likely to be experienced in Sucumbíos, which is not surprising, given the higher temperature and humidity of food storage facilities in Sucumbíos as compared to Carchi. Approximately 6 percent of beneficiaries report disliking the food basket composition, while 7 percent cite the bulkiness and weight of the food as being a problem.

Table 5.7 Difficulties experienced by food beneficiaries, by province

Indicator (=1) if true	All	Carchi	Sucumbíos	Difference
Torn packages torn / food spills	0.25	0.19	0.31	-0.12**
	(0.02)	(0.03)	(0.04)	(0.05)
Food in poor condition / rotten / moldy	0.06	0.03	0.09	-0.06**
	(0.01)	(0.01)	(0.02)	(0.03)
Foods infested with insects	0.01	0.00	0.02	-0.02*
	(0.01)	(0.00)	(0.01)	(0.01)
Did like foods in the basket (taste, quality, odor, variety, etc.)	0.06	0.06	0.06	0.00
	(0.01)	(0.02)	(0.02)	(0.03)
Very large and heavy packages	0.07	0.10	0.05	0.04
	(0.01)	(0.02)	(0.02)	(0.03)
Other problems	0.01	0.02	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Number of observations	334	168	166	

Note: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Finally, Table 5.8 reports problems experienced by the cash transfer households. Overall, the main difficulties facing beneficiaries are lack of understanding on how to use the debit cards

(25 percent) or forgetting passwords (10 percent); however, a number of individuals also report ATM machine malfunctions or withdrawal of insufficient/wrong amounts (8 percent and 6 percent, respectively). Anecdotally, bank officials stated that a handful of beneficiaries received less than the $40 monthly transfer because they were charged a minimal fee if they checked their bank account balance. Some of these difficulties can be expected when introducing programs using a new financial institution and operating in a population with low financial literacy.

Table 5.8 Difficulties experienced by cash beneficiaries, by province

Indicator (=1) if true	All	Carchi	Sucumbíos	Difference
Insufficient/wrong amount	0.06	0.06	0.07	0.00
	(0.01)	(0.02)	(0.02)	(0.02)
Debit card malfunction	0.08	0.06	0.09	-0.03
	(0.01)	(0.02)	(0.02)	(0.03)
Malfunction of the ATM machine	0.08	0.07	0.08	-0.01
	(0.01)	(0.02)	(0.02)	(0.03)
Did not understand card use	0.25	0.26	0.24	0.02
	(0.02)	(0.03)	(0.03)	(0.04)
Forgot password	0.10	0.06	0.12	-0.06**
	(0.01)	(0.02)	(0.02)	(0.03)
Other problems	0.03	0.04	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.02)
Number of observations	***420***	***175***	***245***	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Tables 5.9 and 5.10 show results for who in the household is reported to have control over how the transfer is used or spent. Here we split the sample by the gender of the household head and we focus on differences in decisions made by household head, spouse, joint decisions between head and spouse, or other individual in the household. Results indicate that the cash and voucher arms in male-headed households have very similar distributions, with spouses having most control over spending or use decisions over the transfer (48-50 percent), followed by the household head (22–25 percent), and then joint decision-making (21-22 percent). However, for food beneficiary households, 60 percent of spouses make the decisions, compared to 22 percent of heads and 13 make decisions jointly. This shows that there are some perceived differences within the household of who should "control" different types of transfers, and specifically that food has a greater likelihood of being controlled by female spouses. There are less female headed households in the sample and in these households only 2 percent are married. Consequently, the main decisions are made either by the head (85-91 percent) or by others (9-11 percent).

Table 5.9 Decision on how to spend or use the transfer in male headed households, by modality

Who decides what to do with the transfer?	Food	Cash	Voucher	Food - cash	Food - voucher	Cash - voucher
Household head	0.22	0.22	0.25	-0.01	-0.03	-0.02
	(0.03)	(0.02)	(0.02)	(0.04)	(0.04)	(0.03)
Household spouse	0.60	0.50	0.48	0.10**	0.12***	0.02
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
Household head and spouse together	0.13	0.22	0.21	-0.09***	-0.08***	0.01
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Other relative/nonrelative with/without the head/spouse	0.06	0.06	0.06	0.00	0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Number of observations	***260***	***303***	***308***			

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Table 5.10 Decision on how to spend or use the transfer in female-headed households, by modality

Who decides what to do with the transfer?	Food	Cash	Voucher	Food - Cash	Food - Voucher	Cash - Voucher
Household head	0.91	0.91	0.85	0.00	0.06	0.06
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
Household spouse	0.00	0.00	0.01	0.00	-0.01	-0.01
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)
Household head and spouse together	0.00	0.00	0.03	0.00	-0.03**	-0.03**
	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)
Other relative/nonrelative with/without the head/spouse	0.09	0.09	0.11	0.00	-0.03	-0.02
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
Number of observations	***81***	***122***	***133***			

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

In Table 5.11 we show self-reported use of the most recent transfer for food beneficiary households. As previously noted, this table is descriptive and discrepancies may exist between self-reports and actual behavior. A more detailed analysis on actual use can be found in Chapter 6, however, this table along with tables 5.12 and 5.13 provide context for why we see differences in outcomes across modalities. On average, 63 percent of last food transfer was consumed by the household, and this percentage is higher in Sucumbíos (68 percent) as compared to Carchi (59 percent). Approximately 29 percent of the food is reported to be saved for consumption in "harder times" and as might be expected, Carchi beneficiaries report saving a larger percentage of food as compared to Sucumbíos (34 percent versus 25 percent). Food recipients also report sharing the transfers with family and friends outside their household (approximately 7 percent of the last transfer), and this percentage is the highest across all modalities. In general, the share of the last transfer that beneficiaries report to have sold to buy staples, non-staples, or nonfood items is very small, of monetary equivalence of approximately $0.27.

Table 5.11 Reported uses of last food transfer, by province

Percentage used with:	All	Carchi	Sucumbíos	Difference
Own consumption	63.17	58.53	67.86	-9.33***
	(1.58)	(2.10)	(2.31)	(3.12)
Sold to buy or trade for staple foods	0.28	0.06	0.51	-0.45
	(0.21)	(0.06)	(0.43)	(0.43)
Sold to buy or trade non-staple foods (soda, candy)	0.06	0.06	0.06	0.00
	(0.04)	(0.06)	(0.06)	(0.08)
Sold to buy or trade for goods or other nonfood items	0.33	0.12	0.54	-0.42
	(0.17)	(0.08)	(0.33)	(0.34)
Shared with family or friends outside the home	6.78	7.10	6.45	0.64
	(0.76)	(0.97)	(1.17)	(1.52)
Saved for use in tough times	29.38	34.14	24.57	9.56***
	(1.57)	(2.17)	(2.22)	(3.11)
Number of observations	***334***	***168***	***166***	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Table 5.12 shows results for similar outcomes among the cash transfer household. Beneficiaries report expenditures of $32.67 out of the $40 (or 82 percent) on staple foods including rice, beans, and other items, $3.33 (or 8 percent) on savings, and $2.50 (or 6 percent) on nonfood expenses. Very little of the transfer was reported to be spent on non-staple foods ($0.54) or shared with family or friends outside the household ($0.95). Beneficiaries in Carchi report spending significantly more (on average, $2.41 more) on staple foods; however, this may reflect higher food prices rather than higher relative expenditures.

Finally, voucher beneficiaries also use the majority of their coupon to purchase staple foods ($23.65 or 60 percent). Meat and eggs make up the next highest expenditure category ($8.84 or 22 percent) followed by fruits and vegetables ($7.04 or 17 percent). Although the amount spent on staple foods is lower than what is reported for the cash households, voucher beneficiaries spend almost all their money ($39.5) on staple foods, fruits and vegetables, and meats and eggs (Table 5.13). There is virtually no reported selling, trading, or sharing of vouchers.

Table 5.12 Reported uses of last cash transfer, by province

Amount spent on ($):	All	Carchi	Sucumbíos	Difference
Staple foods (rice, beans, etc.).	32.67	34.08	31.67	2.41***
	(0.51)	(0.75)	(0.68)	(1.02)
Non-staple foods (soda, candy)	0.54	0.73	0.40	0.33
	(0.14)	(0.21)	(0.18)	(0.28)
Nonfood or other expenses	2.50	1.79	3.02	-1.23**
	(0.30)	(0.46)	(0.40)	(0.61)
Share with family or friends outside the home	0.95	1.00	0.92	0.08
	(0.23)	(0.39)	(0.27)	(0.48)
Save for later use	3.33	2.40	4.00	-1.60**
	(0.35)	(0.45)	(0.50)	(0.67)
Number of observations	***420***	***175***	***245***	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Table 5.13 Reported use of vouchers, by province

Amount used with:	All	Carchi	Sucumbíos	Difference
Staple foods (rice, beans, etc.).	23.65	22.27	24.42	-2.15***
	(0.36)	(0.51)	(0.47)	(0.70)
Fruits and vegetables	7.04	8.38	6.29	2.09***
	(0.23)	(0.37)	(0.28)	(0.47)
Meat, eggs	8.84	8.67	8.93	-0.26
	(0.24)	(0.35)	(0.33)	(0.48)
Sold to buy or trade non-staple foods (soda, candy)	0.03	0.03	0.04	0.00
	(0.03)	(0.03)	(0.04)	(0.05)
Sold to buy or trade for goods or other nonfood items	0.01	0.03	0.00	0.03
	(0.01)	(0.03)	(0.00)	(0.03)
Share with family or friends outside the home	0.43	0.61	0.32	0.29
	(0.11)	(0.26)	(0.10)	(0.28)
Number of observations	***435***	***156***	***279***	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

5.2 Nutrition Trainings

In this section we provide results surrounding nutrition trainings and nutrition knowledge of beneficiaries and non-beneficiaries. We start by describing attendance and experience with monthly nutritional trainings in Table 5.14. Because transfers were conditioned on attendance, it is not surprising that attendance rates are very high: on average, beneficiaries report attending 5.65 of 6 trainings (average of 5.8 in Carchi and 5.55 in Sucumbíos). Beneficiaries are also using and sharing the information learned at the trainings: 96 percent report directly using and 89 percent reported sharing information learned with friends and/or neighbors.

Table 5.14 Nutrition training sessions

Overall:	All	Carchi	Sucumbíos	Difference
Number of training sessions attended	5.65	5.80	5.55	0.26***
	(0.03)	(0.03)	(0.04)	(0.05)
Share training information with friends and/or neighbors?	0.89	0.88	0.90	-0.02
	(0.01)	(0.01)	(0.01)	(0.02)
Has ever put into practice what is taught in the training	0.96	0.95	0.97	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)
Number of observations	***1,194***	***499***	***695***	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level. Sample is composed of beneficiaries that attended at least one session. Of the 1207 beneficiaries with nonmissing data, only 13 (or 1 percent) never attended a training.

5.3 Nutrition Knowledge

As mentioned in Chapter 2 of the report, the nutrition sessions included information on program sensitization, family nutrition, food and nutrition for pregnant and lactating women,

nutrition for children aged 0–12 months, and nutrition for children aged 12–24 months. In order to investigate whether the nutrition sessions increased participant's knowledge, we analyze questions on nutrition knowledge collected at baseline and follow-up. Because we want to observe changes in knowledge among the same individuals, we restrict the sample to 1,880 of the 2,122 households where the same individuals were administered the survey between rounds.

Table 5.15 reveals that 77 percent of respondents at baseline know that breastfeeding should start immediately after the child is born; 60 percent know that a baby should start eating food at 6 months; and 71 percent know that a one-year-old should not only be eating the same things as the rest of the family. For these indicators, there are no significant differences between treatment and comparison households. The surveys also asked respondents to name the advantages of breastfeeding; food and beverages pregnant woman should abstain from eating and drinking; food items rich in vitamin A and iron; and ways to treat water. For each question, there is a total number of correct items that could have been answered. For example, for breastfeeding, participants could name up to three advantages of breastfeeding. Table 5.15 reveals that on average, respondents are able to name 1.6 advantages of breastfeeding, 1.9 food/beverages pregnant woman should not eat/drink, 0.9 iron-rich food items, 0.6 vitamin A-rich food items, and 1.2 ways to treat drinking water. For correct answers to iron-rich food items, the treatment arm has a significantly higher average and for correct answers to items pregnant woman should not eat/drink, the comparison arm has a significantly higher average at baseline.

Table 5.15 Baseline means, by pooled treatment

	All	Comparison	Treatment	Difference
How soon should baby start breast feeding: Immediately	0.77	0.77	0.77	-0.00
	(0.01)	(0.02)	(0.01)	(0.02)
At what age should baby start eating food besides breast milk: 6 months	0.60	0.60	0.61	0.00
	(0.01)	(0.02)	(0.01)	(0.03)
Should 1-year-old child only eat same thing as rest of family? No	0.71	0.71	0.72	0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Mean number of items named for:				
Advantages of breast feeding (0-3)	1.64	1.67	1.63	-0.04
	(0.02)	(0.04)	(0.02)	(0.04)
Items pregnant mothers should not eat or drink (0-4)	1.91	1.99	1.88	-0.10
	(0.02)	(0.05)	(0.03)	(0.06)*
Iron-rich food items (0-7)	0.94	0.88	0.97	0.09
	(0.02)	(0.05)	(0.03)	(0.05)*
Vitamin A-rich food items (0-5)	0.63	0.60	0.64	0.04
	(0.02)	(0.03)	(0.02)	(0.04)
Ways to treat water for drinking (0-5)	1.19	1.18	1.20	0.02
	(0.01)	(0.02)	(0.01)	(0.03)
N	1,880	507	1,373	

Notes: Standard errors in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

In order to see if there are improvements in participants' nutrition knowledge, we ask the same questions at follow-up. Table 5.16 shows that the percentage of respondents that know

that an infant should begin breastfeeding immediately, start eating food at 6 months, and that a 1-year-old child should not only be eating the same food as the rest of the family increases from baseline to follow-up. Although we find slight declines in the correct answers for the number of items named for advantages of breast-feeding and food/drinks pregnant woman should not eat or drink, we find large increases from baseline to follow-up on the number of items named for iron-rich food sources; vitamin A-rich food sources, and ways to treat water. At follow-up there are also large and significant differences in means across treatment and comparison arms. In particular, a larger percentage of those in the treatment arm know that an infant should start eating food (other than breast milk) at 6 months, and those in the treatment arm can name significantly more correct iron- and vitamin A-rich food sources. Given that baseline knowledge on feeding practices and prenatal care are already relatively high, it is not surprising that the increases in knowledge are mainly concentrated on nutritious food items. In summary, nutrition knowledge increased from baseline to follow-up for both treatment and comparison groups for 6 out of the 8 questions listed. The small increases in the comparison mean suggest spillover effects and knowledge sharing. In general, however, the increases were much larger for the treatment group.

Table 5.16 Follow-up means, by pooled treatment

	All	Comparison	Treatment	Difference
How soon should baby start breast feeding: Immediately	0.80	0.79	0.81	0.02
	(0.01)	(0.02)	(0.01)	(0.02)
At what age should baby start eating food besides breast milk: 6 months	0.71	0.66	0.73	0.07
	(0.01)	(0.02)	(0.01)	(0.02)***
Should 1-year-old child only eat same thing as rest of family? No	0.75	0.77	0.74	-0.03
	(0.01)	(0.02)	(0.01)	(0.02)
Mean number of items named for:				
Advantages of breast feeding (0-3)	1.56	1.55	1.57	0.01
	(0.02)	(0.03)	(0.02)	(0.04)
Items pregnant mothers should not eat or drink (0-4)	1.89	1.85	1.90	0.05
	(0.02)	(0.04)	(0.02)	(0.05)
Iron-rich food items (0-7)	1.42	1.04	1.56	0.52
	(0.02)	(0.04)	(0.03)	(0.05)***
Vitamin A-rich food items (0-5)	0.85	0.63	0.93	0.30
	(0.02)	(0.03)	(0.02)	(0.04)***
Ways to treat water for drinking (0-5)	1.25	1.24	1.25	0.01
	(0.01)	(0.02)	(0.01)	(0.03)
N	1,880	507	1,373	

Notes: Standard errors in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

6. Impact on Food Consumption and Dietary Diversity

6.1 Indicators and Descriptive Statistics

Household value of food consumption aggregates are constructed from data on the total value of food consumed in the last seven days. These data are asked with reference to 41 different food items. Aggregates are constructed using not just food purchased in the market place but also food that is home-produced, food that is received as gifts or remittances from other households or institutions, and food that is received as payments for in-kind services. Median prices from food purchased are inputted to calculate the total value of food consumed from home production or received as gift or in-kind payment. Weekly household values on food consumed are converted to monthly values which are then converted to household per capita values by dividing by the number of members in the household. Given that the distribution of per capita food consumption is skewed to the right, we convert all values to their logarithms for the analysis, and we drop outliers by trimming the top and bottom .5 percent of the distribution. We also convert to missing observations that report no food consumption in the last week.

Caloric intake is constructed from the amount of food consumed by households (from purchases, own stock, or in kind payments). In particular, the amount of food consumed for each item is multiplied by the energy value for that item to obtain the kilocalories consumed. Energy values are taken from the Nutrition Database for Standard Reference (USDA 2010) and from the *Tabla de Composicion de Alimentos de Centroamerica* (Manchu and Mendez 2007). Total monthly household caloric values are then converted to daily amounts and divided by household size to obtain caloric availability per person per day. Similar to consumption aggregates, all values are converted to their logarithms, and outliers at the top and bottom .5 percent of the distribution are converted to missing as are values that report no food consumption in the last week.

Food consumption and caloric intake play important roles in meeting food security needs. However, households do not solely value quantity – a more varied diet is also important. Increased dietary diversity is associated with a number of improved outcomes in areas such as birth weight, child anthropometrics, hemoglobin concentrations, hypertension, cardiovascular disease, and cancer (Hoddinott and Yohannes 2002). We construct three separate measures for dietary quality: the Dietary Diversity Index (DDI), Household Dietary Diversity Score (HDDS), and the Food Consumption Score (FCS). The most straightforward of these measures, the Dietary Diversity Index, sums the number of distinct food items consumed by the household in the previous seven days. The household questionnaire covers 41 such food items, and thus the DDI in this survey can feasibly range from 0 (no consumption at all) to 41. Hoddinott and Yohannes (2002) show that the DDI correlates well with both household dietary quantity and quality, and thus provides a useful summary point of comparison within the measured sample. The HDDS captures a similar element of food access, although it differs from DDI in that frequency is measured across standardized food groups, instead of individual food items. The score is calculated by summing the number of food groups consumed in the previous seven days from the following 12 groups (Kennedy, Ballard, and Dop 2011): cereals, roots/tubers, vegetables, fruits, meat/poultry/offal, eggs, fish/seafood, pulses/legumes/nuts, milk/milk

products, oils/fats, sugar/honey, miscellaneous. Lastly, WFP measures food insecurity using a proxy indicator called the food consumption score (FCS). The FCS is calculated by summing the number of days eight different food groups (staples, pulses, vegetables, fruit, meat/fish, milk/dairies, sugar/honey, oils/fats) were consumed by a household, multiplying these by weighted frequencies and summing across categories to obtain a single proxy indicator (Table 6.1). The FCS has been found to correlate well with caloric availability at the household level (Wiesmann, Bassett et al. 2009) and thus reflects the quality of the diet in terms of energy and diversity. Across all three dietary diversity measures, DDI, is the most highly correlated with the value of food consumption, caloric intake, total household expenditures, and the wealth index. Given that it is very unlikely that a household consumed zero food items in the last week, for our analysis we convert observations from these households to missing (this occurred for approximately 1 percent of the sample).

Table 6.1 Aggregate food groups and weights to calculate the Food Consumption Score

Group	Food items	Food group	Weight
1	Maize, maize porridge, rice, sorghum, millet past, bread and other cereals	Staples	2
	Cassava, potatoes and sweet potatoes, other tubers, plantains		
2	Beans, peas, groundnuts and cashew nuts	Pulses	3
3	Vegetables, leaves	Vegetables	1
4	Fruits	Fruit	1
5	Beef, goat, poultry, pork, eggs, and fish	Meat and fish	4
6	Milk, yogurt, and other dairies	Milk	4
7	Sugar, sugar products, and honey	Sugar	0.5
8	Oils, fats, and butter	Oil	0.5

Source: WFP (2008).

Tables 6.2 and 6.3 show the mean values at baseline and follow-up of the food consumption and dietary diversity measures - value of per capita food consumption, per capita caloric intake, HDDS, DDI, and FCS. At baseline, households consume approximately $39 of food per capita, 1875 kilocalories per capita, 9 out of the 12 food groups (HDDS), 17 out of the 40 food items (DDI)[2], and have a food frequency score (FCS) of 60. For the value of per capita food consumption and per capita caloric intake, the treatment arm has significantly higher means. However, there are no significant differences in means across treatment and comparison arms for the dietary diversity measures. At follow-up, per capita food consumption and caloric intake only increase for the treatment arm and not the comparison arm, thus the difference in means across treatment and comparison arm increases. For dietary diversity measures, the average HDDS score increases to nearly 11 food groups, the DDI increases to 21 food items, and the FCS to nearly 68. Both treatment and comparison arms experience increases in their HDDS DDI, and FCS scores; however, the increase for the treatment arm is much larger. For all three indices, the treatment arm has significantly higher means than the comparison arm at follow-up, suggesting large impacts of the intervention.

[2] At baseline data on consumption of oils and fats was not collected, thus there are only 40 food items at baseline and 41 at follow-up.

Table 6.2 Baseline food consumption and dietary diversity measures, by treatment status

Outcome variables	All	Comparison	Treatment	Difference
Per capita food consumption (monthly)	39.28	37.03	40.13	3.10
	(0.62)	(1.12)	(0.74)	(1.34)**
N	1,985	545	1,440	
Caloric intake per capita (daily)	1,874.93	1,794.06	1,905.40	111.34
	(25.20)	(45.40)	(30.15)	(54.50)**
N	2,006	549	1,457	
In last 7 days:				
Number of food groups (0-12) consumed – HDDS	9.17	9.10	9.20	0.09
	(0.04)	(0.07)	(0.04)	(0.08)
Number of unique foods (0-40) consumed – DDI	17.31	17.04	17.41	0.37
	(0.12)	(0.24)	(0.14)	(0.28)
Weighted food group frequency (0-112) consumed – FCS	60.24	59.45	60.54	1.09
	(0.44)	(0.87)	(0.51)	(1.00)
N	2,087	562	1,525	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

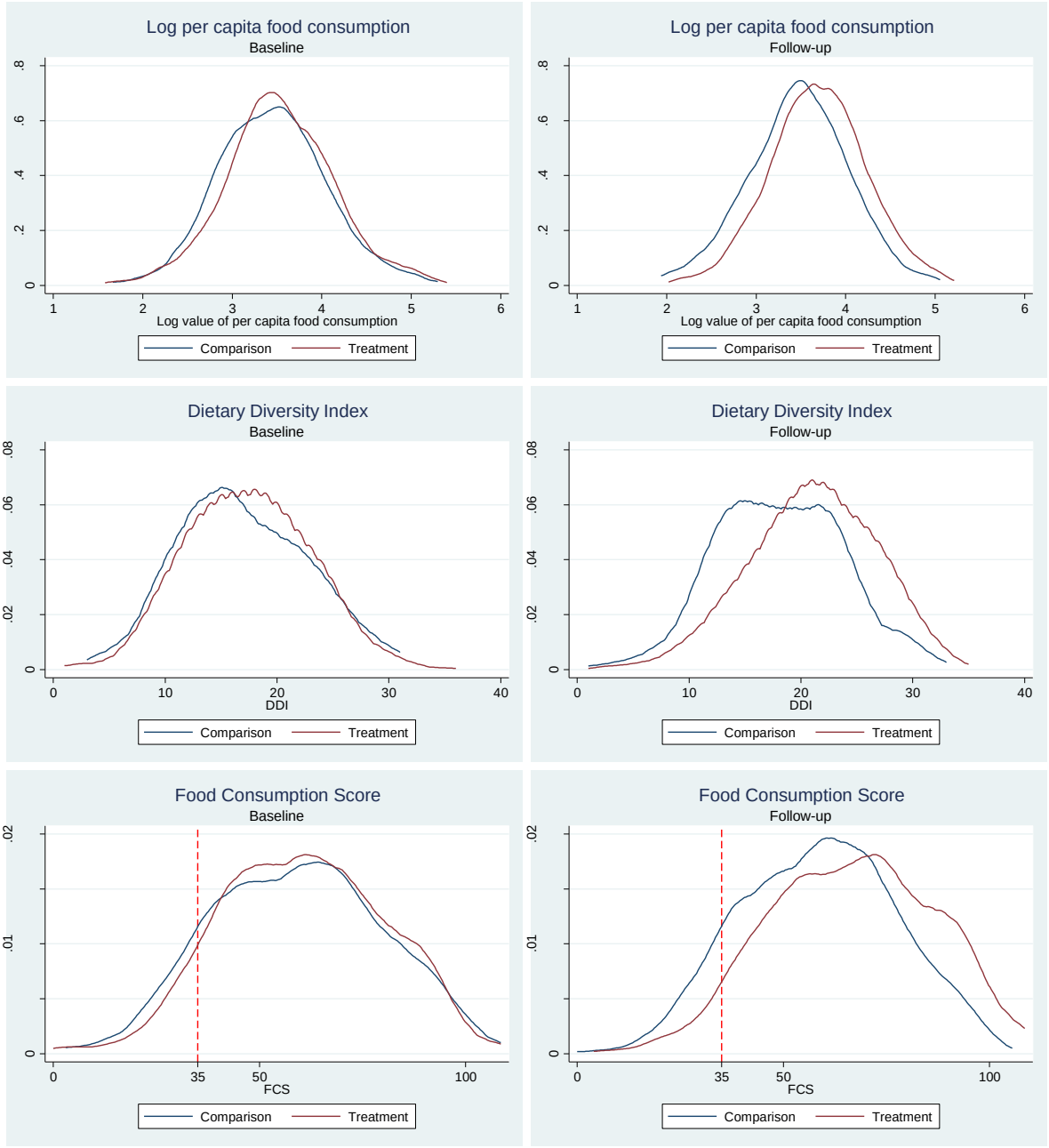
Table 6.3 Follow-up food consumption and dietary diversity measures, by treatment status

Outcome variables	All	Comparison	Treatment	Difference
Per capita food consumption (monthly)	42.67	36.70	44.93	8.22
	(0.57)	(0.95)	(0.69)	(1.18)***
N	1,985	545	1,440	
Caloric intake per capita (daily)	1,953.22	1,748.86	2,030.22	281.36
	(23.44)	(40.96)	(28.08)	(49.66)***
N	2,006	549	1,457	
In last 7 days:				
Number of food groups (0-12) consumed – HDDS	10.76	10.35	10.91	0.56
	(0.03)	(0.07)	(0.04)	(0.08)***
Number of unique foods (0-40) consumed – DDI	21.24	19.13	22.02	2.89
	(0.13)	(0.24)	(0.15)	(0.28)***
Weighted food group frequency (0-112) consumed – FCS	67.90	62.13	70.02	7.89
	(0.44)	(0.79)	(0.52)	(0.94)***
N	2,087	562	1,525	

Notes: Mean values reported with standard errors in parentheses below means. * indicates significance at the 10 percent level, ** significance at the 5 percent level, and *** significance at the 1 percent level.

Figure 6.1 shows the distributions the indices and reveals a similar pattern across treatment and comparison households from baseline to follow-up. In particular, the densities of the treatment and comparison arms for the log value of per capita food consumption (top panel), DDI (middle panel) and FCS (bottom panel) are very similar at baseline, but at follow-up the densities for the treatment arm have shifted to the right of the comparison arm, indicating higher values at all ends of the distribution.

Figure 6.1 Density graphs of food consumption and dietary diversity indices, by treatment and control arms at baseline and follow-up



6.2 Impacts of Pooled Treatment on Food Consumption and Dietary Diversity

In Tables 6.4 and 6.5 we combine all three treatment arms (food, cash, and voucher) and estimate the impact of pooled treatment on the value of per capita food consumption, per capita caloric intake, HDDS, DDI, and FCS. We present the ANCOVA estimates with and without controlling for covariates.

For food consumption and caloric intake we convert the values to their logarithms, and thus, the coefficients in Table 6.4 can be interpreted as percent changes. Focusing on results from columns 2 and 4, we find that being in the pooled treatment arm leads to a 13 percent increase in a household's value of per capita food consumption and a 10 percent increase in per capita caloric intake. While the results are significant, the magnitude is slightly lower than what we would expect to see if households used the whole transfer on food. In particular, given that the average household size is approximately four, we would expect to see a per capita increase of $10, which is approximately a 24 percent increase from baseline per capita food consumption values. Thus, our findings suggest that not all the transfer is being used for immediate food consumption which is consistent with the self-reported data presented earlier.

Table 6.4 Impact of pooled treatment on food consumption measures, with and without covariates

	Log value of per capita food consumption		Log per capita caloric intake	
	(1)	(2)	(3)	(4)
Pooled Treatment	0.17	0.13	0.13	0.10
	(0.03)***	(0.03)***	(0.03)***	(0.03)***
Household head is Colombian		-0.06		-0.04
		(0.03)**		(0.03)
Household head is female		-0.01		-0.01
		(0.02)		(0.02)
Age of household head		0.00		0.00
		(0.00)***		(0.00)***
Household head has at least secondary education		0.04		-0.01
		(0.02)*		(0.02)
Number of children 0-5 years		0.01		-0.02
		(0.02)		(0.02)
Number of children 6-15 years		0.01		0.00
		(0.01)		(0.01)
Household size		-0.11		-0.10
		(0.01)***		(0.01)***
Wealth index: 2nd quintile		0.03		0.03
		(0.03)		(0.03)
Wealth index: 3rd quintile		0.03		0.01
		(0.03)		(0.03)
Wealth index: 4th quintile		0.04		0.04
		(0.04)		(0.04)
Wealth index: 5th quintile		0.06		0.02
		(0.04)*		(0.03)
Baseline log value of per capita food consumption	0.43	0.29		
	(0.02)***	(0.02)***		
Baseline log per capita caloric intake			0.38	0.25
			(0.02)***	(0.02)***
Constant	1.98	2.77	4.51	5.82
	(0.08)***	(0.10)***	(0.16)***	(0.19)***
R^2	0.25	0.35	0.20	0.31
N	1,985	1,985	2,006	2,006

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. Columns 2 and 4 contain urban center fixed effects.

In addition to significantly increasing the quantity of food consumed, the program increases the quality of food consumed as measured by the dietary diversity outcomes (Table 6.5). In particular, HDDS increases by 0.47 points, which is a 5.1 percent increase from the baseline mean; DDI increases by 2.49 points, which is a 14.4 percent increase from the baseline mean; and FCS increases by 7.57 points, which is a 12.6 percent increase from the baseline mean (columns 2, 4, and 6). Other factors that contribute significantly to the dietary diversity measures are whether the household head is Colombian and wealth.

Table 6.5 Impact of pooled treatment on dietary diversity measures, with and without covariates

	HDDS		DDI		FCS	
	(1)	(2)	(3)	(4)	(5)	(6)
Pooled Treatment	0.53	0.47	2.71	2.49	7.51	7.56
	(0.11)***	(0.10)***	(0.37)***	(0.41)***	(1.06)***	(1.14)***
Household head is Colombian		-0.27		-1.03		-1.91
		(0.08)***		(0.27)***		(0.95)**
Household head is female		0.08		0.29		0.40
		(0.07)		(0.27)		(0.84)
Age of household head		-0.01		-0.00		-0.02
		(0.00)*		(0.01)		(0.03)
Household head has at least secondary education		-0.04		0.37		2.17
		(0.07)		(0.27)		(0.89)**
Number of children 0-5 years		0.00		0.08		0.01
		(0.05)		(0.18)		(0.78)
Number of children 6-15 years		-0.07		-0.26		-0.54
		(0.04)*		(0.16)		(0.58)
Household size		0.07		0.22		0.68
		(0.03)**		(0.12)*		(0.41)*
Wealth index: 2nd quintile		0.13		0.24		2.11
		(0.11)		(0.35)		(1.49)
Wealth index: 3rd quintile		0.21		0.52		3.14
		(0.12)*		(0.36)		(1.43)**
Wealth index: 4th quintile		0.22		0.86		3.03
		(0.12)*		(0.40)**		(1.73)*
Wealth index: 5th quintile		0.31		0.80		4.23
		(0.11)***		(0.35)**		(1.49)***
Baseline household dietary diversity score	0.33	0.28				
	(0.03)***	(0.03)***				
Baseline dietary diversity index			0.48	0.43		
			(0.02)***	(0.02)***		
Baseline food consumption score					0.35	0.31
					(0.03)***	(0.02)***
Constant	7.36	7.73	10.91	11.43	41.17	40.23
	(0.30)***	(0.32)***	(0.51)***	(0.73)***	(1.72)***	(2.88)***
R^2	0.16	0.19	0.26	0.29	0.15	0.18
N	2,087	2,087	2,087	2,087	2,087	2,087

Notes: Standard errors in parentheses clustered at the cluster level. * p < 0.1 ** p < 0.05; *** p < 0.01. Columns 2, 4, and 6 contain urban center fixed effects.

6.3 Impact by Treatment Arm on Food Consumption and Dietary Diversity

Tables 6.6 and 6.7 present the ANCOVA estimate for each treatment arm separately, and conduct Wald tests to examine whether the estimates from each treatment arm are significantly different from each other. Specifications include a full set of control variables; however, for simplicity we only present the coefficients from the different treatment arms. Table 6.6 shows that all three treatment arms lead to significant increases in the value of per capita food consumption that range from 12-16 percent. As revealed from the F-tests at the bottom of the table, there are no statistically significant differences across treatment arms in the size of the impact. Similarly, all three treatment arms lead to significant increases in caloric intake that range from 6-16 percent. However, the impact of food on per capita caloric intake is significantly larger than that of the cash transfer.

Table 6.6 Impact of treatment modalities on food consumption measures

	Log value of per capita food consumption	**Log per capita caloric intake**
Treatment==Food	0.16	0.16
	(0.04)***	(0.04)***
Treatment==Cash	0.12	0.06
	(0.04)***	(0.03)*
Treatment==Voucher	0.13	0.11
	(0.04)***	(0.03)***
R^2	0.35	0.32
N	1,985	2,006
F test: Food=Voucher	0.79	2.67
P-value	0.38	0.10
F test: Cash=Voucher	0.16	1.82
P-value	0.69	0.18
F test: Food=Cash	1.49	6.99
P-value	0.22	0.01

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

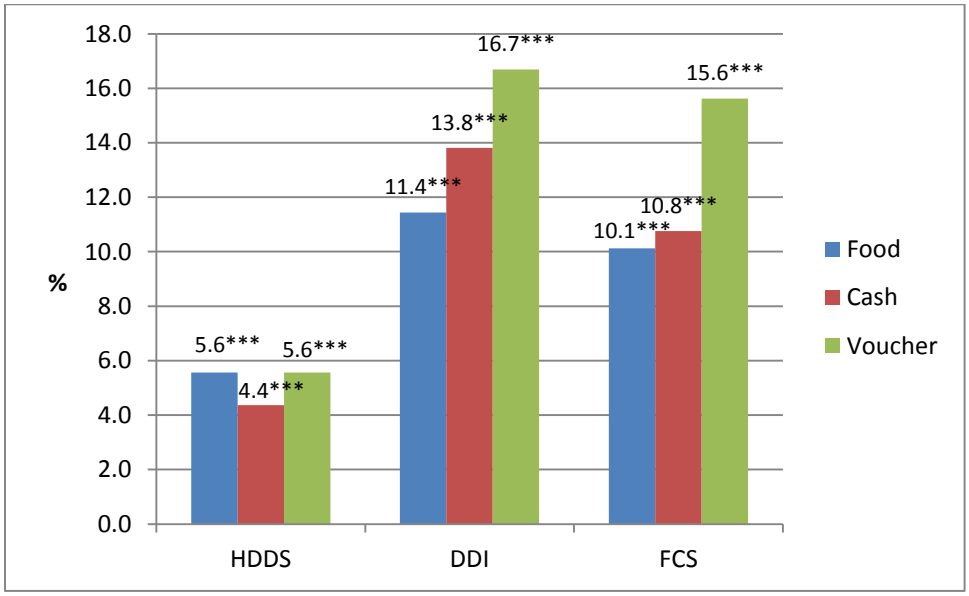
All three modalities (food, cash, and voucher) significantly increase the three measures of dietary diversity; however, the size of the increase differs by treatment arm (Table 6.7). In particular, the voucher leads to significantly larger impacts than food for the DDI and significantly larger impacts than food and cash for the FCS measure. In order to better understand the magnitude of the impact of treatment on dietary diversity outcomes, we convert unit changes from Table 6.7 to percent changes from baseline means and present these changes graphically. Figure 6.2 reveals that the percentage increase in HDDS is small compared to the percentage increase in DDI and FCS. In particular, HDDS increases by 5.6 percent for the food and voucher group, and by 4.4 percent for the cash group. Vouchers lead to the largest percentage increase in DDI and FCS measures: 16.7 percent increase in DDI compared to 11.4 percent and 13.8 percent increase for the food and cash group respectively, and a 15.6 percent increase in FCS compared to a 10.1 percent and 10.8 percent increase for food and cash households.

Table 6.7 Impact of treatment modalities on dietary diversity measures

	HDDS	DDI	FCS
Treatment==Food	0.51	1.98	6.10
	(0.12)***	(0.50)***	(1.46)***
Treatment==Cash	0.40	2.39	6.48
	(0.11)***	(0.44)***	(1.34)***
Treatment==Voucher	0.51	2.89	9.41
	(0.11)***	(0.46)***	(1.36)***
R^2	0.19	0.29	0.19
N	2,087	2,087	2,087
F test: Food=Voucher	0.00	4.34	5.08
P-value	0.99	0.04	0.03
F test: Cash=Voucher	1.85	1.83	4.66
P-value	0.18	0.18	0.03
F test: Food=Cash	1.47	1.02	0.08
P-value	0.23	0.31	0.78

Notes: Standard errors in parentheses clustered at the cluster level. * p < 0.1 ** p < 0.05; *** p < 0.01. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Figure 6.2 Percent increase in dietary diversity measures, by treatment arms



* p < 0.1 ** p < 0.05; *** p < 0.01.

Tables 6.5 and 6.7 reveal that the food, cash, and voucher program leads to significant increases in the variety of foods consumed. In order to provide a better understanding of how this impacts households on the bottom end of the distribution in terms of the FCS, we analyze whether the program leads to a decrease in the percentage of households classified as having "poor to borderline food consumption." According to the WFP guidelines, households are categorized as having poor to borderline health if their FCS score is less than or equal to 35

(Kennedy, Ballard, and Dop 2011). At baseline, approximately 10.5 percent of households have poor to borderline health. This is comparable to the 8.3 percent found in the WFP's assessment of the food security and nutrition situation among Colombian refugees (PMA 2010). Table 6.8 presents the estimates of the impact of treatment on an indicator for having poor to borderline food consumption, and reveals that overall pooled treatment significantly decreases poor to borderline food consumption by 4 percentage points, reducing the proportion of households with poor or borderline food consumption by approximately 40 percent. The second column of Table 6.8 shows that the food and voucher arm significantly decrease the percent of households with poor to borderline consumption by 6 and 4 percentage points respectively. The impact of the food arm is significantly different to that of the cash arm.

Table 6.8 Impact of treatment on poor to borderline food consumption

	Outcome variable: =1 if poor to borderline food consumption	
Pooled Treatment	-0.04	
	(0.02)***	
Treatment==Food		-0.06
		(0.02)***
Treatment==Cash		-0.03
		(0.02)
Treatment==Voucher		-0.04
		(0.02)**
R^2	0.08	0.08
N	2,087	2,087
F test: Food=Voucher		1.74
P-value		0.19
F test: Cash=Voucher		1.53
P-value		0.22
F test: Food=Cash		5.97
P-value		0.02

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

6.4 Impacts by Food Groups

Tables 6.6 and 6.7 show that all three modalities lead to improvements in a household's diet, however, food leads to significantly larger increases in caloric intake, and voucher leads to significantly larger increases in dietary diversity. In order to investigate what food groups are increasing as a result of being in the treatment arms, we conduct our estimations separately for the 12 food groups included in the HDDS. In particular, we conduct ANCOVA estimates on food frequencies—number of days in the last seven days that a household consumed the specific food group – and per capita caloric intake.

We find that pooled treatment significantly increases the number of days a household consumes the following nine food groups: cereals; roots and tubers; vegetables; fruits; meat and poultry; eggs; fish and seafood; pulses, legumes, and nuts; and milk and dairy (Table 6.9). Looking at treatment arms separately (Table 6.10), we find that the food transfer leads to significant increases in the following five groups: cereals; roots and tubers; meat and poultry;

fish and seafood; and pulses, legumes, and nuts. This is not surprising, given that the food baskets consisted of rice, lentils, sardines, and vegetable oil. The cash transfer leads to significant increases in the following seven food groups: roots and tubers; vegetables; meat and poultry; eggs; fish and seafood; pulses, legumes, and nuts; and milk and dairy. Finally, consistent with the previous results, the voucher leads to significant increases in the most number of food groups, which are the following nine groups: cereals, roots and tubers; vegetables; fruits; meat and poultry; eggs; fish and seafood; pulses, legumes, and nuts; and milk and dairy. The impact of vouchers on the frequency of consumption is significantly different to that of food transfers for vegetables, eggs, and milk and dairy.

In Table 6.11 values are again converted to their logarithms, and thus, the coefficients can be interpreted as percent changes. Table 6.11 reveals why we find such a large increase in per capita caloric intake for the food group and not the cash group. In particular, the food group leads to significantly larger increase in caloric intake from cereals. Calories from cereals at baseline are 763 kcals which accounts for the largest portion of total calories or 41 percent. Thus an 18 percent increase in these calories from the food group is equivalent to an increase of 137 kcals, while an 8 percent increase from the cash group is equivalent to 61 kcals. Food also leads to significantly larger increases than cash in caloric intake from fish and seafood and pulses, legumes, and nuts.

Table 6.9 Impact of pooled treatment on food frequency, by food groups

	Outcome variable: Number of days in last 7 days household consumed...											
	Cereals	**Roots & Tubers**	**Vegetables**	**Fruits**	**Meat & poultry**	**Eggs**	**Fish & seafood**	**Pulses legumes & nuts**	**Milk & dairy**	**Sugar & honey**	**Other**	**Oils & fats**
Pooled	0.28	0.49	0.29	0.23	0.28	0.29	0.37	0.84	0.64	-0.00	0.18	-0.09
Treatment	(0.09)***	(0.14)***	(0.09)***	(0.12)**	(0.08)***	(0.12)**	(0.08)***	(0.10)***	(0.15)***	(0.09)	(0.16)	(0.07)
R^2	0.08	0.11	0.08	0.12	0.15	0.07	0.08	0.10	0.18	0.04	0.08	0.04
N	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables. Oils and fats were not included in the baseline survey and thus we do not control for it in the estimation.

Table 6.10 Impact of treatment arms on food frequency, by food groups

	Outcome variable: Number of days in last 7 days household consumed...											
	Cereals	**Roots & Tubers**	**Vegetables**	**Fruits**	**Meat & poultry**	**Eggs**	**Fish & seafood**	**Pulses legumes & nuts**	**Milk & dairy**	**Sugar & honey**	**Other**	**Oils & fats**
Treatment==Food	0.43	0.42	0.13	0.26	0.19	0.06	0.61	1.20	0.19	0.05	0.12	0.00
	(0.10)***	(0.19)**	(0.12)	(0.17)	(0.09)**	(0.16)	(0.12)***	(0.15)***	(0.20)	(0.10)	(0.18)	(0.11)
Treatment==Cash	0.15	0.45	0.30	0.15	0.34	0.26	0.15	0.59	0.66	-0.05	0.24	-0.10
	(0.10)	(0.17)***	(0.11)***	(0.15)	(0.11)***	(0.16)*	(0.08)*	(0.12)***	(0.17)***	(0.11)	(0.17)	(0.08)
Treatment==Voucher	0.30	0.56	0.39	0.29	0.28	0.46	0.40	0.83	0.90	0.01	0.16	-0.13
	(0.10)***	(0.17)***	(0.10)***	(0.14)**	(0.10)***	(0.15)***	(0.09)***	(0.11)***	(0.18)***	(0.10)	(0.19)	(0.08)
R^2	0.09	0.12	0.08	0.12	0.15	0.07	0.10	0.11	0.18	0.04	0.08	0.04
N	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087
F test: Food=Voucher	2.59	0.54	5.44	0.03	0.86	5.00	3.26	6.44	13.87	0.30	0.06	1.57
P-value	0.11	0.46	0.02	0.87	0.36	0.03	0.07	0.01	0.00	0.59	0.81	0.21
F test: Cash=Voucher	2.58	0.42	0.78	0.96	0.21	1.46	9.97	3.67	2.12	0.34	0.28	0.11
P-value	0.11	0.52	0.38	0.33	0.64	0.23	0.00	0.06	0.15	0.56	0.59	0.74
F test: Food=Cash	9.76	0.03	2.40	0.48	1.95	1.34	17.88	17.29	7.21	1.27	0.79	0.92
P-value	0.00	0.87	0.12	0.49	0.17	0.25	0.00	0.00	0.01	0.26	0.38	0.34

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables. Oils and fats were not included in the baseline survey and thus we do not control for it in the estimation.

Table 6.11 Impact of treatment arms on log per capita caloric intake, by food groups

	Outcome variable: Log per capita caloric intake (daily) ...											
	Cereals	**Roots & Tubers**	**Vegetables**	**Fruits**	**Meat & poultry**	**Eggs**	**Fish & seafood**	**Pulses legumes & nuts**	**Milk & dairy**	**Sugar & honey**	**Other**	**Oils & fats**
Treatment==Food	0.18	0.29	0.12	0.14	0.26	0.04	1.08	0.89	0.31	-0.01	0.19	0.05
	(0.05)***	(0.12)**	(0.06)*	(0.08)	(0.12)**	(0.10)	(0.18)***	(0.15)***	(0.17)*	(0.11)	(0.12)*	(0.10)
Treatment==Cash	0.08	0.22	0.12	0.09	0.35	-0.00	0.30	0.38	0.50	0.04	0.06	-0.12
	(0.05)	(0.12)*	(0.06)**	(0.08)	(0.11)***	(0.09)	(0.13)**	(0.13)***	(0.14)***	(0.09)	(0.11)	(0.08)
Treatment==Voucher	0.11	0.22	0.13	0.16	0.31	0.11	0.43	0.59	0.70	0.06	-0.05	-0.07
	(0.05)**	(0.11)*	(0.05)**	(0.08)**	(0.11)***	(0.09)	(0.13)***	(0.13)***	(0.14)***	(0.09)	(0.11)	(0.06)
R^2	0.11	0.06	0.20	0.14	0.18	0.05	0.10	0.10	0.17	0.07	0.09	0.04
N	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006	2,006
F test: Food=Voucher	2.29	0.39	0.00	0.16	0.16	0.65	19.63	5.18	7.03	0.57	5.03	1.54
P-value	0.13	0.54	0.95	0.69	0.69	0.42	0.00	0.02	0.01	0.45	0.03	0.22
F test: Cash=Voucher	0.35	0.00	0.00	1.37	0.19	1.64	1.92	3.32	2.99	0.06	1.17	0.33
P-value	0.55	1.00	0.99	0.24	0.67	0.20	0.17	0.07	0.09	0.81	0.28	0.56
F test: Food=Cash	4.10	0.41	0.00	0.43	0.65	0.12	27.18	13.79	1.63	0.32	1.52	2.39
P-value	0.04	0.52	0.97	0.52	0.42	0.72	0.00	0.00	0.20	0.57	0.22	0.12

Notes: Standard errors in parentheses clustered at the cluster level. * p < 0.1 ** p < 0.05; *** p < 0.01. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables. Oils and fats were not included in the baseline survey and thus we do not control for it in the estimation.

6.5 Impacts by Nationality

In Tables 6.12 - 6.15 we explore whether the impact of treatment differed by Ecuadorian and Colombian households. We do this by creating an interaction term of the treatment indicator with the indicator for whether or not the household head is Colombian. The coefficient in front of treatment represents the impact for Ecuadorians, while the summation of the coefficient in front of treatment and the coefficient in front of the interaction term represents the impact for Colombians. As Table 6.12 reveals, the interaction term is not significant for the food consumption measures. Thus, the impact of treatment on these measures for Colombians is not significantly different to that of Ecuadorians. Across treatment arms, the differential effect with respect to being Colombian is also not significant (Table 6.13).

Table 6.12 Differential impact on food consumption with respect to nationality, by pooled treatment

	Log per capita food consumption	Log per capita caloric intake
Pooled Treatment	0.15	0.11
	(0.03)***	(0.03)***
Pooled Treatment X Colombian	-0.06	-0.03
	(0.07)	(0.06)
Household head is Colombian	-0.01	-0.02
	(0.06)	(0.06)
R^2	0.35	0.31
N	1,985	2,006

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Table 6.13 Differential impact on food consumption with respect to nationality, by treatment arms

	Log per capita food consumption	Log per capita caloric intake
Treatment==Food	0.18	0.15
	(0.04)***	(0.04)***
Treatment==Cash	0.12	0.06
	(0.04)***	(0.04)*
Treatment==Voucher	0.16	0.13
	(0.04)***	(0.03)***
Food Treatment X Colombian	-0.05	0.01
	(0.08)	(0.08)
Cash Treatment X Colombian	-0.01	0.01
	(0.08)	(0.07)
Voucher Treatment X Colombian	-0.11	-0.10
	(0.07)	(0.07)
Household head is Colombian	-0.01	-0.02
	(0.06)	(0.06)
R^2	0.36	0.32
N	1,985	2,006

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

.

Table 6.14 shows that both Ecuadorian and Colombian households benefit from the pooled treatment in terms of increases in the dietary diversity measures, although Colombians experience a significantly larger increase in the HDDS measure. Looking across treatment arms (Table 6.15), we find that for Ecuadorians, vouchers have the largest impact on all three food security measures; however, this is not true for the Colombians. For Colombians, vouchers have the largest impact on the FCS measure, but food has the largest impact on HDDS and DDI. The impact of food on HDDS is significantly larger for Colombian households compared to Ecuadorian households. Furthermore, the impact of cash on HDDS is significantly larger for Colombian households. For FCS and DDI, however, there is no differential impact with respect to being Colombian for any treatment arm.

Table 6.14 Differential impact on dietary diversity with respect to nationality by pooled treatment

	HDDS	DDI	FCS
Pooled treatment	0.32	2.32	7.39
	(0.10)***	(0.41)***	(1.21)***
Pooled treatment X Colombian	0.50	0.57	0.58
	(0.18)***	(0.68)	(1.78)
Household head is Colombian	-0.63	-1.44	-2.32
	(0.16)***	(0.60)**	(1.39)*
R^2	0.19	0.29	0.18
N	2,087	2,087	2,087

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Table 6.15 Differential impact on dietary diversity with respect to nationality, by treatment arms

	HDDS	DDI	FCS
Treatment==Food	0.26	1.57	5.30
	(0.12)**	(0.53)***	(1.53)***
Treatment==Cash	0.25	2.19	6.38
	(0.11)**	(0.45)***	(1.46)***
Treatment==Voucher	0.43	2.87	9.51
	(0.11)***	(0.46)***	(1.39)***
Food treatment X Colombian	0.84	1.38	2.78
	(0.21)***	(0.88)	(2.43)
Cash treatment X Colombian	0.53	0.68	0.19
	(0.19)***	(0.74)	(2.21)
Voucher treatment X Colombian	0.23	-0.05	-0.49
	(0.22)	(0.81)	(2.68)
Household head is Colombian	-0.63	-1.45	-2.39
	(0.16)***	(0.60)**	(1.40)*
R^2	0.20	0.29	0.19
N	2,087	2,087	2,087

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

6.6 Impacts on Nonfood Expenditure

In this section we investigate whether the transfers are also used on nonfood items. Self-reports indicate that for the most part, transfers are used on food consumption (Tables 5.10-5.12), and indeed the impact results above confirm it. Nevertheless, we explore whether nonfood expenditures also increase as a result of the program, and if so, whether it differs by modality. We focus on the following nonfood expenditures that were collected at follow-up: personal care (shampoo, toothpaste, etc.); household or kitchenware; devices or items for communication; gas or electric; transportation; water or water treatment; housing; entertainment; personal care outside of home (beauty salon, etc.); men's clothes; women's clothes; children's clothes; furniture or electronics; jewelry, toys and recreational goods; education; and health. Similar to the tables above, we conduct ANCOVA estimates on pooled treatment and by treatment arms. Given that the range in expenditures is not normally distributed, we transform the dollar amount into logs. Thus the coefficients from the estimates represent percent changes.

Table 6.16 reveals that across the 17 different nonfood expenditures, only expenditures on toys marginally increases as a result of treatment. This reinforces the conclusion that the transfers are mainly used on food and not on non-food items. Table 6.17 reveals that in general the three transfer modalities are not used on non-food items, however, there are a few significant increases at the 5 percent level. In particular, food leads to significant increases in communication and men's clothing. These increases however are small in monetary value, and equivalent to a $1.15 and $1.6 increase respectively.

Table 6.18 explores whether the impacts on nonfood expenditure varies by nationality and finds that with the exception of expenditures on household and kitchenware, entertainment, and toys, there are no significant differences at the 5 percent level in impacts across Colombians and Ecuadorians. For household and kitchenware, Colombians in the cash arm show a significant increase of 19 percent and Colombians in the voucher arm show a significant increase of 11 percent, and these are significantly different from the impact of cash and vouchers for Ecuadorians. One possible explanation for this result is that Colombians, who most likely just arrived to Ecuador, are using part of their cash to buy necessary household items. In contrast, for entertainment and toys the impact for Colombians is significantly smaller than that of Ecuadorians.

Table 6.16 Impact of pooled treatment on household expenditure (logs)

	Personal care	House and kitchen appl.	Commun.	Light and gas	Transp.	Water	Housing	Entert.	Men's clothes	Women's clothes	Child's clothes	Furnit. and electron.	Edu	Health	Services	Jewelry	Toys
Pooled	0.12	0.03	0.09	-0.00	0.03	-0.01	0.12	0.02	0.12	0.01	0.07	0.01	0.14	0.09	0.01	0.01	0.03
Treatment	(0.08)	(0.03)	(0.07)	(0.06)	(0.09)	(0.06)	(0.09)	(0.03)	(0.07)	(0.07)	(0.07)	(0.04)	(0.12)	(0.12)	(0.05)	(0.01)	(0.02)*
R^2	0.12	0.02	0.24	0.21	0.20	0.24	0.43	0.02	0.06	0.06	0.18	0.02	0.45	0.09	0.04	0.01	0.05
N	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables. Information on services, jewelry, and toys was not collected at baseline, and thus we do not control for it in the estimation.

Table 6.17 Impact of treatment arms on household expenditure (logs)

	Personal care	House and kitchen appl.	Commun.	Light and gas	Transp.	Water	Housing	Entert.	Men's clothes	Women's clothes	Child's clothes	Furnit. and electron.	Edu	Health	Services	Jewelry	Toys
Treatment==Food	0.16	0.03	0.17	0.01	0.11	-0.02	0.14	0.03	0.22	0.12	0.06	0.04	0.01	0.04	0.06	0.02	0.03
	(0.10)	(0.03)	(0.08)**	(0.07)	(0.12)	(0.08)	(0.11)	(0.03)	(0.10)**	(0.08)	(0.09)	(0.05)	(0.14)	(0.16)	(0.07)	(0.02)	(0.02)
Treatment==Cash	0.06	0.05	0.01	-0.00	-0.03	-0.03	0.12	0.00	0.05	-0.04	0.03	-0.03	0.10	0.12	0.00	-0.01	0.04
	(0.08)	(0.04)	(0.09)	(0.07)	(0.10)	(0.08)	(0.11)	(0.03)	(0.08)	(0.08)	(0.08)	(0.04)	(0.14)	(0.14)	(0.06)	(0.01)	(0.02)*
Treatment==Voucher	0.16	0.01	0.10	-0.00	0.04	0.01	0.11	0.02	0.12	-0.01	0.11	0.02	0.26	0.09	-0.01	0.01	0.03
	(0.09)*	(0.03)	(0.08)	(0.06)	(0.10)	(0.07)	(0.10)	(0.03)	(0.09)	(0.08)	(0.08)	(0.05)	(0.13)*	(0.13)	(0.06)	(0.02)	(0.02)
R^2	0.12	0.02	0.24	0.21	0.21	0.24	0.43	0.02	0.06	0.06	0.18	0.02	0.45	0.09	0.04	0.01	0.05
N	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044
F test: Food=Voucher	0.00	0.40	0.94	0.03	0.51	0.16	0.09	0.27	1.38	2.84	0.44	0.14	3.29	0.15	1.38	0.39	0.05
P-value	0.99	0.53	0.33	0.86	0.48	0.69	0.77	0.60	0.24	0.09	0.51	0.71	0.07	0.70	0.24	0.53	0.83
F test: Cash=Voucher	1.78	1.25	1.59	0.00	0.83	0.44	0.01	0.40	0.83	0.33	1.16	1.39	1.21	0.07	0.09	2.41	0.43
P-value	0.18	0.27	0.21	0.96	0.36	0.51	0.93	0.53	0.36	0.56	0.28	0.24	0.27	0.80	0.76	0.12	0.51
F test: Food=Cash	1.54	0.31	3.56	0.05	2.10	0.03	0.04	1.19	4.56	5.35	0.11	2.30	0.48	0.35	0.90	3.39	0.12
P-value	0.22	0.58	0.06	0.82	0.15	0.86	0.84	0.28	0.03	0.02	0.74	0.13	0.49	0.55	0.34	0.07	0.72

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables. Information on services, jewelry, and toys was not collected at baseline, and thus we do not control for it in the estimation.

Table 6.18 Impact of treatment arms, by nationality, on household expenditure (logs)

	Personal care	House and kitchen appl.	Commun.	Light and gas	Transp.	Water	Housing	Entert.	Men's clothes	Women's clothes	Child's clothes	Furnit. and electron.	Edu	Health	Services	Jewelry	Toys
Treatment==Food	0.18	-0.00	0.16	-0.02	0.19	-0.02	0.13	0.06	0.13	0.06	0.08	0.04	0.02	0.05	0.11	0.01	0.06
	(0.11)*	(0.04)	(0.09)*	(0.08)	(0.11)*	(0.09)	(0.11)	(0.03)*	(0.11)	(0.10)	(0.10)	(0.06)	(0.17)	(0.18)	(0.08)	(0.02)	(0.03)**
Treatment==Cash	0.09	-0.01	-0.03	-0.01	-0.01	-0.03	0.06	0.03	0.00	-0.04	0.08	-0.01	0.04	0.19	0.00	-0.01	0.04
	(0.09)	(0.04)	(0.10)	(0.09)	(0.10)	(0.08)	(0.11)	(0.03)	(0.09)	(0.09)	(0.09)	(0.05)	(0.16)	(0.15)	(0.06)	(0.02)	(0.02)
Treatment==Voucher	0.16	-0.04	0.13	-0.02	0.03	-0.01	0.05	0.03	0.08	-0.08	0.13	0.04	0.25	0.04	-0.02	0.01	0.05
	(0.10)	(0.04)	(0.08)	(0.08)	(0.10)	(0.07)	(0.10)	(0.03)	(0.09)	(0.09)	(0.08)	(0.06)	(0.15)*	(0.14)	(0.07)	(0.02)	(0.02)*
Food Treatment X Colombian	-0.07	0.09	0.03	0.09	-0.26	0.01	0.02	-0.10	0.29	0.18	-0.06	-0.02	-0.06	-0.04	-0.16	0.03	-0.09
	(0.16)	(0.08)	(0.17)	(0.14)	(0.24)	(0.13)	(0.17)	(0.05)**	(0.15)*	(0.15)	(0.15)	(0.08)	(0.33)	(0.27)	(0.13)	(0.05)	(0.04)**
Cash Treatment X Colombian	-0.12	0.20	0.15	0.02	-0.06	-0.03	0.20	-0.11	0.15	-0.03	-0.19	-0.06	0.27	-0.28	-0.00	0.02	0.01
	(0.14)	(0.10)**	(0.14)	(0.16)	(0.19)	(0.17)	(0.22)	(0.04)***	(0.12)	(0.11)	(0.13)	(0.06)	(0.26)	(0.25)	(0.12)	(0.02)	(0.04)
Voucher Treatment X Colombian	0.01	0.15	-0.11	0.07	0.04	0.07	0.21	-0.04	0.10	0.29	-0.05	-0.09	0.01	0.21	0.03	-0.01	-0.08
	(0.13)	(0.07)**	(0.13)	(0.15)	(0.18)	(0.14)	(0.20)	(0.05)	(0.12)	(0.14)**	(0.12)	(0.08)	(0.26)	(0.25)	(0.13)	(0.02)	(0.04)*
Household head is Colombian	0.07	-0.09	-0.13	-0.20	-0.13	-0.07	0.33	0.07	-0.15	-0.19	-0.06	0.04	-0.17	-0.19	0.06	-0.02	0.03
	(0.10)	(0.06)*	(0.10)	(0.12)	(0.15)	(0.10)	(0.13)**	(0.03)**	(0.09)	(0.08)**	(0.09)	(0.05)	(0.19)	(0.18)	(0.10)	(0.02)	(0.03)
R^2	0.12	0.02	0.24	0.21	0.21	0.24	0.43	0.02	0.07	0.06	0.18	0.02	0.45	0.09	0.04	0.01	0.05
N	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044	2,044

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables. Information on services, jewelry, and toys was not collected at baseline, and thus we do not control for it in the estimation.

7. Impact on Social Capital: Trust, Discrimination, and Participation

7.1 Baseline and Follow-Up Descriptive Statistics

Although the program did not have explicit mandates to change social capital, because of the mixed nationality targeting and because of the interaction of beneficiaries during training sessions, it was hypothesized that the program could change certain components of social capital. Social capital is defined by Putnam (2000) as ''features of social life, networks, norms, trust that enable participants to act together more effectively to pursue shared objectives.'' We focus on the social capital components of trust, discrimination, and community participation in our impact analysis. Questions on discrimination and community participation in the household surveys are asked at the household level ("has anyone in the household. . . "), however, questions on trust are at the individual level; and thus, our analysis is at the individual level. Given that we want to observe social capital as measured by the same individuals at baseline and follow-up, we restrict the sample to 1,879 of the 2,122 households where the same individuals were administered the survey between rounds.

Similar to Alesina and Ferrara (2002) and Labonne and Chase (2011), we divide trust into trust of individuals and trust/confidence in institutions. The questions on trust are on a 4-point scale—disagree, somewhat disagree, somewhat agree, and agree. We create an indicator for trust of individuals that equals 1 if respondent agrees with any one of the following questions: "I can trust the majority of people," "I can trust my neighbor to send an important letter," and "I can trust my neighbor to look after my house while I am away." Similarly, we create an indicator for trust/confidence in institutions that equals 1 if respondent agrees with any of the following questions: "The government would help my family if I had an emergency," "Politicians represent my interests," and "I can go to the police for help if I am a victim of crime." As Alesina and Ferrara point out, a respondent may answer affirmatively to the question about trusting others, even though in his or her actual behavior they may not exhibit trusting behavior or actions. Consequently, to account for this potential ambiguity, we follow Alesina and Ferrara and categorize as trusting only those who "agree" with the questions and not those who "somewhat agree."

Questions on discrimination and participation ask if anyone in the household has felt discriminated against or participated in groups in the last 6 months. The survey asks about 10 different types of discrimination a household could have experienced: discrimination due to color or ethnic origin, gender, lack of money or socioeconomic status, occupation, political views, sickness or disability, nationality, religion, physical appearance, and other causes. We create an indicator for discrimination that equals 1 if the respondent answers yes to anyone in the household having experienced any of the 10 different types of discrimination. For community participation, the survey asks whether or not anyone in the household has participated in the following five groups or associations: agriculture or business association, union, or cooperative; religious or spiritual group; community or neighborhood group; political movement or group; other groups such as NGOs, education, or cultural group. We create an indicator for community participation that equals 1 if a respondent answers yes to participating in any of the five groups.

Tables 7.1 and 7.2 show the percent of individuals that trust other individuals, trust institutions, experience discrimination, and participate in groups or associations at baseline and follow-up. At baseline, 60 percent of respondents trust other individuals, while 87 percent trust institutions. Interestingly, Colombians trust individuals (67 percent compared to 57 percent) and institutions (89 percent versus 86 percent) significantly more than Ecuadorians. Approximately 41 percent of respondents had experienced discrimination in the last 6 months, with Colombians experiencing significantly more discrimination as compared to Ecuadorians (49 percent versus to 36 percent). Approximately 49 percent of respondents had participated in a community group in the last 6 months, with Colombians participating significantly less than Ecuadorians (46 percent compared to 51 percent). Across treatment and comparison arms there are significant differences in means at baseline for the indicators of trust in institutions and participation, thus controlling for baseline values is critical for this analysis. At follow-up, the percent of respondents trusting other individuals and institutions increases slightly, as does the percent participating in groups. For trust in individuals, the percentage in the comparison arm increases slightly, while the percent in the treatment arm remains constant. For trust of institutions and participation in groups, the percent in the comparison arm decreases, while the percent in the treatment arm increases. The percent of individuals experiencing discrimination decreases to 34 percent at follow-up. Both treatment and comparison arms experience decreases in discrimination; however, the decrease for the treatment arm is larger in magnitude. Consequently, significantly more individuals in the treatment arm trust institutions at follow-up and significantly less experience discrimination.

Table 7.1 Baseline means, by pooled treatment

	All	Comparison	Treatment	Difference
Trust in individuals	0.60	0.59	0.61	0.02
	(0.01)	(0.02)	(0.01)	(0.03)
Trust in institutions	0.87	0.90	0.86	-0.04
	(0.01)	(0.01)	(0.01)	(0.02)**
Discrimination	0.41	0.40	0.41	0.00
	(0.01)	(0.02)	(0.01)	(0.03)
Participation	0.49	0.53	0.48	-0.06
	(0.01)	(0.02)	(0.01)	(0.03)**
N	1,879	506	1,373	

Notes: Standard errors in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

Table 7.2 Follow-up means, by pooled treatment

	All	Comparison	Treatment	Difference
Trust in individuals	0.61	0.62	0.61	-0.01
	(0.01)	(0.02)	(0.01)	(0.03)
Trust in institutions	0.90	0.86	0.91	0.06
	(0.01)	(0.02)	(0.01)	(0.02)***
Discrimination	0.34	0.38	0.32	-0.06
	(0.01)	(0.02)	(0.01)	(0.03)**
Participation	0.52	0.50	0.53	0.04
	(0.01)	(0.02)	(0.01)	(0.03)
N	1,878	505	1,373	

Notes: Standard errors in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

7.2 Impacts on Trust, Discrimination, and Community Participation

Tables 7.3–7.4 present the ANCOVA estimates of being in the treatment arm on social capital measures. In Table 7.3, we combine all three treatment arms (food, cash, and voucher) and estimate the impact of pooled treatment on trust of individuals, trust of institutions, discrimination, and participation in groups. We present the results with and without controlling for any covariates. Given that the analysis is at the individual level, covariates for education, age, sex, nationality, and marital status are at the level of the individual and not household head. We focus on columns 2, 4, 6, and 8 of Table 7.3 which control for the full set of covariates. Pooled treatment significantly decreases discrimination by 6 percentage points and increases participation in groups by 6 percentage points. These finding demonstrate the success of the program in bringing individuals together from different backgrounds. Other factors that contribute significantly to the social capital measures are wealth, age, and being Colombian. In particular, being Colombian and older is significantly associated with more discrimination, while being in the top wealth quintile is associated with less discrimination and trust of individuals.

Table 7.4 presents the ANCOVA estimates for each treatment arm separately, and conducts Wald tests to exam whether the estimates from each treatment arm are significantly different from each other. We conduct the estimates using a full set of covariates; however, we report only treatment coefficients for simplicity. Even though all three modalities decrease discrimination and the size of the coefficient is similar across modalities, only the cash arm leads to a significant impact. Similarly, only the cash arm leads to a significant decrease in trust of individuals and this decrease is significantly different from the impact of the food arm. Although cash leads to significant decreases in trust of individuals, it significantly increases trust of institutions. For participation in groups, only the voucher arm leads to a significant increase, and this increase is significantly different from the increase of the cash arm.

Table 7.4 reveals the percentage point change of each social capital indicator that is due to specific treatment modalities. We convert the size of the change to percent changes from baseline means. Figure 7.1 reveals that the percentage decrease in discrimination is large, especially for the cash arm: 19.5 percent decrease in discrimination for the cash arm compared to 12.2 percent for the food arm and 9.8 percent for the voucher arm. Cash also leads to a large decrease of 11.7 percent in trust of individuals. For participation in groups or associations, only the voucher arm experiences a large and significant increase of 20.4 percent.

Table 7.3 Impact of pooled treatment on social capital measures

	Trust Individual		Trust Institution		Discrimination		Participation	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pooled treatment	-0.01	-0.04	0.06	0.04	-0.06	-0.06	0.05	0.06
	(0.03)	(0.03)	(0.03)**	(0.02)	(0.03)*	(0.03)*	(0.03)	(0.03)*
Colombian		-0.03		-0.00		0.08		-0.01
		(0.03)		(0.02)		(0.03)***		(0.03)
Female		-0.05		0.01		-0.01		0.02
		(0.03)		(0.02)		(0.03)		(0.03)
Age		0.00		-0.00		0.00		0.00
		(0.00)		(0.00)		(0.00)***		(0.00)***
Secondary education or higher		0.02		0.00		0.02		-0.01
		(0.03)		(0.02)		(0.03)		(0.03)
Married		-0.02		-0.00		-0.03		0.03
		(0.03)		(0.02)		(0.03)		(0.03)
Household size		0.01		0.00		0.00		0.01
		(0.01)		(0.01)		(0.01)		(0.01)
Number of children 0-5 years		-0.03		-0.03		0.02		-0.00
		(0.02)		(0.01)*		(0.02)		(0.02)
Number of children 6-15 years		-0.00		0.01		0.02		0.01
		(0.01)		(0.01)		(0.02)		(0.02)
Wealth index: 2nd quintile		-0.04		0.02		-0.03		0.00
		(0.03)		(0.02)		(0.04)		(0.04)
Wealth index: 3rd quintile		-0.02		0.00		-0.06		0.02
		(0.04)		(0.02)		(0.04)		(0.04)
Wealth index: 4th quintile		0.00		0.01		-0.05		0.05
		(0.04)		(0.02)		(0.04)		(0.04)
Wealth index: 5th quintile		-0.11		-0.01		-0.07		0.06
		(0.04)***		(0.02)		(0.03)**		(0.04)
Baseline trust in individuals	0.17	0.17						
	(0.03)***	(0.03)***						
Baseline trust in institutions			0.06	0.06				
			(0.02)**	(0.02)**				
Baseline discrimination					0.25	0.23		
					(0.02)***	(0.02)***		
Baseline participation							0.16	0.14
							(0.03)***	(0.03)***
Constant	0.52	0.60	0.80	0.86	0.28	0.14	0.41	0.21
	(0.03)***	(0.08)***	(0.03)***	(0.05)***	(0.03)***	(0.07)**	(0.02)***	(0.07)***
R^2	0.03	0.04	0.01	0.03	0.07	0.09	0.03	0.04
N	1,878	1,878	1,878	1,878	1,879	1,879	1,879	1,879

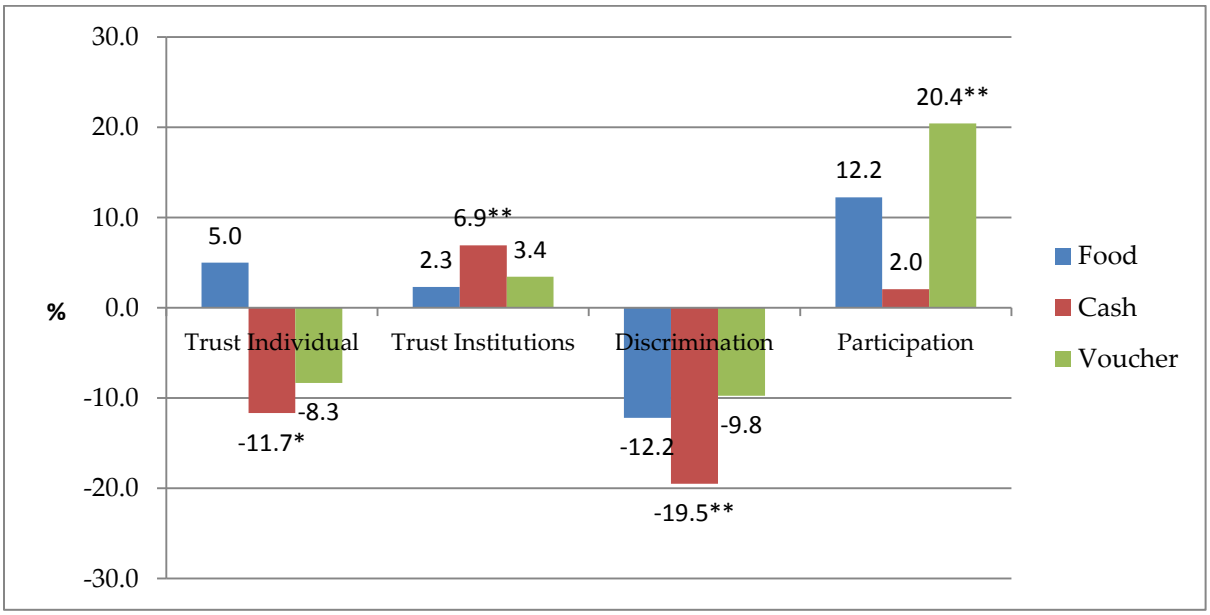
Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. Columns 2, 4, 6, and 8 contain urban center fixed effects.

Table 7.4 Impact of treatment modalities on social capital measures

	Trust Individual	Trust Institution	Discrimination	Participation
Treatment==Food	0.03	0.02	-0.05	0.06
	(0.04)	(0.03)	(0.04)	(0.05)
Treatment==Cash	-0.07	0.06	-0.08	0.01
	(0.04)*	(0.03)**	(0.04)**	(0.04)
Treatment==Voucher	-0.05	0.03	-0.04	0.10
	(0.04)	(0.03)	(0.04)	(0.04)**
R^2	0.05	0.04	0.09	0.05
N	1,878	1,878	1,879	1,879
F test: Food=Voucher	4.60	0.07	0.11	0.59
P-value	0.03	0.80	0.74	0.44
F test: Cash=Voucher	0.11	2.99	1.29	4.75
P-value	0.74	0.09	0.26	0.03
F test: Food=Cash	5.70	2.57	0.45	1.16
P-value	0.02	0.11	0.50	0.28

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Figure 7.1 Percent change in social capital indicators, by treatment arms



Note: * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

7.3 Impacts on Individual Questions

The summary indicators on trust, discrimination, and community participation hide some interesting patterns of the individual questions, and thus in this section we investigate the impact of treatment on each individual question that makes up the summary indicators. Similar to previous tables, we present ANCOVA estimates. Closer analysis of trust indicators reveals

that the cash and voucher arms lead to a significant decrease in beneficiaries' trust in neighbors to take care of one's home, and the size of the coefficient for both arms is significantly different to that of the food arm (Table 7.5). The cash arm also significantly decreases trust in neighbors to send a letter, and again the size of the coefficient is significantly different to that of the food arm. Although cash decreases beneficiaries' trust in neighbors, it also significantly increases trust/confidence in the police.

Table 7.5 Impact of treatment modalities on trust indicators

	Majority of people	Neighbor to send letter	Neighbor to take care of house while away	Government to help my family in emergency	Politicians to represent my interests	Police if I am a victim of crime
Treatment==Food	0.03	0.02	0.02	0.05	-0.03	0.03
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.03)
Treatment==Cash	0.00	-0.07	-0.10	0.05	0.01	0.07
	(0.03)	(0.04)*	(0.04)**	(0.04)	(0.04)	(0.03)***
Treatment==Voucher	-0.02	-0.05	-0.07	-0.00	-0.04	0.02
	(0.03)	(0.03)	(0.04)*	(0.04)	(0.04)	(0.03)
R^2	0.05	0.05	0.06	0.04	0.03	0.03
N	1,878	1,878	1,878	1,878	1,878	1,878
F test: Food=Voucher	1.34	3.86	4.31	1.61	0.06	0.08
P-value	0.25	0.05	0.04	0.21	0.80	0.78
F test: Cash=Voucher	0.30	0.30	0.69	1.45	1.26	5.51
P-value	0.58	0.59	0.41	0.23	0.26	0.02
F test: Food=Cash	0.48	5.28	8.52	0.00	0.55	2.27
P-value	0.49	0.02	0.00	0.98	0.46	0.13

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Table 7.6 shows the impact of treatment arms on individual indicators of discrimination, and reveals that both the cash and voucher lead to decreases of 3 percentage points in discrimination due to socioeconomic status and occupation, however, this decrease is not significant at the 10 percent level. All three treatment arms lead to *increases* in "other" types of discrimination, which could reflect negative stigma attached to receiving aid.

Table 7.7 shows the impact of treatment arms on individual indicators of community participation, and reveals that the increase in participation is due solely to increases in participation in NGOs, or education or cultural groups. This is not surprising, given that participants in the program most likely see themselves as participating in an NGO. On the other hand, the cash arm also leads to a significant decrease in participation of community associations.

Table 7.6 Impact of treatment modalities on discrimination indicators

	Color or race	Gender	Lack of money or socio-economic status	Occupation	Political views	Sickness or disability	Nationality	Religion	Physical appearance	Other
Treatment==Food	0.02	0.00	0.00	0.00	0.01	0.01	-0.01	0.00	0.03	0.02
	(0.02)	(0.02)	(0.04)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)*	(0.01)*
Treatment==Cash	0.02	0.00	-0.03	-0.03	-0.01	-0.01	-0.02	-0.01	0.02	0.02
	(0.01)	(0.02)	(0.03)	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)**
Treatment==Voucher	0.01	-0.02	-0.03	-0.03	-0.01	-0.02	0.01	-0.01	0.01	0.02
	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)	(0.01)*	(0.02)	(0.01)	(0.01)	(0.01)**
R^2	0.06	0.04	0.07	0.07	0.04	0.07	0.19	0.07	0.05	0.02
N	1,879	1,879	1,879	1,879	1,879	1,879	1,879	1,879	1,879	1,879
F test: Food=Voucher	0.33	1.74	1.03	1.44	1.63	4.25	0.60	0.42	1.74	0.01
P-value	0.57	0.19	0.31	0.23	0.20	0.04	0.44	0.52	0.19	0.92
F test: Cash=Voucher	0.06	1.17	0.01	0.02	0.08	1.05	1.46	0.01	0.96	0.05
P-value	0.80	0.28	0.93	0.88	0.78	0.31	0.23	0.93	0.33	0.81
F test: Food=Cash	0.14	0.05	0.95	1.62	2.26	1.28	0.07	0.29	0.28	0.01
P-value	0.71	0.83	0.33	0.21	0.14	0.26	0.79	0.59	0.60	0.91

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Table 7.7 Impact of treatment modalities on community participation

	Agricultural or business associations or cooperatives or unions	Religious or spiritual group	Community association	Political group	NGO or education or cultural groups
Treatment==Food	-0.02	-0.03	-0.00	0.01	0.17
	(0.02)	(0.04)	(0.04)	(0.01)	(0.05)***
Treatment==Cash	-0.02	0.01	-0.06	-0.00	0.09
	(0.02)	(0.04)	(0.03)*	(0.01)	(0.04)**
Treatment==Voucher	-0.02	0.00	0.05	-0.01	0.13
	(0.02)	(0.04)	(0.04)	(0.01)	(0.03)***
R^2	0.07	0.09	0.06	0.03	0.05
N	1,879	1,879	1,879	1,879	1,879
F test: Food=Voucher	0.00	0.67	1.13	2.84	0.51
P-value	0.95	0.41	0.29	0.09	0.48
F test: Cash=Voucher	0.00	0.08	9.05	1.91	0.91
P-value	1.00	0.78	0.00	0.17	0.34
F test: Food=Cash	0.00	1.20	2.31	0.81	1.96
P-value	0.95	0.28	0.13	0.37	0.16

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

7.4 Impacts by Nationality

In Tables 7.8 and 7.9 we explore whether the impact of treatment differed by Ecuadorian and Colombian participants. We create an interaction term of treatment with an indicator for whether or not an individual is Colombian, and the coefficient in front of this interaction term represents the differential impact of treatment. In both tables, we conduct the analysis with the full set of individual, household, and urban center controls; however, we present only the coefficients on treatment, being Colombian, and the interaction of the two indicators. As Table 7.8 reveals, the differential impact on trust and discrimination is not significant. However, for participation the impact is significantly larger for Colombians. In particular, treatment leads to a 2 percentage point increase in participation for Ecuadorians while it leads to an 11 percentage point increase for Colombians. Looking across treatment arms (Table 7.9), we again only find a significant differential impact with respect to being Colombian for the participation indicator. In particular, the impact of cash on participation is significantly larger for Colombians than for Ecuadorians.

Table 7.8 Differential impact with respect to nationality, by pooled treatment

	Trust Individual	Trust Institution	Discrimination	Participation
Pooled treatment	-0.02	0.02	-0.06	0.02
	(0.04)	(0.02)	(0.04)	(0.04)
Pooled treatment X Colombian	-0.04	0.04	-0.01	0.09
	(0.06)	(0.05)	(0.06)	(0.05)*
Colombian	-0.00	-0.03	0.09	-0.08
	(0.05)	(0.05)	(0.06)	(0.04)*
R^2	0.04	0.03	0.09	0.05
N	1,878	1,878	1,879	1,879

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Table 7.9 Differential impact with respect to nationality, by treatment arms

	Trust Individual	Trust Institution	Discrimination	Participation
Treatment==Food	0.06	0.00	-0.04	0.05
	(0.05)	(0.03)	(0.05)	(0.06)
Treatment==Cash	-0.07	0.05	-0.08	-0.04
	(0.05)	(0.03)**	(0.05)	(0.05)
Treatment==Voucher	-0.03	0.01	-0.05	0.06
	(0.04)	(0.03)	(0.04)	(0.04)
Food Treatment X Colombian	-0.07	0.04	-0.06	0.02
	(0.07)	(0.05)	(0.08)	(0.07)
Cash Treatment X Colombian	0.01	0.03	-0.00	0.15
	(0.07)	(0.05)	(0.07)	(0.07)**
Voucher Treatment X Colombian	-0.06	0.04	0.02	0.10
	(0.07)	(0.05)	(0.07)	(0.06)
Colombian	0.00	-0.03	0.09	-0.08
	(0.05)	(0.05)	(0.06)	(0.04)*
R^2	0.05	0.04	0.09	0.05
N	1,878	1,878	1,879	1,879

Notes: Standard errors in parentheses clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

8. Anemia

8.1 Indicators and Descriptive Statistics

Hemoglobin biomarkers were collected for all children aged 6 to 59 months and for female adolescents aged 10 to 16 residing in surveyed households. Anemia cut-off classifications are calculated according to the WHO recommendations (2011) by age group (Table 8.1) and adjusted for pregnancy status and altitude using the recommendations of Sullivan and colleagues (Sullivan et al. 2008). Due to the very low percentages of children or adolescents with severe anemia in the sample, we combine severe and moderate classification in the analysis.

Table 8.1 Anemia classifications

	Anemia status		
Age	**Severe**	**Moderate**	**Mild**
6-59 months	hb < 7	7 ≤ hb < 10	10 ≤ hb < 11.0
5-6 years and 10-11 years	hb < 8	8 ≤ hb < 11	11 ≤ hb < 11.5
12-17 years	hb < 8	8 ≤ hb < 11	11 ≤ hb < 12.0

In total there are 785 children 6 to 59 months and 432 adolescents 10 to 16 years old that had their hemoglobin measured at baseline and follow-up. Sample sizes reflect both changes in household composition as well as availability of children to be tested in both rounds at the time of the interview. Attrition rates for the anemia sample are approximately 20 percent in both the children and adolescent sample. Conducting t-tests reveals that there are significant differences in terms of female headship, ethnicity of household head and wealth among the attrited sample of children aged 6 to 59 months, and significant differences in terms of ethnicity of household head and wealth among the attrited sample of adolescents. There is no differential attrition by pooled treatment status in either the children aged 6 to 59 month sample or the adolescent sample.

Table 8.2 presents anemia levels for children between 6 and 59 months at baseline by pooled treatment. Average hemoglobin levels are 10.85 g/dl in the full sample. Overall levels of anemia are high (48 percent); a little less than half is concentrated in the mild (21 percent) level, while a little more than half (26 percent) is concentrated in the moderate to severe levels. There are no significant differences between comparison and treatment at baseline, indicating success of the randomization.

Table 8.3 presents anemia levels for children between 6 and 59 months at follow-up by pooled treatment. Overall hemoglobin levels have increased approximately 0.4 g/dl to 11.23, which may be a function of children aging over the panel period. The percentage with any anemia decreases to 41 percent, and this decrease is entirely due to the decrease in moderate and severe anemia from 26 percent to 18 percent respectively. Similar to the baseline, there are no significant differences between treatment and comparison groups.

Table 8.2 Baseline anemia measures among 6–59 month old children, by pooled treatment

	All	Comparison	Treatment	Difference
Hemoglobin level (g/dl)	10.85	10.97	10.81	0.16
	(0.05)	(0.11)	(0.06)	(0.13)
Any anemia indicator	0.48	0.44	0.49	-0.05
	(0.02)	(0.04)	(0.02)	(0.04)
Mild anemia indicator	0.21	0.18	0.22	-0.04
	(0.01)	(0.03)	(0.02)	(0.03)
Moderate/severe anemia indicator	0.26	0.26	0.27	-0.01
	(0.02)	(0.03)	(0.02)	(0.04)
N	785	197	588	

Note: Standard errors in parenthesis. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

Table 8.3 Follow-up anemia measures among 6–59 month old children, by pooled treatment

	All	Comparison	Treatment	Difference
Hemoglobin level (g/dl)	11.23	11.35	11.18	0.17
	(0.05)	(0.09)	(0.05)	(0.11)
Any anemia indicator	0.41	0.37	0.43	-0.06
	(0.02)	(0.03)	(0.02)	(0.04)
Mild anemia indicator	0.23	0.22	0.24	-0.02
	(0.02)	(0.03)	(0.02)	(0.03)
Moderate/severe anemia indicator	0.18	0.15	0.19	-0.04
	(0.01)	(0.03)	(0.02)	(0.03)
N	785	197	588	

Note: Standard errors in parenthesis. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

Table 8.4 shows results of baseline anemia measures for the sample of adolescent girls by pooled treatment. Overall levels of anemia are much lower than for the sample aged 6 to 59 months, with 23 percent of adolescents having any form of anemia, which is split between those with mild anemia at 16 percent and those with moderate to severe anemia at 8 percent. Hemoglobin levels are 12.55 g/dl for the entire sample and there are no significant differences between comparison and treatment arms, indicating the success of the randomization.

Table 8.4 Baseline anemia measures among adolescents aged 10 – 16, by pooled treatment

	All	Comparison	Treatment	Difference
Hemoglobin level (g/dl)	12.55	12.53	12.56	-0.03
	(0.06)	(0.10)	(0.07)	(0.12)
Any Anemia Indicator	0.23	0.24	0.23	0.01
	(0.02)	(0.04)	(0.02)	(0.04)
Mild Anemia Indicator	0.16	0.15	0.16	-0.00
	(0.02)	(0.03)	(0.02)	(0.04)
Moderate/severe Anemia Indicator	0.08	0.09	0.07	0.02
	(0.01)	(0.02)	(0.01)	(0.03)
N	432	136	296	

Note: Standard errors in parenthesis. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

Table 8.5 presents results of follow-up anemia measures for the sample of adolescent girls by pooled treatment. Again, there is little movement in overall hemoglobin levels,

however, for the adolescent girls, there is a slight upward trend in any anemia (28 percent versus 23 percent in the baseline), and these slight increases are seen in both mild and moderate measures. Finally, there are no significant differences between treatment and comparison groups.

Table 8.5 Follow-up anemia measures among adolescents aged 10 – 16, by pooled treatment

	All	Comparison	Treatment	Difference
Hemoglobin level (g/dl)	12.46	12.37	12.51	-0.14
	(0.06)	(0.11)	(0.07)	(0.13)
Any anemia indicator	0.28	0.29	0.28	0.00
	(0.02)	(0.04)	(0.03)	(0.05)
Mild anemia indicator	0.18	0.15	0.20	-0.04
	(0.02)	(0.03)	(0.02)	(0.04)
Moderate/severe anemia indicator	0.10	0.14	0.09	0.05
	(0.01)	(0.03)	(0.02)	(0.03)
N	432	136	296	

Note: Standard errors in parenthesis. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

8.2 Impact of Treatment on Anemia Indicators for Children 6-59 Months Old

In Tables 8.6 and 8.7 we combine all three treatment arms (food, cash, and voucher) and estimate the impact of pooled treatment on hemoglobin levels and indicators of anemia. We present the ANCOVA estimates with and without controlling for additional covariates. We use the same modeling as in previous analysis; however we include additional child-specific control variables, age indicators (in 6 month splines for the under 5 group and in year indicators for the adolescent group), sex of child, indicator for whether or not they received an iron dose in the last 6 months and if the girl is menstruating at the time of the survey for the adolescent girl analysis.[3] Table 8.6 shows that there is virtually no impact found of the pooled treatment on any of the anemia measures. This result is robust to the inclusion of control variables, although coefficients change in magnitude, none are statistically significant (Table 8.7).

Table 8.6 Impact of pooled treatment on anemia measures among 6–59 month old children

	Hemoglobin (g/dl)	Any anemia	Moderate or severe
Pooled treatment	-0.11	0.05	0.04
	(0.11)	(0.04)	(0.03)
Baseline anemia indicator	0.35	0.21	0.14
	(0.03)***	(0.04)***	(0.03)***
Constant	7.49	0.27	0.11
	(0.36)***	(0.03)***	(0.02)***
R^2	0.16	0.05	0.03
N	785	785	785

Note: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

[3] We also conduct robustness checks with alternate functional forms for age (continuous month and year variables and indicators), and our results are robust to differences in functional form.

Table 8.7 Impact of pooled treatment on anemia measures among 6–59 month old children with covariates

	Hemoglobin (g/dl)	Any anemia	Moderate or severe
Pooled treatment	-0.14	0.05	0.06
	(0.13)	(0.05)	(0.03)
Child is male	0.12	-0.06	-0.04
	(0.09)	(0.03)*	(0.03)
Received Iron Supplement in last 6 months	-0.03	0.00	-0.02
	(0.10)	(0.04)	(0.03)
Household head is female	0.08	-0.02	-0.03
	(0.11)	(0.04)	(0.03)
Age of household head	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Household head is Colombian	0.02	-0.06	-0.02
	(0.09)	(0.04)	(0.03)
Household head has at least secondary education	0.03	0.03	-0.01
	(0.11)	(0.04)	(0.03)
Household size	-0.01	0.00	0.01
	(0.02)	(0.01)	(0.01)
Wealth index: 2nd quintile	-0.22	0.03	0.10
	(0.17)	(0.06)	(0.04)**
Wealth index: 3rd quintile	-0.01	0.01	-0.01
	(0.15)	(0.06)	(0.04)
Wealth index: 4th quintile	-0.20	0.04	0.02
	(0.13)	(0.06)	(0.04)
Wealth index: 5th quintile	-0.12	-0.02	0.05
	(0.17)	(0.06)	(0.05)
Baseline anemia measure	0.30	0.17	0.09
	(0.03)***	(0.04)***	(0.03)***
Constant	8.13	0.43	0.19
	(0.41)***	(0.12)***	(0.09)**
R^2	0.22	0.11	0.10
N	785	785	785

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain child's age using fixed effects in six month age group splines and urban center fixed effects.

Table 8.8 replicates the ANCOVA estimates for hemoglobin levels and anemia measures for each treatment arm separately, and reports Wald tests examining whether the estimates from each treatment arm are significantly different from each other. Specifications include a full set of control variables; however, for simplicity we only present the coefficients from the different treatment arms. Table 8.8 shows that there is a significant decrease in hemoglobin and increase in any anemia from the food treatment arm, and this increase in anemia is significantly different to that of the voucher arm. Cash also leads to weakly significant increases in moderate to severe anemia. When we consider interactions with ethnicity, we can see that the impact of food on anemia is being driven entirely by increases in the moderate or severe indicator for the Colombian sample (Table 8.9).

Table 8.8 Impact of treatment modalities on anemia measures among 6–59 month old children with covariates

	Hemoglobin (g/dl)	Any anemia	Moderate or severe
Treatment==Food	-0.25	0.12	0.06
	(0.15)*	(0.06)**	(0.04)
Treatment==Cash	-0.13	0.04	0.09
	(0.14)	(0.05)	(0.04)*
Treatment==Voucher	-0.06	0.00	0.02
	(0.15)	(0.05)	(0.04)
R^2	0.22	0.11	0.10
N	785	785	785
F test: Food=Voucher	2.09	4.98	1.06
P-value	0.15	0.03	0.30
F test: Cash=Voucher	0.35	0.69	2.07
P-value	0.55	0.41	0.15
F test: Food=Cash	0.94	2.60	0.34
P-value	0.34	0.11	0.56

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations control for child's age using fixed effects in six month age group splines, child's sex, indicator of receiving an iron supplementation in the last 6 months, ethnicity, sex and education of household head, household size, number of children, wealth quintiles, baseline outcome variable, and contain urban center fixed effects.

Table 8.9 Differential impact on anemia measures among 6 - 59 month old children with covariates with respect to ethnicity, by treatment arms

	Hemoglobin (g/dl)	Any anemia	Moderate or severe
Treatment==Food	-0.13	0.08	0.02
	(0.17)	(0.06)	(0.05)
Treatment==Cash	-0.19	0.08	0.10
	(0.15)	(0.05)	(0.05)**
Treatment==Voucher	-0.03	0.01	0.01
	(0.17)	(0.06)	(0.04)
Food treatment X Colombian	-0.52	0.19	0.21
	(0.23)**	(0.11)*	(0.08)***
Cash treatment X Colombian	0.34	-0.18	-0.12
	(0.21)	(0.11)	(0.08)
Voucher treatment X Colombian	-0.14	-0.02	0.04
	(0.25)	(0.10)	(0.08)
Household head is Colombian	0.10	-0.05	-0.04
	(0.16)	(0.08)	(0.05)
R^2	0.23	0.12	0.11
N	785	785	785

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations control for child's age using fixed effects in six month age group splines, child's sex, indicator of receiving an iron supplementation in the last 6 months, ethnicity, sex and education of household head, household size, number of children, wealth quintiles, baseline outcome variable, and contain urban center fixed effects.

8.3 Impact of Treatment on Anemia Indicators for Adolescent Females

In Tables 8.10 and 8.11 we combine all three treatment arms (food, cash, and voucher) and estimate the impact of pooled treatment on hemoglobin levels and indicators of anemia for adolescent females using the same modeling as for the sample aged 6 to 59 months. We present the ANCOVA estimates with and without controlling for additional covariates. As Tables 8.10 and 8.11 reveal, we find no significant impact of the combined treatment and this is true whether or not we control for covariates.

Table 8.10 Impact of pooled treatment on anemia measures among adolescent girls aged 10–16

	Hemoglobin (g/dl)	Any anemia	Moderate or severe
Pooled treatment	0.13	-0.00	-0.05
	(0.13)	(0.05)	(0.03)
Baseline anemia indicator	0.26	0.12	0.05
	(0.06)***	(0.07)*	(0.08)
Constant	9.16	0.26	0.14
	(0.76)***	(0.04)***	(0.03)***
R^2	0.06	0.01	0.01
N	432	432	432

Note: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

Table 8.12 reports the ANCOVA estimates for hemoglobin and anemia measures among the adolescent girls sample for each treatment arm separately, and conducts Wald tests to examine whether the estimates from each treatment arm are significantly different from each other. Specifications include a full set of control variables; however, for simplicity we only present the coefficients from the different treatment arms. Table 8.12 shows no significant impact of any treatment arm across anemia measures, and this result holds when we consider interactions with Colombian indicators (Table 8.13).

Taken together the results from anemia can be summarized in the following way. First, although levels of anemia are high, particularly for the younger age group, the intervention did not have a positive impact on anemia reduction for either children aged 6 to 59 months, or for adolescent girls aged 10 to 16 years. This result could be explained by the relatively short intervention period. In addition, the focus of the intervention was on food security and nutrition in general, and not focused specifically on anemia reduction. Based on the results, it is possible, and is corroborated by household food group caloric results, that for young children, consumption moved away from more diverse diets and towards consumption of staples that were part of the food transfer for that treatment group. Further analysis of the anemia data will include explicit methods to account for attrition between panel periods.

Table 8.11 Impact of pooled treatment on anemia measures among adolescent girls aged 10–16 with covariates

	Hemoglobin (g/dl)	Any anemia	Moderate or severe
Pooled treatment	-0.02	0.04	-0.03
	(0.11)	(0.04)	(0.03)
Received iron supplement in last 6 months	-0.04	-0.01	0.01
	(0.17)	(0.06)	(0.05)
Currently menstruating	-0.10	0.06	-0.01
	(0.17)	(0.07)	(0.05)
Household head is female	-0.08	0.08	0.02
	(0.14)	(0.05)	(0.04)
Age of household head	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Household head is Colombian	0.24	-0.11	-0.07
	(0.13)*	(0.05)**	(0.03)**
Household head has at least secondary education	0.15	-0.05	-0.05
	(0.14)	(0.05)	(0.04)
Household size	-0.04	0.02	0.01
	(0.03)	(0.01)	(0.01)
Wealth index: 2nd quintile	0.25	-0.06	-0.05
	(0.18)	(0.08)	(0.05)
Wealth index: 3rd quintile	0.39	-0.13	-0.03
	(0.19)**	(0.07)*	(0.06)
Wealth index: 4th quintile	0.06	-0.07	-0.01
	(0.18)	(0.07)	(0.05)
Wealth index: 5th quintile	0.08	-0.08	-0.07
	(0.17)	(0.07)	(0.05)
Baseline anemia measure	0.26	0.08	0.06
	(0.06)***	(0.06)	(0.07)
Constant	9.41	-0.06	0.03
	(0.76)***	(0.14)	(0.08)
R^2	0.15	0.10	0.08
N	432	432	432

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain age in years fixed effects and urban center fixed effects.

Table 8.12 Impact of treatment modalities on anemia measures among adolescent girls aged 10–16 covariates

	Hemoglobin (g/dl)	Any anemia	Moderate or severe
Treatment==Food	0.05	0.06	-0.04
	(0.14)	(0.06)	(0.04)
Treatment==Cash	-0.09	0.02	-0.02
	(0.13)	(0.05)	(0.04)
Treatment==Voucher	-0.00	0.04	-0.04
	(0.15)	(0.05)	(0.04)
R^2	0.15	0.10	0.08
N	432	432	432
F test: Food=Voucher	0.12	0.09	0.03
P-value	0.73	0.77	0.87
F test: Cash=Voucher	0.38	0.13	0.32
P-value	0.54	0.72	0.57
F test: Food=Cash	0.99	0.42	0.53
P-value	0.32	0.52	0.47

Notes: Standard errors in parenthesis clustered at the cluster level. * p < 0.1 ** p < 0.05; *** p < 0.01. All estimations control for age in year splines, indicator of receiving an iron supplementation in the last 6 months, indicator of currently menstruating, ethnicity, sex and education of household head, household size, number of children, wealth quintiles and urban center fixed effects.

Table 8.13 Differential impact on anemia measures among adolescent girls aged 10–16 with covariates with respect to ethnicity, by treatment arms

	Hemoglobin (g/dl)	Any anemia	Moderate or severe
Treatment==Food	0.00	0.07	-0.03
	(0.19)	(0.07)	(0.05)
Treatment==Cash	-0.10	0.02	-0.02
	(0.17)	(0.06)	(0.05)
Treatment==Voucher	0.04	0.05	-0.07
	(0.18)	(0.07)	(0.05)
Food treatment X Colombian	0.22	-0.04	-0.06
	(0.33)	(0.14)	(0.07)
Cash treatment X Colombian	0.01	-0.01	0.01
	(0.30)	(0.10)	(0.08)
Voucher treatment X Colombian	-0.13	-0.05	0.10
	(0.35)	(0.12)	(0.09)
Household head is Colombian	0.25	-0.08	-0.10
	(0.22)	(0.08)	(0.07)
R^2	0.15	0.10	0.09
N	432	432	432

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations control for age in year splines, indicator of receiving an iron supplementation in the last 6 months, indicator of currently menstruating, ethnicity, sex and education of household head, household size, number of children, wealth quintiles and urban center fixed effects.

9. Gender Issues

Women's empowerment has been identified for decades as a development goal in its own right, in addition to a means to achieve other targets, including poverty reduction (King and Mason 2001). Accordingly, numerous cash and other transfer programs are designed with the specific objective of empowering or placing resources in the hands of women in order to have a greater impact on positive outcomes, particularly for children. Despite this understanding, we still know relatively little about how transfer programs interact with women's empowerment within the household and how this dynamic may vary between transfer types, cultures, and household structures. This evaluation provides an opportunity to explore whether transfers affect women's empowerment indicators including intrahousehold decisionmaking power, disagreements, and intimate partner violence, and whether the impact differs by modality.

We divide this chapter into two parts: we first discuss the analysis related to a woman's household decision-making and we then discuss the analysis related to intimate partner violence. One woman per household over the age of 15 was administered the decision-making and intimate partner violence questions, with priority given to "primary females" including female heads of household, spouses of household heads, or next oldest female. While the decision-making variables could be administered to women regardless of their relationship status, the intimate partner violence questions were administered only if a woman had been in a relationship in the past 6 months. Moreover, given the sensitive nature of these sections, enumerators were instructed to administer the questions only if the woman was able to be interviewed alone. In total, of the 2,122 panel households, we have a matched panel of 1,911 women who were administered the decisionmaking module at both the baseline and follow-up. However, due to the restrictions on partnership, only 1,492 woman were administered the domestic violence questions at baseline and 1,438 at follow-up. Of these women, we have a matched panel for 1,268 who were administered the questions both at baseline and follow-up.

9.1 Decisionmaking

9.1.1 Decisionmaking Indicators

Although empowerment can be defined in a number of ways across different disciplines, conceptualization generally refers to "women's ability to make decisions and affect outcomes of importance to themselves and their families (Malhotra, Schuler, and Boender 2002, 5)." Within this definition, researchers have focused on both direct and indirect measures of empowerment. Direct measures generally focus on the expansion over time of a woman's set of available choices and the ability to transition these choices into desirable outcomes. Indirect, or proxy, measures generally focus on the possession of resources, both tangible such as assets, or intangible, such as education or social capital, which may then lead to or facilitate empowerment. Although there are numerous methods of assessing whether or not the transfer program had an impact on women's empowerment, here we focus specifically on women's decisionmaking within the household. Women's household decisionmaking across economic and social spheres is often used in economic and public health literature to measure women's status, bargaining power, or empowerment within the household.

To measure women's decisionmaking, we follow the approach used by the DHS, which asks women to consider their relative decision-making power across a number of domains. In both baseline and follow-up surveys, we ask who in the household generally has the final say in decisions regarding (1) whether or not the woman works for pay, (2) children's education, (3) children's health, (4) woman's own health, (5) small daily food purchases, (6) large food purchases, (7) large asset purchases (such as furniture, TV, etc.), (8) whether or not to use contraceptives. The responses to these questions could be the following: (a) the woman herself, (b) her spouse or partner, (c) the woman and spouse/partner together, (d) someone else in the household, (e) the woman and someone else together, (d) the decision is not applicable (for example, questions (2) and (3) in a household without children present). Given the not applicable response option, the samples for each decisionmaking indicator vary based on the response rates per question (ranging from 1,761 women answering questions regarding daily food purchases to 1,238 women answering questions regarding children's education).

In this analysis we focus on two main outcomes. First we present analysis of joint or sole decisionmaking across domains, measuring the proportion of women with "any decisionmaking power" in the domain. This measure is preferred to an index which ranks level of involvement, as it is not clear from this perspective whether joint or independent decisionmaking is preferred over the other. In addition to this main set of decisionmaking questions, a number of other indicators were collected to corroborate and conduct robustness checks on results. Our second indicator comes from this set of questions and indicates whether or not there has been a disagreement over the decision domains listed above in the last six months. This indicator is simply a yes or no answer and indicates if there have been changes in opinions or challenges in intrahousehold decisionmaking in the recent past.

Table 9.1 shows the percentage of women exhibiting any decisionmaking power, and experience of disagreements by sphere of decisionmaking at baseline. Focusing on the baseline results, women report having highest involvement in decisionmaking over their own health (92percent), children's health (91 percent), children's education and small daily food purchases (both 87 percent). Women report relatively lower decisionmaking involvement in decisions regarding their own work for pay (78 percent) and large purchase of assets (77 percent). However it should be noted that these percentages over all decisionmaking domains are quite high. The experience of disagreements across decisionmaking domains ranges from a high of 11 percent for own work, to lows of 3 percent for large food and for asset purchases. None of these indicators show significant differences at the baseline between treatment and comparison groups.

Table 9.1 Baseline means of decisionmaking indicators, by pooled treatment

	All	Comparison	Treatment	Difference
Sole or joint decisionmaking, own work for pay	0.78	0.77	0.79	-0.02
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, own work for pay	0.11	0.11	0.11	-0.00
	(0.01)	(0.01)	(0.01)	(0.02)
N	*1,749*	*474*	*1,275*	
Sole or joint decisionmaking, children's education	0.87	0.88	0.87	-0.02
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, children's education	0.05	0.06	0.05	-0.00
	(0.01)	(0.01)	(0.01)	(0.02)
N	*1,238*	*335*	*903*	
Sole or joint decisionmaking, children's health	0.91	0.90	0.91	-0.02
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, children's health	0.04	0.04	0.04	-0.00
	(0.01)	(0.01)	(0.01)	(0.02)
N	*1,338*	*362*	*976*	
Sole or joint decisionmaking, own health	0.92	0.93	0.91	-0.02
	(0.01)	(0.01)	(0.01)	(0.02)
Any disagreement, own health	0.04	0.03	0.04	-0.00
	(0.00)	(0.01)	(0.01)	(0.02)
N	*1,780*	*482*	*1,298*	
Sole or joint decisionmaking, daily food purchases	0.87	0.89	0.87	-0.02
	(0.01)	(0.01)	(0.01)	(0.02)
Any disagreement, daily food purchases	0.04	0.05	0.04	-0.00
	(0.00)	(0.01)	(0.01)	(0.02)
N	*1,761*	*473*	*1,288*	
Sole or joint decisionmaking, large food purchases	0.80	0.81	0.80	-0.02
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, large food purchases	0.03	0.04	0.03	-0.00
	(0.00)	(0.01)	(0.00)	(0.02)
N	*1,559*	*434*	*1,125*	
Sole or joint decisionmaking, purchase of large household assets	0.77	0.77	0.77	-0.02
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, purchase of large household assets	0.03	0.02	0.03	-0.00
	(0.00)	(0.01)	(0.00)	(0.02)
N	*1,547*	*411*	*1,136*	

Notes: Sample sizes reflect number of women to which questions are applicable with responses over the panel period
Standard errors in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

Table 9.2 shows the percentage of women exhibiting any decision-making power, and experience of disagreements by sphere of decisionmaking at follow-up. Overall, mean values have not changed significantly during the program implementation period; however there are a few exceptions. The percentage of women reporting disagreements with decisions to work for pay show decreases (from 11 to 8 percent) in the treatment group and this difference is statistically significant at the 5 percent level. In addition, the number of disagreements on child health decisions decreases (from 4 to 2 percent) in the comparison group, and the percentage of women involved in decisions regarding their own health decreases in the comparison group (from 93 to 88 percent). However differences across comparison and treatment group are only marginally significant at the 10 percent level.

Table 9.2 Follow-up means of decisionmaking indicators, by pooled treatment

	All	Comparison	Treatment	Difference
Sole or joint decisionmaking, own work for pay	0.79	0.78	0.79	-0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, own work for pay	0.09	0.12	0.08	0.03
	(0.01)	(0.01)	(0.01)	(0.02)**
N	*1,749*	*474*	*1,275*	
Sole or joint decisionmaking, children's education	0.85	0.85	0.85	-0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, children's education	0.04	0.05	0.04	0.03
	(0.01)	(0.01)	(0.01)	(0.02)
N	*1,238*	*335*	*903*	
Sole or joint decisionmaking, children's health	0.88	0.88	0.88	-0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, children's health	0.04	0.02	0.04	0.03
	(0.01)	(0.01)	(0.01)	(0.02)*
N	*1,338*	*362*	*976*	
Sole or joint decisionmaking, own health	0.90	0.88	0.91	-0.01
	(0.01)	(0.01)	(0.01)	(0.02)*
Any disagreement, own health	0.04	0.05	0.04	0.03
	(0.00)	(0.01)	(0.01)	(0.02)
N	*1,780*	*482*	*1,298*	
Sole or joint decisionmaking, daily food purchases	0.88	0.87	0.88	-0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, daily food purchases	0.04	0.04	0.04	0.03
	(0.00)	(0.01)	(0.01)	(0.02)
N	*1,761*	*473*	*1,288*	
Sole or joint decisionmaking, large food purchases	0.80	0.78	0.81	-0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, large food purchases	0.03	0.04	0.03	0.03
	(0.00)	(0.01)	(0.00)	(0.02)
N	*1,559*	*434*	*1,125*	
Sole or joint decisionmaking, purchase of large household assets	*0.76*	*0.73*	*0.77*	*-0.01*
	(0.01)	(0.02)	(0.01)	(0.02)
Any disagreement, purchase of large household assets	0.02	0.03	0.02	0.03
	(0.00)	(0.01)	(0.00)	(0.02)
N	*1,547*	*411*	*1,136*	

Notes: Sample sizes reflect number of women to which questions are applicable with responses over the panel period
Standard errors in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

9.1.2 Impact of Treatment on Decisionmaking Indicators

In Tables 9.3 and 9.4 we combine all three treatment arms (food, cash, and voucher) and estimate the impact of pooled treatment on the indicator of any decisionmaking involvement (sole or joint). We present the ANCOVA estimates with and without controlling for additional covariates. We use the same modeling as in previous analysis; however we include additional women-specific control variables, age, education, marital status, and ethnicity and exclude some of the household-head specific control variables. As expected, given the relative success of randomization, adding covariates has a marginal impact on the size of the coefficient on treatment. As predicted from the descriptive analysis, the pooled treatment has no impact on

women's decisionmaking involvement across all measures, with and without controlling for other characteristics of the woman and household (Tables 9.3 and 9.4).

Similar to the decisionmaking analysis, Tables 9.5 and 9.6 present the combined effect of the three treatment arms (food, cash, and voucher) on the indicators of any disagreements in the past 6 months across decisionmaking domains with and without controlling for covariates. The pooled treatment has a weakly significant and negative impact on disagreements regarding decisionmaking for own work, and a weakly significant positive impact on disagreements regarding decisionmaking on children's health. However, when controlling for covariates, pooled treatment no longer has any significant relationship with experience of disagreements of any type.

Tables 9.7 and 9.8 replicate the ANCOVA estimates for decisionmaking and disagreements, for each treatment arm separately, and conduct Wald tests to examine whether the estimates from each treatment arm are significantly different from each other. Specifications include a full set of control variables; however, for simplicity we only present the coefficients from the different treatment arms. Table 9.7 shows that none of the treatment arms have significant impacts on decisionmaking, while Table 9.8 shows the only significant impact is a positive impact by the food arm on experience of disagreements regarding child health.

In conclusion, overall we find little evidence of program impact on women's decisionmaking as measured by involvement in any decisions across a number of social and economic domains. We also find little evidence of program impact on the alternative measure of women's experience of disagreements across decisionmaking domains. These results do not vary when we consider interactions with Colombian ethnicity (and thus omit them here). There are number of potential explanations for this lack of significant effect. First, although decisionmaking has often been operationalized in a similar way as we have done, these measures may not be sensitive or specific enough to identify an effect. In addition, since the program is a relatively short time period, it may not be enough to change longer-term decisionmaking dynamics within a household.

Table 9.3 Impact of pooled treatment on sole or joint decisionmaking

	Own work	Children's education	Children's health	Own health	Small food purchases	Large food purchases	Asset purchases
Pooled treatment	0.01	-0.00	0.00	0.03	0.02	0.03	0.04
	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Baseline measure	0.24	0.18	0.17	0.18	0.19	0.21	0.19
	(0.03)***	(0.04)***	(0.04)***	(0.04)***	(0.03)***	(0.03)***	(0.03)***
Constant	0.60	0.70	0.72	0.72	0.70	0.61	0.59
	(0.03)***	(0.05)***	(0.05)***	(0.05)***	(0.04)***	(0.04)***	(0.03)***
R^2	0.06	0.03	0.02	0.03	0.04	0.05	0.04
N	1,749	1,238	1,338	1,780	1,761	1,559	1,547

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 9.4 Impact of pooled treatment on sole or joint decisionmaking, with covariates

	Own work	Children's education	Children's health	Own health	Small food purchases	Large food purchases	Asset purchases
Pooled treatment	-0.01	-0.01	0.01	0.02	-0.02	0.00	0.02
	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Colombian	-0.03	-0.00	0.00	-0.02	-0.01	-0.02	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)
Age	0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)**	(0.00)	(0.00)	(0.00)	(0.00)
Secondary education or higher	0.02	-0.00	-0.03	-0.01	-0.01	0.00	0.02
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Marital status: Married	-0.05	-0.05	-0.00	0.00	0.07	0.03	-0.00
	(0.03)*	(0.03)*	(0.02)	(0.02)	(0.02)***	(0.03)	(0.03)
Marital status: Single	0.18	0.10	0.10	0.09	0.13	0.20	0.22
	(0.02)***	(0.03)***	(0.02)***	(0.02)***	(0.02)***	(0.02)***	(0.03)***
Marital status: Divorced or separated	0.17	0.08	0.06	0.07	0.10	0.17	0.21
	(0.02)***	(0.03)**	(0.03)**	(0.02)***	(0.02)***	(0.03)***	(0.03)***
Marital status: Widowed	0.14	0.02	0.05	0.05	0.08	0.11	0.11
	(0.04)***	(0.05)	(0.04)	(0.03)*	(0.03)**	(0.04)***	(0.05)**
Indigenous	0.02	-0.01	0.02	-0.02	-0.01	0.02	0.00
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)	(0.06)
Afro-Ecuadorian	0.01	-0.04	-0.09	0.01	0.02	0.05	0.03
	(0.03)	(0.04)	(0.04)**	(0.03)	(0.03)	(0.03)	(0.04)
Household size	-0.01	-0.02	-0.02	-0.01	-0.00	-0.01	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)*	(0.01)	(0.01)	(0.01)
Number of children 0-5 years	0.01	-0.00	-0.01	0.01	-0.02	0.00	-0.01
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Number of children 6-15 years	0.02	0.01	0.02	0.01	0.01	0.01	0.02
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Wealth index: 2nd quintile	-0.05	-0.03	-0.03	-0.02	0.01	0.02	0.01
	(0.03)	(0.04)	(0.03)	(0.02)	(0.03)	(0.04)	(0.03)
Wealth index: 3rd quintile	-0.03	-0.02	-0.01	0.01	-0.00	-0.00	-0.01
	(0.03)	(0.04)	(0.03)	(0.02)	(0.03)	(0.04)	(0.03)
Wealth index: 4th quintile	-0.05	-0.02	-0.01	-0.02	-0.02	-0.03	-0.05
	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)
Wealth index: 5th quintile	-0.04	0.00	0.00	-0.01	-0.04	-0.01	-0.00
	-0.01	-0.01	0.01	0.02	-0.02	0.00	0.02
Baseline measure	0.17	0.14	0.14	0.15	0.16	0.16	0.13
	(0.03)***	(0.04)***	(0.05)***	(0.04)***	(0.03)***	(0.03)***	(0.03)***
Constant	0.63	0.90	0.93	0.86	0.78	0.66	0.71
	(0.06)***	(0.08)***	(0.08)***	(0.05)***	(0.06)***	(0.07)***	(0.07)***
R^2	0.11	0.07	0.08	0.06	0.07	0.09	0.11
N	1,749	1,238	1,338	1,780	1,761	1,559	1,547

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. All estimations contain urban center fixed effects. Omitted categories are: Ecuadorian or mixed, in consensual union, primary or no education. Wealth index constructed through principal component analysis using asset ownership and dwelling characteristics.

Table 9.5 Impact of pooled treatment on disagreements regarding decisionmaking

	Own work	Children's education	Children's health	Own health	Small food purchases	Large food purchases	Asset purchases
Pooled Treatment	-0.03	-0.01	0.02	-0.01	-0.00	-0.01	-0.00
	(0.02)*	(0.02)	(0.01)*	(0.01)	(0.01)	(0.01)	(0.01)
Baseline measure	0.11	0.07	0.02	0.07	0.05	0.01	0.09
	(0.03)***	(0.04)*	(0.03)	(0.04)*	(0.03)	(0.03)	(0.05)**
Constant	0.11	0.04	0.02	0.05	0.04	0.04	0.02
	(0.02)***	(0.01)***	(0.01)**	(0.01)***	(0.01)***	(0.01)***	(0.01)***
R^2	0.02	0.01	0.00	0.01	0.00	0.00	0.01
N	1,749	1,238	1,338	1,780	1,761	1,559	1,547

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 9.6 Impact of pooled treatment on disagreements regarding decisionmaking, with covariates

	Own work	Children's education	Children's health	Own health	Small food purchases	Large food purchases	Asset purchases
Pooled treatment	-0.02	-0.00	0.02	0.00	0.00	-0.01	0.00
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Colombian	0.00	-0.01	-0.01	0.00	0.02	-0.00	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)**
Age	-0.00	0.00	-0.00	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Secondary education or higher	0.01	0.01	0.01	0.01	-0.01	0.01	-0.01
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Marital status: Married	-0.03	0.01	0.03	-0.01	-0.01	-0.01	0.01
	(0.02)	(0.01)	(0.01)*	(0.01)	(0.01)	(0.01)	(0.01)
Marital status: Single	-0.09	-0.05	-0.03	-0.05	-0.05	-0.04	-0.03
	(0.02)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***
Marital status: Divorced or separated	-0.09	-0.03	-0.02	-0.04	-0.04	-0.04	-0.03
	(0.02)***	(0.02)*	(0.01)*	(0.01)**	(0.01)**	(0.01)***	(0.01)***
Marital status: Widowed	-0.06	-0.02	-0.02	-0.03	-0.04	-0.04	-0.02
	(0.03)*	(0.03)	(0.01)*	(0.02)*	(0.02)*	(0.01)***	(0.01)*
Indigenous	-0.04	0.03	-0.01	-0.01	-0.04	-0.01	-0.02
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)**	(0.02)	(0.01)***
Afro-Ecuadorian	-0.02	0.02	0.03	-0.02	-0.02	-0.00	0.01
	(0.02)	(0.04)	(0.03)	(0.01)*	(0.01)	(0.02)	(0.02)
Household size	-0.00	-0.01	0.00	0.00	-0.01	-0.00	-0.00
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)*	(0.00)	(0.00)
Number of children 0-5 yrs	0.01	0.01	0.00	0.00	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)*
Number of children 6-15 yrs	0.01	0.02	0.00	0.00	0.01	0.01	0.00
	(0.01)	(0.01)**	(0.01)	(0.01)	(0.01)**	(0.01)	(0.00)
Wealth index: 2nd quintile	0.03	0.01	-0.00	-0.01	-0.00	0.01	0.00
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Wealth index: 3rd quintile	0.04	-0.01	0.02	0.00	0.02	0.02	0.02
	(0.02)*	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)*
Wealth index: 4th quintile	0.03	-0.02	-0.04	-0.01	-0.00	0.01	0.01
	(0.02)	(0.02)	(0.01)***	(0.01)	(0.01)	(0.01)	(0.01)
Wealth index: 5th quintile	0.04	-0.00	0.00	0.03	0.02	0.03	0.02
	(0.02)*	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)**	(0.01)
Baseline measure	0.08	0.06	0.01	0.06	0.04	0.00	0.08
	(0.03)***	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)	(0.05)*
Constant	0.12	0.03	0.02	0.03	0.06	0.04	0.04

	(0.05)**	(0.03)	(0.03)	(0.03)	(0.03)**	(0.02)*	(0.02)**
R^2	0.04	0.02	0.03	0.03	0.02	0.02	0.03
N	1,749	1,238	1,338	1,780	1,761	1,559	1,547

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. All estimations contain urban center fixed effects. Omitted categories are: Ecuadorian or mixed, in consensual union, primary or no education. Wealth index constructed through principal component analysis using asset ownership and dwelling characteristics.

Table 9.7 Impact of treatment modalities on sole or joint decisionmaking

	Own work	Children's education	Children's health	Own health	Small food purchases	Large food purchases	Asset purchases
Treatment==Food	-0.01	0.03	0.03	0.01	-0.02	0.01	0.03
	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
Treatment==Cash	-0.01	-0.03	-0.01	0.02	-0.00	-0.01	-0.01
	(0.03)	(0.04)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
Treatment==Voucher	-0.00	-0.01	0.01	0.02	-0.02	0.01	0.03
	(0.03)	(0.04)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
R^2	0.11	0.07	0.08	0.06	0.07	0.09	0.11
N	1,749	1,238	1,338	1,780	1,761	1,559	1,547
F test: Food=Voucher	0.05	1.58	0.55	0.25	0.00	0.00	0.02
P-value	0.83	0.21	0.46	0.61	0.98	0.97	0.90
F test: Cash=Voucher	0.06	0.18	0.64	0.05	0.58	0.56	1.36
P-value	0.81	0.67	0.43	0.83	0.45	0.45	0.25
F test: Food=Cash	0.00	3.11	2.39	0.06	0.63	0.48	2.39
P-value	0.98	0.08	0.12	0.80	0.43	0.49	0.12

Note: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Table 9.8 Impact of treatment modalities on disagreements regarding decisionmaking domains

	Own work	Children's education	Children's health	Own health	Small food purchases	Large food purchases	Asset purchases
Treatment==Food	-0.03	-0.01	0.03	0.00	0.02	0.01	0.00
	(0.03)	(0.02)	(0.01)**	(0.02)	(0.02)	(0.02)	(0.01)
Treatment==Cash	-0.01	-0.01	0.01	0.01	0.00	-0.01	0.00
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
Treatment==Voucher	-0.03	0.00	0.02	-0.01	-0.00	-0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
R^2	0.04	0.03	0.03	0.03	0.02	0.02	0.03
N	1,749	1,238	1,338	1,780	1,761	1,559	1,547
F test: Food=Voucher	0.04	0.81	0.15	0.71	2.37	3.18	0.13
P-value	0.84	0.37	0.70	0.40	0.13	0.08	0.72
F test: Cash=Voucher	0.76	0.52	1.16	3.32	0.50	0.06	0.09
P-value	0.38	0.47	0.28	0.07	0.48	0.81	0.77
F test: Food=Cash	0.27	0.03	2.71	0.42	0.80	2.45	0.01
P-value	0.60	0.86	0.10	0.52	0.37	0.12	0.92

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects and a full set of control variables.

9.2 Intimate Partner Violence

9.2.1 Intimate Partner Violence Indicators

Intimate partner violence is a multidimensional and complex issue that is usually categorized into physical violence, psychological violence, and sexual violence. We use questions from WHO's Violence Against Woman Instrument to assess intimate partner violence in our sample population (Garcia-Moreno et al, 2005). This instrument has been tested and validated by WHO in multiple settings and countries. The questions on partner violence explore aspects of controlling behaviours, emotional abuse, physical violence, and sexual violence. The instrument does not aim to document every abusive action that a woman may experience, but rather aims to maximize disclosure. We follow WHO and DHS protocol and construct indicators for controlling behaviors, emotional violence, and physical violence and/or sexual violence.

The questionnaire includes seven questions on physical violence: whether a woman has been (1) pushed, shoved, or had an object thrown; (2) slapped or had her arm twisted; (3) punched or hit with object; (4) kicked or dragged; (5) strangled or burned; (6) attacked with knife or other weapon; and (7) threatened to be attacked with knife or other weapon. For sexual violence, there are two questions that are asked at both baseline and follow-up: whether woman has been (1) forced to have sexual interactions, and (2) forced to conduct sexual acts that woman does not approve. We create a physical and/or sexual violence indicator that equals 1 if a woman reports yes to having experienced any type of physical or sexual violence in the last 6 months (approximately the length of the intervention period).

In the baseline survey there are three questions that can be categorized as "emotional violence": whether a woman has been (1) humiliated or insulted, (2) threatened to be abandoned, and (3) threatened to have children taken away. In addition to these three questions, the follow-up survey added the following two indicators: (4) whether partner threatened to hurt woman or someone she knows, and (5) whether woman has been humiliated or insulted in front of others. We use all 5 questions administered at follow-up to create an indicator for emotional violence that equals 1 if a woman reports yes to having experienced any of the five emotional violence indicators in the last 6 months. For controlling behaviors there are two questions at baseline and three additional questions that were added at follow-up: whether a partner (1) accuses woman of being unfaithful, (2) limits woman's contact with her family, (3) limits woman's contact with friends, (4) wants to know where the woman is at all times, and (5) ignores or is indifferent to woman. Similar to the emotional violence indicator, we use all five questions that were administered at follow-up to create an indicator for controlling behaviors that equals 1 if a woman reports yes to having experienced any of the five controlling behaviors indicators in the last 6 months.

We also combine all types of intimate partner violence and create an indicator that equals one if a woman experiences any controlling behaviors, emotional violence, physical violence, and sexual violence. We define this indicator as "Any violence" in the analysis.

At baseline, 17 percent of woman experience controlling behaviors by partner in the last 6 months, 26 percent experience emotional violence, 16 percent experience physical and/or sexual violence, and 33 percent experience any type of violence in the past 6 months (Table 9.9). There are no significant differences in means across treatment and comparison arms for

controlling behaviors, or emotional violence; however, the treatment arm experienced significantly higher physical and/or sexual violence.

The percent of women experiencing controlling behaviors or emotional violence at baseline is lower than at follow-up and this most likely reflects the fact that at baseline there were fewer questions administered (Table 9.10). Although the percent of women experiencing controlling behaviors increases for both the comparison and treatment arm, the increase is much larger for the comparison arm. Consequently, the difference in means between the comparison and treatment arm for controlling behaviors is now statistically significant. The comparison arm also experiences significantly higher rates of physical and sexual violence and any violence.

The large rise in intimate partner violence amongst the comparison group could be due to either an upward secular trend in violence or to resentment of partners taken out on woman for not receiving the transfer. Closer inspection of the data reveals that this large increase in violence from the comparison arm is mainly due to an extraordinary increase in violence in one urban center. While we conduct our analysis with and without this urban center, we intend to further explore the issue of a rise in violence in the comparison group with a qualitative study in the Fall 2012.

Table 9.9 Intimate partner violence baseline means, by pooled treatment

	All	Comparison	Treatment	Difference
Controlling	0.17	0.17	0.17	-0.00
	(0.01)	(0.02)	(0.01)	(0.02)
Emotional	0.26	0.24	0.26	0.02
	(0.01)	(0.02)	(0.01)	(0.03)
Physical and or sexual	0.16	0.13	0.17	0.05
	(0.01)	(0.02)	(0.01)	(0.02)**
Any	0.33	0.31	0.33	0.03
	(0.01)	(0.02)	(0.02)	(0.03)
N	1,268	357	911	

Notes: Standard errors in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

Table 9.10 Intimate partner violence follow-up means, by pooled treatment

	All	**Comparison**	**Treatment**	**Difference**
Controlling	0.35	0.41	0.32	-0.09
	(0.01)	(0.03)	(0.02)	(0.03)***
Emotional	0.28	0.30	0.28	-0.02
	(0.01)	(0.02)	(0.01)	(0.03)
Physical and or sexual	0.17	0.20	0.15	-0.05
	(0.01)	(0.02)	(0.01)	(0.02)*
Any	0.41	0.46	0.39	-0.07
	(0.01)	(0.03)	(0.02)	(0.03)**
N	1,268	357	911	

Notes: Standard errors in parentheses. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

9.2.2 Impact of Treatment on Intimate Partner Violence Indicators

Tables 9.11 and 9.12 present the ANCOVA estimates of being in the treatment arm on intimate partner violence indicators. In Table 9.11, we combine all three treatment arms (food, cash, and voucher) and estimate the impact of pooled treatment on controlling behaviors, emotional violence, physical and/or sexual violence, and any violence. We present the results with and without controlling for any covariates. Given that the coefficients change slightly when we add covariates, we focus on columns 2, 4, 6, and 8 of Table 9.11. Pooled treatment significantly decreases controlling behaviors, physical/sexual violence, and any violence. In particular, pooled treatment leads to an 8 percentage point decrease in controlling behaviors, and a 7 percentage point decrease in physical/sexual violence and any violence. However, as tables 9.10 and 9.11 reveal, most of this decrease is due to large increases in violence from the comparison arm from baseline to follow-up. Removing from the analysis the urban center with the strong upward trend in the comparison group, produces similar results, however, the coefficient on treatment for physical/sexual violence and any violence decreases to 3 percentage points. Other factors that contribute significantly to any violence are education, being Colombian, married, age, and wealth.

Table 9.12 presents the impact estimates for each treatment arm separately, and conducts Wald tests to exam whether the estimates from each treatment arm are significantly different from each other. Similar to tables 9.7 and 9.8 we report only treatment coefficients, although all estimates control for the full set of covariates. All three modalities (food, cash, and voucher) significantly decrease physical/sexual violence. Only food and cash significantly decrease controlling behaviors although the size of the coefficient is similar across modalities. Only cash significantly decreases any violence, although again the size of the coefficient is similar across modalities. Removing the urban center with the upward trend in violence among the comparison group again produces similar results, but the coefficients for physical/sexual violence decrease to 6 percentage points for the food arm, 1 percentage points for the cash arm, and 2 percentage points for the voucher arm.

Table 9.11 Impact of pooled treatment on intimate partner violence measures

	Controlling		Emotional		Physical/Sexual		Any	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pooled Treatment	-0.09	-0.08	-0.03	-0.01	-0.06	-0.07	-0.08	-0.07
	(0.04)**	(0.04)**	(0.03)	(0.03)	(0.03)**	(0.03)**	(0.04)**	(0.04)*
Colombian		-0.05		-0.05		-0.03		-0.05
		(0.03)		(0.03)		(0.02)		(0.03)*
Age		-0.00		0.00		-0.00		-0.00
		(0.00)**		(0.00)		(0.00)		(0.00)*
Secondary education or higher		-0.06		-0.06		0.01		-0.06
		(0.03)**		(0.03)**		(0.02)		(0.03)**
Married		-0.06		-0.08		-0.05		-0.07
		(0.03)*		(0.03)***		(0.02)**		(0.03)**
Indigenous		0.03		0.02		-0.01		0.07
		(0.08)		(0.07)		(0.05)		(0.08)
Afro-Ecuadorian		-0.03		-0.03		0.01		-0.02
		(0.06)		(0.05)		(0.04)		(0.06)
Household size		0.01		-0.01		-0.00		0.01
		(0.01)		(0.01)		(0.01)		(0.01)
Number of children 0-5 years		0.01		0.07		0.01		0.01
		(0.02)		(0.02)***		(0.02)		(0.02)
Number of children 6-15 years		-0.01		0.03		0.01		0.00
		(0.02)		(0.02)*		(0.01)		(0.02)
Wealth index: 2nd quintile		0.01		0.02		-0.03		-0.00
		(0.04)		(0.04)		(0.04)		(0.05)
Wealth index: 3rd quintile		0.06		0.05		-0.02		0.05
		(0.04)		(0.04)		(0.03)		(0.05)
Wealth index: 4th quintile		0.06		0.08		0.02		0.06
		(0.04)		(0.04)**		(0.04)		(0.05)
Wealth index: 5th quintile		0.09		0.06		-0.00		0.10
		(0.05)*		(0.04)		(0.03)		(0.05)**
Baseline controlling	0.35	0.35						
	(0.04)***	(0.04)***						
Baseline emotional			0.36	0.35				
			(0.03)***	(0.03)***				
Baseline physical and or sexual					0.37	0.37		
					(0.03)***	(0.03)***		
Baseline any							0.33	0.33
							(0.03)***	(0.03)***
Constant	0.35	0.34	0.21	0.10	0.15	0.19	0.36	0.35
	(0.03)***	(0.08)***	(0.03)***	(0.07)	(0.03)***	(0.07)***	(0.03)***	(0.08)***
R^2	0.08	0.11	0.12	0.16	0.14	0.15	0.11	0.14
N	1,268	1,268	1,268	1,268	1,268	1,268	1,268	1,268

Notes: Standard errors in parentheses clustered at the cluster level. * p < 0.1 ** p < 0.05; *** p < 0.01. Columns 2, 4, 6, and 8 contain urban center fixed effects. Wealth index constructed through principal component analysis using asset ownership and dwelling characteristics.

Table 9.12 Impact of treatment modalities on intimate partner violence measures

	Controlling	Emotional	Physical/sexual	Any
Treatment==Food	-0.07	-0.00	-0.08	-0.05
	(0.04)*	(0.04)	(0.04)**	(0.05)
Treatment==Cash	-0.10	-0.03	-0.07	-0.09
	(0.05)**	(0.04)	(0.04)*	(0.05)*
Treatment==Voucher	-0.06	-0.00	-0.07	-0.06
	(0.04)	(0.04)	(0.04)*	(0.05)
R^2	0.12	0.16	0.15	0.14
N	1,268	1,268	1,268	1,268
F test: *Food*=Voucher	0.16	0.00	0.25	0.02
P-value	0.69	0.96	0.62	0.90
F test: Cash=Voucher	1.48	0.40	0.03	0.59
P-value	0.23	0.53	0.86	0.44
F test: Food=Cash	0.59	0.44	0.43	0.72
P-value	0.44	0.51	0.51	0.40

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

Our results do not vary when we consider interactions with Colombian nationality (and thus we omit them here). However, an interesting extension is to investigate whether the results differ by whether a male or female receive the transfer. Given that we only know who normally received the transfer for treatment households that took up the program, our estimates are no longer intent-to-treat estimates, and thus our sample size decreases slightly. Table 9.13 reveals that the impact on violence does not depend on the sex of the recipient.

Table 9.13 Impact of treatment by gender on intimate partner violence measures

	Controlling	Emotional	Physical/sexual	Any
Treatment, male recipient	-0.10	-0.07	-0.11	-0.10
	(0.05)**	(0.04)	(0.04)***	(0.05)**
Treatment, female recipient	-0.09	-0.01	-0.07	-0.07
	(0.04)**	(0.03)	(0.03)**	(0.04)*
R^2	0.12	0.17	0.16	0.15
N	1,063	1,063	1,063	1,063
F *test*: Male=Female	0.11	2.52	2.20	0.37
P-value	0.74	0.11	0.14	0.54

Notes: Standard errors in parenthesis clustered at the cluster level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$. All estimations contain baseline outcome variable, urban center fixed effects, and a full set of control variables.

10. Costing and Cost-Effectiveness

10.1 Costing Methods and Results

An important question to address in assessing the relative effectiveness of different food assistance modalities is the cost of implementing each modality. A relative assessment of cost-effectiveness by modality allows an examination of which mechanism (cash, voucher, or food) provides the greatest benefit for the amount of funds invested. The particular goals of this costing analysis are to answer the following two research questions: (1) *What are the relative costs of each modality (cash, voucher, and food)?* (2) *Which modalities are the most cost-effective?*

While WFP tracks program costs via traditional accounting for its own records and for external accountability purposes, such methods do not allow for an accurate breakdown by modality. Traditional accounting costs often underestimate the true overall cost of program operations due to, among other things, the cost of staff time dedicated to each treatment type. Therefore, the Activity-based Costing – Ingredients (ABC-I) approach is used to calculate costs for the analysis. The ABC-I method is a combination of activity-based accounting methods with the "ingredients" method, which calculates program costs from inputs, input quantities, and input unit costs (Fiedler, Villalobos, and de Mattos 2008; Tan-Torres Edejer et al. 2003). As the ingredients method alone does not allocate costs according to program activities, it does not allow for comparison between modalities. However, this method, when paired with the ABC approach, matches activities with all their corresponding inputs into cost centers. The use of the ABC-I method allows for opportunity costs, quantified as economic costs, to be included in the total program costs. This method also allows for the incorporation of "off-budget" expenditures, for example, donated goods or services that otherwise would not be included as program operating costs.

The costing analysis utilizes data from the WFP-CO accounting ledger, information gathered from staff by the CO finance department, internal procurement and operations documents, as well as interviews with local partners. An advantage of the detailed information on costs from the WFP accounting ledgers is that it permits the separation of costs that are common across program modalities from those that are modality specific. A second strength of the cost data is that we can calculate the staff costs associated with the intervention. Distinct cost calculations are necessary to allow for inclusion of actual operational field costs, as well as to avoid double-counting. For example, contracts with collaborating partners were developed as part of the Protracted Relief and Recovery Operation (PRRO), an umbrella program that provides the food component of the food, cash, and voucher program. However, the PRRO also includes the provision of rations for a broader food intervention, also run by WFP-CO. In order to assure that the cost excludes those activities that support the PRRO rather than just the transfer program, a proportional amount is calculated of contracting cost in relation to the total amount of metric tons of food for the transfer program in comparison with total tonnage for PRRO. The complete calculations, including a detailed breakdown of cost by line item, are included in Appendix 2 and Appendix 3. Final calculations are separated into two formats, one representing total budgeted costs, and the other representing total actual costs.

WFP-CO staff provided cost calculations for five months of program activity. We extrapolate the sixth month of costs from the previous five months' data for those activities that

continued into the last month of the program. While the total number of transfers varied slightly from month to month, the mean values for number of beneficiaries over the six-month period are utilized for the cost-per-beneficiary analysis.

The most costly modality to implement was the food transfer (Figure 10.1). In particular, it cost $14.36 to transfer a $40 voucher to a beneficiary, $14.77 to provide them with $40 in cash, and $25.93 to transfer $40 worth of food. These numbers represent the total cost of implementation minus the transfer cost. In total, over the six transfer periods, it cost $86.17 per voucher beneficiary, $88.62 per cash beneficiary, and $155.64 per food beneficiary to provide transfers. Over time, the cost of implementing these types of transfer programs may decline due to economies of scale. However, that phenomenon will principally apply to cash and voucher transfers, as several of the principal costs for the food transfer are costs that will not decrease as the number of beneficiaries increase. For example, if one was to increase the number of voucher or cash beneficiaries, the additional cost of producing extra debit cards or printing more vouchers is minimal, and some costs may decrease over time. However, in the case of food, the cost to add beneficiaries will not decrease, as costs like ration packaging are fixed sums per ration distributed.

Figure 10.1 Total cost to transfer $40, by modality

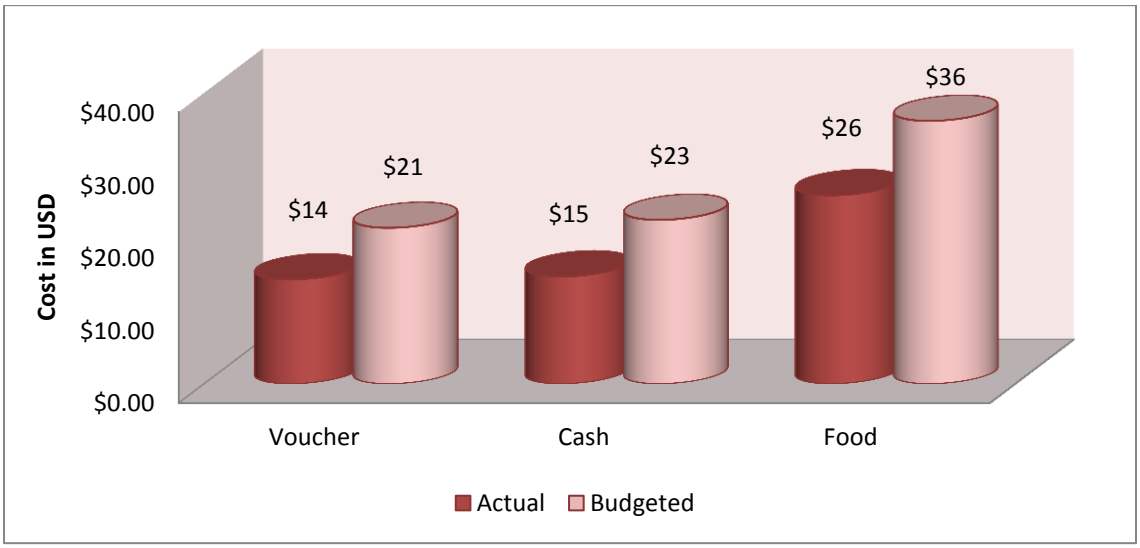


Figure 10.2 depicts the cost breakdown, or disaggregation, for the per transfer cost by modality. Costs are separated into two categories, modality specific, and non-modality specific, in order to pinpoint which modality-related activities has the most impact on cost. Non-modality specific costs are costs that are common across all modalities, such as materials for the beneficiary trainings, or administrative costs for sub-offices. Primarily, the small differences in non-modality specific costs between modalities originate from differences in the number of beneficiaries, in that some cost categories had to be weighted to reflect the number of beneficiaries for that modality type. The cash and voucher modalities have nearly identical percentage cost breakdowns. However, the cost activities are different between the two. For example, the cash transfer incurs modality-specific costs in the form of fees charged by the bank to emit an ATM card for each beneficiary. The voucher modality-specific costs include voucher design, liquidation and execution of payment. The food transfer has significantly higher

modality-specific costs (44 percent of the total cost per transfer, in contrast with cash or voucher, at 20 percent and 22 percent, respectively). The high cost of the food transfer is due to storage costs, ration preparation, and ration distribution.

Figure 10.2 Modality-specific and nonspecific costs

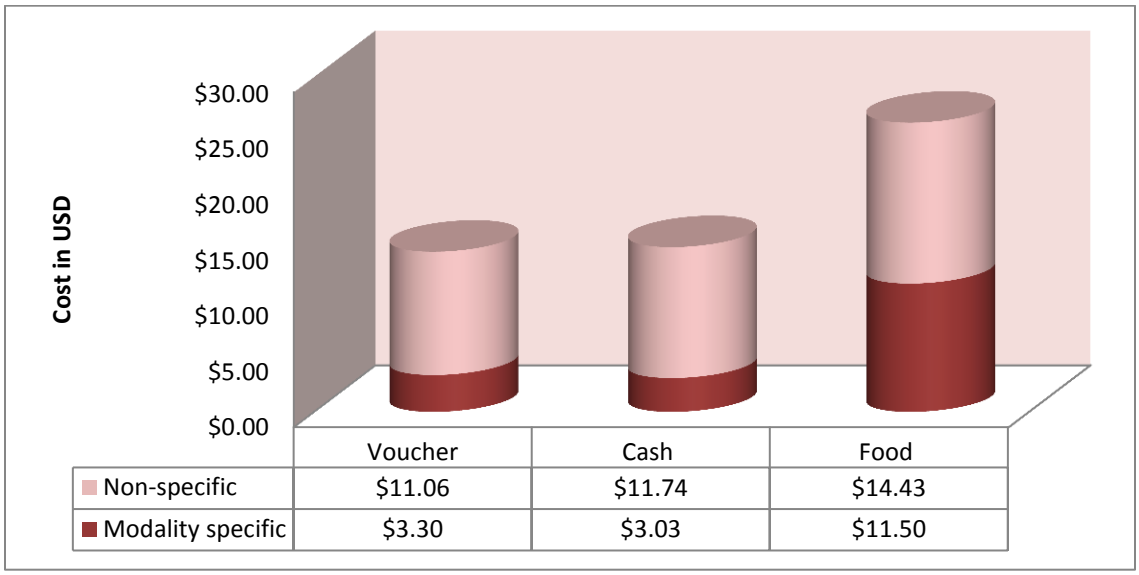
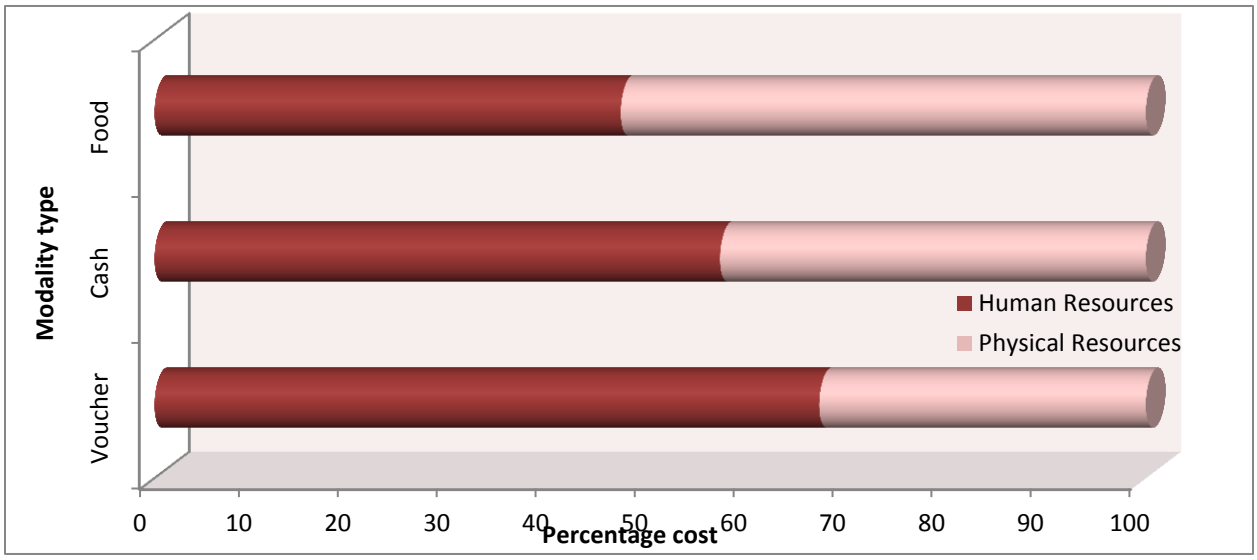


Figure 10.3 shows the differences in cost types for human resources versus physical resources. Human resources are categorized as staff time allocated to activities. Cash and food require a similar percentage of human resource cost to physical cost which is less than that of vouchers. The higher human resource cost of the voucher appears to originate from operational activities conducted by WFP staff, such as voucher design. The voucher design, distribution, liquidation and supermarket selection were all tasks directly handled by WFP, and the latter two were recurring monthly costs. In the case of cash and food, much operations labor was provided by partners.

If one were to "cash out," or switch the least expensive modality (voucher, at $86.17 per beneficiary) for the most expensive modality (food, at $155.64 per beneficiary), 739 extra beneficiaries could be included in the program. If the food transfers were exchanged for cash, 693 beneficiaries could be added to the program. These costs are calculated from the actual cost calculations. These calculations, however, are from a pure cost standpoint and do not incorporate the impacts of each modality relative to cost.

Figure 10.3 Total cost by type (percent), by modality



10.2 Cost-Effectiveness

In order to compare the cost-effectiveness across modalities, we use the modality specific costs from Figure 10.2 and the impact estimates for food security outcomes (Chapter 6). We use modality specific costs because we are interested in the marginal cost of implementing each modality type. In other words, after all common costs of program implementation (planning, targeting, sensitization, nutrition trainings, etc.) are accounted for, what additional costs are incurred to deliver these transfers in the form of food, cash, or voucher. Expressing these in per transfer terms, it cost $11.50 to provide a food transfer, $3.03 to provide a cash transfer, and $3.30 to provide a voucher transfer. We combine these costs with impact estimates of the value of food consumption and caloric intake, as well as dietary diversity indices: the HDDS, the DDI and the FCS (see Chapter 6 for definitions of these indices and impact estimates).

In order to compare the cost-effectiveness across modalities, we do a simulation whereby beneficiaries' food security outcomes increase by 15 percent. Specifically, we calculate how much it would cost to achieve this goal using food, cash, and vouchers, conditional on the transfer size and abstracting from costs common to all modalities. Given the different metrics by which our outcomes are measured, we conduct the simulations for each outcome separately. For example, Figure 6.2 tells us that cash transfers increase the FCS by approximately 11 percent. Therefore, the modality specific cost of increasing FCS by 15 percent using cash transfers is (15%/11%) X $3.03, which equals $4.13.

Table 10.1 shows the results of these calculations for each modality for the following five outcomes: the value of per capita food consumption, per capita caloric intake, HDDS, DDI, and FCS. There are two key findings. First, across all outcomes food is always the most costly means of improving these outcomes by 15 percent. Second, vouchers are usually the least costly means of improving these outcomes by 15 percent, although for increasing the value of food consumption, there is virtually no difference in the cost of vouchers versus cash.

Table 10.1 Modality-specific cost of improving food security outcomes by 15 percent

	Food	Cash	Voucher
Consumption	$10.78	$3.79	$3.81
Calories	$10.78	$7.58	$4.50
HDDS	$28.75	$11.36	$8.25
DDI	$15.68	$3.25	$2.91
FCS	$17.25	$4.13	$3.09

Note: Modality-specific costs per transfer are used to calculate the cost of increasing each outcome by 15 percent.

11. Qualitative Lessons on Nutrition Training, Knowledge, and Behavior Change

Upon request by the WFP-CO, IFPRI developed a small-scale qualitative study designed to examine the efficacy of nutrition trainings that accompanied the distribution of the different transfer types. This study was proposed as a complement to the quantitative survey in order to explore beneficiary preference, knowledge retention, and adoption of nutrition training components. Key research questions included the following: What are beneficiaries learning from nutritional trainings (*knowledge adoption*)? Do beneficiaries utilize strategies taught in trainings, such as use of recipes, in their households (*knowledge application*)? Do beneficiaries retain this nutritional information over time (*knowledge retention*)? What are the facilitating factors and potential barriers for beneficiaries for adoption, application, and retention of nutrition trainings? Are there spillover effects in the diffusion of nutrition knowledge? What are participant preferences for structure and content of nutrition trainings?

11.1 Background

The literature on behavior change presents a conceptual framework of stages of change (Glanz et al. 1994), and has been used to analyze individual conduct in relation to cessation of addictions such as smoking and alcoholism, as well as in the promotion of healthy lifestyles. These behavioral stages, also examined in Prochaska et al. (1994), in consideration with the literature from the fields of psychology on planned behaviors (Ajzen 1991) and self-efficacy (Bandura 1977, 1997), provide a foundation from which to consider the effect of nutrition messaging on participant behaviors. The trans-theoretical stages of change (Glanz et al. 1994) consist of *pre-contemplation* (unaware, not interested in change), *contemplation* (thinking about changing), *preparation* (making definite plans to change), *action* (actively modifying habits or environment), and *maintenance* (sustaining new habits, preventing relapse). This "trans-theoretical model" has been used to understand the process of the adoption of healthy diets or changes in dietary behavior (Kristal et al. 1999). Due to restrictions of time, budget, and privacy, these assessments are often based on self-perception, rather than direct behavioral observations, as in the case of this study.

These psychological theories focus primarily on individual-level behavior change. The broader sociological literature on social networks and knowledge diffusion provides a complement to individual-level analysis by incorporating the role that family, friends and community may play in household and individual decisionmaking. Smith and Christakis (2008) reveal that social linkages play an essential role in determining health outcomes, suggesting that spillover or multiplier effects occur through networks. The theories have been tested in studies of obesity, smoking, and emotional states such as happiness, in which social connections up to the fourth degree of separation may influence individual behavior (Christakis and Fowler 2007). These studies provide insights on how changes in individual behavior may influence household or community behaviors, and vice-versa. In this manner, interventions may cause contagion or stimulate information flow through systems, and encourage peer effects.

Definitive evidence is lacking on the best way to encourage behavior change, and on the most effective program design and implementation. Imdad, Yakoob, and Bhutta (2011), in a meta-analysis of studies that examined the comparative impacts of food with and without

nutrition counseling, found that complementary feeding and feeding with nutrition education both resulted in improved weight and growth in children, and food with counseling was more effective than counseling alone. The literature suggests that nutrition information interventions, also known as behavior change communication, may be more effective if accompanied by financial or in-kind assistance. Curtis et al. (2001) studied hygiene messaging in Burkina Faso, and found that while not all behaviors changed significantly, some behaviors showed notable changes. Certain behaviors may prove easier to adopt than others, and trainings of longer duration and the use of locally applicable materials tend to be more effective. Other mechanisms for health information campaigns, such as text messaging, have also been shown to increase knowledge but not necessarily to change behaviors (Mehran et al. 2011).

A more difficult element to assess is how program design and unique delivery mechanisms for information may effect change. Theoretical models indicate that information campaigns may be more cost-effective in affecting the consumption of fruits and vegetables in a large population than other interventions, such as vouchers or a reduction in value-added tax (Dallongeville et al. 2011). However, in the promotion of positive behaviors such as adopting a healthy diet, there are a variety of actions or behaviors that the program aims to change. Among them are influencing food purchase and consumption decisions, food preparation methods, and increasing nutrition knowledge. This qualitative study aims to explore the role educational nutrition trainings play in the acquisition, maintenance, and use of knowledge by program beneficiaries from the perspective of the beneficiaries themselves.

11.2 Methodology

In order to allow for participation by a diverse selection of beneficiaries, and to comply with time and budget limitations, focus group discussions (FGDs) were determined to be the most appropriate method. FGDs were held in Lago Agrio and Tulcán and were led by an IFPRI facilitator and attended by an observer. The FGDs explored beneficiary perspectives and preferences on nutrition information sessions, and examined potential behavior change in terms of use of recommended recipes or nutritional practices. Further, participants were queried how they perceived the transfer to interact or facilitate behavior change and if information was shared or disseminated through social networks. However, it is important to note several limitations to this approach. Discrepancy may occur between self-assessment measures of stages of change and actual dietary practices (Brug, Glanz, and Kok 1997). It is also not possible to quantify which delivery mechanisms or messages were most effective, although we were able to capture participants' opinions and preferences.

All individuals participating in the FGDs were former beneficiaries of the transfer program. The strategy for the study was to achieve a sample that reflected the characteristics of the beneficiary population. FGDs were stratified on transfer modality (cash, voucher, food), and individual participants were randomly selected from those groups. Two FGDs per treatment arm were conducted in each of the two urban centers (Tulcán and Lago Agrio), for a total of 12 FGDs. FGDs included, on average, nine individuals (varying from 6–11 individuals) for a total of 106 participants and discussions lasted from 60 to 90 minutes. Overall, most participants in the trainings were female, as were the individuals in the FGDs. These women were of different ages, marital status (many widows and single mothers), and nationality. The majority did not

have spouses who attended trainings. While conducting a higher number of FGDs would be preferable to increase representativeness, a very large sample was not necessary, as saturation of reoccurring themes will eventually take place. The time line for fieldwork was designed as to occur approximately 6 months after the last transfer disbursement, or in March 2012.

Audio recordings were collected on two handheld devices with the full knowledge and permission of participants. The facilitator and observer team completed two focus groups a day, with participant outreach and scheduling arranged beforehand by WFP-CO. Discussions were then transcribed for NVivo coding and analysis.

11.3 Results

Beneficiary Preferences: Trainings and Transfer Type

Beneficiary response to the trainings was positive, with participants appreciative of the location, format, and content of the trainings. The location of the trainings was broadly perceived to be convenient, often located within or close to the community. An exception occurred in one of the FGDs in Lago Agrio, where several people complained that the trainings were far from their homes.

> *"They explained things to us…we joked and played games. I learned many things, and as I have a grandson, I will teach my daughter-in-law"* — Older Ecuadorian woman, Lago Agrio, cash recipient.
>
> *"We have to do our domestic chores, take care of things, the children, so they [the trainings] came at the exact time when one has a moment, has a free hour"* — Colombian woman, Tulcán, cash recipient.

In relation the timing and frequency of trainings, beneficiaries were positive and appreciated that in some cases they were able to choose between a morning and an afternoon session, and thus able to complete their other responsibilities. Many participants were stay-at-home mothers, and found trainings to not be overly burdensome. Furthermore, for some women, trainings represented a break from routine where they could relax from their daily responsibilities. On the other hand, a handful of working female participants suggested weekend sessions would be preferred because of scheduling conflicts.

The WFP trainers were well-received, both in terms of the content presented and attitudes toward participants, who shared the materials in a clear manner, even if that content was unfamiliar. Furthermore, beneficiaries stated that they generally did not have access to other sources of nutritional information, and that any available courses on the subject were costly. Internet connectivity and recipe books were also perceived as expensive or inaccessible luxuries. Beneficiaries reported that they were exposed to ideas and knowledge in these sessions. Techniques for food preparation and improving diet as learned in the trainings were seen as useful to those who attended.

Participants expressed interest in continued exposure to information, both in terms of further trainings, and not solely for the continuation of the transfers. Furthermore, the addition of new thematic areas was requested, among these several unrelated to nutrition; psychological support for Colombians, nondiscrimination, domestic violence and issues on machismo, access to services and work opportunities, and nutritional practices for the elderly. Participants related

a desire for more interactive games such as the bingo, which proved extremely popular. One participant noted that games or exercises facilitated knowledge transfer for those beneficiaries who are not literate and thus cannot understand written materials. However, more support was needed in learning how to prepare the recipes provided by the program, particularly in form of practice, or demonstrations during trainings, and that would allow for testing of the difficulty level as well as the resulting flavors of the recommended dishes.

> *"I come from a farm where nobody has knowledge. In these chats [trainings] one learns to separate foods, of how one should eat"* — Colombian woman, Lago Agrio, cash recipient.
>
> *"I am poor but there are people poorer than I, people who sometimes do not eat."* — Ecuadorian woman, Lago Agrio, cash recipient.

However, some dissatisfaction was expressed with various components of the program. One general criticism was around the targeting of the program, in that it did not reach the most vulnerable; and that some that received the benefit were not in sufficiently poor to qualify. In addition, beneficiaries related disappointment and anxiety over the termination of the transfer program. Difficulties were recounted in adjustments to household budgets without the transfer. Some beneficiaries noted that with the end of the program, they reverted back to their former purchasing patterns and potentially former behavior patterns as well.

> *"I had a neighbor who had hurt himself, and he couldn't work, so I sent him a bag of lentils and rice so he could eat it with his children"* – Ecuadorian woman, Lago Agrio, food recipient.
>
> *"We received the food, the lentils, we can sell [the food] to buy whatever we are lacking"* — Colombian woman, Lago Agrio, food recipient.

A number of modality specific opinions and experiences were found. In general, echoing findings from the quantitative survey, beneficiaries expressed preference for the modality received during the program. For example, food recipients believe that with the voucher one receives less food, in contrast to the food transfer, which is easily stored and saved. For many food beneficiaries, the items in the food basket lasted after the end of the program, and leftover foodstuffs, could be shared with relatives or friends. Food could also be re-sold or traded if necessary. Food recipients noted that with the cash modality some cards were blocked, and that the food basket does not allow unhealthy or unwise food choices that could be made with cash purchases.

Cash beneficiaries saw the voucher and food transfers as inflexible, while cash permits for planning and saving towards other needs. Cash may also be used for nonfood necessities such as clothing. Supermarkets that redeem vouchers are perceived as expensive, and that cash holds value better as market prices are lower and cash may be used anywhere without limitation. Additionally, beneficiaries state that markets provide a greater variety of products, while supermarkets are seen as having low quality produce, and occasionally for lacking certain products, in particular, meat.

"[In the supermarket] with the list [voucher], my friend says they gave the most expensive things. Five dollars for me is a lot I am saving" – Colombian woman, Lago Agrio, cash recipient.

"With the cash, you can save twenty for any other thing [that may come up]" – Ecuadorian woman, Lago Agrio, cash recipient.

Despite expressing preference for their modality type, voucher recipients complained more than other transfer recipients. Voucher recipients cited bad treatment by store employees, crowding, high prices, a lack of availability of certain products, low quality produce, and complaints of items not included in the voucher list. Participants from Tulcán were particularly vocal about their dissatisfaction, and some were even convinced they were being cheated. Williams et al. (2012) found that low-income women in Australia perceived fruit and vegetables to be expensive when those items were less available and of lesser quality. This may also be due to the fact that many women may have previously purchased the same items in the open market, where produce prices are generally lower.

"This void persists; you got accustomed to receiving it [the transfer] and having that $40 dollars, which was already planned for" – Colombian woman, Lago Agrio, cash recipient.

"We obtained new products when we received the voucher, but now after the voucher I think we will get the same old products, from before." – Ecuadorian woman, Tulcán, voucher recipient.

As the complaints were particularly vehement in Tulcán, and interviews with the supermarket owner confirmed that receipts were not given to participants, it may be that beneficiaries perceived the higher cost because of the lack of transparency regarding their purchases[4]. Despite the large number of complaints, voucher beneficiaries felt cash transfers would not be spent appropriately by recipients.

"In the first two months I was very satisfied; I took home 5 full bags, but in the third month I only got 3. I think they were taking our 15 cents and we couldn't complain because in the first place we aren't paying for it and we didn't know if the prices were correct." — Ecuadorian woman, Tulcán, voucher recipient.

Despite overall satisfaction with the program, it should be noted that participants may have believed that their responses in FGDs could influence future inclusion in WFP programs, despite explanation that their responses would not. During and after FGDs, several beneficiaries

[4] In a separate interview, management of a Tulcán supermarket acknowledged variety of operational issues such as problems with customer volume, treatment of beneficiaries by store employees, and a lack of stock, especially of fresh produce. To address these issues, trainings were conducted with employees, days for use of voucher were spread out so as to avoid crowding, and increase purchase of the items in question; however, this also lead to problems with produce spoilage. It was also noted beneficiaries did not receive receipts, as they were instead sent to WFP to be redeemed.

asked the facilitator and observer about whether WFP would continue its programs, even after being told these individuals were not WFP staff.

> *"Not only rice with plantains, but lentils and green salad…my son says 'I love salad' since I have been in the trainings"* — Ecuadorian woman with formerly anemic child, Lago Agrio, voucher recipient.
>
> *"The colorful plate works because children eat one color and then another color; I think this had the most results"* — Ecuadorian woman, Tulcán, voucher recipient.

Behavior Change, Knowledge Acquisition, and Retention

Information collected in the quantitative survey revealed that nutrition knowledge increased from baseline in all treatment groups in 6 of 8 key questions, and small increases were also seen in the comparison group. The FGDs allowed for more open discussions of what participants recalled from trainings, and reaffirmed the findings from the quantitative survey, showing consistent basic knowledge retention across categories.

The "Colorful Plate": Dietary Diversity

Program beneficiaries generally understood why one should eat a colorful plate, and how these elements were related to health. The rhyming slogan utilized in the trainings; "*el plato colorido es un plato nutritivo*" (A colorful plate is a nutritious plate) was easily recalled. The colorful plate may also appeal to children, in that the color catches their attention and can be seen as a game. Participants understood the importance of using different types of food, as represented by colors, to increase the nutritional value of their meals. In particular, beneficiaries grasped the need to include vegetables, fruits and salads to complement traditional proteins and starches such as rice, lentils and meat. Additionally, beneficiaries acknowledged that that the common practice of combining carbohydrates with carbohydrates is not advisable, as it is unhealthy and causes weight gain, among other problems. Instead, they stated one should substitute another starch with another food group, such as salad. Only a small minority of participants did not thoroughly understand the rationale behind this message.

> *"I like to combine food, to have salad, we used to make rice with pasta but that was bad - flour with flour - which makes you fat"* — Ecuadorian woman, Tulcán, voucher recipient.
>
> *"In Tulcán we are addicted to rice, pasta, and potato. The most interesting thing they told us is that we shouldn't do that – we have to make a colorful plate"* — Ecuadorian woman, Tulcán, cash recipient.

Anemia

Most program participants were comfortable in recalling information on anemia, reflecting an understanding of the condition and the relationship between certain foods and improved anemia status. There was widespread recognition of the external symptoms; "Anemia is when one is pallid, with no color, and does not have an appetite"; or when one is underweight and even lead to death, in some cases. However, only one participant mentioned the internal symptoms of the condition; "no appetite, and do not have red blood cells." Many beneficiaries specifically identified the connection between consumption of iron-rich foods such as liver and leafy greens and improvement in anemia status.

Beneficiaries did, however, emphasize the connection between iron intake, whether through consumption of certain foods or as supplement, and the use of other micronutrients. Many beneficiaries mentioned other vitamins as also having an impact on anemia status, for example, calcium and iodine. On the other hand, one detailed point - the use of vitamin C (orange juice) to increase absorption of iron - was not well understood. Traditional methods of anemia treatment were mentioned as potential solutions, such as pigeon blood, liver and blackberry *licuados* (blended drink). Several participants had children diagnosed with anemia after the baseline survey. When asked about what had happened since, the women said their children had recuperated. These changes were attributed to adaptation to their children's' diets, such as incorporating greens, lentils, meat, and liver. These accounts suggest that in some households, anemia is being managed through dietary changes spurred by contact with the health system and nutrition trainings.

> *"In the first [survey] my daughter had anemia and I went to the clinic, they gave iron and vitamins, and in the second [survey], she did not"* — Ecuadorian woman, Lago Agrio, voucher recipient.
>
> *"I received a lot of lentils in the last distribution, so I ate and gave some to my daughter with vegetables, thanks to God she did not have anemia any more when they returned"* — Ecuadorian woman, Lago Agrio, food recipient.
>
> *"My daughter was very anemic. They told me in the trainings to make a lentil or a chard soup with liver"* — Colombian woman, Lago Agrio, cash recipient.

Pregnancy, Complementary Feeding, and Nutrition for Young Children

Trainings covered a variety of topics concerning the diet of pregnant and breast feeding women, as well as appropriate care for babies and young children under the age of two years. These subjects contained information on the progression of complementary foods, including quantity, types of foods, and preparation as well as the importance and duration of breast feeding. Hygiene, such as hand washing, and other sanitary behaviors particularly in regards to food preparation and storage, was also covered.

Beneficiaries showed good knowledge retention for all the general concepts covered in this category. Content best retained included information on care, with recommendations such as the prohibition of harmful behaviors like smoking. Also well remembered were behaviors such as changes in eating habits during the gestation period to support the growth of the fetus. Beneficiaries recognized the need to be careful about what pregnant woman consume in order to abstain from harmful substances, and to ensure dietary diversity with fruits and vegetables in order to provide sufficient micronutrients to the fetus. Some participants also highlighted the importance of consuming iron-rich foods, or taking vitamin supplements. However, while participants widely understood the importance of micronutrients, they did not seem to remember which micronutrient led to which deficiencies, or which foods contained each micronutrient, with the notable exception of iron.

"When a child is sick you should give more liquids, and should not give soda because when they eat nutritious food they lose the nutrients." — Ecuadorian woman, Tulcán, cash recipient.

"You can stew lentils and feed it to children, it is a great food" — Ecuadorian woman with anemic child, Lago Agrio, food recipient.

In terms of the knowledge retention of nutrition information for young children, participants reliably recalled the recommendation for exclusive breastfeeding until 6 months, followed by complementary foods, and slowly progressing to regular foods. Other information recalled included how to treat sick children, and how to ensure a nutritious diet, and also ways in which certain foods could better be prepared for children's tastes. The adoption of hygienic practices like hand washing, regular medical visits, and vitamins were mentioned as important to child development, as well as ensuring that children are served first.

Overall, program beneficiaries exhibit a range of stages of behavior change. Few participants appeared to be in a stage of pre-contemplation, or unaware or uninterested in change. Some participants stated they were still considering the use of new practices (pre-contemplation), while others had tested recipes or were utilizing recipes on a rotating basis a handful of times a week (action). Behavior change was reported by beneficiaries across a number of different activities including food purchase, preparation and consumption, and in changing food preparation habits to reflect healthier choices.

"Since we began the trainings I totally changed my way of living -with less sugar and salt" — Ecuadorian woman, Tulcán, cash recipient.

"Pureed vegetables, quinoa, rice, we vary [our diet], we don't make as much fried food." — Ecuadorian woman, Tulcán, cash recipient.

"It takes the same time to make a salad as it takes to fry potatoes" — Ecuadorian woman, Tulcán, voucher recipient.

Some women expressed a desire for their husbands to participate to help change their attitudes towards nutrition. A small handful of women said their husbands had attended an occasional training, mostly when their wives were not present as an obligation to receive the transfer. Generally, machismo was mentioned as a problem, as was domestic violence. As one woman put it, the lack of male attendance was because "all of them are machista."

"I would like my husband to go to training, but he doesn't want to go. I told him let's go so that you can learn how to combine foods and he said 'What crap – this lettuce and chard!'" — Colombian woman, Lago Agrio, voucher recipient.

"He is not interested; he sees the food and looks like an angry bull about to explode" — Ecuadorian woman, cash recipient.

Furthermore, in terms of behavior change, most men were not interested in cooking. Spouses may be resistant to changes in household cooking practices, potentially generating conflict within the household. Women may adapt their cooking practices and purchases to reflect the preferences of their husbands, which often reflect traditional tastes. This resistance to change is potentially limiting to positive behavior changes in the household diet since spouses may exert power (whether physical, emotional or otherwise), over their wives. On the other hand, the women also assert that they still yield decision-making power over determining the content of household meals. Women did identify exceptions of men who shared in the household cooking responsibilities, especially in regards to food purchase and preparation.

> *"[My husband] has to eat because it is already made. They don't have anything else to eat, because they can't cook themselves."* — Ecuadorian woman, Lago Agrio, cash recipient.
>
> *"My husband does participate in the kitchen and he knows how to cook."* — Ecuadorian woman, Tulcán, voucher recipient.
>
> *"For example, with chard…I added a bit of sausage and potato, and then they [children] eat it."* — Ecuadorian woman, Tulcán, cash recipient.

There was evidence of changes of purchase patterns across modalities, even among those who received a food, who said once staples were accounted for they had money on hand to buy non-staple foods. Purchases reflect the content of trainings; more vegetables and micro-nutrient dense foods, less fatty foods, and sweets. Still, beneficiaries express preferences for oil, salt and sugar, as they facilitate all cooking and give flavor. Furthermore, if low on funds, basic foods are the first priority for purchases, including rice, potatoes, oil and sugar. Beneficiaries began to accept that food purchasing changes can be economical, and that there are cheap, nutritious alternatives to existing food choice.

> *"I can't make them [recipes] because they require meat, which is expensive"* — Ecuadorian woman, Lago Agrio, voucher recipient.
>
> *"There are people who don't eat many beans. Lentils are cheaper than buying chicken and it's nutritious. It's better if you have meat, but you can't, I buy lentils"* — Ecuadorian woman, Lago Agrio, cash recipient.

However, customary diets and traditional foods are a difficult obstacle. It is therefore not evident whether beneficiaries will maintain these changes over time without the transfer, which eases financial limitations for purchases and consumption.

"I have saved [the recipes] but I haven't put them into practice because it is difficult to get everything they ask" — Ecuadorian woman, Lago Agrio, food recipient.

"When I don't have meat, I buy heart, and I put that in the recipes" — Ecuadorian woman, Tulcán, food recipient.

"The recipe called for white wine but there wasn't any in the store – so I put in lime juice" — Ecuadorian woman, Tulcán, cash recipient.

The utilization of specific recipes depended on the availability of the ingredients in the household, and access to food products. Popular recipes included quinoa or spinach soup, spinach omelet, noodles with liver, hominy with eggs *(motepillo*), fish, chicken soup (*sopita de menundencias*), sweet beans (*dulce de chocho*) and black beans and rice. Beneficiaries reported that recipes were equally or less time-consuming as preparing traditional dishes. Take home materials were helpful, as the participants mentioned the importance of having the recipes as a household reference. Some mentioned the idea of practicing recipes in trainings as a way to facilitate acceptance and adoption. Questions remain of the use of these materials for those that are illiterate, especially the elderly. It was evident that the oldest members of the FGDs were the least engaged, and retained less information.

"How will this rice turn out, will the lentils fully cook? If we prepared a recipe in each session…well, I think we should do it" — Ecuadorian woman, Tulcán, voucher recipient.

Accounts of recipe use show that beneficiaries are testing and adapting new behaviors. Most beneficiaries found recipes to be straightforward, although it was not possible to acquire all ingredients consistently. Ingredient substitution occurred, primarily due to financial considerations; and resulted in less expensive meals. In addition, adaptation of recipes also occurred to facilitate acceptance by children, such as blending vegetables or adding other foods to make "new" foods palatable. One area where behavior change was less evident is for other health practices like breastfeeding. Attitudes of household members may affect uptake of nutritional practices, especially by spouses and children. There are differing levels of support from spouses, some which welcome new behavior, and others which wanted to maintain previous habits.

Social Networks

Social cohesion affects the flow of information in a community, which in turn affects social control, or the ability to encourage positive communal behaviors (Entwisle et al. 2007). Population turnover, due to migration or other causes, affects the quality of social ties, in that residential stability has a positive effect (Sampson 1991). Cohesion and control form what Sampson and colleagues (1997) call "social efficacy," or the willingness of members to act to improve a community, which can affect violence or other social ills. Social efficacy is influenced by community networks, which vary in the complexity of social ties, connectivity, and permeability of boundaries (Entwisle et al. 2007).

The study clusters are urban or peri-urban, which may affect the "density of acquaintanceship" at the community level (Freudenburg 1986). The factors that affect the density of acquaintanceship include length of residence, population size, diversity and segregation. The communities in the program also include those with a high proportion of Colombian refugees, most of who maintain cross-border relationships with their former communities. Participants, both Ecuadorian and Colombian, recounted that they met new people, and that new relationships were formed in the trainings. In some cases, a sense of solidarity or common objective was fostered within neighborhoods. Despite this fostering of new relationships, the duration of the trainings may have been too brief to solidify relationships; or to ensure contact after program closure.

> *We didn't know each other, but after, little by little, we became like a family"* — Ecuadorian woman, Tulcán, cash recipient.
>
> *"We made friends with the other women; they were from all parts of Colombia, from Guayaquil, from everywhere"* – Ecuadorian woman, Lago Agrio, food recipient.

> *"We lack a bit to get to all get to know each other, there wasn't confidence between us"* — Ecuadorian woman, Tulcán, cash recipient.
>
> *"In Colombia when my mother cooks she says 'neighbor, I want to invite you over because we are cooking,' but here that doesn't happen"* — Colombian woman, Tulcán, food recipient.

In addition to ethnicity, there may also be social or cultural norms that affect sharing practices particularly around nutrition knowledge. Personality may also impact how individuals receive knowledge or share information. Rogers (2002) identifies "early adopters", who diffuse innovation and try new behaviors. Others may be late adopters, who wait until other people have already adopted behaviors before trying to change (Bandura 1986). While we understand this phenomenon occurs, less is known about the "geography" of dissemination. Fowler and Christakis (2008) describe a "contagion" of emotional states dependent on geographic proximity, affecting clusters of individuals through relationships and social ties.

There was evidence of information sharing, both from by word of mouth and from materials. Conducting trainings by *barrios* may be useful because ideas may "spread" due to physical proximity and extant social ties, and may increase the likelihood that those who did not participate will be "exposed" through the diffusion of knowledge. These results are consistent with the results from the survey, in that 89 percent report of beneficiaries reported sharing information learned with friends or neighbors. Nutrition knowledge also increased for the comparison group households, suggesting that beneficiaries may share knowledge and there is a beneficial spillover effect.

> *"I have been able to share [what I learned] with friends and young people: you should nurse your baby until 2 years. These trainings were very important"* — Ecuadorian woman, Lago Agrio, cash recipient.
>
> *"With my neighbors…they asked to borrow the recipe, they wanted to learn; they asked me to make copies."* — Colombian woman, Lago Agrio, voucher recipient.

Discrimination

According to beneficiaries, Colombians face difficulties in Ecuador, from discrimination in social and work environments due to refugee status. On the other hand, one FGD in particular unearthed resentment for Colombians as they are perceived as having more outlets for assistance, including UNHCR, IOM, and the Red Cross and local foundations. Ecuadorians feel they are excluded; Suspicion and dissatisfaction exists regarding the targeting for assistance programs, both in terms of nationality and by perceptions of poverty. Thus the food, cash and voucher program was praised in its inclusive approach to reach both vulnerable groups. This finding is consistent with the quantitative results presented in Chapter 7 which show decreases in experience of discrimination for both Colombians and Ecuadorians.

> *"It is hard to find work when you are Colombian and uneducated - they reproach you."*
> — Colombian woman, Lago Agrio, cash recipient.
>
> *"At the foundation they gave food but when I went…they said it was only for Colombians."*
> — Ecuadorian woman, Lago Agrio, cash recipient.

11.4 Qualitative Conclusion

Qualitative evidence shows beneficiary response to the trainings was positive, including interactions with WFP staff. In addition, beneficiaries are retaining information, sharing with their social networks, and occasionally incorporating recipes into their diet. The program may also have positive social effects in including both Ecuadorians and Colombians in the program. It is unclear from the limited evidence the scale at which this phenomenon may occur, and whether the duration of the training period was long enough to affect these intra-community relationships. This program has widely avoided the resentment generated by programs that only target one nationality.

> *"We are very grateful for this program that included not only Colombian families but also Ecuadorian, because while the government attends to refugees, there are also many poor Ecuadorians too"* — Ecuadorian woman, Lago Agrio, cash recipient.

Two remaining areas of concern for the program include the support of household members, primarily spouses, and the maintenance of habits without the benefit of the transfer. Prochaska et al. (1994) posits that interventions should increase the pros of behavior change, the receipt of a transfer that alleviates financial pressures, and decreases the cons. Incorporating male members of the household (especially spouses) into the training process could help decrease a potential barrier to change. Another issue is complaints from beneficiaries that they needed more preparation to accurately prepare new dishes. Recipe testing, or "demonstration of diet", was utilized with success in two notable behavior changes studies in Bangladesh (Roy et al. 2005) and in Malawi (Hotz and Gibson 2005), both of which found significant impacts of nutrition education on nutrition outcomes. This practice could be especially appropriate for illiterate beneficiaries. In general, literature suggests that trainings appear to be a useful complement to the transfer program; however, the utility without the transfer remains

unproven. Nutrition education is not generally viewed as effective as a stand-alone intervention without a complementary transfer or other component. However, a handful of recent studies provide initial evidence of the impact of nutrition trainings without a complementary intervention (Roy et al. 2005), as well as in the case of an infant nutrition education program in Malawi (Fitzsimons et al. 2012), where consumption and diets improved for young children as well as in spillover effects to older children.

12. Impact Evaluation Conclusion

This report evaluates the impact of the WFP's Food, Cash, and Voucher intervention in Northern Ecuador on outcomes including food security, social capital, anemia, and gender issues. In addition, to the impact assessment, this report provides evidence surrounding participants experience with the program, conducts a costing study to examine which modality (food, cash, or voucher) provides the greatest benefit for the amount of funds invested, and presents the results from a qualitative study on the efficacy of the nutrition trainings that accompanied the transfers. Moreover, because the program targeted Colombian refugees and poor Ecuadorians in Northern Ecuador, conclusions and policy implications are also examined by nationality. This evaluation study in Ecuador is one of several impact evaluations being undertaken in different countries by the WFP and IFPRI in which various forms of transfers are compared to learn which modalities are most effective in different contexts.

The results from this report lead to conclusions and policy implications that can be divided into three main components: program impacts (or benefits to participants), participant's costs and preferences, and program costs.

Program Benefits

Overall, program participation leads to large and significant increases across a range of food security measures, with the value of per capita food consumption increasing by 13 percent, per capita caloric intake increasing by 10 percent, HDDS improving by 5.1 percent, DDI by 14.4 percent, and FCS by 12.6 percent. The program also leads to a significant decrease in the percentage of households in the sample with "poor to borderline" food consumption scores by 4 percentage points (or a total percentage reduction of approximately 40 percent). Although all three modalities improve the value of food consumption, caloric intake, and dietary diversity measures, vouchers lead to the largest gains in dietary diversity and food leads to the largest increase in caloric intake. Consistent with the results on food security measures, vouchers lead to significant increases in the largest number of food groups, increasing consumption in the last 7 days among 9 distinct food groups, while these numbers are 5 and 7 for food and cash modalities, respectively. Both Colombians and Ecuadorians benefit from participating in the program; however, Colombians in the food and cash groups experience significantly greater gains in dietary diversity as compared to Ecuadorians.

Overall, program participation increases social capital among beneficiaries. Discrimination decreases by 6 percentage points and participation in groups increases by 6 percentage points. Although only cash leads to a significant decrease in discrimination, the size of the impact is not different across treatment arms. Cash also leads to a significant increase in trust of institutions and decrease in trust of individuals. The increase in trust of institutions is significantly different to that of vouchers and the decrease in trust of individuals is significantly different to that of food. On the other hand, only vouchers lead to significant increases in participation in groups, and the size of the impact is significantly different to that of cash. Program impacts on social capital vary across nationality, with treatment leading to larger impacts on participation for Colombians than for Ecuadorians.

Overall, participation in the program does not lead to changes in household decisionmaking or experience of disagreement regarding decisionmaking across a wide range

of social and economic domains. The program does, however, lead to a significant decrease in intimate partner violence. Across modalities, there are no significant differences in the size of the impact for any of the decisionmaking or intimate partner violence indicators and there are no differential impacts with respect to being Colombian.

Finally, overall participation in the program does not lead to a significant change in hemoglobin levels or anemia classifications for either children aged 6 to 59 months or for adolescent girls aged 10 to 16 years. The program does, however, lead to a significant decrease in hemoglobin levels and increase in anemia for children in the food group. In addition, moderate or severe anemia increases among children in the cash group. When interacted with nationality, the increase in anemia among children in the food group is concentrated among Colombian households. In contrast, there are no significant impacts by either treatment arm or nationality for adolescent girls.

Participant's costs and preferences

Although vouchers have the largest impact in terms of food security, voucher participants report having the most difficulties with the program, with 79 percent of voucher beneficiaries reporting at least one complaint with their transfer, compared to 40 percent in the cash group and 37 percent in the food group. Common difficulties experienced by the voucher recipient households include high food prices and lack of food in supermarkets, as well as problems at cashiers and understanding rules or use of vouchers. In general, cash is the preferred modality among participants. In terms of opportunity costs and transportation costs, cash is the least costly, which is consistent with participants' revealed preferences. Despite modality-specific complaints, overall beneficiaries report overwhelming satisfaction with the program, including nutrition trainings and interactions with program staff.

Program costs

The most costly modality to implement from the institutional perspective for WFP was the food transfer, while cash and vouchers had similar costs. In particular, as measured on a per transfer basis using modality-specific costs, it cost $3.03 to transfer $40 in cash to a beneficiary, $3.30 to provide them with a $40 voucher, and $11.50 to transfer $40 worth of food. The difference in cost between the food ration and the other modalities was primarily due to added storage, distribution, and contracting. In contrast to the other transfers, food rations require a degree of manipulation, in that they must be packaged (thus requiring labor), transported (human resource and transport cost), and stored in warehouses (rental and upkeep costs). Combining impacts with costs to compare the cost-effectiveness across modalities for food security measures, we find that food vouchers are the most cost-effective means for improving food security and food is the least cost-effective means of improving these outcomes.

Discussion

It is important to emphasize that the results from this evaluation represent a nutrition knowledge and transfer "bundled" intervention and are specific to the population studied: poor urban households in Northern Ecuador. Although we find large overall program impacts, these findings may not hold in rural areas where supermarkets are more likely to have less variety of foods and may also lack the capacity to properly implement such a program. While these

results cannot be generalized to rural areas, they do provide insight for a large, vulnerable segment of the population, the urban poor, and demonstrate how transfer programs have a short-term positive impact on food security and social relations within households and communities.

In the context considered here, choosing the "winner" among the different modalities depends on the objectives of the policymakers. If the objective of these transfers is simply to improve welfare, cash is preferable. Cash is the modality that beneficiaries are most satisfied with, and it is the cheapest means of making transfers. Given the budget available to WFP for this project, shifting from food to cash could have increased beneficiary numbers by 12 percent. Moreover, cash allows for savings that helps households smooth their food and nonfood consumption. If the objective is to increase calories or dietary diversity, vouchers are the most cost-effective means of doing so, followed by cash. Although, vouchers are the most cost-effective means of increasing caloric availability and diet quality, it is the modality *least* preferred by beneficiaries. Thus policymakers are faced with the trade-off of improving overall welfare or improving specific outcomes. The former gives aid recipients' autonomy, while the latter restricts their choices in order to achieve specific objectives.

Appendix 1: WFP Poster for Supermarkets



Appendix 2: Costing Methods and Definition

Costing Glossary:

Cost per beneficiary: the total cost of one beneficiary in any modality

Cost per transfer: the total cost to deliver one $40 transfer in any modality

Human resource cost: Those costs originating from staff time, reflected as a hourly representation of salary

Modality specific cost: Those implementing costs which are unique to one modality and not applicable to any other modality, for example, the distribution of food or the liquidation of vouchers.

Non-modality specific cost: Costs of implementation that are allocated across all modalities, in that they are not specific to one modality type or another (i.e. a cost that cash, food and voucher all share). However, not all modality specific costs are divided equally; this is to reflect the differing number of beneficiaries per modality type. Therefore, some non-modality specific costs are allocated proportionally in relation to the number of beneficiaries per modality type.

Physical resource cost: These are costs that are not related to personnel time, including all physical materials used in implementation, including vehicle costs, infrastructure or rental costs, and materials such as paper, ID machines, etc.

Total cost: All implementation costs including non-modality specific and modality specific costs

Introduction

The International Food Policy Research Institute (IFPRI), in conjunction with the World Food Programme (WFP), conducted a large-scale impact evaluation to examine vouchers, food, and cash-based transfers. The evaluation provides evidence to help determine the relative benefits of alternative modalities to the traditional food transfers. IFPRI has developed a costing protocol to track comparative costs relative to program modality and to assess cost-effectiveness across the countries involved in the WFP impact evaluation, Ecuador, Niger, Yemen, and Uganda.

The costing protocol builds off the activity-based costing ingredients method (ABC-I). Traditional accounting methods do not take into account the opportunity cost of program activities, or benefits sacrificed when resources are allocated elsewhere. Therefore, accounting costs often underestimate the true overall cost of program operations. The use of the ABC-I method allows for opportunity costs, quantified as economic costs, to be included in the total program costs. This method also allows for the incorporation of "off-budget" expenditures, for example, donated goods or services that otherwise would not be included as program operating

costs. In this case, donated commodities would be incorporated, even if the actual cost of those rations were provided by donor governments.

This costing report aims to answer the following research questions with the goal to aid the WFP in decisionmaking on program activities and funding:

1. *What are the relative costs of each modality (cash, voucher, and food)?*
2. *Which modalities are the most cost-effective?*

Methodology

In the ABC-I approach, costs are organized into their respective sectors, known as cost centers. The ABC-I method is a combination of activity-based accounting methods with the "ingredients" method, which calculates program costs from inputs, input quantities, and input unit costs (Fiedler, Villalobos, and de Mattos 2008; Tan-Torres Edejer et al. 2003). As the ingredients method alone does not allocate costs according to program activities, it would not allow for comparison between modalities. However, this method, when paired with the ABC-I approach, matches activities with all their corresponding inputs into cost centers.

In typical program accounting, the general ledger of total funds spent may serve as a reference point from which to detail activities and ingredients (Canby 1995). However, as WFP program staff currently utilize cost-accounting methods that aggregate data by cost centers that are not separated by program modality, it is necessary to re-organize and cost these inputs using the ABC-I approach. Furthermore, as the WFP Executive Board noted in a recent meeting, "The practice of embedding non-commodity activities in the commodity-based cost structure results in non-commodity inputs not being properly defined and categorized. This creates significant difficulties in planning, controlling, managing and implementing such activities…[and] in benchmarking across projects, developing performance metrics, and evaluating the impact" (WFP 2010); it may also be necessary to categorize these costs as recurrent or start-up costs in order to facilitate future data analysis.

A cost profile analysis provides the information with regards to the comparative benefits of program modalities, as it allocates costs to their subsequent activities and individual inputs ("ingredients"). Additionally, program costs should be separated into initial program start-up costs versus recurrent costs. A cost-effectiveness analysis is a further step in evaluating the various program modalities. As some outcomes may vary according to the program design in each country, common outcomes should be identified that can be compared across contexts, if possible. The calculation of cost per unit of desired impact would then be compared across program modalities for these selected outcomes.

The bottom-up approach of ABC-I is a thorough, albeit time-intensive, method. Detailed input data are required, such as the percentages of time allocated for personnel costs by activity. This particular "ingredient" requires the direct participation of country program staff that may already have many demands on their time. In-country interviews with program staff are necessary to accurately delineate these types of data. Costs incurred by collaborating partners for implementation, as well as for other activities, such as the initial census for beneficiary identification (conducted by survey firm CEPAR), are included so as to properly reflect the actual cost of delivery of each modality.

Process

At several points throughout the evaluation period, IFPRI staff met with WFP program personnel in Quito to explain the costing methodology and obtain internal procurement and operations documents. Interviews and information in Quito were primarily conducted with the CO Head of Finance Unit, CO Head of Operations, and other program staff involved in the design of the nutrition components of the intervention.

In addition to providing information via interviews and providing existing documentation, the WFP-CO undertook a brief survey of all staff involved in the program to determine the percentage of human resource hours dedicated to this project. The spreadsheet proved extremely helpful in determining the human resource costs. However, as costs were organized by staff member rather than by activity, a separate spreadsheet was developed in accordance with the ABC-I methodology and circulated to other WFP-CO staff for comments on its accuracy.

One issue discussed with CO staff was how to reflect differences between budgeted costs, or those costs as reflected in the official WFP accounting ledger, and actual costs incurred in the field or by collaborating partners. In order to accurately include all costs, it would be necessary to input contracting costs to WFP with partners, not simply the payment to partners to execute the program as detailed in PRRO agreements. However, if one were to insert both types of costs for partners, double-counting would occur. Therefore, a separate analysis was conducted to determine the cost WFP paid for project execution, to contrast with a calculation for what was actually spent by partners. This parallel analysis may be of interest to WFP as it gives an idea of whether it is more fiscally sensible to continue to work through local partners instead of through direct implementation by WFP sub-offices. To ensure that costs of implementation were accurately reflected, costing interviews were conducted with collaborating partners for food distribution. Furthermore, interviews with supermarket owners participating in the voucher scheme were conducted in both Sucumbíos and Carchi. Finally, an interview was also conducted with the manager in charge at the bank in Sucumbíos. Additional interviews were conducted by telephone with local partners in Carchi as needed to confirm cost information provided by central offices.

Costs Explained

Before presenting the results of the costing exercise, it is helpful to provide a few explanatory notes regarding categorizations and calculations of costs. In relation to the agreements with collaborating partners, to reflect actual costs incurred, only the cost of contracting was included rather than the total amount paid by WFP to partners. Furthermore, these contracts were developed as part of the PRRO, an umbrella program that provided the food component of the transfer program, yet also includes the provision of rations for other PRRO activities. In order to assure that the cost excluded those activities that support the PRRO rather than just the transfer program, a proportional amount was calculated of contracting cost in relation to the total amount of metric tons of food for the transfer in comparison with total tons for the PRRO. Variance in the cost of the WFP food basket over time was not included in this analysis, as similar changes in cost for other modalities due to inflation or other reasons were also not calculated. However, it is interesting to note, perhaps for future analyses, that the

average cost of the donated food basket increased from approximately $40 to $58 per ration over the intervention period.

The construction costs of storage facilities were not included, primarily because in all cases with food storage, these facilities existed prior to the commencement of the transfer program activities. Instead, facility rental values for the intervention period were included. Other costs related to facilities included renovations or repairs necessary to prepare warehouses for the receipt of rations. These costs were calculated utilizing the percentage of total tonnage stored in each facility that were transfer program rations. As an example, in the case of the local food distribution partner in Lago Agrio, approximately a $1,500 investment in repairs was necessary for the existing warehouse. However, as those repairs also apply for other programs implemented by the local partner, a proportional amount of that cost was allocated to the transfer program costs ($500, or one-third of total weight of metric tonnage stored). The local partner in Sucumbíos only had one warehouse in Lago Agrio, and thus, the Shushufindi food delivery arrived direct from Quito. Although there were no storage or facility costs for food distribution in Shushufindi, the transport cost was $150 (including drivers and gas). In terms of human resources, staff had already received training in storage and distribution, so no extra training was necessary to prepare for participation in the cash, food, and voucher transfer program. Similarly, the food implementation partner in Carchi and the calculation for the monthly storage facility costs in Tulcán was calculated by the metric tonnage the transfer program rations occupied of the warehouse, which (39.3 percent of tonnage) was $102.18, and similarly in San Gabriel (100 percent tonnage) was $200, for a total of $302.18.

In terms of the supermarkets, as partners for the voucher scheme, several additional costs are noted. However, these costs were not included in the cost analysis because they are private, not public costs and thus not costs incurred by WFP. In Lago Agrio, the supermarket invested in human resource capacity by hiring extra staff and upgrading the computer system. The computer upgrades cost $800, and for the additional staff included 4 people for 15 days of work at $300/month for 6 months. In Tulcán, the supermarket incurred additional costs principally in terms of extra employees (two extra persons at the registers at a total cost of $400/each) to handle the increased flow of customers, as well as the installation of a computer system (total cost of $800) to handle transactions.

As a final consideration, the sixth month of costs for this analysis was extrapolated from the previous five months' data for those activities that continued on into the last month of the program. Mean values for number of beneficiaries over the six month period were utilized to conduct the cost-per-beneficiary calculation.

Detailed budgeted and actual costs by modality that are used in the analysis can be found in Table A3.1 and Table A3.2 in Appendix 3.

Appendix 3: Detailed Cost Tables

Table A3.1 Detailed budgeted costs, by modality

*Human Resources **Physical resources	CASH		VOUCHER		FOOD	
	HR*	RF**	HR	RF	HR	RF
PROJECT DEVELOPMENT						
1.0 *Project design*						
1.0.1 Project documentation						
1.0.1.a WFP staff	5,320		5,320		5,320	
1.0.2 Guidelines development process						
1.0.2.a WFP staff	557		595		192	
1.0.3 Document approval						
1.0.3.a WFP staff						
1.1 *Identification of participants*						
1.1.1 Contracting consulting firm						
1.1.1.a WFP staff	12		12		12	
1.1.1.b Contracting cost		73,520		73,520		73,520
1.1.2 Census design						
1.1.2.a WFP staff	3,660		3,660		3,660	
1.1.3 Data collection in the field						
1.1.3.a. CEPAR						
1.1.3.a.i CEPAR staff						
1.1.3.a.ii CEPAR staff training						
1.1.3.a.iii CEPAR, transport						
1.1.3.a.iv CEPAR, materials						
1.1.3.b WFP						
1.1.3.b.i WFP staff	80		80		80	
1.1.3.b.ii Travel		715		820		426
1.1.4 Data processing						
1.1.4.a CEPAR staff						
1.3 *Budgeting for project activities*						
1.3.a WFP staff	332		367		263	
1.4 *CD Work Partnerships & Monitoring System*						
1.4.a WFP staff	2979		3405		2128	
1.5 *Travel*						
1.5.1 Other Travel		3508		3389		3736
PROJECT IMPLEMENTATION						
2.0 *Mobilization*						
2.0.1 Public relations meetings						

2.0.2 Launch						
2.0.3 Communications						
2.0.3.a WFP staff						
2.0.3.b Materials (printing)						
2.0.3.c Travel						
2.1 *Establishing partnerships*						
2.1.1 Presentation of project to partners						
2.1.1.a WFP staff						
2.1.2 Prepare contracts with supermarkets						
2.1.2.a WFP staff			2,228			
2.1.3 Meetings & contracts with supermarkets						
2.1.3.1 Field visit Sucumbíos						
2.1.3.1.a. WFP staff			85			
2.1.3.1.b. Travel				884		0
2.1.3.1.c. Legal Consulting		250		250		250
2.1.3.2 Field visit Carchi						
2.1.3.2a. WFP staff			85			
2.1.3.2b. Transport				884		
2.1.4 Prepare contracts with bank						
2.1.4.a WFP staff	912					
2.1.5 Meetings and contracts with bank						
2.1.5.a WFP staff	271					
2.1.5.b Contracting with Bank						
2.1.6 Contracts with other partners						
2.1.6.a Partner A						5,912
2.1.6.b Partner B						8,488
2.2 *Logistics coordination for implementation*						
2.2.1 Revision project design project delivery						
2.2.1a. WFP staff time	216		216		400	
2.2.1.b Production of ID cards						
2.2.1.c WFP Staff	3,046		3,330		2,169	
2.2.1.d Travel		2,389		2,731		1,920
2.2.1.d Machine for printing ID		2,066		2,361		1,476
2.2.1.e Companies ID printers		623		712		445
2.2.2 Preparation of virtual bank accounts						
2.2.2a. Production of debit cards		13219				
2.2.2.b Transfer Bank		215				
2.2.2.c Bank staff						
2.2.2.d WFP staff	3799					
2.2.2.e Travel		774				
2.2.3 Supermarket selection						
2.2.3.a WFP staff			1374			

2.2.4 Travel preparation				1118		
2.2.4.a WFP staff	74		85		53	
2.3 *Beneficiary Training*						
2.3.1 Training and introduction						
2.3.1.a. WFP staff	1873		2140		1338	
2.3.1.b. Travel		1730		1977		1397
2.3.2 Planning meetings						
2.3.2.a WFP staff	2310		2514		1718	
2.3.3 Development of Training Materials						
2.3.3.1 Design of training materials						
2.3.3.1.a WFP staff	1320		1512		1352	
2.3.3.1.b National Consultants	6018		6018		6018	
2.3.3.1.c Travel N. Consultants	564			645		403
2.3.2.2 Procurement of training materials		2000		2000		2000
2.3.2.2.a WFP staff	1747		1997		1248	
2.3.4 Conduct training sessions						
2.3.4.a. WFP staff	10529		11650		8287	
2.3.4.b. Rental of space		1094		1227		767
2.3.4.c. Equipment		3364		3203		2403
2.3.4.d Travel		339		387		276
2.4 *Voucher development*						
2.4.1 Design of vouchers						
2.4.1.a. WFP staff			215			
2.4.1.b. Printing materials				582		
2.4.1.c. Voucher Provided						
2.4.1.c.i. WFP staff			11,060			
2.4.2 Voucher Liquidation						
2.4.2.a WFP staff			6,857			
2.4.2.b Bank Transfer to Supermarkets						
2.5 *Food Handling*						
2.5.1 Food storage						
2.5.1.a WFP staff					2,341	
2.5.1.b Bodega rental monthly						
2.5.1.b.i WFP						19,506
2.5.1.b.i Partner B						
2.5.1.b.iii Partner A						
2.5.1.c Facility repairs and investment						
2.5.1.c.i WFP						
2.5.1.c.ii Partner B						
2.5.1.c.iii Partner A						
2.5.2 Rations preparation						
2.5.2.a. Ration preparation & packaging						18,764

2.5.2.b WFP staff						
2.5.2.c Other materials						
2.5.2.d Cost of food ration						
2.5.3 Food distribution						
2.5.3.a. Transport (truck, gas, drivers, etc.)						
2.5.3.a.i WFP					4,365	
2.5.3.a.ii Partner B						
2.5.3.a.iii Partner A						
2.5.3.b Partners staff for distribution						
2.5.3.b.i Partner B						
2.5.3.b.ii Partner A						
2.6 *Facilities Maintenance*						
2.6.1 Sub-offices		235		269		168
2.6.1.a WFP staff	1,260		1,440		900	
2.6.2 Sub-offices, materials						
2.6.2.a WFP staff	1,529		1,747		1,092	
2.6.2.b Travel		1,547		1,768		1,249
2.6.2.1 Sub-offices, maintenance						
2.6.2.1.a WFP staff	1,008		1,152		720	
2.6.2.1.b Implementation		3,252		3,252		3,252
2.6.2.1.c Office Supplies & Materials		621		710		444
2.6.2.1.d General Services		424		484		302
2.6.2.1.e Communications & Services		74		85		53
2.6.2.1.f Repair and Maintenance		45		51		32
2.6.2.1.g Vehicle Maintenance		1,138		1,300		813
2.6.2.1.h Other Expenses and Services		1,236		1,412		882
2.6.2.1.i Safety Materials and Equipment		2,291		2,619		1,637
2.6.2.1.j Cost of Security Service		222		254		159
2.6.2.1.k Mail & Courier Services		28		32		28
2.7 *WFP Staff hiring*						
2.7.1 Selection Process						
2.7.1.1 Announcements publicity		480		480		480
2.7.1.1.a WFP staff	703		803		502	
2.7.2.2 Staff attention						
2.7.2.2.a WFP staff	314		358		314	
2.8 *Travel*						
2.8.1 Travel						
2.8.1.a WFP staff						
2.8.1.b Other activities, travel						
2.9 *Execution of payments*						
2.9.a WFP staff	2794		2604		282	

PROJECT MONITORING AND EVALUATION						
3.0 *Setting up monitoring system*						
3.0.a WFP staff	2112		2112		2112	
3.0.b Materials (programs, etc.)						
3.1 *Monitoring data basic*						
3.1.a WFP staff	1014		1078		884	
TOTAL COST (TYPE):	56351	117398	76100	109408	47749	151188
TOTAL COST:		173749		185509		198937
TOTAL COST PER TRANSFER:		$22.55		$21.45		$36.15
TOTAL COST PER BENEFICIARY:		**$135.32**		**$128.74**		**$216.94**

Table A3.2 Detailed actual costs, by modality

COSTING: ECUADOR C&V

*Human Resources	**CASH**		**VOUCHER**		**FOOD**	
**Physical resources	HR*	RF**	HR	RF	**HR**	RF
PROJECT DEVELOPMENT						
1.0 Project design						
1.0.1 Project documentation						
1.0.1.a WFP staff	5,320	-	5,320	-	5,320	-
1.0.2 Guidelines development process	-	-	-	-	-	-
1.0.2.a WFP staff	458	-	458	-	458	-
1.0.3 Document approval	-	-	-	-	-	-
1.0.3.a WFP staff	-	-	-	-	-	-
1.1 Identification of participants	-	-	-	-	-	-
1.1.1 Contracting consulting firm	-	-	-	-	-	-
1.1.1.a WFP staff	12	-	12	-	12	-
1.1.1.b Contracting cost	-		-		-	
1.1.2 Census design	-	-		-	-	-
1.1.2.a WFP staff	3,660	-	3,660	-	3,660	-
1.1.3 Data collection in the field	-	-	-	-	-	-
1.1.3.a. CEPAR	-	-	-	-	-	-
1.1.3.a.i CEPAR staff	6,983	-	6,983	-	6,983	-
1.1.3.a.ii CEPAR staff training	-	-	-	-	-	-
1.1.3.a.iii CEPAR, transport		4,560		4,560		4,560
1.1.3.a.iv CEPAR, materials		907		907		907
1.1.3.b WFP						

1.1.3.b.i WFP staff	80	-	80	-	80	-
1.1.3.b.ii Travel	-	715	-	820	-	426
1.1.4 Data processing	-	-	-	-	-	-
1.1.4.a CEPAR staff	1,367	-	1,367	-	1,367	-
1.3 Budgeting for project activities	-	-	-	-	-	-
1.3.a WFP staff	321	-	321	-	321	-
1.4 CD Work Partnerships and Monitoring System	-	-	-	-	-	
1.4.a WFP staff	2,837	-	2,837	-	2,837	-
1.5 Travel	-	-	-	-	-	-
1.5.1 Other Travel	-	3,508	-	3,389	-	3,736
PROJECT IMPLEMENTATION						
2.0 Mobilization	-	-	-	-		
2.0.1 Public relations meetings	-	-	-	-	-	-
2.0.2 Launch	-	-	-	-	-	-
2.0.3 Communications	-	-	-	-	-	-
2.0.3.a WFP staff	-	-	-	-	-	-
2.0.3.b Materials (printing)	-	-	-	-	-	-
2.0.3.c Travel	-	-	-	-	-	-
2.1 Establishing partnerships	-	-	-	-	-	-
2.1.1 Presentation of project to partners	-	-	-	-	-	-
2.1.1.a WFP staff	-	-	-	-	-	-
2.1.2 Prepare contracts with supermarkets	-	-	-	-	-	-
2.1.2.a WFP staff	-	-	2,228	-	-	-
2.1.3 Meetings and contracts with supermarkets	-	-	-	-	-	-
2.1.3.1 Field visit Sucumbíos	-	-	-	-	-	-
2.1.3.1.a. WFP staff	-	-	85	-	-	-
2.1.3.1.b. Travel	-		-	884	-	-
2.1.3.1.c. Legal Consulting	-	250	-	250	-	250
2.1.3.2 Field visit Carchi	-	-	-	-	-	-
2.1.3.2a. WFP staff		-	85	-		-
2.1.3.2b. Transport	-	-			-	-
2.1.4 Prepare contracts with bank	-	-	-		-	-
2.1.4.a WFP staff	912	-	-		-	-
2.1.5 Meetings and contracts with bank	-	-	-		-	-
2.1.5.a WFP staff	271	-	-		-	-
2.1.5.b Contracting with Bank	-	-	-		-	-
2.1.6 Contracts with other partners						
2.1.6.a Partner A						
2.1.6.b Partner B						
2.2 Logistics coordination for implementation	-	-	-		-	-

2.2.1 Revision project design project delivery	-	-	-	-	-	-
2.2.1a. WFP staff time	216	-	216	-	400	-
2.2.1.b Production of ID cards	-	-	-	-	-	-
2.2.1.c WFP Staff	3,046	-	3,330	-	2,169	-
2.2.1.d Travel	-	2,389	-	2,731	-	1,920
2.2.1.d Machine for printing ID	-	2,066	-	2,361	-	1,476
2.2.1.e Companies ID printers	-	623	-	712	-	445
2.2.2 Preparation of virtual bank accounts	-	-	-	-	-	-
2.2.2a. Production of debit cards	-	13,219	-	-	-	-
2.2.2.b Transfer Bank	-	215	-	-	-	-
2.2.2.c Bank staff	-	-	-	-	-	-
2.2.2.d WFP staff	3,799	-	-	-	-	-
2.2.2.e Travel	-	774	-	-	-	-
2.2.3 Supermarket selection	-	-	-	-	-	-
2.2.3.a WFP staff	-	-	1,374	-	-	-
2.2.4 Travel preparation	-	-	-	1,118	-	-
2.2.4.a WFP staff	74	-	85	-	53	-
2.3 Beneficiary Training	-	-	-	-	-	-
2.3.1 Training and introduction	-	-	-	-	-	-
2.3.1.a. WFP staff	1,873	-	2,140	-	1,338	-
2.3.1.b. Travel	-	1,730	-	1,977	-	1,397
2.3.2 Planning meetings	-	-	-	-	-	-
2.3.2.a WFP staff	2,310	-	2,514		1,718	-
2.3.3 Development of Training Materials	-	-	-	-	-	-
2.3.3.1 Design of training materials	-	-	-	-	-	-
2.3.3.1.a WFP staff	1,320	-	1,512	-	1,352	-
2.3.3.1.b National Consultants	6,018	-	6,018	-	6,018	-
2.3.3.1.c Travel N. Consultants	564	-	-	645	-	403
2.3.2.2 Procurement of training materials	-	2,000	-	2,000	-	2,000
2.3.2.2.a WFP staff	1,747	-	1,997	-	1,248	-
2.3.4 Conduct training sessions	-	-	-	-	-	-
2.3.4.a. WFP staff	10,529	-	11,650	-	8,287	-
2.3.4.b. Rental of space	-	1,094	-	1,227	-	767
2.3.4.c. Equipment	-	3,364	-	3,203	-	2,403
2.3.4.d Travel	-	339	-	387	-	276
2.4 Voucher development	-	-	-	-	-	-
2.4.1 Design of vouchers	-	-	-	-	-	-
2.4.1.a. WFP staff	-	-	215	-	-	-
2.4.1.b. Printing materials	-	-	-	582	-	-
2.4.1.c. Voucher Provided	-	-	-	-	-	-
2.4.1.c.i. WFP staff	-	-	11,060	-	-	-
2.4.2 Voucher Liquidation		-		-		-

2.4.2.a WFP staff	-	-	6,857	-	-	-
2.4.2.b Bank Transfer to Supermarkets	-	-	-	-	-	-
2.5 Food Handling	-	-	-	-	-	-
2.5.1 Food storage	-	-	-	-	-	-
2.5.1.a WFP staff		-	-	-	2,341	-
2.5.1.b Bodega rental monthly	-	-	-	-	-	
2.5.1.b.i WFP	-	-	-	-	-	19,506
2.5.1.b.i Partner B	-	-	-	-	-	1,200
2.5.1.b.iii Partner A	-	-	-	-	-	1,813
2.5.1.c Facility repairs and investment	-	-	-	-	-	-
2.5.1.c.i WFP	-	-	-	-	-	-
2.5.1.c.ii Partner B	-	-	-	-	-	500
2.5.1.c.iii Partner A	-	-	-	-	-	1,596
2.5.2 Rations preparation	-	-	-	-	-	-
2.5.2.a. Ration preparation & packaging	-	-	-	-	-	18,764
2.5.2.b WFP staff	-	-	-	-	-	-
2.5.2.c Other materials	-	-	-	-	-	-
2.5.2.d Cost of food ration	-	-	-	-	-	-
2.5.3 Food distribution	-	-	-	-	-	-
2.5.3.a. Transport (truck, gas, drivers, etc.)	-	-	-	-	-	-
2.5.3.a.i WFP	-	-	-	-	4,365	-
2.5.3.a.ii Partner B	-	-	-	-	-	900
2.5.3.a.iii Partner A						600
2.5.3.b Partners staff for distribution	-	-	-	-	-	-
2.5.3.b.i Partner B	-	-	-	-	4,800	-
2.5.3.b.ii Partner A	-	-	-	-	5,444	-
2.6 Facilities Maintenance	-	-	-	-	-	-
2.6.1 Sub-offices	-	235	-	269	-	168
2.6.1.a WFP staff	1,260	-	1,440	-	900	-
2.6.2 Sub-offices, materials	-	-	-	-	-	-
2.6.2.a WFP staff	1,529	-	1,747	-	1,092	-
2.6.2.b Travel	-	1,547	-	1,768	-	1,249
2.6.2.1 Sub-offices, maintenance		-				-
2.6.2.1.a WFP staff	1,008	-	1,152	-	720	-
2.6.2.1.b Implementation	-	3,252	-	3,252	-	3,252
2.6.2.1.c Office Supplies & Materials	-	621	-	710	-	444
2.6.2.1.d General Services	-	424	-	484	-	302
2.6.2.1.e Communications & Services	-	74	-	85	-	53
2.6.2.1.f Repair and Maintenance	-	45	-	51	-	32
2.6.2.1.g Vehicle Maintenance	-	1,138	-	1,300	-	813
2.6.2.1.h Other Expenses and Services	-	1,236	-	1,412	-	882
2.6.2.1.i Safety Materials & Equipment	-	2,291	-	2,619	-	1,637

2.6.2.1.j Cost of Security Service	-	222	-	254	-	159
2.6.2.1.k Mail & Courier Services	-	28	-	32	-	28
2.7 WFP Staff hiring	-	-	-	-	-	-
2.7.1 Selection Process	-	-	-	-	-	-
2.7.1.1 Announcements publicity	-	480	-	480	-	480
2.7.1.1.a WFP staff	703	-	803	-	502	-
2.7.2.2 Staff attention	-	-	-	-	-	-
2.7.2.2.a WFP staff	314	-	358	-	314	-
2.8 Travel	-	-	-	-	-	-
2.8.1 Travel	-	-	-	-	-	-
2.8.1.a WFP staff	-	-	-	-	-	-
2.8.1.b Other activities, travel	-	-	-	-	-	-
2.9 Execution of payments	-	-	-	-	-	-
2.9.a WFP staff	2,794	-	2,604	-	282	-
PROJECT MONITORING AND EVALUATION						
3.0 Setting up monitoring system	-		-		-	-
3.0.a WFP staff	2,112		2,112		2,112	-
3.0.b Materials (programs, etc.)	-		-		-	-
3.1 Monitoring data basic	-		-		-	-
3.1.a WFP staff	1,014		1,078		884	-
	-	-	-	-	-	-
TOTAL COST (TYPE):	64,449	49,345	83,700	40,471	67,375	75,344
TOTAL COST:		113,794		124,171		142,719
TOTAL COST PER TRANSFER:		$14.77		$14.36		$25.93
TOTAL COST PER BENEFICIARY:		**$88.62**		**$86.17**		**$155.64**

Table A3.3 Modality specific costs (based on actual costs)

*Human Resources	CASH		VOUCHER		FOOD	
**Physical resources	HR*	RF**	HR	RF	HR	RF
PROJECT IMPLEMENTATION						
2.0 Mobilization						
2.0.1 Public relations meetings						
2.0.3 Communications						
2.0.3.a WFP staff						
2.0.3.b Materials (printing)						
2.0.3.c Travel						
2.1 Establishing partnerships						
2.1.1 Presentation of project to partners						
2.1.1.a WFP staff						
2.1.2 Prepare contracts with supermarkets						
2.1.2.a WFP staff			2228			
2.1.3 Meetings and contracts with supermarkets						
2.1.3.1 Field visit Sucumbíos						
2.1.3.1.a. WFP staff			85			
2.1.3.1.b. Travel				884		
2.1.3.1.c. Legal Consulting		250		250		250
2.1.3.1 Field visit Carchi						
2.1.3.1a. WFP staff			85			
2.1.3.1b. Transport						
2.1.4 Prepare contracts with bank						
2.1.4.a WFP staff	912					
2.1.5 Meetings and contracts with bank						
2.1.5.a WFP staff	271					
2.1.5.b Contracting with Bank						
2.1.6 Contracts with other partners						
2.1.6.a Partner A						
2.1.6.b Partner B						
2.2.2 Preparation of virtual bank accounts						
2.2.2a. Production of debit cards		13219				
2.2.2.b Transfer Bank		215				
2.2.2.c Bank staff						
2.2.2.d WFP staff	3799					
2.2.2.e Travel		773				
2.2.3 Supermarket selection						
2.2.3.a WFP staff			1374			
2.2.4 Travel preparation				1118		

2.2.4.a WFP staff	74		85		53	
2.4 Voucher development						
2.4.1 Design of vouchers						
2.4.1.a. WFP staff			215			
2.4.1.b. Printing materials				582		
2.4.1.c. Voucher Provided						
2.4.1.c.i. WFP staff			11060			
2.4.2 Voucher Liquidation						
2.4.2.a WFP staff			6857			
2.4.2.b Bank Transfer to Supermarkets						
2.5 Food Handling						
2.5.1 Food storage						
2.5.1.a WFP staff					2341	
2.5.1.b Bodega rental monthly						
2.5.1.b.i WFP						19506
2.5.1.b.i Partner B						1200
2.5.1.b.iii Partner A						1813
2.5.1.c Bodega repairs and investment						
2.5.1.c.i WFP						
2.5.1.c.ii Partner B						500
2.5.1.c.iii Partner A						1596
2.5.2 Rations preparation						
2.5.2.a. Ration preparation & packaging						18764
2.5.2.b WFP staff						
2.5.2.c Other materials						
2.5.2.d Cost of food ration						
2.5.3 Food distribution						
2.5.3.a. Transport (truck, gas, drivers, etc.)						
2.5.3.a.i WFP					4365	
2.5.3.a.ii Partner B						900
2.5.3.a.iii Partner A						600
2.5.3.b Partners staff for distribution						
2.5.3.b.i Partner B					4800	
2.5.3.b.ii Partner A					5444	
2.9 Execution of payments						
2.9.a WFP staff	2794		2604		282	
PROJECT MONITORING AND EVALUATION						
3.1 Monitoring data basic						
3.1.a WFP staff	1014		1078		884	

TOTAL COST (TYPE):	8863	14457	25672	2834	18169	45129
TOTAL COST:		23320		28506		63298
TOTAL COST PER TRANSFER:		$3.03		$3.30		$11.50
TOTAL COST PER BENEFICIARY:		**$18.16**		**$19.78**		**$69.03**

Table A3.4 Non-modality specific costs (based on actual costs)

NON-MOD SPECIFIC COST	CASH		VOUCHER		FOOD	
	HR	PR	HR	PR	HR	PR
PROJECT DEVELOPMENT						
1.0 Project design						
1.0.1 Project documentation						
1.0.1.a WFP staff	5320		5320		5320	
1.0.2 Guidelines development process						
1.0.2.a WFP staff	458		458		458	
1.0.3 Document approval						
1.0.3.a WFP staff						
1.1 Identification of participants						
1.1.1 Contracting consulting firm						
1.1.1.a WFP staff	12		12		12	
1.1.1.b Contracting cost						
1.1.2 Census design						
1.1.2.a WFP staff	3660		3660		3660	
1.1.3 Data collection in the field						
1.1.3.a. CEPAR						
1.1.3.a.i CEPAR staff	6983		6983		6983	
1.1.3.a.ii CEPAR staff training						
1.1.3.a.iii CEPAR, transport		4560		4560		4560
1.1.3.a.iv CEPAR, materials		907		907		907
1.1.3.b WFP						
1.1.3.b.i WFP staff	80		80		80	
1.1.3.b.ii Travel		715		820		426
1.1.4 Data processing						
1.1.4.a CEPAR staff	1367		1367		1367	
1.3 Budgeting for project activities						
1.3.a WFP staff	321		321		321	
1.4 CD Work Partnerships & Monitoring System						
1.4.a WFP staff	2837		2837		2837	
1.5 Travel						
1.5.1 Other Travel		3507		3389		3735

2.0.2 Launch						
2.2 Logistics coordination for implementation						
2.2.1 Revision project design project delivery						
2.2.1a. WFP staff time	216		216		400	
2.2.1.b Production of ID cards						
2.2.1.c WFP Staff	3046		3330		2169	
2.2.1.d Travel		2389		2731		1920
2.2.1.d Machine for printing ID		2066		2361		1476
2.2.1.e Companies ID printers		623		712		445
2.3 Beneficiary Training						
2.3.1 Training and introduction						
2.3.1.a. WFP staff	1873		2140		1338	
2.3.1.b. Travel		1730		1977		1397
2.3.2 Planning meetings						
2.3.2.a WFP staff	2310		2514		1718	
2.3.3 Development of Training Materials						
2.3.3.1 Design of training materials						
2.3.3.1.a WFP staff	1320		1512		1352	
2.3.3.1.b National Consultants	6018		6018		6018	
2.3.3.1.c Travel N. Consultants	564			645		403
2.3.2.2 Procurement of training materials		2000		2000		2000
2.3.2.2.a WFP staff	1747		1997		1248	
2.3.4 Conduct training sessions						
2.3.4.a. WFP staff	10529		11650		8287	
2.3.4.b. Rental of space		1094		1227		767
2.3.4.c. Equipment		3364		3203		2403
2.3.4.d Travel		338		387		276
2.6 Facilities Maintenance						
2.6.1 Sub-offices		235		269		168
2.6.1.a WFP staff	1260		1440		900	
2.6.2 Sub-offices, materials						
2.6.2.a WFP staff	1529		1747		1092	
2.6.2.b Travel		1547		1768		1249
2.6.2.1 Sub-offices, maintenance						
2.6.2.1.a WFP staff	1008		1152		720	
2.6.2.1.b Implementation		3252		3252		3252
2.6.2.1.c Office Supplies and Materials		621		710		444
2.6.2.1.d General Services		424		484		302
2.6.2.1.e Communications & Services		74		85		53
2.6.2.1.f Repair and Maintenance		45		51		32

2.6.2.1.g Vehicle Maintenance		1138		1300		813
2.6.2.1.h Other Expenses and Services		1236		1412		882
2.6.2.1.i Safety Materials and Equipment		2291		2619		1637
2.6.2.1.j Cost of Security Service		222		254		159
2.6.2.1.k Mail & Courier Services		28		32		28
2.7 WFP Staff hiring						
2.7.1 Selection Process						
2.7.1.1 Announcements publicity		480		480		480
2.7.1.1.a WFP staff	703		803		502	
2.7.2.2 Staff attention						
2.7.2.2.a WFP staff	314		358		314	
2.8 Travel						
2.8.1 Travel						
2.8.1.a WFP staff						
2.8.1.b Other activities, travel						
3.0 Setting up monitoring system						
3.0.a WFP staff	2112		2112		2112	
3.0.b Materials (programs, etc.)						
	55,586	34,885	58,028	37,636	49,206	30,213
Total cost, non-modality specific		$90,471		$95,664		$ 79,420
Total cost (non-mod) per transfer		$11.74		$11.06		$14.43
Total cost (non-mod) per beneficiary		**$70.46**		**$66.39**		**$86.61**

References

Ahmed, A., D. Gilligan, J. Hoddinott, A. Peterman, and S. Roy. 2010. *Evaluating Vouchers and Cash-Based Transfers: Final Inception Report*. Washington, DC: International Food Policy Research Institute.

Ahmed, A., A. Quisumbing, M. Nasreen, J. Hoddinott, and E. Bryan. 2009. *Comparing Food and Cash Transfers to the Ultra-Poor in Bangladesh*. Washington, D.C.: International Food Policy Research Institute. http://www.ifpri.org/publication/comparing-food-and-cash-transfers-ultra-poor-bangladesh.

Ajzen, I. 1991. "The Theory of Planned Behavior." *Organizational Behavior and Human Decision Processes* 50 (November 4): 179–211.

Alesina, A., and E. Ferrara. 2002. "Who Trusts Others?" *Journal of Public Economics* 85 (2): 207–234.

Bandura, A. 1977. "Self-efficacy: Towards a Unifying Theory of Behavioral Change." *Psychological Review* 84 (2): 191–215.

Bandura, A. 1986. The Explanatory and Predictive Scope of Self-Efficacy Theory. *Journal of Social and Clinical Psychology*, Special Issue: Self-Efficacy Theory in Contemporary Psychology, 4: 359-373.

————. 1997. *Self-Efficacy: The Exercise of Control.* New York: Freeman.

Barrett, C. B., and D. G. Maxwell. 2005. *Food Aid after 50 Years: Recasting Its Role*. New York and London: Routledge.

Brug, J., K. Glanz, and G. Kok. 1997. "The Relationship between Self-Efficacy, Attitudes, Intake Compared to Others, Consumption, and Stages of Change Related to Fruit and Vegetables." *American Journal of Health Promotion* 12 (1): 25–30.

Caldés, N., D. Coady, and J. A. Maluccio. 2006. "The Cost of Poverty Alleviation Transfer Programs: A Comparative Analysis of Three Programs in Latin America." *World Development* 34 (5): 818–837.

Canby, J. B. 1995. "Applying Activity-Based Costing to Healthcare Settings." *Journal of the Healthcare Financial Management Association* 49 (2): 50–55.

Christakis, C., and J. Fowler. 2007. "The Spread of Obesity in a large Social Network over 32 years." *New England Journal of Medicine* 357 (4): 370–379.

————. 2008. "The Collective Dynamics of Smoking in a Large Social Network." *New England Journal of Medicine* 358 (21): 2249–2258.

Cunha, J. M. 2010. *Testing Paternalism: Cash vs . In-kind Transfers in Rural Mexico*. Discussion Paper 09–021. Stanford, CA, USA: Stanford Institute for Economic Policy.

Curtis, V., B. Kanki, S. Cousens, I. Diallo, A. Kpozehouen, M. Sangaré, and M. Nikiema. 2001. "Evidence of Behaviour Change Following a Hygiene Promotion Programme in Burkina Faso." *Bulletin of the World Health Organization* 79 (6): 518–527.

Dallongeville, J., L. Dauchet, O. de Mouzon, V. Réquillart, and L. Soler. 2011. "Increasing Fruit and Vegetable Consumption: A Cost-Effectiveness Analysis of Public Policies." *European Journal of Public Health* 21 (1): 69–73.

Entwisle, B., K. Faust, R. Rindfuss, and T. Kaneda. 2007. "Networks and Contexts: Variation in the Structure of Social Ties." *American Journal of Sociology* 112 (5): 1495–1533.

Fiedler, J. L., C. A.Villalobos, and A. C. de Mattos. 2008. "An Activity-Based Cost Analysis of the Honduras Community-Based, Integrated Child Care (AIN-C) Programme." *Health Policy and Planning* 23 (6): 408–427.

Fiszbein, A., N. Schady, F. H. G. Ferreira, M. Grosh, N. Kelleher, P. Olinto, and E. Skoufias. 2009. *Conditional Cash Transfers: Reducing Present and Future Poverty*. Washington, DC: World Bank.

Fitzsimons, E., B. Malde, A. Mesnard, and M. Vera-Hernandez. 2012. *Household Responses to Information on Child Nutrition: Experimental Evidence from Malawi*. CEPR Discussion Paper No. DP8915. London: Centre for Economic Policy Research.

Freudenburg, W. 1986. "The Density of Acquaintanceship: An Overlooked Variable in Community Research." *American Journal of Sociology* 92 (1): 27–63.

García-Moreno, C., H. A. F. M. Jansen, M. Ellsberg, L. Heise, and C. Watts. 2005. *WHO Multicountry Study on Women's Health and Domestic Violence against Women: Initial Results on Prevalence, Health Outcomes, and Women's Responses*. Geneva: World Health Organization. http://www.cabdirect.org/abstracts/20063002089.html.

Gentilini, U. 2007. *Cash and Food Transfers: A Primer*. Occasional Paper 18. Rome: World Food Programme.

Glanz, K., J. Brug, and P. Van Assema. 1997. "Are Awareness of Dietary Fat Intake and Actual Fat Consumption Associated?—A Dutch-American Comparison." *European Journal of Clinical Nutrition* 51 (8): 542–547. http://ukpmc.ac.uk/abstract/MED/11248880.

Glanz, K., R. Patterson, A. Kristal, C. DiClemente, J. Heimendinger, L. Linnan, and D. McLerran. 1994. "Stages of Change in Adopting Healthy Diets: Fat, Fiber and Correlates of Nutrition Intake." *Health Education Quarterly* 21 (4): 499–519.

Hanlon, J., A. Barrientos, and D. Hulme. 2010. *Just Give Money to the Poor: The Development Revolution from the Global South*. Sterling, VA, USA: Kumarian Press.

Hidrobo, M., J. Hoddinott, A. Margolies, V. Moreira, and A. Peterman. 2011. "Impact Evaluation of Cash, Food Vouchers and Food Transfers among Colombian Refugees and Poor Ecuadorians in Carchi and Sucumbios: Baseline Report." International Food Policy Research Institute, Washington, DC.

Hoddinott, J., and Y. Yohannes. 2002. *Dietary Diversity as a Food Security Indicator*. Food Consumption and Nutrition Division Discussion Paper 136. Washington, DC: International Food Policy and Research Institution.

Hotz, C., and R. Gibson. 2005. "Participatory Nutrition Education and Adoption of New Feeding Practices Are Associated with Improved Adequacy of Complementary Diets among Rural Malawian Children: A Pilot Study." *European journal of clinical nutrition* 59 (2): 226–237.

Imdad, A., M. Y. Yakoob, and Z. Bhutta. 2011. "Impact of Maternal Education about Complementary Feeding and Provision of Complementary Foods on Child Growth in Developing Countries." *BMC Public Health* 11 (Supplement 3): S25.

Kennedy, G., T. Ballard, and M. C. Dop. 2011. *Guidelines for Measuring Household and Individual Dietary Diversity*. Rome: Food and Agricultural Organization of the United Nations.

King, E. M., and A. D. Mason. 2001. *Engendering Development through Gender Equality in Rights, Resources, and Voices*. Research Report. Washington, DC: World Bank.

Kristal, A., K. Glanz, S. Curry, and R. Patterson. 1999. "How Can Stages of Change Be Best Used in Dietary Interventions?" *Journal of the American Dietetic Association* 99 (6): 679–684.

Labonne, J., and R. Chase. 2011. "Do Community-Driven Development Projects Enhance Social Capital? Evidence from the Philippines." *Journal of Development Economics* 96 (2): 348–358.

Manchu, M. T., and H. Mendez. 2007. *Tabla de Composicion de Alimentos de Centroamerica*, segunda edicion. Guatemala City: Instituto de Nutricion de Centro America y Panama (INCAP), Organizacion Panamericana de la Salud (OPS).

Malhotra, A., S. Schuler, and C. Boender. 2002. *Measuring Women's Empowerment as a Variable in International Development*. Background paper for the World Bank Workshop on Poverty and Gender: New Perspectives. Washington, DC: Gender and Development Group, World Bank.

McKenzie, D. (2012). Beyond baseline and follow-up: the case for more T in experiments. *Journal of Development Economics, 99*(2), 210-221.

Mehran, L., P. Nazeri, H. Delshad, P. Mirmiran, Y. Mehrabi, and F. Azizi. 2011. "Do Text Messaging Interventions Improve Knowledge, Attitude and Practice Regarding Iodine Deficiency and Iodized Salt Consumption?" *Public Health Nutrition,* First View article: 16.

PMA (Programa Mundial de Alimentos [World Food Programme]). 2010. *Informe de la Evaluacion a profundidad de la seguridad alimentaria y nutricional en la poblacion Colombiana refugiada en Ecuador y de la poblacion de acogida*. Quito, Ecuador.

Prochaska, J. O., W. F. Velicer, J. S. Rossi, M. G. Goldstein, B. H. Marcus, W. Rakowski, C. Fiore et al. 1994. "Stages of Change and Decisional Balance for 12 Problem Behaviors." *Health Psychology* (official journal of the Division of Health Psychology, American Psychological Association) 13 (1): 39–46.

Putnam, R. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

Rogers, E. 2002. "Diffusion of Preventive Innovations." *Addictive Behaviors* 27 (6): 989-993.

Roy, S., G. Fuchs, Z. Mahmud, G. Ara, S. Islam, S. Shafique, S. Akter et al. 2005. "Intensive Nutrition Education with or without Supplementary Feeding Improves the Nutritional Status of Moderately-Malnourished Children in Bangladesh." *Journal of Health, Population, and Nutrition* 23 (4): 320–330.

Sabates-Wheeler, R., and S. Devereux. 2010. "Cash Transfers and High Food Prices: Explaining Outcomes on Ethiopia's Productive Safety Net Programme." *Food Policy* 35 (4): 274–285. doi:10.1016/j.foodpol.2010.01.001. http://linkinghub.elsevier.com/retrieve/pii/S0306919210000230.

Sampson, R. 1991. "Linking the Micro- and Macrolevel Dimensions of Community Social Organization." *Social Forces* 70 (1): 43–64.

Sampson, R., S. Raudenbush, and F. Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277 (5328): 918–924.

Smith, K., and N. Christakis. 2008. "Social Networks and Health." *Annual Review of Sociology* 34 (1): 405–429.

Subbarao, K., A. Bonnerjee, and J. Braithwaite. 1997. *Safety Net Programs and Poverty Reduction: Lessons from Cross-Country Experience*. Washington, DC: World Bank.

Sullivan, K. M., Z. Mei, L. Grummer-Strawn, and I. Parvanta. 2008. "Haemoglobin Adjustments to Define Anaemia." *Tropical Medicine & International Health* 13 (10): 1267–1271.

Tabor, S. R. 2002. *Assisting the Poor with Cash: Design and Implementation of Social Transfer Programs*. Washington, DC: World Bank.

Tan-Torres Edejer, T., R. Baltussen, T. Adam, R. Hutubessy, A. Acharya, D. B. Evans, and C. J. L. Murray. 2003. *Making Choices in Health: WHO Guide to Cost-Effectiveness Analysis*. Geneva: World Health Organization.

UNHCR (United Nations High Commission for Refugees). 2010. *Global Report 2010: Ecuador*. Geneva. http://www.unhcr.org/4dfdbf5c0.html.

USDA (United States Department of Agriculture). 2010. *USDA National Nutrient Database for Standard Reference*, Release 23. Beltsville, MD, USA: Agricultural Research Service, USDA.

Webb, P., and S. K. Kumar. 1995. "Food and Cash for Work in Ethiopia: Experiences during Famine and Macroeconomic Reform." In *Employment for Poverty Reduction and Food Security*, edited by J. von Braun, 201–219. Washington, DC: International Food Policy Research Institute.

Weismann, D., L. Bassett, T. Benson, and J. Hoddinott. 2009. *Validation of the World Food Programme's Food Consumption Score and Alternative Indicators of Household Food Security*. Washington, DC: International Food Policy Research Institute.

WFP (World Food Programme). 2008. *Food Consumption Analysis: Calculation and Use of the Food Consumption Score in Food Security Analysis*. Rome.

————. 2010. *Resource, Financial, and Budgetary Matters: Financial Framework Review*. Executive Board, Second Regular Session. Rome.

WFP-Ecuador. 2010. *Spanish Trust Fund Proposal: Food Assistance (Cash/Vouchers) to Colombian Refugee Populations*. Quito.

————. 2011. *Report on the Cash and Voucher Project: Quarterly Report of Monitoring, May-July 2011*. Quito.

White, A. G. 2011. *In the Shoes of Refugees: Providing Protection and Solutions for Displaced Colombians in Ecuador*. Geneva: United Nations High Commission for Refugees http://www.unhcr.org/4e4bd6c19.html.

WHO (World Health Organization). 2011. *Haemoglobin Concentrations for the Diagnosis of Anaemia and Assessment of Severity.* Geneva. http://www.who.int/vmnis/indicators/haemoglobin.pdf.

Williams, L. K., L. Thornton, D. Crawford, and K. Ball. 2012. "Perceived Quality and Availability of Fruit and Vegetables Are Associated with Perceptions of Fruit and Vegetable Affordability among Socio-Economically Disadvantaged Women." *Public Health Nutrition* 15 (7): 1261–1267.