Zambia's Multiple Category Cash Transfer Program

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Baseline Report

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Executive Summary

In 2011, Zambia's Ministry of Community Development, Women and Child Health (MCDMCH) began implementing the Multiple Categorical cash transfer program (MCP) in two districts. An impact evaluation with experimental design accompanied the program in order to learn its effects on recipients and provide evidence for making decisions about the future of the program. The American Institutes for Research (AIR) was contracted by UNICEF Zambia to design and implement a randomized, controlled trial (RCT) for a three-year impact evaluation of the program and to conduct the necessary data collection, analysis, and reporting.[1]

The primary goals of this baseline report are to describe the sample developed for the evaluation and the approach to random assignment, assess targeting, check for equivalence between the treatment and control groups, and estimate potential effects of the program on outcomes by using statistical models that link outcomes to income and other factors. Developing predictions in advance of program effects allows us to state up front the hypothesized results, thus providing a benchmark against which results can be compared.

These goals of this report are briefly summarized here and expanded on in the full report.

The Program: The MCP targets households that meet any of the following conditions:
- A female-headed household keeping orphans
- A household with a disabled member
- An elderly-headed household (over 60 years old) keeping orphans
- A special case: this category is for cases that are critical but do not qualify under the other categories; for example, a household of two elderly people who are unable to look after themselves.

Eligible households receive 55,000 kwacha a month (equivalent to U.S. $11) irrespective of household size, an amount deemed sufficient to purchase one meal a day for everyone in the household for one month. According to the MCDSS, the goal of the MCP is to reduce extreme poverty and the intergenerational transfer of poverty. The operations manual states that 'the objectives of the program are to assist the most destitute and incapacitated households in society meet their basic needs, particularly health, education, food and shelter'. Thus, objectives of the program relate to five primary areas: income, education, health, food security, and livelihoods. The MCDMCH started the rollout of the MCP in Serenje and Luwingu, two districts with some of the highest rates of food insecurity and poverty. This introduces an element of geographical targeting to the program.

The Sample: We have collected data from a large and representative sample that was randomly selected. There are 3,078 households and 15,630 people in the study. The program primarily targets households caring for orphans, so it is important to have a sufficient number of orphans in the sample to detect effects on this subgroup. The sample includes 5,049 orphans aged 18 or younger, ensuring sufficient power to detect effects of a size that are large enough for policymakers and donors to care

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[1] Palm Associates was contracted by AIR to assist with the baseline data collection.

about. Among the recipients, 75 percent are women, 33.7 percent never attended school, and 54 percent are widowed. The program aims to assist extremely vulnerable households caring for orphans. The program appears to have met this goal. Fifteen percent of children ages 6 through 18 in the study do not own a pair of shoes, a blanket, or a change of clothing, classifying them in the most vulnerable category on the United Nations vulnerability scale; only 16.5 percent of children in the sample have all three items.

Targeting and Comparison to National Samples: Poverty rates are higher in the two program districts than the national average, and the results presented here indicate that MCP-eligible households are even poorer than other household in their province, with a poverty rate of 91 percent versus 62 percent in the most comparable Zambia Living Conditions and Monitoring Survey (LCMS) sample. Self-assessed well-being measures and food security indicators are consistent with this result—MCP-eligible households are more food-insecure and report lower welfare levels than their counterparts in the LCMS. Targeting in the MCP is highly progressive due to the geographical targeting approach. With respect to the categorical targeting, half of all MCP recipient households are headed by widows, while the LCMS samples consistently report only 13 percent widow-headed households nationally, in rural regions, and within the two provinces where the program is being implemented. MCP households are also six times more likely to have a disabled household member than the LCMS sample. However, perhaps the most notable characteristics for the MCP recipients pertain to the younger population, since the number of MCP households caring for children who have lost one or both parents is significantly higher. The comparison shows that targeting was successful based on the inclusion criteria. Thus, on both poverty and human development metrics, the targeting strategy in the CGP is highly progressive.

Randomization: We compare the treatment and control groups at baseline to assess equivalence along outcome and control indicators while accounting for the nested nature of the data. Randomization appears to have worked, because none of the indicators are statistically different between the two groups at baseline.

Transfer Size: The program provides Kw 55,000 per month, which translates to Kw 11,000 per capita per month because the median family size is five. This study shows that mean per capita expenditure in recipient households before the transfer is Kw 51,401 per person per month. Thus, the 11,000 kwacha monthly per capital transfer is a 21 percent increase to the household's monthly expenditure. This is a meaningful increase to recipients considering that 91 percent of households fall below the national extreme poverty line compared to 66 percent of all rural households in the LCMS. However, the transfer size is 6 percentage points lower than Zambia's Child Grant program, where the transfer size is 27 percent of mean consumption.

Predicted Program Effects: Our prediction of program effects indicates that the MCP is likely to have positive and statistically significant impacts on first-order and second-order indicators. We use statistical techniques to predict the impact of the MCP on household and individual indicators. We find very large predicted impacts on food consumption and diet diversity. We estimate that 82 percent of the transfer will be spent on food, and within foods, there will a reallocation towards meats/fish/poultry, pulses and dairy, and away from tubers and vegetables. These estimates are corroborated with self-reported food

security and welfare measures. For example, we estimate that the MCP will reduce the number of households surviving on one meal a day by 10 percent, and will reduce the number of moderately food insecure households by 11 percent.

Predicted impacts on child-level indicators are smaller than those for household-level outcomes, but this is to be expected since the household outcomes represent the first level of impact. We estimate that the largest schooling effects will be on enrollment of children age 6-8 (4 percent), which we interpret as on-time school entry. We also estimate a large reduction in the proportion of children without a pair of shoes, blanket, or change of clothes (by 8 percent), and a 3 percent reduction in children 13–17 who are clinically depressed.

Simulations of the overall distributional effects of the program suggest large declines in the poverty gap (22 percent) and squared poverty gap (30 percent), and only a modest 6 percent reduction in the headcount. This, of course, is a reflection of the highly successful targeting of the MCP, which identifies and treats households at the very bottom of the welfare distribution.

I. Introduction

This report provides the baseline results of the Multiple Categorical cash transfer impact evaluation. In 2011, Zambia's Ministry of Community Development, Women and Child Health (MCDMCH) began implementing the Multiple Categorical cash transfer program (MCP) in two districts. An impact evaluation with experimental design accompanied the program in order to learn its effects on recipients and provide evidence for making decisions about the future of the program. The American Institutes for Research (AIR) was contracted by UNICEF Zambia to design and implement a randomized, controlled trial (RCT) for a three-year impact evaluation of the program and to conduct the necessary data collection, analysis, and reporting.[2] This report contains the findings from AIR's work, presented in eight sections: Introduction, Conceptual Framework, Study Design, Survey Instruments, Sample, Targeting Analysis, Predictions of Program Impacts, and Limitations and Conclusion.

Background

In 2011, Zambia's MCDMCH started the rollout of the MCP in two districts: Luwingu and Serenje. Zambia had been implementing cash transfer programs since 2004 in four districts, trying different targeting models in each district. The government introduced a categorical program called the Child Grant in 2010 that targets households with children under five years old. In 2011 the government started another categorical model called the Multiple Category program that targets households that meet any of the following conditions:

- A female-headed household keeping orphans
- A household with a disabled member
- An elderly-headed household (over 60 years old) keeping orphans
- A special case: this category is for cases that are critical but do not qualify under the other categories; for example, a household of two elderly people who are unable to look after themselves.

Recipient households receive 55,000 kwacha (Kw) a month (equivalent to U.S. $11), an amount deemed sufficient to purchase one meal a day for everyone in the household for one month. The amount is the same regardless of household size. Payments are made every other month through a local paypoint manager, and there are no conditions to receive the money.

Locations

The MCDMCH chose to start the MCP in the two districts within Zambia that have some of the highest rates of extreme poverty, thus introducing an element of geographical targeting to the program. The two districts are Luwingu, located in Northern Province, and Serenje, located in Central Province. These districts represent some of the most remote locations in Zambia, making them a challenge for providing support services, and are some of the most underprivileged communities in Zambia.

Objectives

According to the MCDMCH, the goal of the MCP is to reduce extreme poverty and the intergenerational transfer of poverty. The operations manual states that 'the objectives of the program are to assist the

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[2] Palm Associates was contracted by AIR to assist with the baseline data collection.

most destitute and incapacitated households in society meet their basic needs, particularly health, education, food and shelter'. Thus, objectives of the program relate to five primary areas: income, education, health, food security, and livelihoods. Therefore, the impact evaluation will primarily focus on assessing change in these areas.

II. Conceptual Framework

The MCP provides an unconditional cash transfer to households that meet one of several demographic criteria. As we demonstrate later in this report, MCP-eligible households are extremely poor, with 95 percent falling below the national extreme poverty line and having a median household per capita daily consumption of Kw 1050, or approximately 20 U.S. cents. Households at very low levels of consumption will spend almost all their income. We therefore expect that among the beneficiary population, virtually all of the cash transfer will be spent at the initial stages of the program, and the composition of spending will focus on basic needs such as food, clothing, and shelter. Once immediate basic needs are met, and possibly after a period of time, the influx of new cash may then trigger further responses within the household economy—for example, by providing room for investment and other productive activity, the use of services, and the ability to free up older children to attend school.

Figure 1 brings together these ideas into a conceptual framework that shows how the MCP can affect household activity, the causal pathways involved, and the potential moderating and mediating factors (moderators and mediators). The diagram is read from left to right. We expect a direct effect of the cash transfer on household consumption (food security, diet diversity), on the use of services, and possibly even on productive activity after some time. Sociological and economic theories of human behavior suggest that the impact of the cash may work through several mechanisms (mediators), including a bargaining power within the household, the degree to which the household is forward looking, and the expectations the household has about the quality of life in the future (which could determine investment and other choices with longer term implications). Similarly, the impact of the cash transfer may be smaller or larger depending on local conditions in the community. These moderators include access to markets and other services, prices, and shocks. Moderating effects are shown with lines that intersect the direct causal pathways between the cash transfer and outcomes to indicate that they can influence the strength of the direct effect.

The next step in the causal chain is the effect on adolescents, and here we focus on adolescents age 13-17 since this is an important demographic group within the target households—roughly 16 percent of all households members in the sample fall within this five-year age range. The key point to recognize here is that any potential impact of the program on children must work through the household through spending or time allocation decisions (including use of services). The link between the household and children can also be moderated by environmental factors, such as distance to schools or health facilities, as indicated in the diagram, and household-level characteristics themselves, such as the mother's literacy. Indeed, from a theoretical perspective, some factors cited as mediators may actually be moderators, such as women's bargaining power. We can test for moderation versus mediation through established statistical techniques,[3] and this information will be important to help us understand the actual impact of the program on behavior.[4]

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[3] Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182.

[4] A mediator is a factor that can be influenced by the program and so lies directly within the causal chain. A moderator, in contrast, is not influenced by the program. Thus, service availability is a moderator, whereas

In Figure 1, we list some of the key indicators along the causal chain that we will analyze in the evaluation of the MCP. These are consistent with the long time frame of the project and, as described more fully in Section 4, are in most cases measured using established items in existing national sample surveys such as the Living Conditions Monitoring Survey (LCMS) and the Zambia Demographic and Health Survey (ZDHS). The only exception is the mental health measure, which is not used in the ZDHS.

Figure 1. Conceptual Framework for Impact Evaluation of Zambia Multiple Categorical Grant
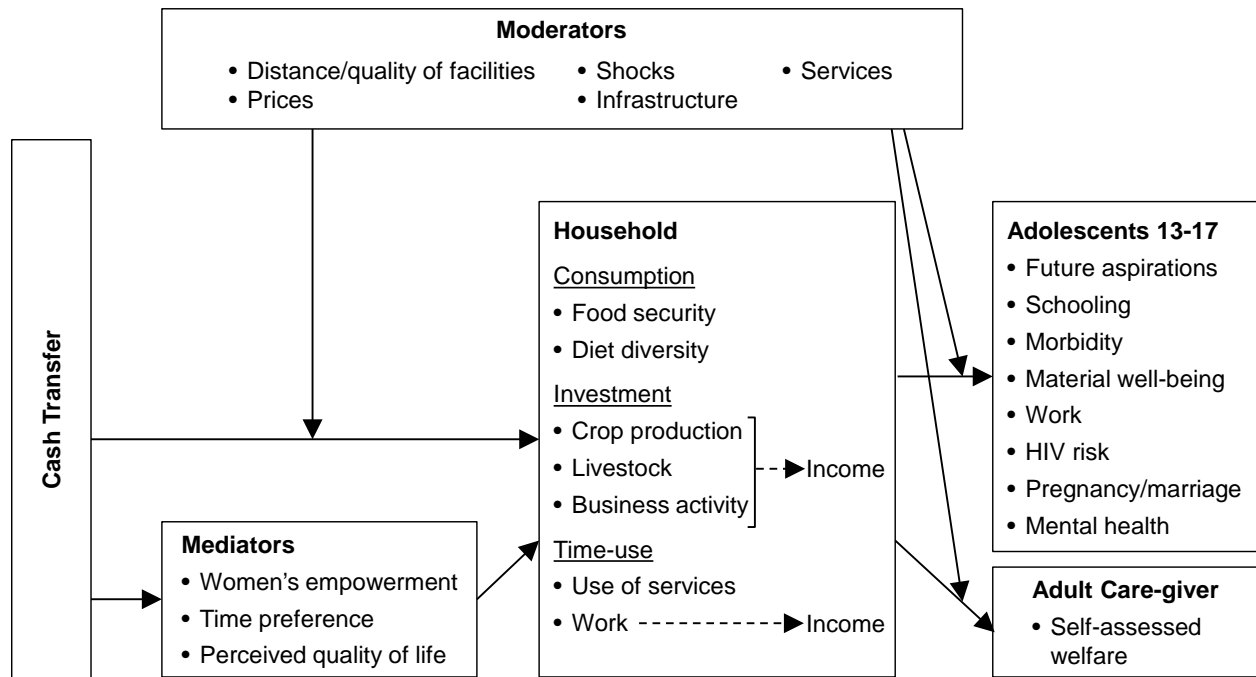
women's bargaining power may be either a moderator or a mediator depending on whether it is itself changed by the program. Maternal literacy is a moderator and not a program outcome, unless the program inspires caregivers to learn to read and write.

III. Study Design

The MCP impact evaluation relies on a randomized design to estimate the effects of the program on recipients. Communities designated by Community Welfare Assistance Committees (CWACs) were randomly assigned to either the treatment condition to start the program in December 2011 or to the delayed control condition to start the program at the end of 2014.

The MCDSS decided to implement a randomly assigned delayed control group because it did not have sufficient resources or capacity to deliver the program to all eligible households immediately. Thus, the Ministry instituted a policy of randomly assigning communities to current or delayed treatment, deeming it to be the most ethical and fair way to select the order in which communities receive the resources as they became available. This section reviews the benefits of randomized, controlled trials (RCTs) for estimating program impacts. We then discuss the randomization processes, including selection, sampling, and assignment; the timing and process of data collection; and data entry.

Benefits of Randomization

The MCP impact study is an RCT with random assignment at the community level (CWAC). An RCT is the most powerful research design for drawing conclusions about the impacts of an intervention on specific outcomes. An RCT draws from a pool of subjects that are believed to be comparable, and then randomly assigns some to a treatment group that receives the intervention and others to a control group against which comparisons of outcomes can be made. An RCT permits us to directly attribute any observed differences between the treatment and control groups to the intervention; otherwise, other unobserved factors, such as motivation, could influence the likelihood of subjects being in the treatment or control group.[5] Randomization is used to balance the observed and unobserved characteristics that affect the outcomes between the treatment and control conditions of the sample. In a randomized experiment, treatment and control groups are expected to be comparable (with possible chance variation between groups) so that the average differences in outcome between the two groups at the end of the study can be attributed to the intervention.

Randomization Approach

This study includes several levels of random selection, including CWACs within districts and households within CWACs. It is a multisite RCT because random assignment of CWACs occurs within each of the two districts. The Ministry conducted the first step of the randomization process by selecting and ordering 46 CWACs within each district (out of roughly 100 CWACs in each district) through a lottery held at the Ministry headquarters in June 2010, with Ministry staff from the two districts and two provinces participating. This process created transparency and understanding about how the communities were selected for everyone involved in implementing the program. After the 92 CWACs were randomly selected (46 from each district) for the study, CWAC members and Ministry staff identified all eligible households that met at least one of the program criteria. This process resulted in more than 100 eligible households in each CWAC; 33 households were then randomly sampled from each CWAC for inclusion in

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[5] Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Hopewell, NJ: Houghton Mifflin.

the study.[6] Baseline data were collected for the 33 randomly sampled households in each randomly selected CWAC in each district (46 CWACs per district) and located in one of the two geographically targeted districts. The final study sample size was more than 3,000 households.

The baseline data collection began before CWACs were randomly assigned to treatment or control conditions. Neither the households nor the enumerators knew who would benefit now and who would have to wait. Random assignment occurred after the baseline data collection was complete, with the Ministry's Permanent Secretary flipping a coin to determine whether the first half of the list of randomly selected CWACs would be in the treatment or the delayed control condition. This process was conducted in public with local officials, Ministry staff, and community members present as witnesses.

Timing and Process of Baseline Data Collection
To ensure high-quality and valid data, special attention was paid to the process and timing of data collection, making sure that it was culturally appropriate, sensitive to Zambia's economic cycle, and consistently implemented. AIR contracted with Palm Associates, a Zambian research firm with years of experience conducting household surveys throughout Zambia, to help implement the MCP survey and enter the data. A team of Zambian enumerators experienced in household and community surveys and fluent in the local language where they worked were trained on the MCP instrument and then tested in the field before moving into their assigned communities for data collection. One enumerator collected data in each household, interviewing the identified potential female recipient and documenting her answers. This oral interview process was necessary because many of the recipients are illiterate. In addition to interviewing the female head of household, the enumerator interviewed up to two adolescents between the ages of 13 and 17 in each household. The adolescent interviews were held in private and enumerators could only interview adolescents of the same gender to be culturally sensitive to the private nature of the questions. In addition to the household survey, a community questionnaire was administered in every CWAC by two senior enumerators to a group of community leaders including CWAC committee members, teachers, village headmen, and local business owners. Last, a senior member on the enumerator team administered a health facility questionnaire for each CWAC to the staff of the nearest health facility.

Baseline data collection occurred in Zambia's lean season (September through February), when people have the least amount of food left from the previous harvest and hunger is at its greatest. Zambia has three seasons: a rainy season from December through March, a cold dry season from April through August, and a hot dry season from September through November. Crops are planted in the rainy season and harvested throughout the rainy season and into May. Food is most scarce toward the end of the hot dry season (October and November) because this is the longest period without a food harvest. The MCP aims to support poor households during this period of hunger by providing enough money to purchase a meal a day. We believe that the biggest impacts of the program are likely to be observed during this lean season; thus, the study is designed with baseline and follow-up periods of data collection during this season.

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[6] The sample size was determined through a power analysis to ensure that the study was able to detect meaningful effects. The 28 households per CWAC and 30 CWACs per district result from this power analysis.

Baseline data collection efforts in the two districts occurred within a few weeks of each other. Data were collected in Luwingu and Serenje in late November and early December to avoid the rains.

Data Entry

Palm Associates entered the data as they came in from the field. Data were verified using double entry on separate computers, flagging inconsistent responses between the two entries, and referring to the original questionnaire to see the actual response.

IV. Survey Instrument

Four survey instruments were used in the quantitative impact evaluation of the MCP—a household questionnaire, adolescent questionnaire, community questionnaire, and health facility questionnaire. The core instruments are the household and adolescent questionnaires. The household instrument is very similar in layout and coverage to two major multi-topic national surveys in Zambia, the Living Conditions and Monitoring Survey (LCMS) and the Zambia Demographic and Health Survey (ZDHS). The guiding principles behind the design of the household questionnaire are described in a background note[7] submitted to UNICEF and the MCDSS. Preliminary drafts of the questionnaire were discussed at a meeting in Lusaka that involved representation from six ministries.[8] The design of the household instrument was guided by three core principles:

- First, the instrument must contain the key list of indicators presented in the project's log frame that will allow the program to be assessed against its stated objectives. These core indicators include monetary poverty, food security, school enrollment and absenteeism, morbidity, and the welfare of orphans and vulnerable children (OVC) (although the final instrument contains many more relevant indicators).
- Second, where possible, indicators are measured using the questions and approaches that have already been field tested and approved by Government and Cooperating Partners in Zambia. Thus, for almost all the key indicators measured in the study, we employ questions from either the ZDHS or the LCMS, thus ensuring that they are appropriate for local conditions and that the resulting data can be compared with national data. The most notable exceptions are the mental health scale and a set of questions on future aspirations for OVC; neither of these topics are covered in either the LCMS or the ZDHS.
- Finally, the survey instrument must be a manageable length to avoid interviewer or respondent fatigue. The final instrument is 38 pages long and takes approximately 90 minutes to complete. Table 4.1 provides a list of topics covered in each of the three instruments.

Beyond these three core principles, and consistent with international best practice in program evaluation, the instruments collected sufficient information along the causal chain to allow us to understand *how* the program influences behavior. This is in contrast to more naïve evaluations that look only at *whether* a program has had an impact by focusing exclusively on final outcomes. By looking at the entire causal chain, we were able to understand how the program influences behavior, even when final outcome or impact indicators are not influenced by the program. Because the program provides cash, and because savings rates among this very poor population are likely to be very low, the initial and direct impact of the program will be to influence spending and household expenditures. Expenditure, therefore, is a key *mediator* for subsequent development impacts on OVC (see Figure 2.1, Conceptual Framework). We have thus included the full expenditure module of the LCMS in our household survey, which covers 217 separate expenditure items across both food and nonfood categories. Moreover, by

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[7] American Institutes for Reasearch. (2010). *Baseline survey instrument for quantitative evaluation household survey* (background note submitted to UNICEF and MCDSS, Lusaka, July 2010): Washington, DC: Author.
[8] A written summary of this meeting was compiled by AIR and is available upon request.

simultaneously fielding community and health facility questionnaires, we can capture characteristics of the local environment that can act as important *moderators* of program impacts. For example, the program may have stronger impacts on adolescent development in locations where health facilities are better, or the impacts on diet diversity and food security may be larger when markets are more accessible (so that cash can be easily spent).

A particularly innovative aspect of this evaluation is the battery of questions that were asked directly to adolescents in face-to-face interviews. This is a time-consuming exercise, but it allows us to obtain key information on expectations, aspirations, and mental health directly from the respondent, and also allows us to probe on more sensitive and delicate topics such as sexual activity, partner characteristics, and condom use. Sexual activity and mental health are especially innovative topics for a large-scale evaluation such as this, and are of obvious importance in terms of child protection and exposure to risky behavior.

Table 4.1: Topics in Survey Questionnaires

Household Survey (N=3,078)	OVC Module (N=2,098)
Roster and OVC Status	Future Aspirations
Health — All	Future Quality of Life and Health
Education — 3+ years	Mental Health
Main Economic Activity — 5+ years	Sexual Activity
Income — 16+ years	Time Preference
Household Assets	
Housing Conditions	Community Survey (N=92)
Access to Facilities and Services	Migration
Agriculture and Livestock	CWAC Profile and Governance
Self-Assessed Poverty and Food Security	Agricultural Prices
Women's Empowerment and Expectations	Existence of Other Programs and Groups
Mortality	External Shocks
Child Health	Wage Rates
Fertility – Women 12-49	Prices of Food
Expenditure	
	Health Facility Questionnaire (N=33)
	Basic Characteristics and Equipment
	Services Provided
	Drugs Available
	Personnel

V. Sample

This section reports the mean differences at baseline for primary outcomes and mediating variables between the treatment group and the control group on the household survey. We also describe the sample for the study, breaking it up into five categories: household demographics, recipients, children, food consumption, and adolescent development. The primary purpose of the baseline data collection was to measure the starting point for everyone in the sample and check that the treatment and control conditions were balanced before the start of the intervention. In theory, randomization should lead to a balance for outcome and control indicators between the two conditions, but this may not always happen.[9] Therefore, we measured each group at baseline and tested for differences to determine whether randomization led to a balanced sample.

Treatment and Control Comparisons
Randomization appears to have worked in terms of creating equivalent groups at baseline, because the means characteristics of groups were balanced between the treatment and control conditions. We tested all the outcome measures and control variables for statistical differences between the two groups, using OLS regression with cluster robust standard errors (since randomization occurred at the CWAC level, and to account for the nested nature of the data with households clustered in CWACs[10]). None of the indicators were statistically significantly different at baseline. See Appendix D for the complete results for all 27 indicators.

The Sample
Besides checking for statistical equivalence between groups, the baseline provides a snapshot of the lifestyle, well-being, and family characteristics of potential recipients before they start receiving the cash transfers. We present this picture by describing the entire sample with the treatment and control groups combined, because the two groups are statistically similar and both represent eligible recipients for the program. Neither group's members knew their status as treatment or delayed control during baseline data collection so that their responses would not be influenced by anticipation effects. We describe the five characteristics of the sample that relate to the goals of the program: demographics, household heads (recipients), children 0-18 years old, household consumption of food, and adolescent development.

Demographics
The sample contains 3,078 households, with 1,561 in the treatment group and 1,517 in the control group. The median household has five people, with a standard deviation (SD) of 2.48 for the average household size of 5.00 people. Figure 5.1 depicts the distribution of households by size.

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[9] Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Hopewell, NJ: Houghton Mifflin.

[10] White, H. (1994). *Estimation, inference, and specification analysis*. Cambridge University Press.

Figure 5.1 Household Size (n=3077)

Frequency

Household Size	Frequency
1	167
2	306
3	456
4	502
5	495
6	386
7	278
8	205
9	135
10	66
11	39
12	25
13	5
14	8
15	2
16	1
17	1
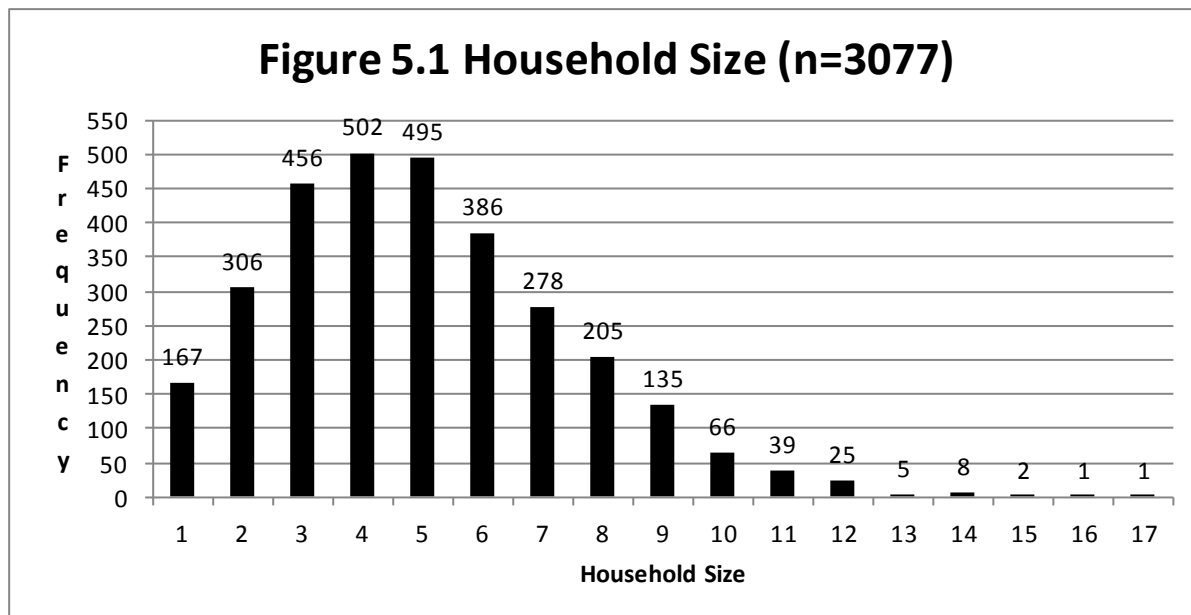
Of the 15,360 people in the sample, almost half (6,782) of the sampled individuals are children between 6 and 18 years old. This demographic distribution results because two of the targeted categories require households to have at least one orphan to qualify for the program. Table 5.1 breaks down the sample by age and gender. Nearly 8 percent of the people in the sample are over 69 years old, which is well above the national average for this age group. The MCP recipients are over-represented for older age range. Figures 5.2 and 5.3 show the distribution by age and gender of the Zambian population and MCP recipients respectively. The MCP has a greater percentage of people in the adolescent and elderly populations. This result is not surprising because one of the targeted populations for the program is senior-headed households caring for orphans. The distribution of the sample by age differs greatly from the Child Grant program (CGP) due to the different targeting criteria. The CGP enrolled households with children under three years old. The MCP households are older, with a greater percentage of children 6 to 18 and over 70, and fewer children under 5 than the CGP. Table 5.2 shows the difference in age distribution between the two programs.

Table 5.1: Age by Gender

Age	Male	Female	per Household	Total
0 to 5	1105	1080	0.71	2185
6 to 18	3572	3213	2.35	6782
19 to 69	1807	3421	1.86	5228
70+	469	696	0.38	1165

Table 5.2: Age Distribution MCP versus CGP

Age	MCP per Household	CGP per Household
0 to 5	0.71	1.90
6 to 18	2.35	1.82
19 to 69	1.86	1.94
70+	0.38	0.03

Figure 5.2: Zambian population by age and gender (n= 102,881)

Source: 2010 LCMS

Figure 5.3 MCP population by age and gender (n= 15,360)

Source: 2011 MCP
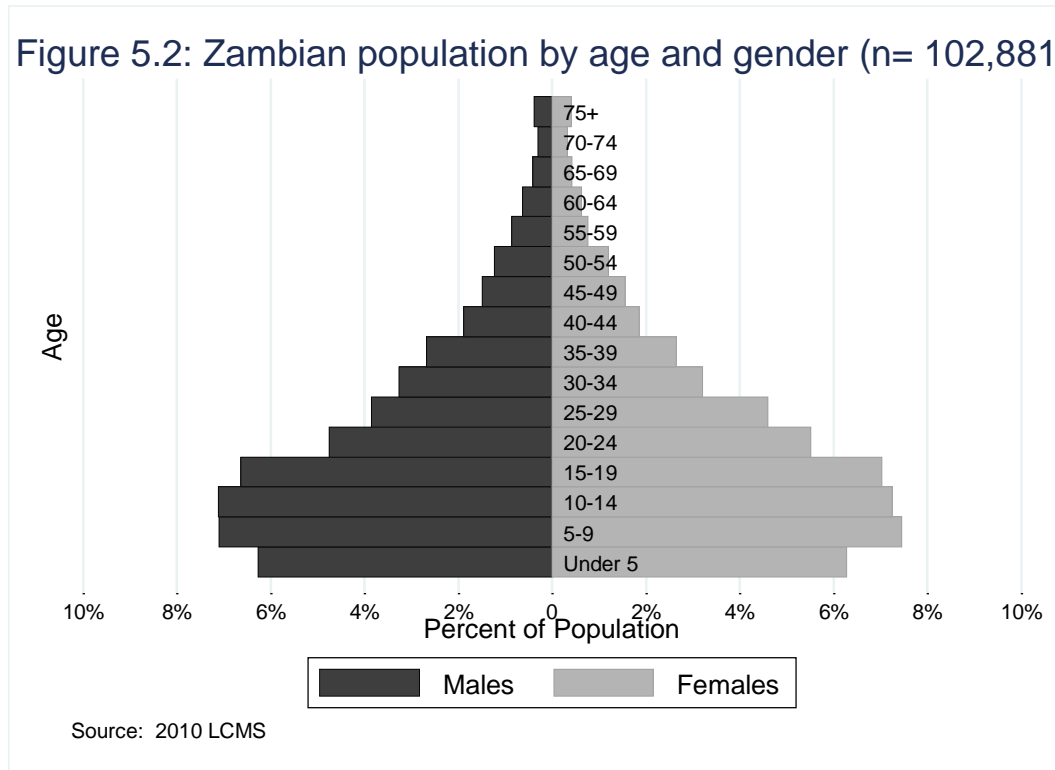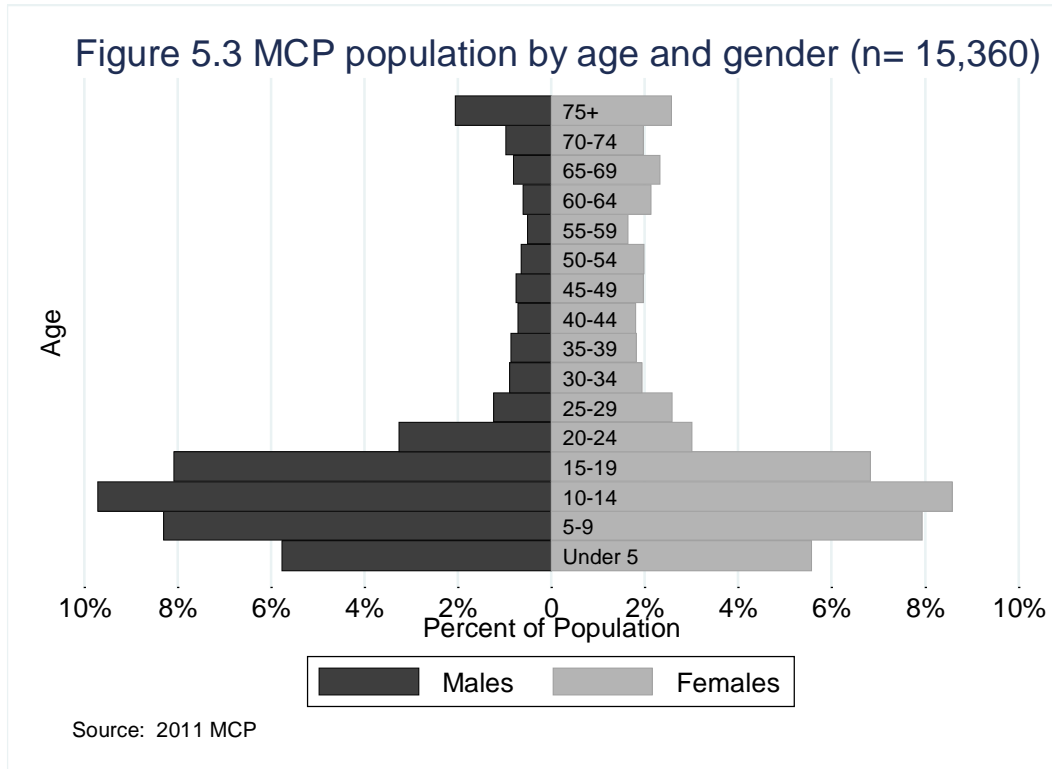
Orphans play a key role in qualifying for the cash transfer program because two of the categories require orphans in the household. Thus, it is not surprising that orphans compose over half of the children in the sample (57 percent). Figure 5.4 depicts the percentage of children under 18 years old who have been orphaned.

Figure 5.4: Orphan Status For Children Under 18 Years Old (n=8894)
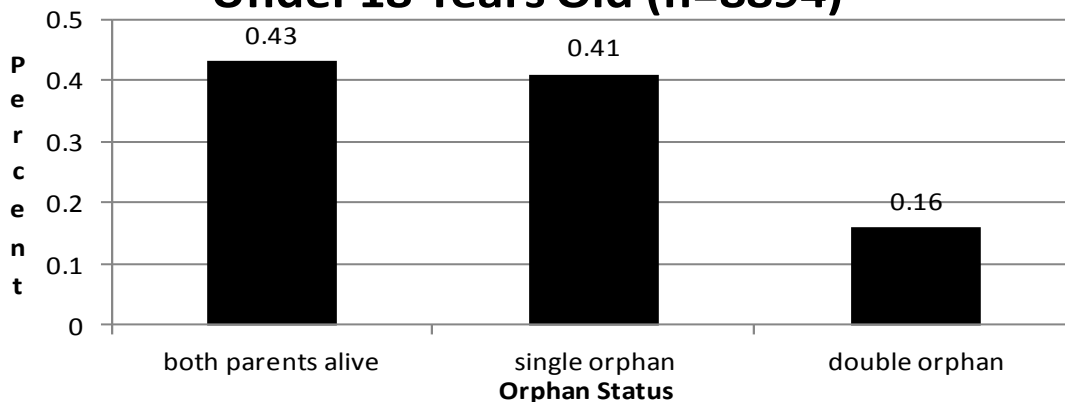
Recipients

The MCP defines recipients as the female head of household. If no female head of household is present, then a male can be named the household recipient. Male recipients represent 25 percent of the sample,

which is much greater than in the CGP, where only 1 percent of the recipients are male. This difference can be attributed to the categorical targeting that focuses on seniors caring for orphans in the MCP; a majority of the male recipients are over 60 years old (66 percent). Almost half of the recipients are over 60 years old caring for orphans (1,483), one of the categories the program targets. Similarly, over half of the sample's women are widowed (54 percent), of whom 92.4 percent are women in one of the programs targeted categories—female-headed households with widows who are caring for orphans. This is a much larger percentage than in the child grant program, where only 6.5 percent of the recipients are widowed. The entire marital status distribution is depicted in Figure 5.5.

Figure 5.5: Marital Status of Recipients (n=3077)
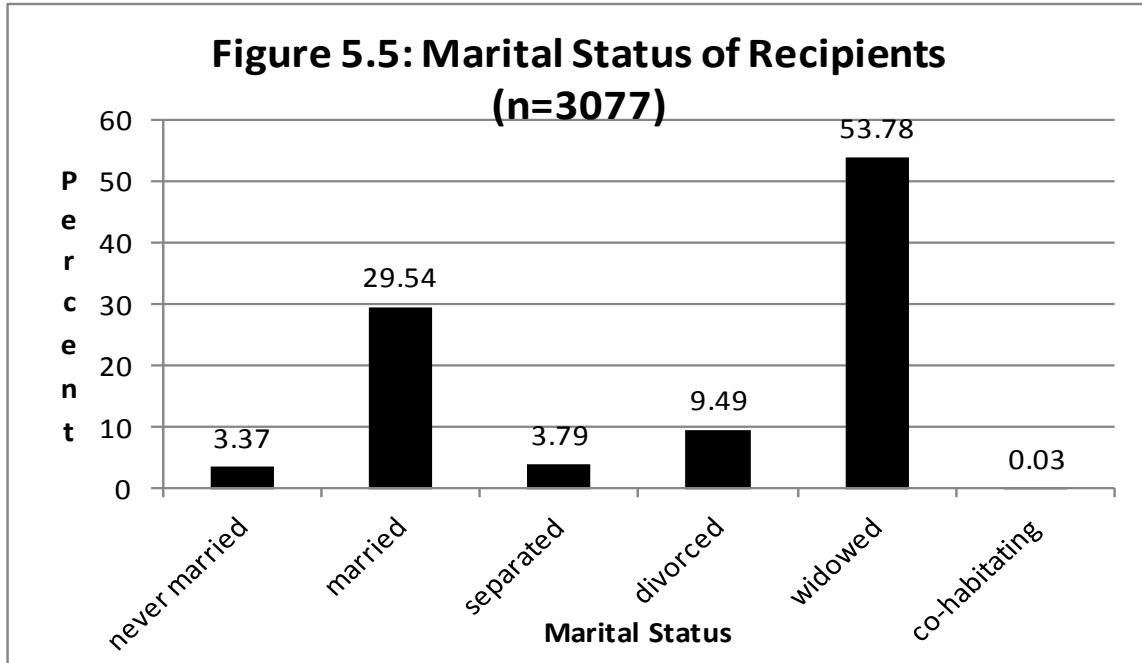
The program's recipients are not very well educated; 33.7 percent did not attend school, and over 54 percent did not go beyond grade 3. Only 5.5 percent attended secondary school (grades 9 through 12). Figure 5.6 shows the distribution of the highest level of education completed by grade for the sample.

Figure 5.6: Highest Grade of Education Completed for Recipients (n=3077)
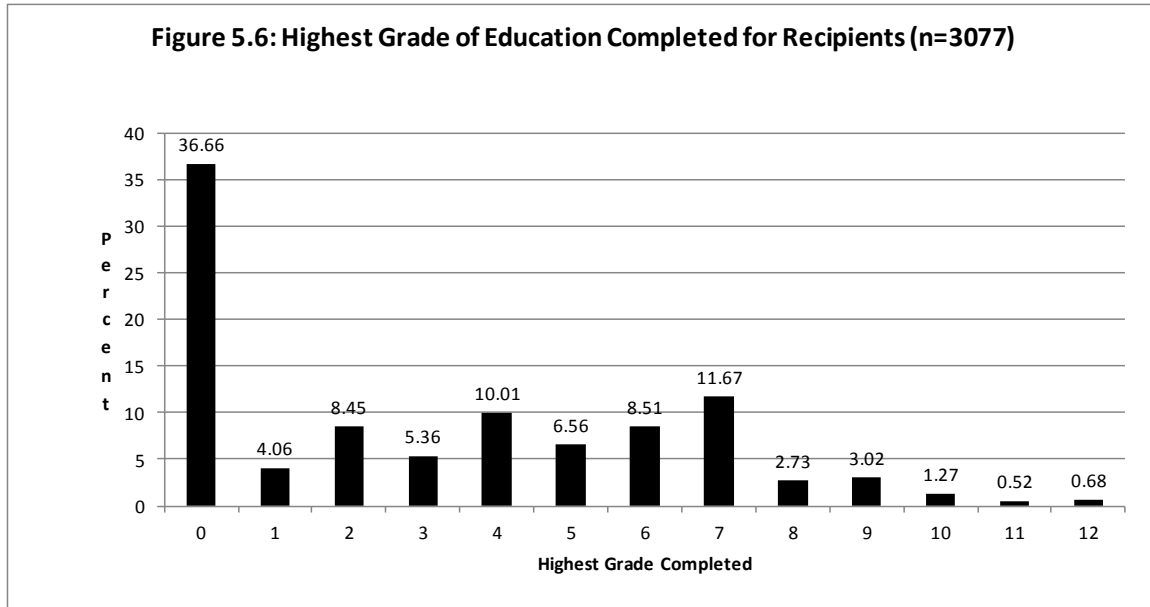
Children

Two of the categories targeted in the MCP require households to care for orphans; thus, adolescents and children of school-going age compose a large part of the targeted population. The study includes 6,782 children between 6 and 18 years old, which is 44 percent of the sample. This large sample size of adolescents enables us to investigate effects among subgroups of the population and detect small impacts with a high degree of statistical power. Figure 5.7 depicts the distribution of these children by age and gender. The distribution is fairly equal across age, with slightly more boys than girls within almost every age group.

Figure 5.7: Percent of Children by Gender and Age (n=6782)
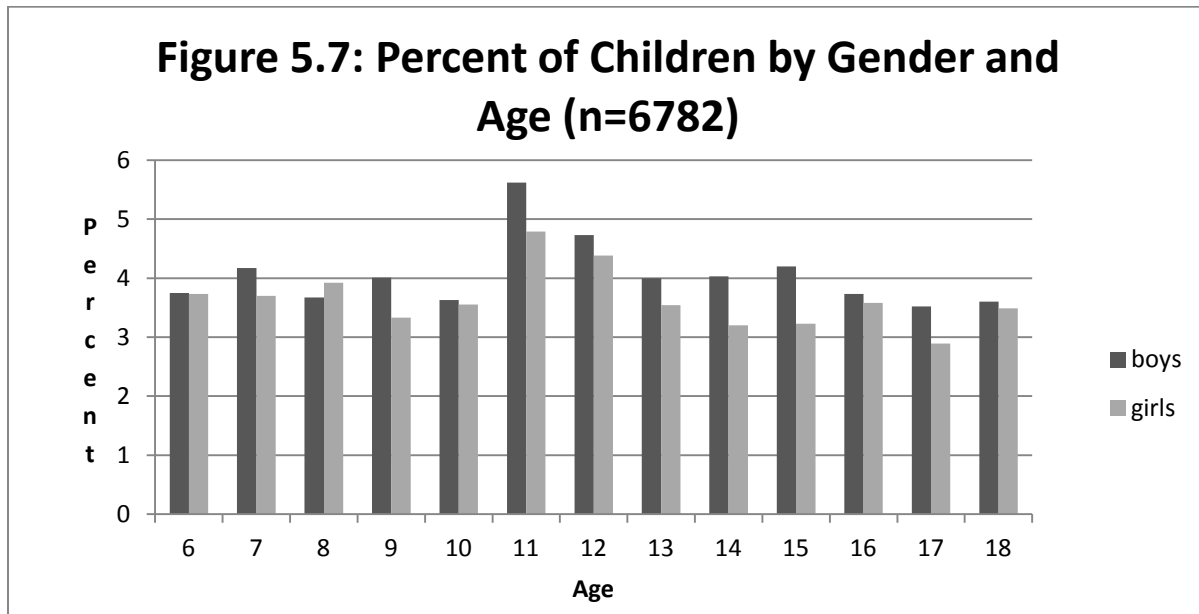
Education levels for children living in recipient households are quite low. Over one-third of the school-aged population is not currently attending school (37 percent). Of those who are not attending school, 69 percent have never attended school. Thus, 26 percent of the school-aged children in the sample have never attended school. Of those who have ever been to school, 15 percent have stopped attending. Figure 5.8 shows the percentage of children ages 6 through 18 who attend school, by age. Enrollment peaks at around 80 percent for 11- to 14-year-olds, but quickly drops off as they approach their late teens. Also, there is delay in enrollment, with many children not starting until they are 8 or 9 years old.

Figure 5.8: Percent of children enrolled in school by age (6782)
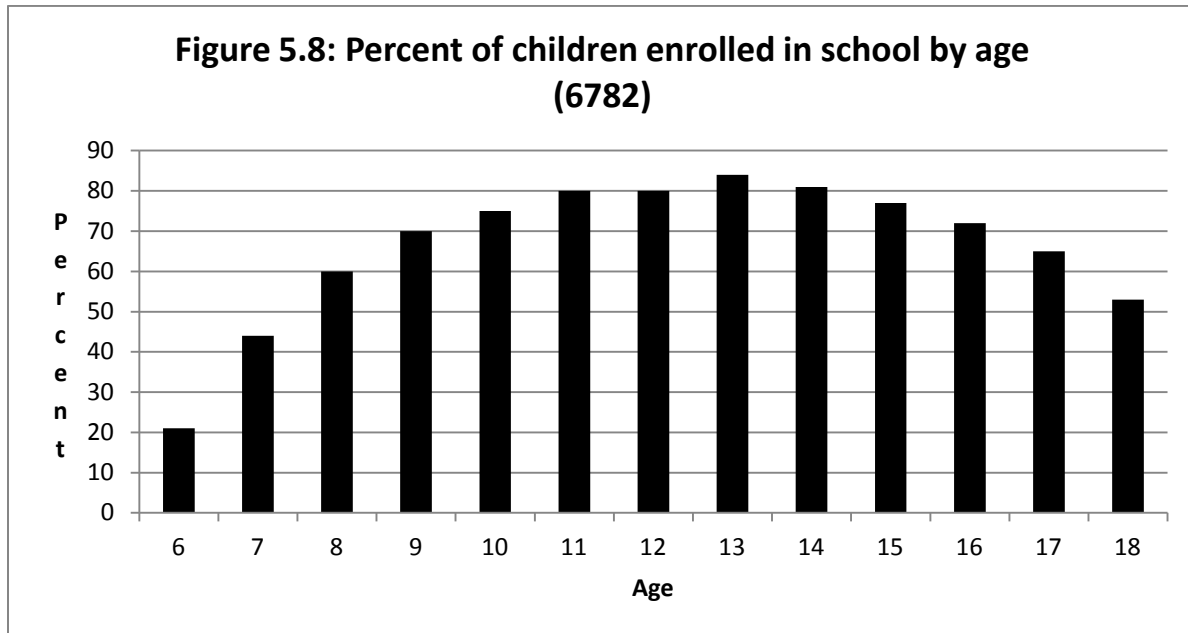
Perhaps most telling about the poverty of the sample, 14.63 percent of children ages 6 through 18 do not have a blanket, shoes, or two sets of clothing, thus scoring the lowest value (0) on the UN material well-being scale.[11] Similarly, only 17.07 percent of school-age children in the sample score the highest on this scale, meaning that they have all three: shoes, blanket, and two sets of clothing. These results are primarily driven by the lack of shoes, because only 23 percent of children own a pair of shoes or sandals, whereas 62 percent have or share a blanket and 78 percent own a second set of clothing. These statistics are similar to those found in the CGP. Figure 5.9 shows the percentage of children that score at each level of the UN material well-being scale.

[11] The material well-being scale is a recommended indicator to measure care and support for OVC. See UNICEF. (2005). *Guide to monitoring and evaluation of the national response for children orphaned and made vulnerable by HIV/AIDS*. New York: Author. Available at http://www.measuredhs.com/hivdata/guides/ovcguide.pdf

Figure 5.9: Material Needs Status (n=6788)
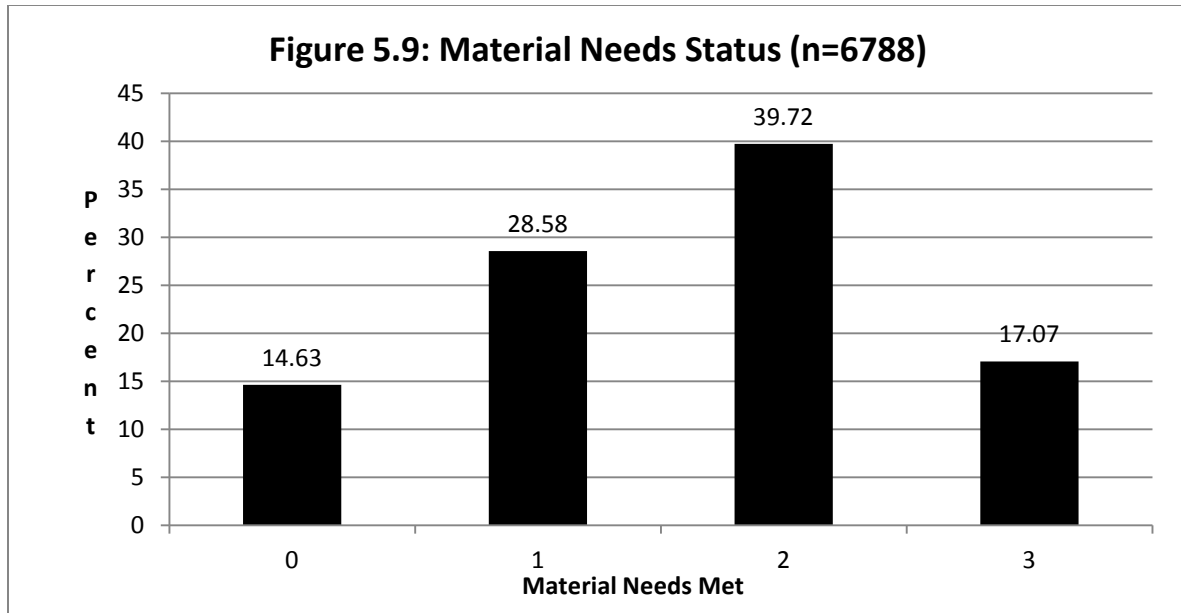
Food Expenditure

Increased nutrition and food security are two primary goals of the MCP, according to the MCDMCH. At baseline, the average household spends 39,507 kwacha (roughly U.S. $8) per person per month on food, which represents 75 percent of its total per capita expenditures. Thus, food is where most money is spent. The biggest portion of money spent on food is for carbohydrates, such as roots, tubers, and cereals, at 42 percent, which includes the staple foods, cassava and maize. Fruits and vegetables are the second biggest category, with 28 percent of overall food spending in this category. Figure 5.10 shows the proportion of food spending by food category. Protein and fat quantities are small relative to carbohydrates, explaining why we see malnourished children in the sample.

Figure 5.10 Proportion of Food Expenditures by Category
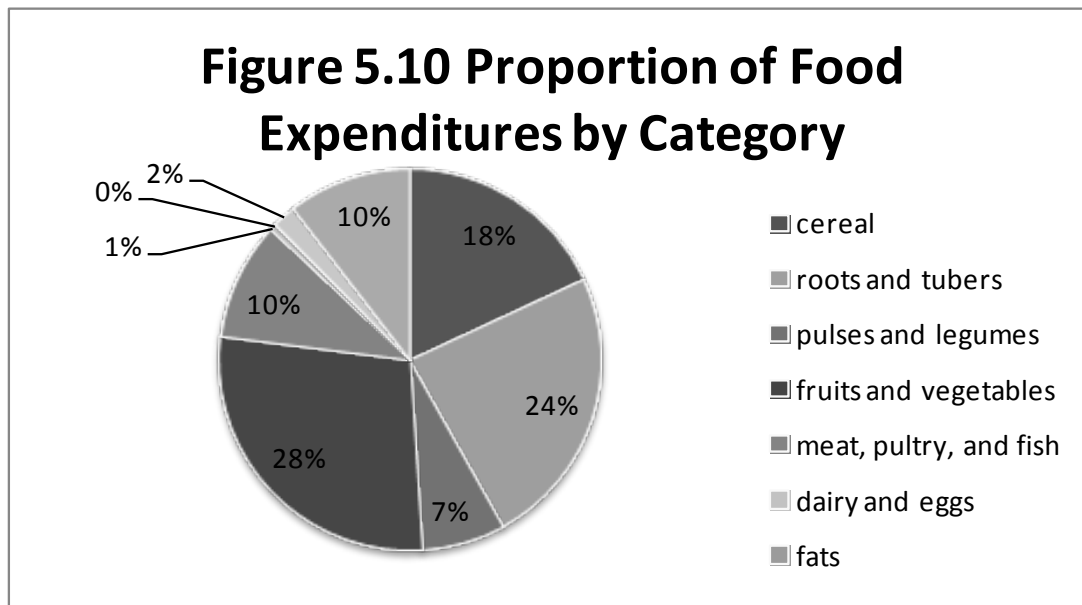
Adolescent Development

A particularly exciting component of this evaluation is that it will measure the impact of the MCG on a range of developmental indicators specifically for adolescents age 13-17 at baseline. We administered a short questionnaire directly to a maximum of two adolescents per household in this age range, covering mental health, future aspirations and expectations, and sexual activity. The information on sexual activity is assessed separately in relation to similar outcomes at national level using the ZDHS. Here we briefly introduce the other measures collected in this questionnaire. For all the indicators discussed here, we tested for statistical differences between intervention and control groups and found none, and therefore show comparisons by gender.

We measure mental health using the short form of the Center for Epidemiological Studies Depression Scale (CES-D).[12] We use a 10-item variant of the short form proposed in Andresen et al. (1994),[13] and each item is coded from 1 (rarely) to 4 (all the time), so the scale ranges from 10 to 40. The cut-off point for depressive symptoms is 20 or above. Table 5.3 shows that the percentage of adolescents in the sample without clinically depressive symptoms is 75 percent, and slightly higher at 77 percent for females. This scale was recently administered to a similar population as part of the evaluation of the Kenya cash transfer for orphans and vulnerable children (CT-OVC) program; for comparison purposes we show estimates from that sample as a point of reference. We separate the intervention and control groups in the Kenya sample because the scale was administered four years after intervention. Among the control group in Kenya the mean is a bit lower, at 73 percent, than for the Zambian sample, and again higher among females, indicating that females are less likely to show depressive symptoms. The overall mean for the intervention group is slightly higher at 77 percent, and this appears to be driven by a large difference among males between the treatment and control groups. Figure 5.11 shows the distribution of the CES-D score for Zambia and the control group in Kenya and confirms that the entire distribution of scores is generally similar across the samples, roughly centered around 18 and slightly right skewed. The Cronbach Alpha is a measure of internal consistency for scale measures—we obtained an alpha of 0.70, which indicates high internal validity for the scale.

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[12] Radloff, Lenore, 1977, The CES-D scale: A self-report depression scale for research in the general population, *Applied Psychological Measurement, 1*(3): 385-401.

[13] Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D (Center for Epidemiologic Studies–Depression Scale). *American Journal of Preventive Medicine, 10*, 77-84.

Table 5.3: Percentage of Adolescents without Clinical Depression Using CES-D Scale

| | Zambia MCP Ages 13-17 | Kenya CT-OVC Ages 15-18 | |
		Control Group	Treatment Group 4 years post-intervention
All	75	73	77
Male	74	66	75
Female	77	81	79

The cut-off score is 20 and above for depressive symptoms. Table shows percentage of respondents below this cut-off.

Figure 5.11: Distribution of CES-D score in Zambia MCP and Kenya CT-OVC
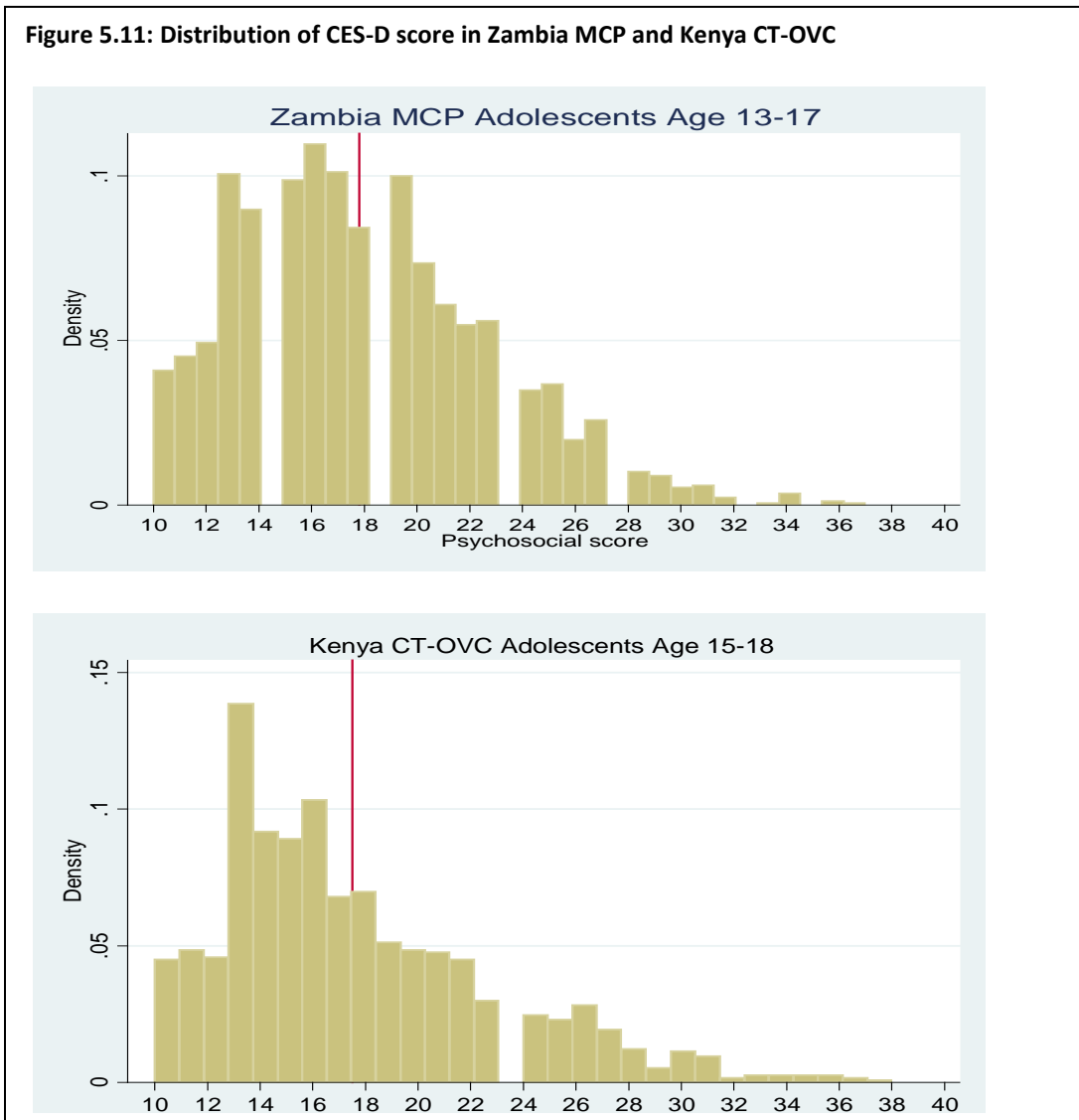
The adolescent module inquired about future aspirations in terms of living arrangements, schooling, and beliefs about the future. Table 5.4 shows that only 35 percent of young people hoped to live in the same place in five years, whereas 22 percent hoped to live in Lusaka, and 42 percent in some other place, mostly the district Boma or some other place in Zambia; females were slightly more likely to prefer living in the same place than males. In terms of educational aspirations, there are also only very small differences between the sexes, with males (17 percent) slightly more likely to aspire to tertiary schooling relative to females (16 percent). A significant percentage of adolescents expect to complete primary schooling only and/or not be in school in five years.

Table 5.4: Future Aspirations among Adolescents 13-17 by Sex

Where would you like to be living in 5 years?			Where do you want to be with education in 5 years?		
	M	F		M	F
Same place	35.4	37.7	Primary/no longer in school	23.7	22.5
Lusaka	22.4	21.1	Secondary	59.0	61.4
Other	42.2	41.2	Tertiary	17.3	16.3

Table 5.5 reports the percentage of adolescents who believe their life will be better in the future. Again there is little difference by gender, and the majority of adolescents believe their life will be better in the future, with the percentage increasing as a longer period is considered.

Table 5.5: percent of adolescents 13-17 who believe their life will be better in the future by sex

	Male	Female
One year from now	51.8	51.8
Three years from now	66.1	65.4
Five years from now	79.6	79.5

Finally, we also inquired about self-reported general health status using a five-point scale coded poor/fair, good/very good, and excellent). Overall, 12 percent of males believed that they were in poor or fair health (the two lowest scales) compared to only 9 percent for females. For this and all other indicators reported here, an interesting point is that females report aspirations and future expectations that are at least as high (if not higher) than males.

VI. Comparison with National Samples

In this section we compare some key features of the MCP beneficiary population to those of national samples taken from the 2010 LCMS and the 2007 ZDHS. This comparison is facilitated by the fact that during the design of the survey instrument, we purposely used questions from these survey instruments to include in the evaluation instrument.

We begin the comparison with monetary welfare, which we measure with per capita household consumption expenditures. We implemented the complete LCMS consumption module in our evaluation survey and are thus able to accurately compare monetary well-being between the MCP population and selected national samples. The consumption statistics and associated poverty indicators that we report here from the LCMS will not exactly replicate those from official CSO reports because we use per capita (rather than per adult equivalent) consumption, and because our construction of aggregate consumption differs slightly from the approach used by CSO. These differences are documented in Appendix B, but for the purposes of this analysis, we construct a measure of aggregate consumption identically across the two survey instruments, based on data collected using the exact same survey instrument; thus we are able to accurately and confidently assess monetary welfare across the two samples. The LCMS monetary figures are inflated by 6.4 percent to make them comparable to the MCP figures, which were collected a year later in 2011.

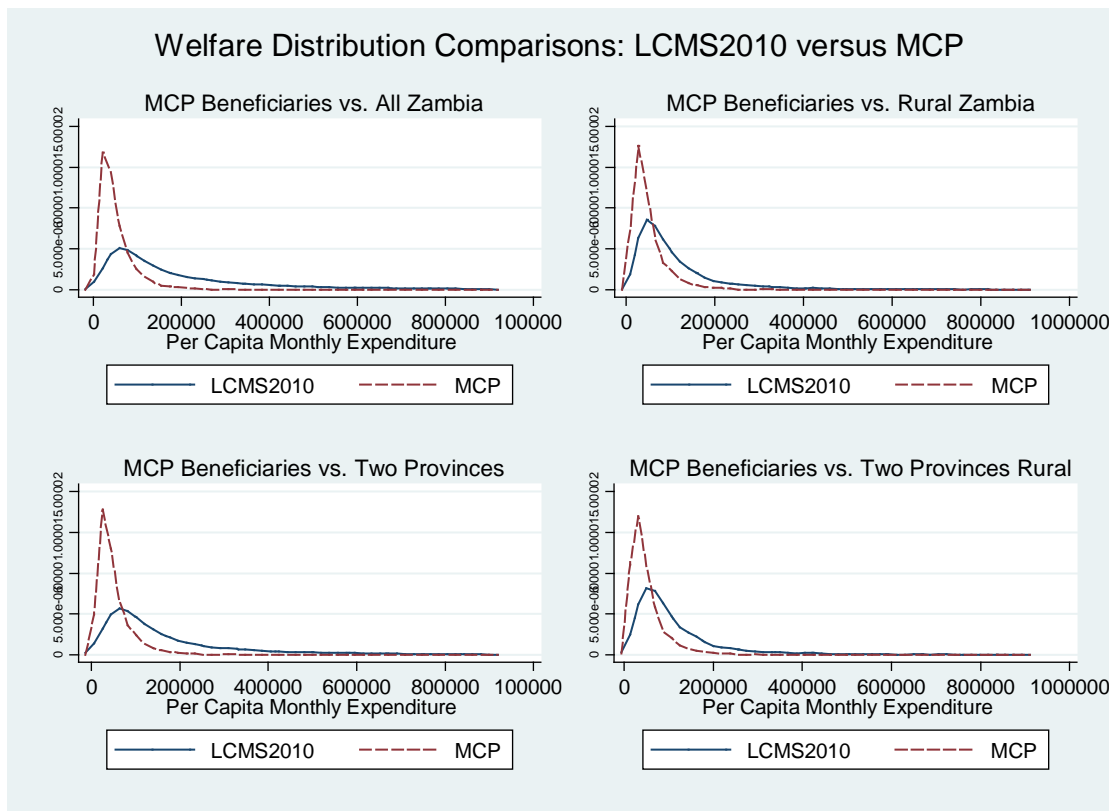Figure 6.1: Welfare Distribution Comparisons: LCMS2010 versus MCP

Figure 6.1 shows the distribution of consumption for MCP beneficiaries from the baseline data and different national samples, starting with all Zambia (top left), then rural Zambia (top right), then the two provinces that contain the evaluation districts (Central and Northern), and finally the rural-only sample of these two provinces. Due to high outliers, we have dropped the top 5 percent of LCMS households from these graphs. In each and every case the MCP distribution is shifted significantly to the left of the LCMS distribution, indicating that the beneficiary population is significantly poorer than all of these samples. Notice that the distribution for the two provinces is very similar to the all-Zambia distribution, indicating that these two provinces are at almost the same level of monetary welfare as the nation. The rural distribution (top right) is shifted to the left of the national distribution—rural Zambians are poorer than their urban counterparts. However, the distribution of consumption among rural households in these two provinces population appears to be about the same as that of all rural Zambian households. These graphs thus indicate that the two provinces are not very poor in terms of monetary well-being relative to Zambia as a whole, yet the targeted population within these provinces is much poorer than average—this highlights the strength of the targeting approach of the MCP in selecting needy households.

Table 6.1: Comparison of Consumption Expenditure with National Samples

| | MCP | LCMS 2010 | | | |
		All Zambia	Rural Zambia	Two Provinces	Two Provinces Rural
Per capita consumption (Kw)	39,089	99,770	75,012	90,249	81,764
Per capita food consumption (kw)	29,667	71,288	56,658	67,670	62,687
Food share (%)*	79.52	78.27	84.47	82.10	84.55
Meat share (%)**	4.82	17.62	14.29	17.67	16.67

All statistics are medians. Top 5 percent of LCMS households and any household reporting 0 food expenditures excluded.
*Food expenditure as share of total expenditure.
** Meat/poultry/fish expenditure as share of total food expenditure.

Table 6.1 shows median per capita consumption for MCP households and the same samples from the LCMS. The pattern in this table is consistent with the distributions described above. The two selected provinces appear to have only slightly lower levels of consumption than the nation as a whole, and rural households in these two provinces have median consumption that is higher than the national rural median, but MCP households are significantly poorer than the rest of Zambia. Table 6.1 also shows median food consumption expenditure and the resulting food share. Typically the food share declines as households become richer (what is referred to as 'Engels' Law'), but the table shows a somewhat anomalous pattern where the much poorer MCP sample actually has slightly higher food shares than the three of the other samples shown in the table, despite being significantly poorer. This anomalous result may be driven by the types of food chosen by richer households; indeed the share of meat out of total food spending is significantly lower in MCP households (4.82 percent) relative to all rural households in the same provinces (16.67 percent), which is a typical pattern for poor households, since meats are luxury goods whose consumption increases as income increases.

Table 6.2: Comparison of Poverty Indicators with National Samples

	MCP	All Zambia	LCMS 2010 Rural Zambia	Two Provinces	Two Provinces Rural
Headcount	90.64	49.54	65.97	55.77	62.31
Poverty Gap	54.84	21.54	29.82	23.41	26.63
Squared Poverty Gap	37.49	12.02	16.97	12.72	14.61
Mean Poverty Gap (Kw)	62010	44586	46355	4046	43812

Indicators are calculated using the Zambian severe poverty line as the cut-off and per capita monthly consumption as the welfare measure. The LCMS 2010 consumption module was fielded in the MCP survey to permit this comparison.

Table 6.2 presents the three most common Foster-Greer-Thorbecke (FGT) poverty indexes for the MCP and national samples, using the Zambia national severe poverty line of Kw 96,366 per person per month (inflated to 2010 units) as the cut-off. Consistent with the earlier analysis, the MCP target population is significantly poorer than the rest of Zambia. The poverty headcount is 90.6 percent in this population, versus 49.52 percent in all Zambia and 62.3 percent among rural households in the same province. Likewise both the poverty gap and squared poverty gap show much higher values for the MCP population; for example, the poverty gap is twice the value among MCP households as it is among other rural households in Central and Northern Province, and the squared poverty gap is almost three times as high. So not only are MCP households poorer than the rest of Zambia, they are much farther below the poverty line as well. This idea is captured concretely by the mean poverty gap—the average shortfall (in kwacha) between the severe poverty line and the consumption of households below that line. Among MCP households, those who are poor have a mean consumption that is Kw 62,010 per person per month below the severe poverty line of Kw 102,533.[14] On the other hand, among all Zambians below this line, the mean gap is only Kw 44,586.

Note that the monetary value of the poverty gap provides an estimate of the amount of money it would take to bring all poor households up to the poverty line. Among MCP households this figure is Kw 62,010 per person per month. Most poverty-targeted programs aim to reduce or eliminate food security rather than poverty itself. Since the food ratio among these households is 75 percent, the target value that can be used to anchor the transfer is 75 percent of the poverty gap or Kw 46,508 per person per month. The MCP provides Kw 55,000 per month and the median household size among the target population is 5. Thus the MCP covers approximately 24 percent of the food poverty gap (per person) of the target population. Alternatively, the MCP transfer represents about 21 percent of the mean (28 percent of median) total consumption of the beneficiary population. This is 6 percentage points lower than Zambia's Child Grant program, where the transfer size is 27 percent of mean consumption. There are several reasons for this: (1) the transfer amount of 55,000 kwacha per month has not changed from 2010 to 2011 even though there has been inflation in Zambia, making the transfers worth less in 2011; (2) the MCP includes more households with relatively high levels of consumption, which is why the

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[14] This is the severe poverty line (Kw 96,366) inflated by 6.4%.

mean household consumption is greater than the median household consumption and the value of the transfer with respect to mean consumption is lower.

Table 6.3: Comparison of Self-Reported Welfare Measures with National Samples

Variable	MCP	LCMS 2010			
		All Zambia	All Rural	Two Provinces	Two Provinces Rural
Considers itself very poor	66.72	38.22	46.44	33.96	35.35
Household worse off compared with 12 months ago	34.53	16.37	15.42	13.21	12.24
Eats one meal a day	28.78	4.14	3.45	3.00	2.67
Ate meat/fish < 5 times in last month	90.10	66.83	72.70	66.68	69.19
Ate vegetables < 5 times in last week	11.18	11.23	11.11	13.74	14.39
N	3,067	19,357	8453	4480	2287

Note: Indicators are from Section 15 in LCMS 2010 data files. Identical questions were fielded in the MCP survey.

We supplement the objective measures of welfare with self-reported subjective measures in Table 6.3; these are consistent with the results from the analysis of consumption. Sixty-six percent of MCP households consider themselves to be very poor, compared with only 38 percent of all Zambian households and 35 percent of rural households in the two provinces. MCP households are twice as likely to believe they are worse off than they were 12 months ago relative to households in the LCMS (though of course the actual time periods are different, the LCMS field work having been conducted in 2010 and the MCP baseline survey in 2011). But on the three indicators of food security, the trends are very stark: MCP households are much more likely to eat only one meal a day (29 percent) than other Zambian households (4 percent), and eat less meat as well. Thus on the range of welfare indicators we have at our disposal, both objective and subjective, MCP households appear to be significantly worse off than their Zambian counterparts, even when we restrict the comparison to rural households in the Central and Northern provinces.

Although the prior analyses suggest that MCP households are indeed less food secure, have higher poverty rates, and have higher poverty than the national average or even more geographically comparable samples, the MCP targeting criteria is based on *socially* vulnerable households, not necessarily just poor ones. Table 6.4 provides means for household characteristics that include targeting indicators as suggested by the conditions of eligibility. As reported in Section I, the conditions that households must meet to be eligible for this program are as follows:

- A female-headed household keeping orphans
- A household with a disabled member
- An elderly-headed household (over 60 years old) keeping orphans
- A special case: this category is for cases that are critical but do not qualify under the other categories; for example, a household of two elderly people who are unable to look after themselves.

Table 6.4: Comparison of Household Demographics with National Samples

Variable	MCP	LCMS 2010			
		All Zambia	All Rural	2 Provinces	2 provinces, Rural
Female-Headed Household	75.37	23.52	23.81	21.14	20.95
Widow-Headed Household	53.41	12.61	12.65	13.06	12.78
Elderly-Headed Household (over 60)	47.74	12.00	13.81	12.77	13.49
Any Disabled Household Members	30.96	4.89	5.52	4.39	4.60
Child 5 or Under in Household	43.27	54.30	57.81	55.56	56.27
Child 17 and Under in Household	84.93	84.98	87.32	87.23	87.63
Any Orphan in Household	58.45	20.24	18.58	19.13	17.92
Female-Headed Household with Orphan(s)	47.47	9.00	8.49	8.60	8.15
Elderly-Headed Household (over 60) with Orphan(s)	25.28	3.94	4.25	3.72	3.74
N	3,078	19,397	8468	4483	2290

Note: Summary statistics in LCMS are weighted.

Just about three quarters of all MCP households report as female-headed, which is over 50 percentage points higher than in all LCMS households or in comparable subpopulations within the national sample. Moreover, half of all MCP recipient households are headed by widows, while the LCMS samples consistently report only 13 percent widow-headed households nationally, in rural regions, and within the two provinces where the program is being implemented. MCP households are also six times more likely to have a disabled household member than the LCMS sample. However, perhaps the most notable characteristics for the MCP recipients pertain to the younger population. Although the proportion of MCP households with children under 5 *and* under 18 is lower than for LCMS households, the number of MCP households caring for children who have lost one or both parents is significantly higher. The comparison shows that targeting was successful based on the inclusion criteria.

In sum, the MCP households are subjectively and objectively poorer than households in Zambia as reported by the LCMS—not only among the national sample, but as compared to all rural households, the households within the targeted regions, and among rural households within the provinces included in the implementation of the MCP. These households are also socially vulnerable, with well above the national averages as reported by the LCMS for proportion of female-, widow-, or elderly-headed households; percentage of households caring for an orphan; and for households with any disabled members. In fact, virtually every measure (each created using nearly identical instrumentation and construction) used to facilitate a comparison between MCP households and LCMS shows that the MCP households are significantly worse off.

Table 6.5: Comparison of Adolescent Sexual Experience Indicators (ages 15-17) with National Samples

Variable	MCP[1]	DHS 2007[2]			
		All Zambia	All Rural	Two Provinces	Two Provinces Rural
Males					
Ever Had Sexual Intercourse (%)	16.98	34.79	38.66	35.79	38.15
Average Age at First Sexual Intercourse (years)	14.06	13.94	14.05	13.57	13.57
Condom Use First Sexual Intercourse (%)	25.71	19.30	16.05	13.94	9.49
Females					
Ever Had Sexual Intercourse (%)	21.81	35.94	41.26	30.80	33.46
Average Age at First Sexual Intercourse (years)	14.30	14.60	14.42	14.32	14.01
Condom Use First Sexual Intercourse (%)	22.61	28.65	18.25	22.67	15.74
Forced Sexual Intercourse Ever (%)	17.65	10.27	11.86	12.86	14.62
First Partner >10 Years Older (%)	7.38	5.02	6.41	18.51	22.51

Note: Summary statistics in DHS are weighted.
[1]Total sample aged 15-17 respondents for section= 2,096 (46% female)
[2] Total sample aged 15-17 respondents for section= 13,646 (52% female)

Although the LCMS survey instrument contains in-depth consumption and household characteristics, the ZDHS includes greater detail for child health as well as risky behavior. With consideration for the targeting of households with orphans, the MCP survey included multiple questions on risky sexual behaviors, which were modeled after the ZDHS survey. While the MCP survey included children aged 13-17 (up to two per household) for these questions, ZDHS reports for respondents aged 15-49. Table 6.5 reports mean values for these outcomes for MCP respondents, as well as all of Zambia, rural Zambia, the two provinces that contain the evaluation districts (Central and Northern), and finally the rural-only sample of these two provinces. Due to skip patterns in the survey instructions, only respondents who responded having sexual intercourse answered any other questions in the module. We restrict the samples to individuals age 15-17.

Both males and females reported lower rates of sexual activity in MCP as compared to DHS. Males were likelier to report using condoms in MCP than in ZDHS, while the proportion of females who reported forced sexual intercourse is higher for MCP. The results seem to suggest that although the DHS samples report riskier sexual behavior, such as greater likelihood to have had sexual intercourse, older age of first partners, and lower rates of condom use, the MCP female population reports higher rates of sexual violence.

VII. Prediction of Program Impacts

To gauge the potential impact of the cash transfer ex ante, we have used the baseline evaluation data to estimate the relationship between total per capita household expenditure and some of the impact indicators shown in the Conceptual Framework (Section 2, Figure 2.1). For all the indicators except poverty, we apply regression analysis to estimate the relationship between an outcome and total per capita expenditure. We control for household size, age, sex, and schooling of the head of household, and whether the head is disabled or widowed. For individual-level outcomes, we also include the age and sex of the child as additional controls. Because units of measure are not the same across outcomes, we report the estimated impacts as a percent of the observed baseline mean value of the indicator in order to facilitate comparisons across different outcomes.

The program provides Kw 55,000 per month, or Kw 11,000 in per capita terms. Earlier analysis has shown that mean per capita expenditure in recipient households before the transfer is Kw 39,089 per person per month. Thus, the 11,000 kwacha monthly per capital transfer is a 28 percent increase to the household's monthly expenditure. This is a meaningful increase to recipients, considering that 90 percent of MCP households fall below the national extreme poverty line, compared with 66 percent of all rural households based on data from the Zambia Living Conditions and Monitoring Survey (LCMS) 2010. The MCP transfer level is comparable to that of the Child Grant Program and some of the world's most successful programs, such as *Oportunidades* in Mexico and *Familias* in Colombia.

Because the immediate impact of the cash transfer will be to alter the level and composition of household consumption, we begin by assessing the potential impact of the program on consumption behavior, for both food and nonfood items, because this will the key pathway for realizing other impacts, such as education, health, and material well-being of children. Guided by the economic theory of consumer demand, we estimate a system of demand equations for seven mutually exclusive expenditure groups, relating each one to total per capita expenditure. Using these equations, we calculate theoretically consistent responses (referred to as "elasticities" in economic theory) to the change in total per capita expenditure associated with the cash transfers under the MCP.[15] Given the average transfer per person to the household (Kw 11,000), the average level of spending on each item at baseline, and the estimated "response," we can calculate the expected change in consumption due to the program.[16]

Table 7.1 provides these estimates for seven broad budget categories. The first column shows the share of the actual budget devoted to each item, while column 2 shows the estimated responses or elasticity measures. The key threshold for the elasticity is 1; items that carry an elasticity of less than 1 are considered 'necessities' because their relative importance in the budget declines as the household gets

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[15] The estimates are theoretically consistent in that they do not violate the budget constraint. That is, the sum of the predicted responses should not exceed the total amount of additional money provided by the program (Kw 11,000 per person per month).

[16] Mathematically, the estimated response (or elasticity) for each item, measured in percentage terms, is multiplied by the percentage increase in mean per capita expenditure implied by the program (27 percent) to get the total impact of the program on that item in percentage terms. This total impact is multiplied by the actual mean level of spending to obtain the predicted impact in kwacha.

richer. Similarly, items with an elasticity greater than 1 are 'luxuries' in the sense that their importance increases as the household becomes richer.

The estimates in Table 1 demonstrate that among these households, transportation and communication, alcohol and tobacco, and 'other' are strong luxuries, while household items, clothing, and health are necessities. Interestingly, food has an elasticity close to 1—for these very poor households, the food share will not decline with a small increase in income. Column 3 shows how the transfer will be spent across the eight items as a percentage of the total transfer value, while the last column shows the distribution of spending out of the transfer in terms of Kwacha. The bulk of the transfer (82 percent) will be spent on food; the next largest expenditure item is 'household goods' (6 percent), followed by transportation and communication (3 percent). The model implies a total transfer level of Kw 11,205, very close to the average transfer of Kw 11,000—this is a key constraint that must be enforced to obtain theoretically consistent estimates.

Table 7.1: Predicted Impact of MCP Payment on Consumption

	Actual Allocation of Expenditure (%)	Estimated Expenditure Elasticity	Predicted Allocation of Transfer (%)	Predicted Allocation Kwacha
Food	75.42	1.08	81.87	9,173
Clothing	2.21	0.69	1.35	151
Household	12.82	0.52	5.68	636
Education	2.94	1.12	2.88	322
Health	4.59	0.70	3.01	337
Other	0.27	1.23	0.37	42
Transport/Communication	1.01	2.14	3.09	346
Alcohol/Tobacco	0.74	1.45	1.75	197
Total	100		100	11,205

See text for details on derivation of elasticity and resulting predictions.

Table 7.1 indicates that the payment of Kw 11,000 through the MCP will lead to an increase per capita of about Kw 9,173 in food spending. We use the same methodology described above to simulate the composition of food spending on the basis of existing tendencies. Results of this analysis are provided in Table 7.2. Again, because we estimate the food demand equations as a system, we are able to impose the budget constraint so that the sum of the increase in spending on each food item is limited to the total increase in food spending estimated above (Kw 9,173). The results (column 3 of Table 7.2) show that 39 percent of the additional money for food will go to consumption of the basic staples of cereal (maize) and tubers (cassava), 18 percent will go to meats (including poultry and fish), and 19 percent will go to fruits and vegetables. The allocation of the MCP transfer is different from the actual distribution of food shares at baseline shown in column 1. For example, the mean share devoted to meat/poultry/fish is currently 10 percent, but the share of MCP money devoted to these items is predicted to be substantially larger at 18 percent; this is further highlighted in Figure 7.1. In general we see a shift away vegetables and tubers towards meats, pulses, and dairy. Notice that all three of these groups are strong luxuries, with expenditure elasticity estimates well above 1. Thus, based on these simulations and assuming preferences remain stable, we predict that the MCP will improve diet diversity among recipient households.

Table 7.2: Predicted Impact of MCP on Food Consumption

	Actual Allocation of Expenditure (%)	Estimated Expenditure Elasticity	Predicted Allocation of Transfer (%)	Predicted Allocation of Transfer Kwacha
Cereal	17.99	1.03	17.04	1,601
Roots/Tubers	24.09	1.07	21.90	2,058
Pulses	6.91	1.49	11.21	1,053
Fruit/Veg	27.54	0.84	18.55	1,743
Meat	9.93	1.60	18.10	1,701
Dairy	0.55	1.64	1.05	98
Sugars	1.93	1.41	2.96	278
Fats	11.06	0.97	9.18	862
Total	100.00		100.00	9,395

See text for estimation details.

Figure 7.1: Actual Food Group Shares and Predicted Shares out of MCP Transfer Payment
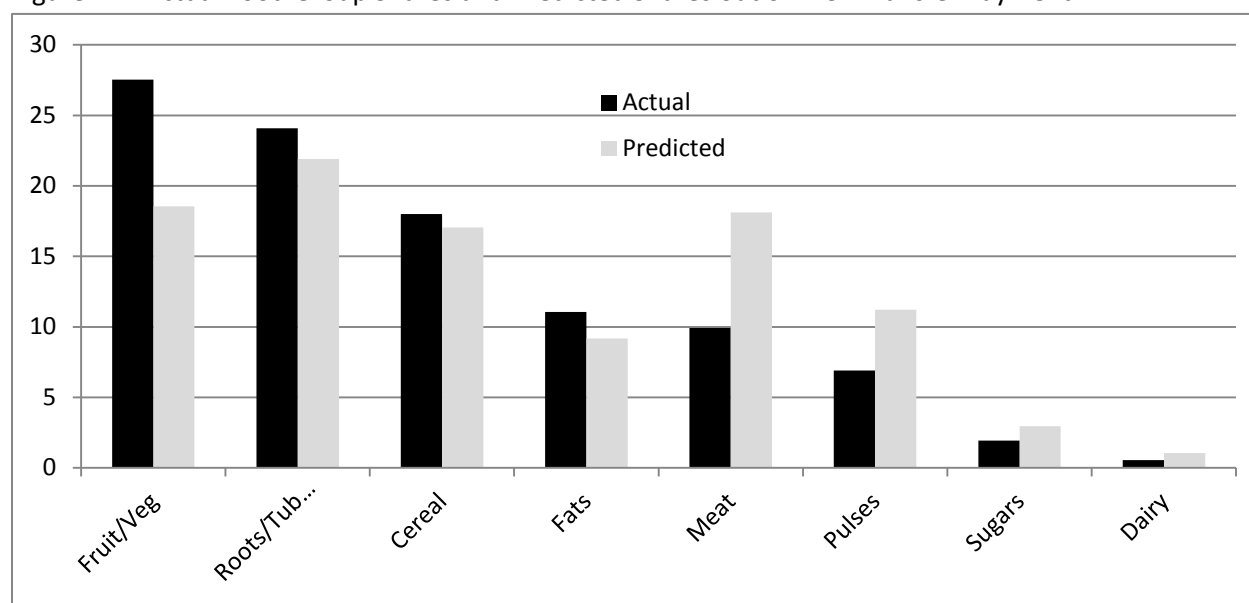
We now turn to estimated impacts on several other household welfare indicators, some of which were reported in Chapter 6—these are shown in Table 7.3. The first row reports the impact on food expenditure in percentage terms derived from Table 7.1 as a point of comparison. The other estimates suggest that the MCP will have a large effect on reducing the households that are moderately food insecure (11 percent), the share of households surviving on only one meal a day (10 percent), and the share that eat meat less than three times per month (12 percent). The overall picture from these estimates as well as those discussed above is that the MCP is predicted to have an important impact on overall food security and diet diversity.

Table 7.3: Predicted Impact of MCP on Selected Household Indicators

Indicator	Baseline Mean	Predicted % Change
Food consumption per capita (Kw)	36,703	25
FANTA[17] raw score	15	3
Severely Food Insecure	83%	-3
Moderately Food Insecure*	18%	-11
Only One Daily Meal	29%	-10
Eats meat <5 Times/Month	83%	-4
Eats Meat <3 Times/Month	63%	-12
Considers Itself Very Poor	67%	-7

Last column shows predicted change based on regression models relating expenditure per capita to outcome indicated in the first column, and then simulating increase in expenditure per capita, except for food expenditure, which is predicted from Engel Curve analysis described later in this chapter. *Excludes those who are severely food insecure.

We next turn to a set of children's human development indicators such as school enrollment, health, and psycho-social status (PSS); these are reported in Table 7.4. Glancing down the second column of Table 7.4, one sees that in general the estimated impacts of the MCP on child-level outcomes tend to be smaller than on household-level outcomes (with the exception of material well-being). This is not surprising because, as explained in the Conceptual Framework, these are second-order effects that work through the immediate effect of the program on the household-level indicators reported above. In terms of specifics, we estimate that the largest schooling impact will be to encourage on-time school entry, as evidenced by the relatively large predicted effect on enrollment of children age 6-8. The estimated impact on material welfare is quite substantial, and the simulations also suggest impacts on young child morbidity and PSS among adolescents.

Table 7.4: Predicted Impact of MCP on Selected Child Indicators

Indicator	Baseline Mean	Predicted Change (%)
School enrollment		
Age 6-18	66	1.7
Age 6-18 males	67	1.1
Age 6-18 females	65	2.4
Age 6-8	41	4.1
Age 6-13	65	2.2
Age 14-18	70	1.5
Material Welfare (no shoes, blanket or change of clothes) age 6-18	17	-8.3
Morbidity last 2 weeks age 0-5	22	-3.0
Curative care if sick age 0-5	71	1.8
CES-D depression scale raw score age 13-17	18	-1.6
Not clinically depressed age 13-17	67	3.1

Last column shows predicted change based on regression models relating expenditure per capita to outcome indicated in the first column, and then simulating increase in expenditure per capita.

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[17] Coates, J., Swindale, A., & Bilinsky, P. (2007). *Household food insecurity access scale for measurement of food access*. Washington DC: Food & Nutrition Technical Assistance Project (FANTA). Available at www.fantaproject.org

Our final exercise is to simulate the new distribution of consumption among the beneficiary population with the MCP. This is a straightforward calculus where we compute the three FGT poverty indexes from the baseline survey, then simulate transfer receipt to each household and recalculate the indexes—results are shown in Table 7.5. Since MCP households are among the poorest in Zambia and thus located quite a distance below the poverty line, we would not expect the transfer to move many households above the poverty line. Table 7.5 column 3 shows that in fact only 6.6 percent of households are predicted to attain a consumption level that is above the severe poverty line. On the other hand, given the highly progressive targeting of the program, the impact on the PG and SPG are quite large, with estimated declines of 22 and 30 percent, respectively—a significant accomplishment.

Table 7.5: Predicted Impact of MCP on Poverty Indicators of Target Population

	Actual	Predicted	Percent Change
Headcount	92.6	86.4	-6.6
Poverty Gap	56.0	43.5	-22.2
Squared Poverty Gap	38.3	27.0	-29.5

Predicted changes obtained by simulating the increase in per capita consumption for each household based on transfer value and household size. Numbers in column 1 differ slightly from numbers in Table 6.2 because of the exclusion of the top 5% of MCP households (rather than the top 5% of LCMS households in Table 6.2).

VIII. Limitations and Conclusion

In this final section, we present the limitations to the data collection and our conclusions.

Limitations
Several limitations to the baseline data collection might affect the study's impact estimates and generalizeability, although we do not believe that these limitations cause a meaningful threat to the validity of the study. Baseline data were collected in October 2011, a few months after Zambia's biggest recorded harvest of maize in the country's history in May 2011. The bumper harvest in 2011 beat the previous year's bumper harvest of 2010. According to the Zambian newspaper, *Lusaka Times*, "Zambia has recorded another bumper harvest of 224,897 metric tonnes (MT) of maize in the 2010-2011 agricultural season. This represents 8 percent rise above the last 2009-2010 agricultural season."[18] The previous record harvest was 1.9 tonnes in 1989; thus the bumper harvest of 2010-2011 represents a large increase in maize production for the country. Maize is the primary staple food and cash crop for the country; therefore, a bumper harvest of maize should improve the amount of food available to everyone in the country, including our sample. We expect our baseline measures of food consumption to be higher than in the average year. This unique harvest will not affect the validity of our impact estimates, because we have a randomly selected control group that also experienced the same bumper harvest. However, we might underestimate the impact of the intervention at follow-up rounds of data collection because everyone in the sample started with a higher than average amount of maize and food compared with other years. This could affect the external validity of the impact estimates for other time periods.

Another limitation relates to comparisons of adolescent sexual behavior between the MCP data and DHS data. The DHS contains a small sample of 15-17 year olds who answer the sexual behavior questions and may not be an accurate representation for that demographic. However, it is the best data available for comparing with the MCP dataset and provides some insight into how the MCP sample compares to national levels.

Main Conclusions
The Sample: We have collected data from a large and representative sample that was randomly selected. There are 3,078 households and 15,630 people in the study. The program primarily targets households caring for orphans, so it is important to have a large number of orphans in the sample to detect effects to this subgroup. The sample includes 5,049 orphans aged 18 or younger, ensuring sufficient power to detect meaningful effects. Among the recipients, 75 percent are women, 33.7 percent never attended school, and 54 percent are widowed. The program aims to assist extremely vulnerable households caring for orphans. The program appears to have met this goal because 15 percent of children ages 6 through 18 in the study do not own a pair of shoes, a blanket, or a change of clothing, classifying them in the most vulnerable category on the United Nations vulnerability scale. Only 17 percent of children in the sample have all three items.

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[18] http://www.lusakatimes.com/2011/05/17/official-zambia-records-bumper-harvest/.

Randomization: We have compared the treatment and control groups at baseline to assess equivalence along outcome and control indicators while accounting for the nested nature of the data. Randomization appears to have worked because none of the indicators are statistically different between the two groups at baseline.

Conceptual Framework: We have laid out a conceptual framework for understanding and evaluating the impact of the MCP on the household. This framework posits that the immediate or direct effects of the program will be to alter consumption patterns and time use. These effects may work directly, or they may be mediated through women's bargaining power or preferences. The first-order effects will in turn have secondary impacts on adolescent child outcomes. All these effects (first and second order) may be moderated by factors such as access to facilities and markets and maternal education.

Targeting and Comparison to National Samples: Poverty rates are higher in the two program districts than the national average, and the results presented here indicate that MCP-eligible households are even poorer than other household in their province, with a poverty rate of 91 percent versus 62 percent in the most comparable LCMS sample. Self-assessed well-being measures and food security indicators are consistent with this result—MCP-eligible households are more food insecure and report lower welfare levels than their counterparts in the LCMS. Targeting in the MCP is highly progressive due to the geographical targeting approach. With respect to the categorical targeting, half of all MCP recipient households are headed by widows, while the LCMS samples consistently report only 13 percent widow-headed households nationally, in rural regions, and within the two provinces where the program is being implemented. MCP households are also six times more likely to have a disabled household member than the LCMS sample. However, perhaps the most notable characteristics for the MCP recipients pertain to the younger population, since the number of MCP households caring for children who have lost one or both parents is significantly higher. The comparison shows that targeting was successful based on the inclusion criteria. Thus, on both poverty and human development metrics, the targeting strategy in the MCP is highly progressive.

Transfer Size: The program provides Kw 55,000 per month, which translates to Kw 11,000 per capita per month because the median family size is five. This study shows that mean per capita expenditure in recipient households before the transfer is Kw 51,401 per person per month. Thus, the 11,000 kwacha monthly per capita transfer is a 21 percent increase to the household's monthly expenditure. This is a meaningful increase to recipients considering that 91 percent of households fall below the national extreme poverty line, compared with 66 percent of all rural households in the Zambia Living Conditions and Monitoring Survey (LCMS). However, the transfer size is 6 percentage points lower than Zambia's Child Grant program, where the transfer size is 27 percent of mean consumption.

Predicted Program Effects: Our prediction of program effects indicates that the MCP is likely to have positive and statistically significant impacts on first-order and second-order indicators. We use statistical techniques to predict the impact of the MCP on household and individual indicators. We find very large predicted impacts on food consumption and diet diversity. We estimate that 82 percent of the transfer will be spent on food, and within foods, there will a reallocation towards meats/fish/poultry, pulses and dairy, and away from tubers and vegetables. These estimates are corroborated by self-reported food

security and welfare measures. For example, we estimate that the MCP will reduce the number of households surviving on one meal a day by 10 percent, and will reduce the number of moderately food-insecure households by 11 percent.

Predicted impacts on child-level indicators are smaller than those for household-level outcomes, but this is to be expected, since the household outcomes represent the first level of impact. We estimate that the largest schooling effects will be on enrollment of children age 6-8 (4 percent), which we interpret as on-time school entry. We also estimate a large reduction in the proportion of children without a pair of shoes, blanket, or change of clothes (by 8 percent), and a 3 percent reduction in children 13-17 who are clinically depressed.

Simulations of the overall distributional effects of the program suggest large declines in the poverty gap (22 percent) and squared poverty gap (30 percent), and only a modest 6 percent reduction in the headcount. This of course is a reflection of the highly successful targeting of the MCP, which identifies and treats households at the very bottom of the welfare distribution.

Appendix A: Health Facilities

Appendix A discusses the basic characteristics of the primary health facilities within the Multiple Categorical cash transfer program using survey data obtained during baseline collection in 2011. The sections of this appendix review the basic summary statistics of the facilities in relation to characteristics and equipment, services and drugs, and personnel.

A health facility survey was administered to each primary health facility throughout the two districts included in the program. Tertiary care facilities, such as local, district, or regional hospitals, were excluded.

Characteristics and Equipment

A total of 30 health facilities serve the two rural districts of Zambia that are included in this study. Of these facilities 60.0 percent are health centers, 26.7 percent are health posts, and only one facility is classified as a dispensary (two are not classified). All facilities were constructed between 1939 and 2010; however, the median year is 2003, with the majority of construction occurring after 1990, implying a growth in infrastructure dedicated to access to healthcare. The characteristics of these facilities are typical of developing regions; only 4 out of 30 have electricity, only 10 percent use a protected water source, and only two facilities have an operating room. Roughly two of three facilities provide housing for employees; 40 percent report having at least one vehicle.

Services and Drugs

Table A.1 shows available services provided by the 30 health facilities. Approximately three in four facilities offer well-baby services, and even more offer antenatal services (90.0 percent). Twenty-six facilities offer family planning services, and the same number of facilities participated in a child health day or immunization campaign during the six months prior to the survey. Outpatient services are offered by 87 percent of all facilities; nearly 67 percent offer obstetric services, but fewer than 50 percent offer either mobile clinics or treatment for acute malnutrition for children.

Table A.1: Services

VARIABLES	N	Mean (%)
Outpatient consultations	30	86.7
Obstetric	30	66.7
Well-baby clinic	30	7.33
Antenatal	30	90.0
Family planning	30	86.7
Mobile clinic	30	46.7
Treatment for acute malnutrition for children	30	36.7
Child health day/immunization campaign	30	86.7

Table A.2 shows available testing for the health facilities. The tests that are available at the highest percentage of facilities are rapid diagnostic tests (RDTs) for malaria (82.8 percent) and HIV tests (72.4 percent). Malaria parasite slide (MPS) tests are conducted at 14 percent of facilities, and rapid plasma reagin (RPR) tests for syphilis are available at nearly half. Pregnancy tests are performed at 44 percent of facilities, while urine tests are conducted at one in four facilities. A smaller percentage of facilities offer stool test or skin snip tests (10.3 percent and 13.8 percent, respectively).

A.2 Testing

VARIABLES	N	Mean (%)
Stool tests	29	10.3
Blood tests for malaria-RDT	29	82.8
Blood tests for malaria-MPS	29	13.8
HIV tests	29	72.4
Pregnancy tests	29	41.4
Urine tests	29	24.1
Skin snip tests	29	13.8
RPR tests for syphilis	29	44.8

Table A.3 shows the proportion of facilities that normally carry certain drugs or supplies, followed by the percentage that actually had that item in stock at the time of the survey. Although 70 percent of facilities normally carry insecticide-treated mosquito nets, only roughly half had them in stock during the interview. Vaccines were slightly less likely to be in stock at the time of interview as compared to the percentage that claim to carry them, with over 50 percent in stock at time of survey, excluding meningitis vaccines, which were present in only a third of facilities. Surprisingly, even more facilities had antiretrovirals in stock than reported regularly carrying them (43.3 percent vs. 40.0 percent). Cotrimoxazole and penicillin, used to treat infections, were available in the majority of facilities. Folic acid tablets were available in 9 out of 10 facilities. Fansidar and coartem (common malaria treatments) and oral rehydration salts (ORS) were available in the majority of facilities. Of the modern methods of contraception available, nearly 80 percent carried and stocked contraceptive pills, and almost 90 percent had condoms. The average number of drug types carried by facilities was 13.7 and the mean number in stock was 12.8[19], implying that the health facilities in this sample are fairly reliable in regard to medical supplies.

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[19] Not shown.

A.3: Drugs		Carry Mean	In Stock Mean
VARIABLES	N	(%)	(%)
Insecticide-treated mosquito nets	30	70.0	53.3
Meningitis vaccines	30	33.3	33.3
Polio vaccines	30	66.7	56.7
Measles vaccines	30	63.3	56.7
Tetanus vaccines	30	66.7	56.7
DPT vaccines	30	63.3	56.7
BCG vaccines	30	63.3	56.7
Antiretrovirals	30	40.0	43.3
Cotrimoxazole	30	80.0	76.7
Penicillin injection/tablets	30	73.3	73.3
Folic acid tablets	30	93.3	90.0
Fansidar	30	90.0	86.7
Coartem	30	90.0	86.7
Oral rehydration salts	30	93.3	90.0
Aspirin	30	86.7	86.7
Paracetamol/Panadol	30	86.7	80.0
Intrauterine devices	30	30.0	23.3
Contraceptive pills	30	76.7	76.7
Spermicide	30	13.3	10.0
Condoms	30	93.3	86.7

Personnel

The following table shows the percentage of facilities with full-time and part-time personnel, as well as any personnel, by type of staff. There are no full-time medical doctors at any of the facilities, although 10 percent of facilities have at least one part-time medical doctor on staff. There are no full-time pharmacists, medical aides, physiotherapists, pharmaceutical attendants/assistants, or laboratory technologists at any of the facilities. Approximately 70 percent of facilities have at least one classified daily employee on staff, while almost 90 percent have at least one community health worker. Of all 30 facilities, 2 report having no full- or part-time personnel (not shown).

Table A.4: Personnel

VARIABLES	N	Part-Time Mean	Full-Time Mean	Any Mean
Medical doctors	30	10.0	0.0	3.3
Assistant medical doctors	30	13.3	13.3	20.0
Medical assistants	30	6.7	10.0	10.0
Medical aides	30	6.7	0.0	0.0
Registered nurses	30	6.7	13.3	13.3
Enrolled nurses	30	6.7	26.7	30.0
Midwives or nurse midwives	30	6.7	3.3	3.3
Pharmacists	30	6.7	0.0	0.0
Physiotherapists	30	6.7	0.0	0.0
Pharmaceutical attendants/assistants	30	6.7	0.0	0.0
Laboratory technologists	30	3.3	0.0	3.3
Laboratory scientists	30	6.7	10.0	10.0
Classified daily employees (CDE)	30	16.7	56.7	70.0
Community health workers	30	43.3	46.7	86.7

Appendix B: Measurement of Monetary Welfare in the LCMS and AIR

Monetary poverty in Zambia and most African countries is measured using consumption expenditure gathered from national household surveys. In Zambia, this survey is the Living Conditions Monitoring Survey (LCMS) implemented by the Zambia Central Statistics Office (CSO). The AIR survey instrument uses the identical consumption module as that used by the CSO in the most recent LCMS implemented in 2010. This allows us to compare monetary welfare of program beneficiaries against national samples using identical welfare measures.

The construction of any aggregate consumption expenditure from national survey data entails assumptions about how to treat certain consumption items such as the use value of durable goods or the value of housing services for those who own their home (which tends to be a large fraction of the poorest households). AIR does not have access to the exact formula used by CSO in calculating their consumption aggregate and so has developed its own formula for calculating this measure. We believe that the main difference between the CSO and AIR methodology is the inclusion of imputed rent in the CSO measure and the imputation of certain food items in cases of non-reporting of foods. We apply our formula to the LCMS2010 data and compare them with the reported consumption aggregate provided by CSO and used to calculate national poverty estimates.[20]

The left panel of Figure B.1 below compares the distribution of total household consumption expenditure reported by CSO with that calculated by AIR (we drop households in the top 5 percent of the CSO total expenditure distribution in these graphs and in Table B.1 since consumption is highly skewed to the right). The AIR aggregate is shifted slightly to the left, indicating that on average, the AIR formula leads to lower total household welfare than that calculated by CSO. This is likely due to the absence of imputed rent in the AIR calculation, so the right panel of the figure compares the AIR and CSO measures with imputed rent subtracted from the CSO measure. As the figure demonstrates, we are able to almost exactly replicate the CSO measure using the AIR formula when we subtract imputed rent.

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[20] We are grateful to Mr. Goodson Sinyenga, Deputy Director of Economic Statistics at the CSO for providing us with the LCMS 2010 data and the consumption aggregates.

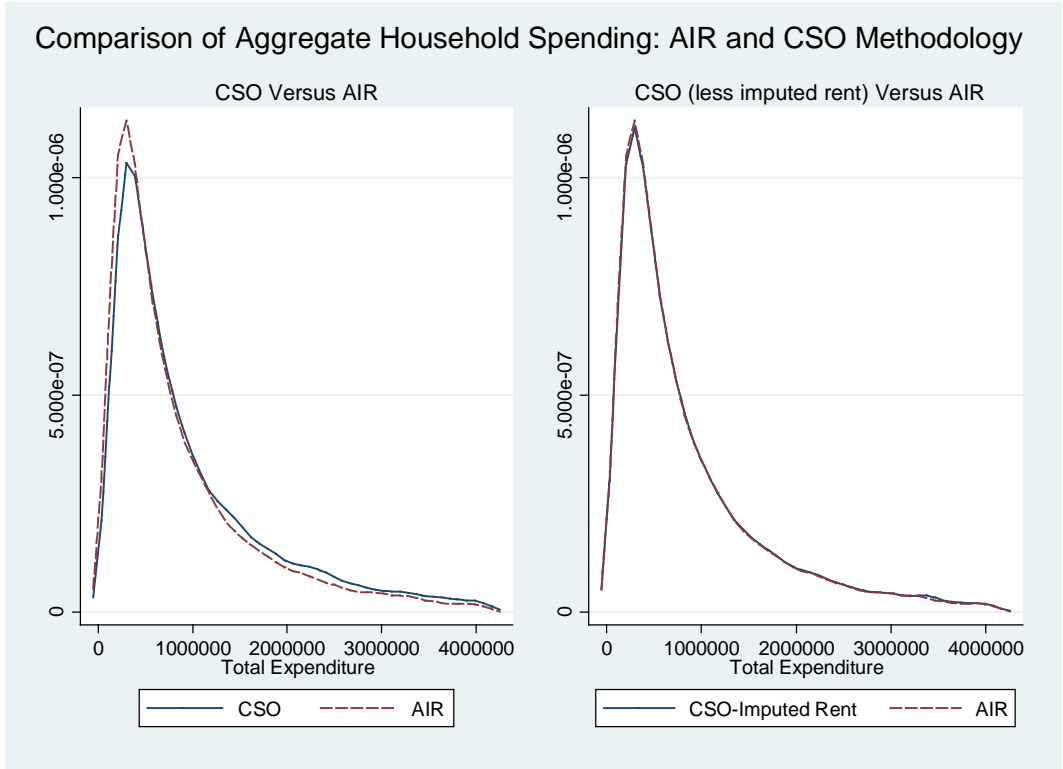Comparison of Aggregate Household Spending: AIR and CSO Methodology

Table B.1 shows the median values of total and food expenditure as well as the food share for the three alternative approaches (CSO, CSO less imputed rent, AIR). The CSO median is higher than the AIR median as the figure above suggests, but when imputed rent is subtracted the two measures have almost identical medians, though the CSO measure is still slightly higher. Moreover, the Spearman Rank Correlation Coefficient between the CSO and AIR measures, which measures the correlation in the ranks of households, is 0.984, almost a perfect 1, indicating that the rank order of households is preserved across the two approaches. We investigated some cases where the individual differences in consumption across the two formulas were very large. In some cases there were clear data entry errors in some component of spending and in other cases the CSO had imputed food values, which we did not do.

Total food expenditure, which does not include imputed rent, displays very similar medians between CSO and AIR (row 2 of Table B.1), and the food share, defined as total food spending divided by total spending, is slightly lower in the CSO measure that excludes imputed rent (0.699) relative to the AIR measure (0.73), but they are overall of similar magnitudes. The underlying mean values of the food share are not significantly different across the two approaches.

Table B.1: Median Expenditure, Food Expenditure and Food Share Using Alternative Methods

	CSO	CSO less Imputed Rent	AIR
Total expenditure (Kw)	499000	448500	440923
Food expenditure (Kw)	314500	-	323000
Food share	0.612	0.699	0.730

See text for details.

To further probe the potential differences in the AIR and CSO methodology we report three of the Foster-Greer-Thorbecke poverty indicators, using the Zambia national severe poverty line of Kw 96,366 per person per month and converting total household expenditure into per capita units. Note that these poverty estimates will differ from nationally reported figures because the latter use adult equivalent units. Consistent with the previous results, the CSO consumption aggregate shows lower poverty (43.6 percent) since it includes imputed rent, while the AIR shows higher poverty (49.5 percent). However, when imputed rent is excluded from the CSO measure, the poverty indicators across the two measures are virtually identical (48.8 versus 49.5 percent), and are not statistically different.

Table B.2: Poverty Indicators with Alternative Measures of Aggregate Expenditure

	CSO	CSO Less Imputed Rent	AIR
Headcount	0.436	0.488	0.495
Poverty gap	0.173	0.210	0.215
Squared Poverty gap	0.089	0.116	0.120

The severe poverty line of Kw 96,366 per person per month is used in these calculations.

Our conclusion from this analysis is that the AIR formula for calculating total household consumption, the 'gold standard' in measuring monetary welfare and poverty, is virtually identical to the CSO measure when imputed rent is not considered, and does not change the rank order of households in the LCMS. In the text of the report, we use the AIR formula to compute this measure in both the LCMS2010 and the AIR surveys, and compare them to understand the relative welfare of the MCP population to national samples. The analysis presented here suggests that such a comparison is a valid way of assessing the relative welfare of the populations; in other words, we are not comparing 'apples to oranges.'[21]

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[21] Lanjouw, Jean and Peter Lanjouw, 2001, "How to Compare Apples and Oranges: Poverty measurement based on Different Definitions of Consumption," Review of Income and Wealth, Vol.47(1): 25-42.

Appendix C: Community Characteristics

Appendix C discusses basic characteristics of the communities within the Multiple Categorical cash transfer program using survey data obtained during baseline collection in 2011. The sections of this appendix review the basic summary statistics of the communities in relation to governance, social capital, economic activity, and shocks.

A community survey was administered throughout the two Zambian districts included in the program: Luwingu and Serenje. The survey was administered by a team of Zambian enumerators experienced in household surveys and fluent in the local language who were instructed to interview key informants from among the following: the village head, Area Coordinating Committee/CWAC members, government officials, and NGO workers.

Within the two districts there are a total of 54 Community Welfare Assistance Committees (CWACs) that are grouped into 92 smaller communities, leaving an average of fewer than 2 communities per CWAC. The median population of these communities is 1,350, and the median number of households is 288 households.[22]

Governance

Table C.1 shows the descriptive statistics of selected characteristics of governance within each community. The majority (84.8 percent) of the communities report having representation in an Area Coordinating Committee (ACC) or Community Development Committee, while slightly more (87.9 percent) report having an elected executive committee. On average, there are 9.9 members in each committee, with an average total of 3.9 female members per committee (not shown). Over 90 percent of CWAC chairpersons are male, despite approximately 40 percent of members in committee being female, on average. Community leaders report meeting regularly at a higher rate (90.2 percent) than CWAC committees (75.0 percent).

Table C.1: Governance

VARIABLES	(1) N	(2) Mean (%)
Has representation in the local ACC or Community Development Committee	92	84.8
Has an elected executive committee	91	87.9
Gender of CWAC chairperson is male	90	93.3
CWAC committee meets regularly	92	75.0
Community leaders meet regularly	92	90.2

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[22] Due to outliers in the data for both population and number of households within each community, the medians were reported for both indicators.

Social Capital

Table C.2 shows the proportion of NGOs active in the community. Development Aid from People to People (DAPP) is represented in the most communities (14.1 percent), followed by Medecins Sans Frontieres and World Vision International (WVI) (both at 8.7 percent), Community Markets for Conservation (COMACO) (5.4 percent), Peace Corps (4.4 percent), and Care International (3.3 percent). Nearly one in three communities has at least one active NGO.

Table C.2: NGOs Operating in Sample Communities

VARIABLES	N	Mean (%)
Zambia Partnership Communication	92	1.1
PASFID	92	1.1
NOSPA	92	1.1
Medecins Sans Frontieres	92	8.7
HELP Ministries	92	1.1
Peace Corps	92	4.4
Green Living Movement (GLM)	92	1.1
Community Markets for Conservation (COMACO)	92	5.4
Development Aid from People to People (DAPP)	92	14.1
Catholic Relief Services (CRS)	92	1.1
Care International	92	3.3
World Vision International (WVI)	92	8.7
Any NGO in community	92	32.6

Table C.3 shows the proportion of active clubs in the communities. Nearly every community has at least one club, with football ranking the highest (87.0 percent), followed by farmer's/agro (79.3 percent) and women's clubs (77.2 percent).

Table C.3: Clubs

VARIABLES	N	Mean (%)
Football Club	92	87.0
Drama Club	92	16.3
Peer Educators	92	21.7
Credit Club	92	1.1
Women's Club	92	77.2
Beekeeper's Club	92	10.9
Fishery Club	92	12.0
Farmer's/Agro Club	92	79.3
Any clubs in village	92	96.7

Economic Activity and Shocks

Table C.4 reports the economic activities of the community as described by the interviewees. Over 90 percent of communities report crop farming as the usual main economic activity in the village. The survey data also report the average daily wage for men as well as women in the villages. The mean daily wage for men and women is 9,630 Kw and 7,337 Kw, respectively. The majority of communities report that children under the age of 16 work for money (87.0 percent), with 95 percent of those reporting domestic work or farming as the primary form of labor. Of the villages where children work, 72 percent report that half or more of the children in the village participate in some form of work for money.

Table C.4: Economic Activities

VARIABLES	N	Mean (%)
The main economic activity in village is farming crops	92	92.4
Children under age of 16 work in village	92	87.0
Of villages where children work, children usually perform domestic work or farming	80	95.0
Of villages where children work, majority of child population works	79	72.2

Table C.5 reports the beneficial shocks to the community over the five years prior to the survey administration. According to the data, development projects and school construction occurred in the most villages (47.8 percent and 35.9 percent, respectively), while road construction and new employment opportunities were each reported in 23 percent of communities. A newly constructed health facility was reported the least, although this still represents 1 in 5 communities. Just over 60 percent of all communities reported some sort of beneficial shocks in the 5 years prior to the survey administration.

Table C.5: Good External Shocks, Last 5 Years

VARIABLES	N	Mean (%)
School constructed last 5 years in community	92	35.9
Road constructed last 5 years in community	92	22.8
Health facility constructed last 5 years in community	92	19.6
New employment opportunity available last 5 years in community	92	22.8
Development projected started last 5 years in community	92	47.8
Any beneficial external shock	92	62.0

Table C.6 reports the proportion of villages that experienced detrimental shocks in the five years prior to the survey. Very few villages reported having massive job lay-offs (9.8 percent), but other detrimental shocks were reported in not an insignificant number of villages. Nearly every village reported at least one negative external shock over the previous five years, with both livestock and human diseases reported in the most villages (71.7 percent and 75.0 percent, respectively), and over 60 percent have experienced sharp changes in prices and crop disease.

Table C.6: Bad External Shocks

VARIABLES	N	Mean (%)
Loss of key social services has occurred last 5 years in community	92	18.5
Massive job lay-offs have occurred last 5 years in community	92	9.8
Sharp changes in prices have occurred last 5 years in community	92	64.1
Human disease/epidemic has occurred last 5 years in community	92	75.0
Livestock disease has occurred last 5 years in community	92	71.7
Crop disease has occurred last 5 years in community	92	66.3
Flood has occurred last 5 years in community	92	16.3
Drought has occurred last 5 years in community	92	34.8
Any detrimental external shock	92	98.9

Appendix D: Comparison of Treatment and Control Groups at Baseline

Table D.1: Comparison of Treatment and Control Groups at Baseline

variable	Control	SD Control	N1	Treatment	SD Treatment	N2	Mean_diff	P_value	T_value
exp_food_pc	40367.87	35290.74	1516	38641.75	36237.80	1561	1726.116	0.4346	0.78
exp_foodshare_pc	0.77	0.15	1516	0.74	0.16	1561	0.024	0.1396	1.49
cereal_share	0.19	0.18	1516	0.17	0.17	1556	0.024	0.3062	1.03
roots_tubers_share	0.23	0.24	1516	0.25	0.23	1556	-0.016	0.6648	-0.43
pulses_legumes_share	0.07	0.11	1516	0.07	0.10	1556	0.006	0.4600	0.74
fruits_vegetables_share	0.27	0.16	1516	0.28	0.17	1556	-0.015	0.2259	-1.22
meat_poultry_fish_share	0.10	0.13	1516	0.10	0.13	1556	0.002	0.8159	0.23
Total household expenditure per person in the household	51843.45	42876.01	1516	50832.42	47438.87	1561	1011.033	0.7334	0.34
Food security scale	14.68	5.71	1491	14.78	5.49	1530	-0.104	0.8191	0.23
Household size	5.01	2.50	1516	4.98	2.47	1561	0.028	0.8935	0.31
Distance to food market	27.51	30.67	1071	34.15	31.77	1083	-6.648	0.3414	-0.96
Distance to health facility	11.91	15.55	1393	13.02	17.55	1436	-1.111	0.5575	-0.59
Yes/no whether household recieved a farm input subsidy	1.95	0.22	1517	1.97	0.18	1561	-0.019	0.2161	-1.25
Yes/no whether household recieved a food security pack	0.01	0.10	1517	0.01	0.09	1561	0.001	0.8227	0.22
Yes/no whether household was affected by drought	0.11	0.31	1517	0.08	0.27	1561	0.027	0.2335	1.20
Yes/no whether household was affected by flood	0.03	0.17	1517	0.04	0.19	1561	-0.008	0.6957	-0.39
Yes/no whether household was affected by any shocks	0.59	0.49	1517	0.51	0.50	1561	0.080	0.1203	1.57
Male=1; Female=0	0.53	0.50	1078	0.54	0.50	1018	-0.016	0.4562	-0.75
Used condom during first sexual intercourse	0.19	0.39	128	0.26	0.44	138	-0.073	0.1846	-1.34
Ever had sexual intercourse 1=yes 0=no	0.13	0.33	1078	0.14	0.35	1020	-0.018	0.3699	-0.90
Age first sexual intercourse	13.93	2.41	135	13.79	2.61	145	0.140	0.6652	0.43
Orphan or vulnerable child	0.66	0.48	1078	0.66	0.47	1020	-0.001	0.9747	-0.03
Double orphan	0.21	0.41	1078	0.20	0.40	1020	0.012	0.6518	0.45
Psychosocial score	17.76	4.79	1047	18.00	4.73	981	-0.234	0.6672	-0.43
OVC_scale	1.75	0.92	1078	1.60	0.97	1020	0.151	0.0801	1.77
age	14.86	1.44	1078	14.88	1.50	1020	-0.021	0.7177	-0.36
What is the marital status of	1.01	0.09	1041	1.02	0.21	980	-0.011	0.1548	-1.43

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