

**DRAFT**

**Preventive versus Recuperative Targeting of Food Aid:  
Accounting for the Costs  
Mid-term Cost Report**

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## ACRONYMS USED

ADP	Area Development Program
CBR	Cost-Benefit Ratio
CDC	Centers for Disease Control and Prevention
CER	Cost-Effectiveness Ratio
CTS	Commodity Tracking System
DAP	Development Activity Program
FY	Fiscal Year
HAZ	Height-for-Age Z-Score
IFPRI	International Food Policy Research Institute
MCHN	Maternal and Child Health and Nutrition
NCHS	National Center for Health Statistics
USAID	United States Agency for International Development
WAZ	Weight-for-Age Z-Score
WHO	World Health Organization
WHZ	Weight-for-Height Z-Score
WV	World Vision



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## EXECUTIVE SUMMARY

### Background and objectives

This report presents a preliminary cost analysis for the Maternal and Child Health and Nutrition Program (MCHN) implemented by World Vision (WV) in the Central Plateau region of Haiti. The main purpose is to provide the basis for the comparison of the cost-effectiveness of two different approaches to targeting and delivering an integrated nutrition and health program that includes food supplements. The first approach is the traditional *recuperative* approach, whereby children under five years of age are targeted to receive food supplements, nutrition counseling, and follow-up, after being identified as underweight for their age. The second or so-called *preventive* approach targets all children below two years of age, irrespective of their nutritional status. The two models are being implemented in selected parts of three Communes in the Central Plateau, referred to as *pilot areas*.

This mid-term report outlines the methodology for calculating costs associated with the two models and cost-effectiveness, delineates the costs to be measured, and provides preliminary estimates and analysis of the costs of the program—where possible identifying costs that vary across the two models. Because of the mid-term nature of this report, there remain a number of gaps. We expect that the “preliminary” nature of the report will be viewed by FANTA and WV-Haiti as an opportunity to provide comments directed toward improving the analytical approach as we go forward toward the larger research objective of calculating the cost-effectiveness of the WV-Haiti program.

### Methodology

The *cost-effectiveness* of a program is calculated as the cost-per-unit-of-impact, referred to as the cost-effectiveness ratio (CER). The pilot study will evaluate the effectiveness of the program using a set of internationally agreed upon measures of child under-nutrition. Compared to effectiveness, the numerator in the CER is conceptually straightforward because most costs can be measured using a single, linear, metric: money. A complication regarding costs, however, is that a full accounting of the costs typically requires the analyst to cast the net more widely than just an analysis of the program budget or accounting information alone. There are a number of activities (and their associated costs) that take place outside the formal framework (and budget) of many programs, and WV-Haiti is no exception (for example, the provision of medical supplies).

After capturing the full range of costs feeding into the overall program, the final step is to identify and isolate the costs that pertain *specifically* to the pilot areas and, within these areas, to identify the costs that pertain to each model of the intervention, since the numerator, effectiveness, is being measured at this level. Only when this is done will the measures of costs and effectiveness be on the same basis, allowing calculation of the CER. We do this by apportioning total costs in Central Plateau to the pilot areas based on the fraction of beneficiaries served in those areas.

Costs can be categorized as *program*, *private*, or *social* costs. Program costs can be categorized further as those financed directly out of the program budget and those financed by

other agencies but forming an integral part of the program (e.g., donated food and medical supplies). The latter are referred to as off-budget program costs. Private costs are those borne by program beneficiaries (e.g., travel costs). Social costs are those paid for by others in society (e.g., by the Ministry of Health). Often, only direct program costs are considered in cost estimates, and off-budget program, private, and social costs are ignored. Each of the above costs can be incurred as financial, in-kind, or opportunity costs.

### **Program costs in the Central Plateau**

In this report, we estimate direct and off-budget program costs for MCHN in Central Plateau, using accounting and other information provided by WV-Haiti. The data show that the program grew substantially over its first three years, more than doubling its size from the first to the second year. The preliminary estimate for fiscal year 2004 is that over \$4 million was spent in Central Plateau and fully one-third of that amount was the value of food distributed to beneficiaries. Ignoring the value of the donated food distributed would have underestimated the program costs substantially. The value of medical supplies, however, appears to be less important in the overall costs (less than two percent), though this conclusion is preliminary, as additional information is being collected on those costs.

### **Program costs in the pilot areas**

The pilot areas represent only a small part of the overall DAP intervention area, and therefore comprises only a small part of the overall costs. We estimate total costs for the pilot areas, excluding external evaluation costs, to be approximately \$1.1 million, from October 2001 to September 2004 and excluding private costs, which have not yet been calculated. Overall, nearly 60 percent of this was for the preventive model and the remaining 40 percent for the recuperative model. These figures, however, mask the fact that in the most recent fiscal year, costs in the preventive area are twice those in the recuperative area, reflecting the unequal numbers of program beneficiaries between the two modalities. This is due to two factors: (1) there are more children under two years of age (targeted in the preventive model) than malnourished children under five (targeted in the recuperative model); and (2) beneficiaries in the recuperative model (i.e., malnourished children) receive program benefits for a maximum of 9 months, whereas in the preventive model, children can receive benefits for up to 18 months (i.e., from 6 months of age until they reach 24 months of age).

### **Private and social costs**

We outline a strategy for estimating *private* costs, based on the opportunity cost of beneficiaries' time. Data collection of these costs is only partially complete. The aim is to assess time costs in the follow-up evaluation household survey planned for 2005 and in a short survey with health frontline staff. We will ignore the various possible *social* costs as we are unable to make assessments about their value. However, there is little reason to think that these would differ across interventions in any fashion.

### **Next steps**

The preliminary analysis presented here outlines the methodology for, and goes some distance toward, calculating costs for the WV-Haiti pilot program, though it has a number of

gaps. These will be filled during the time remaining in the evaluation, as we work with WV-Haiti staff to continue documenting ongoing costs of the program and as we design and implement a short survey of health staff and the follow-up evaluation household survey.



# 1. INTRODUCTION

## 1.1 Background

This report presents a cost analysis for the Maternal and Child Health and Nutrition Program (MCHN) implemented by World Vision (WV) in the Central Plateau region of Haiti. The main purpose is to provide the basis for the comparison of the cost-effectiveness of two different approaches to targeting and delivering an integrated nutrition and health program that includes food supplements. The first approach is the traditional *recuperative* approach, whereby children under five years of age are targeted to receive food supplements, nutrition counseling, and follow-up, after being identified as underweight for their age. The second or so-called *preventive* approach targets all children below two years of age, irrespective of their nutritional status. The rationale behind the latter approach is that children are targeted before their growth falters and the intervention occurs during the period of highest growth velocity and during the period of maximum potential to benefit from a nutrition intervention. Additionally, it is expected that by providing health and nutrition interventions throughout these critical two years, not only short-term, but also long-term, benefits on growth will be achieved (IFPRI 2001).

The evaluation of the impact on nutritional status of these two different approaches is being conducted over a four-year period by the International Food Policy Research Institute (IFPRI) and Cornell University, in collaboration with WV-Haiti (IFPRI 2001). For each approach, the research team will assess impact on (1) attained growth as measured by the mean and distribution of weight-for-age Z-scores (WAZ), height-for-age Z-scores (HAZ), and weight-for-height Z-scores (WHZ); and (2) the prevalence of undernutrition as measured by stunting ( $HAZ < -2$ ), wasting ( $WHZ < -2$ ), and underweight ( $WAZ < -2$ ). The two models are being implemented in selected parts of three Communes in the Central Plateau, referred to as *pilot areas*. An initial baseline survey was conducted in 2002, the first year of the project, before food distribution started. A follow-up evaluation survey will be implemented three years after the baseline, to assess the impact of the interventions on children's nutritional status. Operational research methodologies were used in the interim to identify constraints to effective implementation and to design and implement corrective measures in an ongoing fashion (Loechl et al. 2004). In addition to conducting the impact and operations research of the two program models, the IFPRI-Cornell University team also provided WV-Haiti with technical assistance for developing and refining the program models.

Not only are the preventive and recuperative approaches expected to differ in terms of their relative success in reducing malnutrition, they are also likely to differ in how much is spent in generating improved outcomes. Thus, it is necessary to assess the trade-off between differences in costs and differences in effectiveness by calculating and comparing the relative cost-effectiveness of both models. For example, if the preventive model generates a larger impact, but in doing so incurs more costs, then it is possible that, in spite of being more effective as measured by impact on the target population, it is less cost-effective in terms of its cost per "unit" of impact. An important aim of the research is to determine which model achieves greater nutritional impact at lower cost.

## **1.2 Objectives of the cost analysis**

As a precursor and necessary input into the cost-effectiveness analysis, this mid-term cost report presents preliminary estimates and analysis of the costs of the program—where possible identifying costs that vary across the two models. While the primary objective is the presentation of the methodology for calculating costs associated with the two models, the analysis also provides insight into overall program operations over time, as well as the relative importance of different program components. For example, we estimate the value of various elements of the program that are not formally part of the WV-Haiti accounting framework, in particular the food donations and the health supplies distributed to beneficiaries. Food is donated by USAID and health supplies are made available by the Ministry of Health at no cost to WV-Haiti.

The specific objectives of the mid-term cost report are to

- outline the basic cost-effectiveness methodology;
- delineate the costs to be measured (for the eventual cost-effective analysis); and
- calculate and analyze in a preliminary fashion (that is, from October 2001 through September 2004) the various costs of the program.

At the same time, a broader objective is to develop a methodology to assess the cost-effectiveness of similar MCHN-food assisted programs, which are currently popular models of development assistance to low-income countries.

Because of the mid-term nature of this report, we acknowledge up front that there remain a number of gaps. We expect that the “preliminary” nature of the report will be viewed by FANTA and WV-Haiti as an opportunity to provide comments for improving the analytical approach as we go forward toward the larger research objective of calculating the cost-effectiveness of the WV-Haiti program.

## **1.3 Summary of WV-Haiti program activities**

WV-Haiti has implemented privately funded Area Development Programs (ADPs) in different parts of Haiti since 1976. Activities under this program include health, agriculture production and natural resource management, child sponsorship, education, small business, and water projects. WV-Haiti has been involved in food distribution activities (in La Gonave) since 1994, as an implementing agency for Catholic Relief Services, one of USAID’s Cooperating Sponsors. In 2002, WV-Haiti itself became a USAID Cooperating Sponsor and is implementing a five-year Title II Development Activity Program (DAP) in six Communes of the Central Department and in the island of La Gonave with regional offices in Hinche (Central Plateau) and Anse-à-Galets (La Gonave). The DAP activities focus on health and nutrition (MCHN), agricultural production, and education.

The WV-Haiti MCHN program, under both the preventive and recuperative models, offers services at five contact points between program staff and participants. These include

(1) *Rally Posts*, where health education, growth monitoring and promotion, and preventive health care are provided and program beneficiaries<sup>1</sup> are identified; (2) *Mothers' Clubs*, where smaller groups of participants gather to discuss health and nutrition topics in the context of the program's behavior change and communication strategy; (3) *Pre- and Postnatal Consultations*, where pregnant and lactating women receive preventive health care and education; (4) *Food Distribution Points*, where program beneficiaries receive their monthly food rations; and (5) *Home Visits*, where beneficiary households with a newborn infant, a severely malnourished child, or a child with growth faltering are visited by WV health staff.<sup>2</sup>

The targeted beneficiaries of the preventive MCHN model are *all* children between 6 and 23 months of age who reside in the program areas, whereas the beneficiaries of the recuperative MCHN model include only *malnourished*<sup>3</sup> children between 6 and 59 months of age who reside in the program areas.<sup>4</sup> In both approaches, pregnant and lactating mothers (with infants less than six months of age) are targeted as well.

The Rally Post is the entry point in both models, and is used to refer beneficiaries to the appropriate program services. New beneficiaries are identified at the Rally Posts every month and eligible children are admitted into the program on a monthly basis. Pregnant and lactating women are recruited into the program every four months.

For mothers of children 6–23 months old in the preventive model and mothers of malnourished children under five in the recuperative model, monthly attendance at the Rally Posts and at Mothers' Clubs is mandatory to be eligible to receive the monthly food ration offered by the program. Pregnant and lactating women are also required to participate in Mothers' Clubs and pre- and postnatal consultations to be eligible for the monthly food ration.

Direct implementers of the MCHN program in the field are health agents and *colvols* for the health and nutrition interventions and food monitors for the distribution of the food rations at the Food Distribution Points. The health staff also assists the food monitors during food distribution.

## 1.4 Organization of the report

The report is organized as follows: Section 2 outlines the cost-effectiveness methodology and defines the types of costs to be considered in the analysis. Section 3 calculates the program

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<sup>1</sup> Throughout the report, we refer to those who receive both food rations and health services as the program beneficiaries. This ignores the smaller category of individuals who receive only health services, for example at Rally Posts, but do not qualify for or receive food rations.

<sup>2</sup> In the operations research conducted of the WV program, we focus on the examination of the services delivered at the Rally Posts, Mothers' Clubs, and Food Distribution Points only (Loechl et al. 2004).

<sup>3</sup> Malnourished children are defined as M2 and M3 according to the Gomez classification. In this classification, normal (N) corresponds to  $\geq 90$  percent of the median of the weight-for-age CDC/NCHS/WHO standards; mild malnutrition (Grade M1), to 75 percent -  $< 90$  percent; moderate malnutrition (Grade M2), to 60 percent -  $< 75$  percent; and severe malnutrition (Grade M3), to  $\leq 60$  percent (Cogill 2003).

<sup>4</sup> Severely malnourished children between 24 and 59 months of age in the preventive program are also eligible to participate in the preventive program. These children (classified as M3 according to the Gomez classification) are identified through the regular growth monitoring and promotion activities done at the Rally Posts.

costs for the Central Plateau region and Section 4 assesses the proportion of those costs relevant for the pilot areas and for each intervention model, to put the costs on the same basis as the planned measures of effectiveness. Section 5 describes the private and social costs of the program. In Section 6, we offer some preliminary conclusions.



## 2. METHODOLOGY

### 2.1 Cost-effectiveness

The cost-effectiveness of a program is calculated as the cost-per-unit-of-impact, referred to as the cost-effectiveness ratio (CER). The apparent theoretical simplicity quickly disappears, however, as we begin to consider what exactly should be included in the numerator and denominator, and how they should be measured.

As described in the introduction, the pilot study will evaluate the effectiveness of the program using a set of internationally agreed upon measures of child under-nutrition, including HAZ. These scores are statistically standardized and therefore it can be argued that they provide a standardized measure of effectiveness. At the same time, in some frameworks, it may be preferable not to treat equally sized differences in the indicator that occur at different points in the distribution as the same. For example, in some analyses, we might not treat an improvement in HAZ of 0.4 units for a population with a starting average of -1.0 as “twice” as large as an improvement of only 0.2 units for a similar population with the same starting point—that is, a change in the population average from -1.0 to -0.8 may be different than a change from -0.8 to -0.6. Assessing (and considering alternatives to) the “standardization” of effectiveness will be an aspect of both the effectiveness and cost-effectiveness analyses in future reports.

Compared to effectiveness, in some measure, the numerator is conceptually more straightforward because most costs can be measured using a single, linear, metric: money. Even this is not entirely true, however, as a full accounting of costs includes financial costs in different currencies and at different times, as well as unpaid time costs. We discuss below the methodologies for assigning standardized values to such costs.

A further complication regarding costs is that a full accounting of the costs typically requires the analyst to cast the net more widely than just an analysis of the program budget or accounting information alone. There are a number of activities (and their associated costs) that take place outside the formal framework (and budget) of many programs, and WV-Haiti is no exception. For example, in their review of the costs of three conditional cash transfer programs in Latin America, Caldés, Coady, and Maluccio (2004) find that none of the programs directly include the cost of health care supplies provided by their respective governments in the program accounting systems.

After capturing the full range of costs feeding into the overall program, the final step is to identify and isolate the costs that pertain *specifically* to the pilot areas and, within these areas, to identify the costs that pertain to each model of the intervention, since the numerator, effectiveness, is being measured at this level. Only when this is done will the measures of costs and effectiveness be on the same basis, allowing calculation of the CER.

Given the design and multiple potential benefits of the intervention, particularly improved nutritional status for children that is likely to yield nutritional, health, and economic returns over many years, we caution that it would be incorrect to interpret the CER as a measure of the cost-benefit ratio (CBR) of the program.

## 2.2 Cost definitions

We begin by considering what to include as costs associated with the program. The three broad categories of costs that need to be considered are described below (Caldés, Coady, and Maluccio 2004).

### 2.2.1 Program, private, and social costs

Costs can be categorized as *program*, *private*, or *social* costs. Program costs can be categorized further as those financed directly out of the program budget (e.g., administrative salaries) and those financed by other agencies but forming an integral part of the program (e.g., donated food and medical supplies). The latter are referred to as off-budget program costs. Private costs are those borne by program beneficiaries (e.g., travel costs) or other individuals including the *colvols*, who receive a small incentive but whose work can be considered as “partially voluntary.”<sup>5</sup> Social costs are those paid for by others in society (e.g., by the Ministry of Health or other governmental institutions). Often, only direct program costs are considered in cost estimates, and off-budget program, private, and social costs are ignored. One reason for this is that only direct program costs tend to be included in the financial accounting records of government and nongovernment organizations, as is the case for WV-Haiti.

### 2.2.2 Financial, in-kind, or opportunity costs

Each of the above costs can be incurred as financial, in-kind, or opportunity costs. *Financial* costs include items like salaries, user-charges, or travel costs; *in-kind* costs include donations such as food donated to the program by the USAID Title II program under the DAP, and *opportunity* costs include time, for example of program beneficiaries or “under-paid” personnel such as the *colvols*. Time costs of program beneficiaries and program volunteers are often not included in cost analyses (Caldés, Coady, and Maluccio 2004).

### 2.2.3 Fixed or variable costs

*Fixed* costs are usually incurred at the start of the program before it begins front-line activities (such as delivering services to beneficiaries) and thus may not vary as the number of program beneficiaries varies. These costs are often irretrievable (i.e., sunk) once incurred and may include aspects related to the initial design of the program. As the program evolves, we expect fixed costs as a fraction of total costs to decline. The size of *variable* (or recurring) costs, on the other hand, depends on the scale of the program. Finally, it is often helpful to distinguish between initial fixed costs that are set-up costs, which tend to be sunk costs, and capital costs (e.g., equipment), which, while they show up as expenses made in only one year are for services “used” over the life of the capital item, typically spanning several years.

By highlighting and considering the above categories for assessing costs associated with the program, we ensure a comprehensive analysis that guards against missing important resource allocations made in program operation. This does not mean we uncover and estimate every

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<sup>5</sup> The *colvols* are provided with an incentive, which was initially 30 percent of a health agent’s salary but was raised to 50 percent, in fiscal year 2004. This change was accompanied by a change in title, whereby the *colvols* are now referred to as health promoter assistants (health agents are referred to as health promoters).

single cost item associated with the program no matter the size. Instead, we focus on measuring all those costs that are likely to be substantial.



### 3. PROGRAM COSTS AT CENTRAL PLATEAU LEVEL

In this section, we describe program costs for the whole Central Plateau region, and in Section 4, we focus on the program costs for the pilot areas only. Section 5 describes how private and social costs will be assessed.

#### 3.1 Direct program costs

The primary source of information for the direct program costs is typically the program's accounting system.<sup>6</sup> An accounting-based approach to measuring direct program costs is possible because although WV-Haiti does not operate in a completely autonomous fashion, the majority of program-related activities is carried out directly within the project and is therefore under its accounting system.<sup>7</sup> For a given time period—in this case, the period from the start of the WV-Haiti DAP in October 2001 through September 2004—we first examine the program's detailed accounting records. For programs spanning a number of years, adjustments to account for inflation and depreciation of capital investments can be made. The financial accounts used in this analysis are denominated in U.S. dollars during a relatively short (three-year) period of low inflation, which averaged about 2 percent per year. In addition, capital expenses represent only a small component (less than 7 percent) of the expenditures we consider. Thus, we do not make adjustments for inflation or depreciation—doing so does not change the analysis substantively.

Direct program costs are captured by the WV-Haiti DAP accounting system. These accounts are separate from other WV-Haiti activities, in particular the privately funded ADPs, though some activities and personnel classified in one or the other category (DAP or non-DAP) cross over to a small degree. WV-Haiti DAP accounting costs are organized by department as follows: support; maternal and child health and nutrition (MCHN); education; internal monitoring and evaluation; commodities (or logistics); and agriculture.<sup>8</sup> Within each of the departments, there are a number of cost categories—the first-level categories are shown in Table 1. The system includes many subcategories which, for simplicity, are not shown here.

In fiscal year (FY) 2002 (WV-Haiti DAP operates on an October to September fiscal year, coincident with the U.S. government), DAP accounting records are available only for the central office. During that year, operations were just beginning to scale up and therefore direct expenditures in the regions were relatively small. Starting in January 2003, however, DAP accounting records are available for both La Gonave and Central Plateau regions. Each regional office is responsible for its own accounts (using the same accounting category framework and software), which are maintained in local currency. Monthly summary reports are then sent to

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<sup>6</sup> In some cases analysts use budgets; when available, actual expenditures are preferred.

<sup>7</sup> This approach is not always possible, however. For example, Fiedler (2003), in a cost analysis of a Honduran community-based integrated childcare program that did not have a centralized accounting system, constructs total program costs from the bottom up, estimating the costs required for each activity and then aggregating them. This is a valid approach and was considered in the design of this study. It allows useful simulations of costs under varying program designs (e.g., excluding certain components). An important drawback to the bottom-up approach, however, is that it is difficult to capture all of the activities and associated costs borne in the central office of the program. Our view, supported by Waters (2000), is that it would have likely led to an underestimate of the overall costs.

<sup>8</sup> In addition, there is a separate “department” allocated for the Emergency Seeds Program, though there were virtually no expenses made under this category during the period examined in this report.

**Table 1–WV-Haiti DAP aggregated accounting categories**

Accounting Code	Accounting Category
8000	Salaries and benefits
8020	Staff training
8100	Office supplies
8150	Ministry Supplies
8200	Travel
8300	Interoffice
8400	Occupancy
8500	Other direct charges
8600	Hospitality
8650	Advertising
8700	Fees and taxes
8750	Consultancy
8880	Equipment < \$5,000
8809	Equipment > \$5,000

the central office where the information is reentered into the accounting system (after being converted into U.S. dollars using monthly average exchange rates). At this data reentry stage, however, the source location of the expenditures is not retained, so that it is not possible using only the central office accounting system to separate expenditures made in the two regions from those made at the central office.<sup>9</sup>

We begin the calculation of direct program costs for the Central Plateau by including all expenses reported for the support, MCHN, internal monitoring and evaluation, and commodities departments from the Central Plateau regional DAP accounting report. This is possible starting in January 2003. Including only the above-mentioned departments excludes a small percent of the total costs reported by Central Plateau, those allocated to education (0.3 percent over the period) and agriculture (8.0 percent).<sup>10</sup> What is reported by La Gonave and Central Plateau regions, however, comprises only a portion of the total WV-Haiti operations for these departments—less than 20 percent. We therefore turn to the central office DAP next, to incorporate expenses accounted for in the central office that pertain to Central Plateau.

The first set of these expenses are salaries for staff working in Central Plateau. Due to contracting and hiring practices, many regional staff members are paid from the central office. Using payroll information that indicates the department and region for each employee, we can assess the expenses made at the central office for employees based in Central Plateau. These are added to the regionally reported Central Plateau DAP account amounts described in the previous paragraph.

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<sup>9</sup> Not categorizing expenses by region has its advantages in terms of the amount of work and simplifying the accounting system, as well as others of which we may not be aware. Indeed in many cases, it may not be clear where to assign expenditures, for example, when they are for items shared across regions. At first glance, however, it would seem worthwhile reconsidering the practice of not retaining the identifying information when these region-level data are entered, in order to facilitate more disaggregated analysis of accounting level information such as this one.

<sup>10</sup> Because we exclude such a small percentage from the Central Plateau regional accounts, we do not adjust the amount charged to support, though it is likely that a small proportion of the activities charged under support are dedicated to the excluded departments.

Of course, the central office exists to support and run the program in the regions. Thus, many or all of its expenses also should be applied to the regions. Further, prior to January 2003, there were no regional DAP reports so we only have the central office DAP accounts for calendar year 2002.

To apportion some of the central office expenditures to the regions, we first calculate what we refer to as the “residual” central office DAP expenses.<sup>11</sup> These include all expenses in the four departments (excluding education and agriculture) that we are unable to directly assign to one or the other of the regions. They are the central office DAP accounts, less the regionally reported accounts, less the salaries of regional personnel paid from the central office. Lastly, we subtract the value of resources committed to the evaluation components of the pilot study, including the direct costs of the baseline survey and operations research fieldwork, as well as an approximate value of the WV-Haiti staff time devoted to those activities.<sup>12</sup> Unlike internal monitoring and evaluation, these external evaluation activities and their related expenses would not comprise part of an ongoing program, so it is important not to include them in the base case measures of cost-effectiveness.<sup>13</sup> In the cost-effectiveness analysis, however, we can consider the effect of adding them back in to approximate the situation of starting up the program in another country, for example.

There are no major cost differences between operating in the two regions, although they do differ in some respects. For example, WV-Haiti has been working in La Gonave for nearly three decades so that certain infrastructure associated with program activities is in place. Some differences in internal shipping costs between the regions do exist, for example, but as a percentage of the value of the food they are small (less than five percent).

There are two principal program activities under the current DAP: food distribution and health and nutrition activities. Therefore, there are two sensible ways to allocate costs from the central office to the regions, based on the relative sizes of these two activities. As the two activities are closely linked, it makes little difference which one we use.

In what follows, then, we apportion residual expenditures from the central office DAP expenditures to Central Plateau based on the relative annual distribution of the quantity of food between the regions. Food distribution (under MCHN) is about twice as large in Central Plateau as in La Gonave and this relationship has been stable over time. Table 2 shows the total number of metric tons of all types of food distributed in the two regions for each fiscal year. The first thing to notice is that in FY 2002, the program was only beginning to roll out, with food distribution beginning in March 2002 for pregnant and lactating women and beginning in May for children. Consequently, distributions more than doubled between FY 2002 and FY 2003, and nearly tripled within Central Plateau. Distributions grew more modestly into 2004.

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<sup>11</sup> And before doing this, we remove two large expenditures that are not relevant for the on-going program. These were gifts-in-kind from WV-U.S., which at market value were recorded as \$1.1 million under MCHN and \$2.2 million under commodities.

<sup>12</sup> We estimate these expenses in fiscal years 2002 to 2004 to be (1) \$100,000 for baseline survey; (2) \$15,000 for each of two rounds of operations field research; and (3) \$80,000 in WV-Haiti staff time.

<sup>13</sup> A caveat to this approach is that the presence of an external evaluation is likely to affect incentives for those implementing the program and therefore to affect program operations and impact. Fortunately, there is little reason to think these effects would differ across the two models.

**Table 2—Food distributed under MCHN: By region (metric tons)**

	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004<sup>a</sup></b>
Central Plateau	951	2,463	3,124
(percent)	(58)	(66)	(66)
La Gonave	694	1,257	1,595
(percent)	(42)	(34)	(34)
Total	1,645	3,720	4,719

Source: WV-Haiti Commodities group.

<sup>a</sup> September 2004 estimated (using average monthly distribution).

Using the percentages from Table 2, we assign 58, 66, and 66 percent of the residual central office accounting costs to Central Plateau in fiscal years 2002, 2003, and 2004, respectively. The estimates of direct program costs in Central Plateau<sup>14</sup> are presented in Table 3. Direct program costs in Central Plateau grew just over 50 percent from \$1.6 million in FY 2002 to \$2.6 million in FY 2004, at a much slower rate than the growth in food distribution, likely reflecting economies of scale in the operations of the program. The dominant cost category is Commodities, followed by Support activities, though the latter declined as a percentage of total costs over the period. Internal monitoring and evaluation comprise a very small percentage of costs at present.

**Table 3—Direct program costs in Central Plateau: By department (\$000)**

	<b>FY 2002</b>	<b>FY 2003</b>	<b>FY 2004</b>
Support	606.9	734.1	796.2
	(37)	(32)	(31)
MCHN	308.2	393.2	628.2
	(19)	(17)	(25)
Internal monitoring and evaluation	0.1	57.0	1.8
	(0)	(2)	(0)
Commodity	717.2	1,124.0	1,130.3
	(44)	(49)	(44)
Total	1,632.3	2,308.3	2,556.5

Source: WV-Haiti accounting records.

### 3.2 Off-budget program costs

Next, we consider the off-budget costs for WV-Haiti. There are two principal items in this group: food donations made by USAID and health care supplies provided by the Ministry of Health in Haiti.

#### 3.2.1 Food donations

As part of its reporting requirements to USAID, WV has an elaborate computerized tracking system designed for the DAP food items (known as the commodity tracking system or CTS) which is a system used by WV in other countries where it operates. This system tracks

<sup>14</sup> Direct program costs in the Central Plateau include (1) expenses reported from the Central Plateau regional DAP accounting reports; (2) salaries for staff working in the Central Plateau paid from the central office; and (3) a portion of residual expenditures from the central office assigned to the Central Plateau.



food items from the moment they enter the country until they are distributed to the beneficiaries, documenting the movements, amounts distributed, and any losses.

In contrast to other Cooperating Sponsors, WV does not distribute food at the same time that they deliver health and nutrition services. Instead, food distributions are scheduled on different days and in different locations than the health and nutrition activities (Rally Posts, etc.). On the morning of a distribution day, the food is transported by truck from regional warehouses to specific distribution sites, where program beneficiaries from different areas gather once per month in order to receive their food rations. At the end of the day, any food not distributed is transported back to the warehouse. All these movements are recorded in the CTS for each type of food.

WV-U.S. pays for the shipping to Haiti, but upon arrival at the port, all expenses for shipping and warehousing are covered by WV-Haiti and are included in the DAP accounting system and reflected under the commodities department activities.

The costs not reflected in the accounting system, then, include shipment to Haiti and the value of the food items. Using shipping records provided by WV-Haiti, we calculate the mean value per kilogram, including external shipping costs, for each major food item for each fiscal year.<sup>15</sup> This does not necessarily equal the market price of these items in Haiti if one were to purchase them on the private market. We choose to value at the international price as it is the most relevant in terms of the resources being devoted to the program, even though it is possible local value of the items is more or less than the international value. We then use this information to calculate the aggregate value of food items delivered under MCHN.<sup>16,17</sup> These figures are presented in Table 4.

**Table 4—Value of food distributed in Central Plateau: By food type (\$000)**

	FY 2002	FY 2003	FY 2004 <sup>a</sup>
Soy fortified bulgur (percent)	163.3 (35)	448.8 (31)	514.2 (33)
Lentil (percent)	64.5 (14)	381.8 (26)	290.2 (18)
Vegetable oil (percent)	109.7 (24)	342.4 (23)	381.4 (24)
Wheat soy blend (percent)	128.1 (27)	298.0 (20)	386.5 (25)
Total	465.7	1,470.9	1,572.2

Source: WV-Haiti Commodities group.

<sup>a</sup> September 2004 estimated (using average monthly distribution).

<sup>15</sup> These are often referred to as cost, insurance, and freight (CIF) prices as opposed to free on board (FOB) prices, which include only the cost of the items being shipped.

<sup>16</sup> The figures exclude the relatively small amount of food distributed under the education programs.

<sup>17</sup> Currently, the CTS for WV-Haiti does not incorporate price information in the database, though it does include the shipment number allowing a link between the distributed items and their FOB and CIF values. While the current system makes sense from the point of view of tracking quantity, it may be worthwhile including price information in the future to facilitate analysis related not only to the quantity but to the value of the food items.

Reflecting the patterns above seen in Table 2, the value of food distributed tripled between the first and second year of the program. In FY 2003 and again FY 2004, WV-Haiti distributed \$1.5 million in food to the Central Plateau. One-third of the value was in soy fortified bulgur, one-quarter in vegetable oil, one-quarter in wheat soy blend, and one-sixth in lentils, except in 2003, when lentils represented one-quarter. Given that the rations are predefined quantities (though deviations occur, for example, when there are shortages), it is unsurprising that the percentages do not vary greatly, since relative prices have been steady over the period. The exception is for lentils in FY 2003 as the price per kilogram nearly doubled that year due to substantial losses during shipment to Haiti (leading to their greater fraction of the total value in FY 2003).<sup>18</sup>

### **3.2.2 Health supplies**

The next important component, another off-budget program cost, is the provision of vaccines (for both children and women), vitamin A capsules, iron/folic acid supplements, oral rehydration salts, and deworming pills. At times, the program also delivers (or sells at cost) other items, depending on supplies, such as small preparatory kits for pregnant women. As these other items are somewhat irregular (and there is little information on them), we do not include their value here but are confident they comprise only a small amount of the healthcare supply costs.

For the preparation of this report in December 2004, it was not possible to obtain detailed information on a month-by-month basis of the number of beneficiaries receiving each of the various health care items listed above. As a result, we are unable to provide specific estimates of these costs at this time. However, we use WV-Haiti quarterly reports, which have aggregate information for some of the quarters on the number of beneficiaries receiving the various items, to calculate rough estimates of the numbers of beneficiary children over the period. Combining this information with price information on vaccines and other supplies (provided by UNICEF), we are able to make a crude assessment of the costs of these supplies in the pilot areas. Our preliminary conclusion is that they are not substantial (on the order of \$50,000 per year), particularly in comparison to the direct program and value of food costs—comprising less than 2 percent of the total costs.

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<sup>18</sup> Table 4 excludes internal losses, but these represent a small percent of the total value of food.

#### 4. PROGRAM COSTS IN THE PILOT AREAS

To estimate direct program costs only for the pilot areas, we do the following. First, in the previous section, we estimated the direct program costs made in Central Plateau (as they were not directly available from the accounting information), combining information from the regional DAP accounts, the central office DAP accounts, and information on where personnel paid from the central office work (as the central office pays some regional staff). The pilot program, however, is operating only in selected parts of three of six Communes in Central Plateau. After estimating the program costs for Central Plateau as a whole, in this section we estimate the fraction of costs associated with the pilot areas. This is done by estimating the fraction of all of the program beneficiaries in Central Plateau who are in the pilot areas and extrapolating this measure to the costs. In the final step, we separate costs spent on the preventive and recuperative models, again using information on the number of program beneficiaries for each model.

The original research proposal contemplated a number of design differences between the preventive and recuperative models (IFPRI 2001). For example, a potential saving identified under the preventive model was that it would be unnecessary to weigh and measure children for screening purposes, since targeting is based on age as opposed to nutritional status (which requires weighing the child). During final program design, however, this component was retained by WV-Haiti under the health services offered in both the preventive and the recuperative models.<sup>19</sup>

It turns out that the driving force behind any differences in costs between the two models, then, is the number of program beneficiaries. In the preventive model, children remain in the program longer, on average, though they and their families receive the same food distribution per month as in the recuperative model. Linked to this, mothers under the preventive model attend the Mothers' Clubs for a longer period of time and children are required to attend the Rally Posts for a longer period. Pregnant and lactating women are treated the same under both models. A sensible way to distribute the costs associated with each model, then, is to base them on the relative distribution of food to children benefiting, which is directly linked to the number of program beneficiaries, as the size of the food rations (per month) do not vary across interventions. This also appropriately apportions costs linked to many of the other services of the programs, such as carrying out the Mothers' Clubs, which are conditions of program eligibility.

As part of the pilot program, WV-Haiti is tracking program beneficiaries and distributions made in the pilot areas by intervention. First, the fraction of program beneficiaries in the pilot areas of all program beneficiaries in Central Plateau is used to assign costs to the pilot areas. Then, we use the relative fraction of distributions between the interventions to distribute the total amount between each intervention. This implicitly assumes that the percent of pregnant and lactating women who receive food and other services does not differ across interventions. While there is no direct evidence on this point at the moment, since all pregnant and lactating women can join the program, there is no a priori reason to expect large differences.

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<sup>19</sup> In the (future) cost-effectiveness analysis, however, we will estimate the value of such a potential savings to simulate the effect of that program change.

We emphasize that this top-down approach, which includes a number of reasonable, but nonetheless ad hoc, assumptions, is imperfect. Nevertheless, as we show, it captures the broad patterns of growth and development of the pilot program over time quite well. Further, it distinguishes between the two models based on the principal factor driving differences in their costs: the number of program beneficiaries receiving food and other services. Thus, while it may not be entirely free of measurement error, it is a valid and reasonably accurate approach to assessing costs without substantially increasing the complexity (and consequently the costs) of the present study for what are likely to be limited gains in accuracy.

Table 5 demonstrates that once in full operation (the pilot program was only just begun in FY 2002 and distributions were made only in the final two months of that fiscal year in pilot areas) in FYs 2003 and 2004, the pilot areas account for about 12–15 percent of the program beneficiaries in Central Plateau. We reach the same conclusion when we consider instead the proportion of food distributed in the pilot areas compared with that distributed in Central Plateau as a whole.

**Table 5—Number of program beneficiary children in Central Plateau and pilot areas**

	Central Plateau	Pilot program – total	Pilot program – preventive	Pilot program – recuperative
<b>FY 2002</b>	29,375	961	484	477
Percent of CP	-	3.3	1.6	1.6
Percent of pilot	-	100	50	50
<b>FY 2003</b>	73,765	11,088	5,930	5,158
Percent of CP	-	15.0	8.0	7.0
Percent of pilot	-	100	53	47
<b>FY 2004<sup>a</sup></b>	118,735	14,487	9,588	4,899
Percent of CP	-	12.2	8.1	4.1
Percent of pilot	-	100	66	34

Source: WV-Haiti Commodities group.

<sup>a</sup> Excludes September.

Using the percentages from Table 5 and the levels presented in Tables 3 and 4, we are now in a position to estimate the direct program and off-budget program costs of each of the pilot interventions. These are shown in Table 6.

From October 2001 to September 2004, the total program costs for the pilot interventions (excluding evaluation costs described in footnote 12) was \$1.1 million for three years of operation. At the outset, the costs across interventions were similar, but by FY 2004 the ratio of costs was in line with the beneficiary numbers: costs in preventive areas in FY 2004 are nearly double those in recuperative areas.

This is not the whole story, however, for two reasons. First, to this point, we have not yet integrated private costs, which may be substantial. These are addressed in Section 5. Second, we have not yet considered the changes in activity mix over time during the development of the program, which can help further interpret the cost figures. A crude way to do this is to ignore costs associated with the first year of operation when a number of design and preparatory activities were being carried out, leaving only the costs in FY 2003 and FY 2004. In the ultimate

cost-effectiveness analyses, “simulations” including or excluding first-year operation costs can be considered in order to assess the importance of the start-up costs. Whether or not they are included influences how we interpret and describe the results. For example, if we are interested in the costs associated with setting up the program from scratch in a different country, including all the set-up costs would make sense. On the other hand, if we want to consider how much it would cost to merely expand the program to a neighboring region in Haiti, it would be sensible to exclude them.

**Table 6—Direct program and off-budget program costs in the pilot areas (\$000)**

	Preventive	Recuperative	Total
<b>FY 2002</b>			
Direct program costs	26.9	26.9	53.8
Food costs	7.7	7.7	15.4
Health supply costs	n.a.	n.a.	n.a.
Total	34.6	34.6	69.2
<b>FY 2003</b>			
Direct program costs	183.5	162.7	346.2
Food costs	117.0	103.6	220.6
Health supply costs	n.a.	n.a.	n.a.
Total	300.5	266.3	566.8
<b>FY 2004</b>			
Direct program costs	205.9	106.0	311.9
Food costs	126.6	65.2	191.8
Health supply costs	n.a.	n.a.	n.a.
Total	332.5	171.2	503.7
<b>Overall</b>			
Direct program costs	416.3	295.6	711.9
Food costs	251.3	176.5	427.8
Health supply costs	n.a.	n.a.	n.a.
Total	667.6	472.1	1139.7

n.a. = Not available.



## 5. PRIVATE AND SOCIAL COSTS

As discussed at the outset, while our information is most complete for direct *program* costs and for food and health supply off-budget program costs, there are other current costs (and possibly savings) that result directly from the introduction of the program. Indeed, failing to pay attention to them may severely under- or overstate the costs.

### 5.1 Private costs

Most of the private costs that stem from the program are time costs incurred by beneficiaries to complete program requirements. We assume that the value of increased time costs for children is not significant, which is uncontroversial for under five-year-olds. The time dedicated to the program by adults, particularly the caregivers, is a different matter. Program beneficiaries may incur new costs as a result of the program in several ways. They must now attend the Mothers' Clubs, bring their children to the Rally Posts (though another caregiver can take the child to the Rally Post), and travel to the food distribution points (though any member of the family can carry out this last requirement). If they do not, they cannot participate in the program—hence, these are necessary, and possibly additional, private costs that they undertake in order to remain program beneficiaries. Other possible additional costs, such as more time spent caring for children, might be related to the program but not strictly necessary for participation, so we do not consider them.

At this writing, data collection aimed at assessing private costs is only partially complete. This is because one useful tool for assessing the time costs described above is the follow-up evaluation household survey planned for mid-2005. The aim is to collect information on incremental costs to the caregiver—that is, the additional time imposed by the program at the various points of contact. For example, if a Rally Post were located in a nearby town and the caregiver made monthly trips to this town before the program, it is possible that even in the absence of the program, she would have made trips to that location; for her, the incremental cost would include only the time spent at the Rally Post. For another beneficiary who would not have made such a trip, however, the incremental cost also includes the cost of the trip. This includes any financial costs (e.g., bus fare), though given the convenient location of the services and lack of public transport, we expect little of these, as was found in the operations research (Loechl et al. 2004).

Time spent by mothers in the Mothers' Clubs can be analyzed in similar fashion. Food distribution centers, however, will need to be treated differently, since it is not required that the mother attends in person, and she can send a household representative. Loechl et al. (2004) provide information on time spent by mothers to fulfill program requirements at the three critical contact points (Mothers' Clubs, Rally Posts, Food Distribution Points), suggesting that they are substantial, averaging 10 hours per month per beneficiary. All of these types of costs will be collected in the follow-up survey.

About 85 percent of caregivers in the 2002 baseline sample survey reported being involved in income-generating activities in the past year (Menon and Ruel 2003). For these women, it is obvious why we should value their time—they may have had to give up remunerative activities in order to attend the program activity. This likely occurs despite

laudable efforts by WV-Haiti to plan events to avoid overlap with important income-earning activities, such as local market days. Even for those women who did not apparently lose earnings, however, we must still value their time spent in complying with program requirements.

To value women's time, we will use the Haitian Living Standards Measurement Survey and calculate daily earnings for rural women who live and work in Central Plateau (the LSMS data are not yet available to us). As the subset of women who work is not random, we recognize that to some extent these figures might overstate what many women could earn. As a partial adjustment, we can adjust the calculated daily wage by conditioning on characteristics including age and education.

Additional private costs are also borne by the volunteer *colvols* or health promoter assistants, even after WV-Haiti began to pay them a higher stipend in FY 2004. This is because while they receive a stipend, it is not intended to pay for their services entirely, that is, they effectively donate time on a voluntary basis. A short survey of *colvols* and health agents will be implemented to (1) assess their time allocation for work, including total time, and (2) explore whether there are any significant differences between the interventions in how these frontline agents are spending their time. The value of their time will be calculated in similar fashion to that of the caregivers.

When an assessment of private costs from households and frontline staff is complete, they will be incorporated into the analysis to augment Table 6. Further, as with set-up costs, in the cost-effectiveness analysis, it will be possible to explore how cost-effectiveness varies whether or not private costs are included.

## **5.2 Social costs**

Undoubtedly there are additional costs incurred or saved by other actors in the economy (or the economy as a whole) as a result of the program—these are what we refer to as social costs. Costs include the following: (1) The program expenditures may include taxes (e.g., income and other taxes) that are not true social or resource costs, but constitute a transfer of resources from the WV-Haiti budget to general government revenues. In a full (general equilibrium) accounting, these would need to be offset by treating them as benefits in the “government account.” (2) Any supply-side costs or savings incurred by the Ministry of Health. We expect the latter type of costs to be small, in particular because, if anything, WV-Haiti is underwriting costs of health care provision that might normally fall under the purview of the Ministry of Health. At present, however, we are unable to make assessments about the value of savings to the Ministry of Health or the other social costs due to taxes. Nevertheless, there is little reason to think that these sorts of social savings and costs would differ across interventions in any fashion other than varying with the number of program beneficiaries, a characteristic we do control for in the analysis. In our judgment, then, ignoring the various possible social costs will not bias conclusions about relative costs feeding into the cost-effectiveness analysis.



## 6. PRELIMINARY CONCLUSIONS

The preliminary analysis presented here outlines the methodology for, and goes some distance toward, calculating costs for the WV-Haiti pilot program. These costs will then be incorporated in a cost-effectiveness analysis. The data show that the program grew substantially over its first three years, more than doubling its size in the first year. They also indicate that it is very important to consider off-budget program costs. Ignoring the value of the donated food distributed would underestimate the program costs by more than one-third. The value of medical supplies, however, appears to be less important in the overall costs, though this conclusion is preliminary as additional information is being collected on those costs.

The pilot areas represent only a small part of the overall DAP intervention area, and therefore comprises only a small part of the overall costs. We estimate total costs for the pilot areas, excluding external evaluation costs, to be approximately \$1.1 million, to September 2004 and excluding private costs.<sup>20</sup> Overall, nearly 60 percent of this was for the preventive model and the remaining 40 percent for the recuperative model. These figures, however, mask the fact that in the most recent fiscal year, costs in the preventive area are twice those in the recuperative area, reflecting the unequal numbers of program beneficiaries between the two modalities. This is due to both the fact that there are more children under two years than malnourished children under five and to the characteristic that after the program has been operating for a while, the average time that an under-two-year-old remains in the program is longer than the nine months a child who enters because he or she is malnourished attends the program.

This report is the first step in calculating costs for the entire pilot program and has a number of gaps. These will be filled during the time remaining in the evaluation, as we await results on the effectiveness of these interventions.

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<sup>20</sup> Haiti has undergone a difficult period since the pilot study began. As with other parts of the evaluation, the generalizability of the results presented here, as well as those to come, will need to be carefully assessed.



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