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Cost-Effectiveness Analysis of USAID Food for Peace Emergency Food Security Activities Final Report

May 2020

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FINAL REPORT

COST-EFFECTIVENESS ANALYSIS OF USAID FOOD FOR PEACE EMERGENCY FOOD SECURITY ACTIVITIES

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ACRONYMS

ABC-I	Activities-based costing ingredient methodology
CBA	Cost-benefit analysis
CEA	Cost-effectiveness analysis
CFW	Cash for work
DDI	Dietary diversity index
DDS	Dietary diversity score
DFID	Department of International Development (UK)
DRC	Democratic Republic of Congo
EFSP	Emergency food security program
FCS	Food consumption score
FFP	Food for Peace
GAO	Government Accountability Office
GDP	Gross domestic product
HDDS	Household dietary diversity score
HEA	Household economy assessment
HH	Household
HHS	Household hunger scale
IDP	Internally displaced person
IP	Implementing partner
IRC	International Rescue Committee
LEAP	Learning, evaluation, and analysis
LRP	Local or regional purchase
M&E	Monitoring and evaluation
MT	Metric ton
NGO	Non-governmental organization
PIRS	Performance indicator report sheet
PMT	Proxy means test
rCSI	Reduced coping strategy index
TCTR	Total cost to transfer ratio
UCT	Unconditional cash transfer
USAID	United States Agency for International Development
USD	United States dollar

VAT	Value added tax
WASH	Water sanitation and hygiene
WFP	World Food Programme

I. EXECUTIVE SUMMARY

PURPOSE OF THE STUDY

The Learning Evaluation and Analysis Project (LEAP) III team has been contracted to provide the Office of Food for Peace (FFP) with a comparative cost-effectiveness analysis (CEA) of their emergency food assistance transfer modalities. The objective of this study is to better understand the cost-effectiveness of different types of transfers employed by emergency food security programs (EFSP).

When alternative interventions aim to deliver a comparable service, cost-effectiveness analysis can provide insight and guidance on what approaches provide the most value for beneficiaries at the least cost. This study aimed to improve FFP's ability to determine under what circumstances various food assistance modalities are likely to be the most cost-effective.

This study comprises three components:

1. A review of a subset of 51 FFP projects that was used to develop the expandable model, as well as calculate cost effectiveness for those projects where data was available.
2. An expandable model that can be used to continue to build a database for all relevant FFP projects on their cost effectiveness.
3. A guidance document for using the expandable model to continue to input project data as it becomes available.

This report presents the findings of the review of 51 projects and provides a template for reporting on future findings as additional projects are input to the model. Three food assistance modalities are compared by this study: Local and Regional Purchase (LRP),[1] cash transfers, and food vouchers. Title II[2] was not included.

KEY FINDINGS

The number of projects with appropriate and comparable reporting data (17 out of 51) was not large enough to provide a sufficient sample for precise results. The findings were highly sensitive to model specifications and therefore were inconclusive about the relative cost effectiveness of transfer modalities.

However, the exercise demonstrated how improved reporting practices could support a more rigorous estimation of comparative cost-effectiveness. As a result, the team has provided an expandable version of the CEA model and a guideline for its use, so that it can be continuously updated with new project data. The model can then be used as a tool for analysis and decision-making for future FFP emergency humanitarian assistance programming.

This report presents the findings from the model development and project review, alongside the expandable model and associated guidance.

[1] LRP is in-kind food assistance procured from within the country or region where the assistance is provided
[2] Title II is in-kind food assistance procured from the United States

LESSONS LEARNED

The findings of this analysis provide important insights into FFP's project monitoring and evaluation policy for implementing partners (IPs), who are the main source of project data. The following recommendations for the monitoring and evaluation of FFP projects could enable greater rigour and robust conclusions in future analyses:

1. Require the reporting of the mean FCS of beneficiaries in addition to the portion of households with poor, borderline and acceptable FCS. Data on portions of population that fall below a threshold is a good static measure. However, the mean FCS score can allow for a more accurate measurement of changes over time.
2. Strengthen the monitoring and evaluation (M&E) requirements for FFP emergency programming to promote improved data collection and reporting quality. This will facilitate comparative analysis across projects. In particular, we suggest that Final Evaluation Reports include:
    - A clear outline of the evaluation method that was applied, including the sample size and sampling strategy;
    - Average household (HH) size in study area so that analysis can standardize effects for different populations;
    - Reporting on the timing of transfers i.e. the date when each transfer is disbursed;
    - Reporting on the timing of surveys and data collection to enable comparison with the last transfer disbursement to verify the full effect of the transfer is being captured by the survey, for example, in relation to the recall period; and
    - Cost data breakdown, which should include both the total project cost, as well as the value of the transfer to allow for a Total Cost to Transfer Ratio (TCTR)
3. While measures such as the FCS score are useful in measuring the impact of an intervention on food security status, they can fail to capture other benefits. Consider extending the analytical approach to capture additional benefits, such as the alternative uses of cash (to buy medical supplies, service debt, pay for education), time-savings benefits, and/or security benefits of transfers for future analyses by using cost-benefit analysis (CBA). CBA could provide more utility when comparing the effects of different transfer modalities that are disproportionately associated with non-food security benefits.

This report presents the methodology used to translate the project evaluation results into a cost-effectiveness analysis framework. The study demonstrates that there is an evidence base that can be used to evaluate the effectiveness of FFP programming. However, there is a strong imperative to make this evidence systematic across projects so that it can be more broadly and effectively used to inform future program and funding decisions.

II. INTRODUCTION

OVERVIEW OF FOOD FOR PEACE COST-EFFECTIVENESS ANALYSIS (CEA) PROJECT

The Office of Food for Peace predicts, prevents, and responds to hunger overseas. FFP's emergency food assistance programs aim to provide immediate relief to households facing acute food insecurity. FFP delivers resource transfers through four food assistance modalities: Title II, Local and Regional Purchase (LRP), cash transfers, and food vouchers. Title II is in-kind food assistance procured from the United States and LRP is in-kind food assistance procured from within the country or region where the assistance is provided. Cash and voucher transfers (restricted or unrestricted) allow beneficiaries to purchase necessary food commodities themselves when local markets are functioning and well-supplied. In the fiscal year 2019, FFP programmed roughly $4B under emergency food assistance and $362M towards development of food security activities.

The LEAP III team has been contracted to provide FFP with a comparative CEA of their emergency food assistance transfer modalities, alongside an expandable model and associated guidance for using the model.

PURPOSE OF THE REPORT

This report presents the findings from a cost-effectiveness analysis of FFP emergency food assistance projects, which compared the cost of different transfer modalities to improve food security outcomes of beneficiaries, measured by the Food Consumption Score (FCS).

The report outlines the methodology, results, and limitations of the cost-effectiveness analysis. It also includes recommendations on how future analyses of emergency food security programs could be improved.

DEFINITIONS

Table 1: Key Terms in this Study

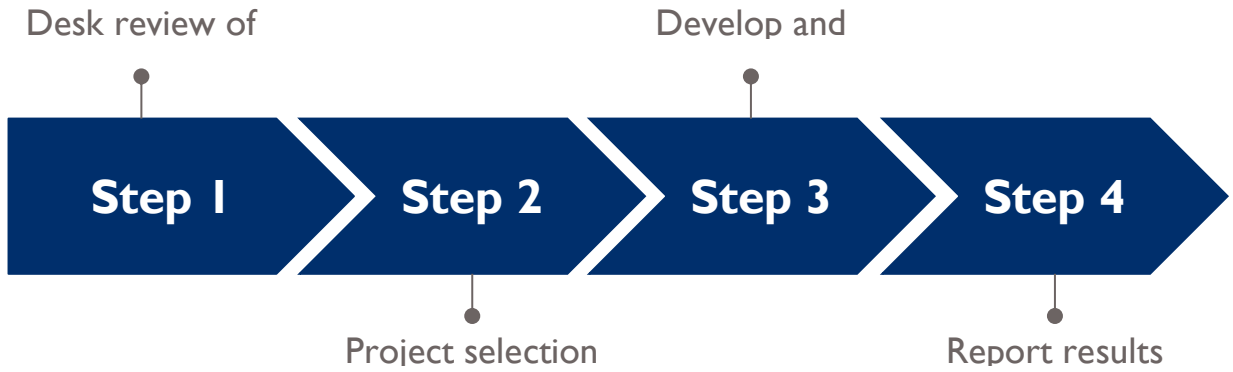
Key term	Definition
Title II	U.S. in-kind food aid (Title II) is often used to respond to an emergency where: 1. local markets are not functioning; 2. there isn't enough food in local markets to meet the need; or 3. beneficiaries do not have physical access to markets. A typical food basket can include a grain, a pulse, and oil, designed to mirror local diets as much as possible. This food aid takes an average of 4–6 months to reach beneficiaries. However, food is often pre-positioned in warehouses around the world to reduce delivery times.
Local Regional Purchase	Locally or regionally purchased commodities are often used when local or regional markets have acceptable quantities of food available to supply emergency food assistance programs without impacting prices or commercial trade. In-kind locally or regionally purchased food typically reaches people within one to two months.
Cash transfer	Cash transfers and vouchers are often used when local markets have sufficient food and people simply can't afford it. Cash transfers may be used when people are physically spread out or highly mobile, rapid response is high priority, or food needs are so severe people will spend most new income on food.
Voucher transfer	Vouchers may be used when working with specific vendors, ensuring people receive certain foods, or for security reasons. Vouchers can strengthen local markets by enabling participating local vendors to sell more food. Debit card or mobile phone cash transfers, as well as electronic vouchers may benefit local banks and mobile phone companies.
Food Consumption Score	The Food Consumption Score (FCS) is an index that was developed by the World Food Programme (WFP) in 1996. The score is calculated using the summation of the frequency of consumption of different food groups consumed by a household during the 7 days before the survey. There are standard weights for each of the food groups that comprise the FCS (WFP, 2015).

III. METHODS

The objective of this assignment was to provide USAID with a comparative cost-effectiveness analysis of FFP emergency food assistance modalities in order to improve understanding of cost-effectiveness in relation to emergency program design models.

The methodology consisted of reviewing 51 FFP emergency projects for their evaluability, which encompassed nine countries and several transfer modalities, including food vouchers, conditional and unconditional cash transfers, cash for work, and LRP, and then comparing 17 of these projects based on their cost-effectiveness. The resulting model compares the cost of delivering the transfer to the transfer's ability to improve the FCS of the targeted population.

Specifically, the methodology undertaken to develop this report can be broken down into the following steps:



DESK REVIEW

The first step in the methodology involved a thorough desk review of FFP project documents, as well as the literature related to calculating and comparing cost-effectiveness of different transfer modalities in humanitarian crises.

Food for Peace provided documents for 51 past emergency projects, spanning a wide variety of contexts and geographical regions. The project documents that were provided included the following:

- Endline Survey Reports
- Baseline Survey Reports
- External Evaluation Reports
- Final Program Reports
- Annual Results Reports
- Indicator Tracking Reports
- Program Narrative Reports

The team reviewed all the project reports and collated the data into a single database in order to review its quality and evaluability. The main information extracted from the project documents during this stage included the:

- Project name,
- Award number,
- Country or implementation region,
- Funder,
- Program budget,
- Transfer modality,
- Project time period,
- Targeted outcomes,
- Implementing partner, and
- What documents were available.

Simultaneously, the team conducted a literature review of recent studies and reviews of cost-effectiveness analyses on food assistance modalities. The literature review examined existing indicators (measures of effectiveness), as well as evidence on effectiveness, costs, and cost-effectiveness of relevant transfer modalities. The literature review can be found in **Annex I**.

Measure of Cost-Effectiveness

The effectiveness of transfer modalities can be measured in various ways. Some common measures of effectiveness include impacts on food consumption, dietary diversity, coping strategies, household hunger, and livelihoods frameworks, including specific indicators that have been established and validated for each.

The measure of cost-effectiveness suggested by USAID for this study was the Food Consumption Score (FCS). As part of the desk review, the team reviewed the literature to evaluate the suitability of FCS as a measure of effectiveness, ensure the comparability of programs, and to allow the results of the analysis to be cross referenced against international benchmarks.

Table 2 summarizes several common measures of transfer modality effectiveness that were examined as part of the desk review.

Table 2: Common Measures of Effectiveness

Measure	Description
Food Consumption Score (FCS)	FCS is a composite score based on dietary diversity, food frequency, and the relative nutritional importance of different food groups. It aggregates household data on the diversity and frequency of food groups consumed over the last seven days. This is then weighted by the relative nutritional value of the food groups. Based on this calculation, the household's food consumption can be classified into one of three categories: poor, borderline, or acceptable.
Household Dietary Diversity Score (HDDS)	The HDDS measures food access and consumption across 12 standardized food groups from the previous 24 hours. It provides a snapshot of the economic ability of a household to access a variety of foods. The HDDS is a proxy measure of household food access and the socio-economic status of the household by measuring the number of food groups consumed, rather than the individualized items.
Reduced Coping Strategy Index (rCSI)	The rCSI is a proxy indicator of household food insecurity that is based on a list of behaviors (coping strategies). The index reflects both the frequency of each behavior (i.e. how many days over the last 7 days the coping strategy was used by any member of the household) and severity (i.e. how serious the strategy). The rCSI is based on a list of five food-related coping strategies that the household used in the seven days prior to the survey.
Household Hunger Scale (HHS)	The Household Hunger Scale (HHS) is a food deprivation scale that measures the percentage of households experiencing hunger. To collect data for this indicator, the person in the household in charge of food preparation is asked about the frequency with which three events were experienced by any household member in the last four weeks: 1. No food at all in house 2. Went to bed hungry 3. Went all day and night without eating. Values for the three questions are summed for each household, producing an HHS raw score ranging from 0 to 6.
Household Economy Approach (HEA)	The household economy analysis (HEA) was developed by Save the Children in the 1990s and is used for early warning of acute food insecurity, contingency and response planning, emergency needs assessments, livelihood programme design, among others. It provides a livelihood framework to analyze how people obtain access to essential commodities in order to determine people's food and non-food needs. The framework relies on two components; a baseline assessment to quantify people's food and income sources and expenditure patterns according to livelihood zones for a reference year, and an outcome analysis, which looks at how that access is affected as a result of a positive or negative change, or problem specification. The analysis can be applied to measure household resilience, through a household livelihoods resilience score, and provide insight on whether households can recover after a shock without negative coping strategies.
Poverty Gap	Some studies that compare modality effectiveness have estimated the impact of transfers on the poverty status of beneficiaries of the programs by using propensity score methods to compare the proportions of program households in extreme poverty with those in the matched control groups (Ahmed et al, 2009). Another method that has been used to compare cost-effectiveness of different transfer modalities has been to examine the cost required for a modality to produce a predefined improvement in poverty measures, such as an X% decrease in the number of beneficiaries living in extreme poverty, or to predict changes in poverty gaps.

Using FCS as the primary measure of effectiveness presents a number of advantages and disadvantages. The first advantage is that FFP requires implementing partners (IPs) to collect data on FCS as an outcome indicator for all projects that are over six months in duration (USAID, 2019). Consequently, it is the most widely-available outcome measure across projects. FCS also correlates well with caloric availability at the household level, and reflects the quality of diet in regards to energy and diversity (Hidrobo et al, 2014). In addition, the questionnaire that is used to calculate the score can be adapted according to local contexts by updating the examples for each food group to reflect common, local food staples for each category.

However, scholars have presented a number of critiques of the FCS. Wiesmann et al (2009) claim that the weight values assigned to food groups are not based on a clearly defined nutritional metric and do not usefully increase the association of the FCS index with caloric intake over an unweighted version of the index. The score also does not account for distribution of food consumption within households or micronutrient quality. Finally, multiple studies (Wiesmann et al, 2009; Loven and Mathiassen, 2014) found that there is no evidence of universally valid cutoff points and that current cutoff points consistently underestimated inadequate energy consumption, risking increased prevalence of false negatives in data analysis.

In addition, the FCS is only based on the previous seven days of consumption from when the survey was distributed. Recall data of this nature, particularly at the level FCS requires, is not always reliable. The recall period makes the measure more vulnerable to timing issues than if it covered a longer retrospective period. Delays between the last transfer and data collection may lead to the FCS not reflecting the true benefit of the transfer. The FCS also does not capture what cumulative impacts a project may have. If a project spends X million over Y months, we can examine if Z% more households will have an acceptable FCS score in a seven day period after the last disbursement, or whenever FCS is measured. However, there is no way to verify whether that FCS would be representative of any 7 day period randomly chosen within the Y months of the project, or how long this benefit may be sustained after the survey was administered.

Furthermore, although guidelines have since been updated, the projects available for this analysis frequently only report on the share of beneficiaries that fall above an "acceptable" FCS score. However, such an approach can fail to report the impact of an intervention if the result is an average movement concentrated around the households with lowest FCS scores, moving them from very low to low, but not past the threshold.

Despite these limitations, the team considered FCS appropriate for the purpose of this analysis. Other measures, such as CSI and HEA, only measure food consumption indirectly. HEA in particular is more useful as a project planning tool in humanitarian contexts. HHS only encompasses severe categories of food security, which may not account for nuances in diet quality or food consumption. Finally, as mentioned, HDDS is very comparable to FCS, but FCS is more commonly reported across projects. However, it is important to clearly state the limitations of FCS as a measure of effectiveness and discuss the implications for interpreting the final results of the analysis (see Discussion section).

Project Selection

The second step in the methodology was to review the database of project data and identify a subset of projects to include in the cost-effectiveness analysis. The team conducted iterative reviews according to

detailed and rigorous selection criteria to select a subset of projects for the analysis. The process of screening projects followed three steps:

1. **Food Consumption Score** - The first step selected projects based on the availability of FCS results at baseline and endline (29 out of 51 projects selected);
2. **Evaluability Assessment** - The second step focused on the methodological rigor of data collection and reporting (21 out of 29 selected); and
3. **Final Selection** - The third selection step focused on the availability of additional data required by the model (17 of 21 selected).

Selection Step 1: Food Consumption Score

As mentioned, FCS was selected as the measure of effectiveness. Consequently, for the first review there were two main selection criteria:

1. The presence of the FCS as an outcome indicator in project reports at baseline and endline.

Since the FCS is the primary measure of effectiveness used in this study, accurate reporting of changes in FCS was integral to determine transfer modality effectiveness. There are several limitations in how FCS was reported for different projects, which are discussed in more detail below.

2. Sufficient documentation of project information at baseline and endline.

Project information refers to basic data such as the number of beneficiaries, data collection methodology, external factors, other outcomes that were measured, issues or challenges with the program or evaluation, and, most importantly, project cost data.

It is important to note that, for projects that were missing reports, the team requested any additional key documents from USAID before excluding the project from the analysis.

After applying these primary criteria, 29 projects were found to have sufficient baseline and endline data, including details on FCS. During this selection round, the most common reason for excluding a project from the analysis was the lack of key project reports; namely, baseline and endline reports.

Selection Step 2: Evaluability Assessment

The second review assessed how evaluable each project was based on the available documentation. This included a critical review of the project design, evaluation methodology, sampling techniques, sample size, disaggregation of beneficiary data based on transfer modality received, and timing of transfers.

Projects that employed a single transfer modality were prioritized for analysis. Many projects provided multifaceted food assistance using a variety of transfer modalities. However, this causes issues with disaggregating and attributing effectiveness. With a single transfer modality, it is possible to more accurately attribute corresponding changes in FCS to the activities of the project. Therefore, projects were excluded if there were multiple transfer types provided simultaneously and the data could not be disaggregated.

The data collection and evaluation methodology for each project was assessed to ensure the findings were rigorous. A number of issues arose in regard to these considerations. The most common issue that led to the exclusion from the CEA was due to information gaps in project reports, such as insufficient information about the methodology used to conduct the evaluation. Issues around sample size and

sampling methodologies were also common. For example, some projects had sufficient sample size, but the methodology did not specify what type of sampling strategy was used. Other reasons for exclusion included if the evaluation findings did not represent the entire project population or if the sample size was insufficient to detect a significant effect within the target population.

The timelines of both transfer distribution and data collection were also important to ensure that the FCS would accurately capture the benefits of the project. Because FCS only includes food consumption from the last seven days, the data collection had to be conducted in a timely enough manner to capture the benefits of the transfer modality employed. Additionally, clear timelines were necessary to determine the duration of exposure for different cohorts in a program. For example, the lack of disaggregated data for a project in Nigeria meant that there was no way to differentiate cohorts that received two rounds of transfers compared to those that received three. Finally, a close examination of project timelines was important to determine if data collected at baseline and endline are representative of the project's effects. For example, one project collected baseline data after significant exposure to the project activities, which created a risk of underestimating or possibly misattributing effects.

The second review reduced the number of eligible projects from 29 to 21. The most common issue during this round of selection was insufficient sample size in the project evaluation.

Selection Step 3: Final Selection

After completing the second round of review, the team began to populate the cost-effectiveness model. During this process, some additional considerations arose regarding the utility of project data, leading to several more projects being omitted from the analysis.

These issues were related to project design and the measurements of key indicators. Thus, while populating the model, the team also examined how projects measured and documented FCS and other key parameters that were necessary to standardize results, rather than just the presence of an FCS (as with round one).

In particular, the team reviewed and compared the consistency of FCS measurements across contexts to ensure that results would be comparable in the CEA model. The review examined how FCS was measured and recorded for each project, including:

- Mean FCS (Baseline and Endline)
- % of target population with "acceptable FCS" (Baseline and Endline)
- Disaggregation of FCS across target population (Baseline and Endline)
- Scale of FCS scores (Poor, Limited/Borderline, Acceptable)

The team also gathered detailed information, from either primary or accurate secondary sources, on key parameters such as household size so that cost data could be standardized across contexts.

After refining the parameters of the cost-effectiveness model, a total of 17 projects qualified to be included in the analysis, comprising eight projects with cash transfers, eight with vouchers, and one with local regional purchase across six countries (**Table 3**). Once the screening process was complete, the team reviewed the short-listed projects with USAID.

Table 3: Summary of Projects Selected for Analysis

Country	Modality	Number of beneficiary households	Reports mean FCS	Reports % of HH with acceptable FCS
Mali	Cash	4,538	✓	✓
Mauritania	Cash	2,927		✓
Mauritania	Cash	1,840		✓
Niger	Voucher	3,400		✓
Niger	Voucher	4,000		✓
Niger	Voucher	3,300		✓
Nigeria	Cash	4,515		✓
Nigeria	Cash	5,985	✓	✓
Nigeria	Voucher	57,906		✓
Nigeria	LRP	4,002		✓
Nigeria	Cash	7,959	✓	✓
Nigeria	Cash	9,235		✓
Somalia	Voucher	5,897	✓	✓
Somalia	Voucher	5,484		✓
Somalia	Cash	4,518	✓	✓
Yemen	Voucher	14,558	✓	✓
Yemen	Voucher	17,378	✓	✓

COST-EFFECTIVENESS MODEL

After the team identified an appropriate subset of projects, a cost-effectiveness model was developed and parameters of the analysis refined.

There are three key elements included in the analysis, which are each specified in more detail below. The first involves estimating program effectiveness, measured by the change in FCS among beneficiaries; the second is estimating the costs of the transfers; and the third is comparing the two in a standardized measure of cost-effectiveness.

Estimating Program Effectiveness

The team compared program effectiveness across the 17 shortlisted projects, using FCS. However, not all projects that measure FCS report it in the same way. As a consequence, two measures of FCS were used:

1. The change in the portion of households with acceptable FCS
2. Change in households' mean FCS

The first measure is the change in the percentage of beneficiary households with an "acceptable" FCS. For this measure, the team compared the change in the proportion of households that scored in the acceptable category of FCS from baseline to endline. This was the most frequently reported measure across projects, as it is required by USAID for all FFP activities that are six months or more in duration (USAID, 2019).

The second type of measurement included in reports, albeit less frequently, was the mean FCS score per household. The measure of effectiveness was the change in households' mean FCS from baseline to endline.

It is important to note that these two measures are not directly comparable with each other. Currently, the monitoring and evaluation guidance that is provided by FFP stipulates that IPs are only required to report the change in acceptable FCS. However, this presents limitations in assessing effectiveness of project activities. For example, it would be difficult to directly compare a context where the majority of beneficiaries were just below the "acceptable" threshold and whose statuses could be easily improved through a small intervention to a context where the majority of beneficiaries had a "poor" FCS, and were not completely moved to "acceptable," through a larger intervention that still had a positive effect. Mean FCS score would improve the comparability of these contexts by removing the threshold measurement. However, as we will discuss in more detail in later sections, mean FCS still does not capture all the benefits of a transfer modality and does not account for the size of household or distribution of the transfer.

In addition, IPs are required to report on FCS for projects that are six months or longer, but only required to conduct baseline and endline surveys for projects that are 12 months or longer. This results in a gap, where FCS reporting for shorter projects may not have comparable baseline and endline values, making it unsuitable for CEA. Many projects were excluded from analysis for this reason.

Defining and Estimating the Costs

The next major element of the analysis involved defining the relevant costs of each project. Ideally, this would encompass both the cost of the transfer, as well as the total cost of the project to ascertain whether particular transfer modalities have a stronger impact on FCS and how much of this effect is due to the difference between transfer type values, rather than the cost of administering the transfer. However, in most cases only the total project cost was available for the selected projects. For 10 out of the 17 projects that were evaluated, the cost of the transfer itself was provided in project budgets and recorded in the model, alongside the total project cost. These two figures are used to calculate a cost to transfer ratio. This ratio estimates the cost to deliver every $1 received by the beneficiary.

All cost data was provided by FFP. For each project, the cost of the project was divided by the number of beneficiary households and the average number of people per household in order to estimate the cost per person. Estimating cost per person is important for comparability; households in the project review

ranged in size from five persons to 10 persons; the same size transfer going to a household of five will have a very different effect than to a household of 10.

For a number of projects, the average household size had to be estimated based on national data in order to standardize the cost per household more accurately. To supplement missing information on household size and composition, the team referred to the document, "Household Size and Composition Around the World," published by the United Nations, and used the national average household size as an estimate. Again, although this may not reflect important regional variations, it provided a suitable estimate of average household size and allowed the project to be included in the analysis.

It is important to note that FCS is calculated on a household basis. Therefore the comparison of the cost per person necessarily assumes that the average household FCS is consistent across members of the household, though in reality it is most likely that some household members have significantly higher FCS than other household members. The figures presented represent the *average* cost per person per change in FCS.

In some projects, the FCS score was only reported for certain cohorts or regions, while the cost data was generic for the whole project. The team addressed this issue by estimating the cost proportionate to the population size of the relevant region. Although this may not reflect cost differences between regions, it provides a reasonable benchmark.

Calculating the cost-effectiveness

Once the data for effectiveness and costs were gathered into the model, the comparative cost-effectiveness could be calculated. Several iterations of this calculation were conducted in order to differentiate projects with different measures of effectiveness and to standardize results.

Cost per Person-Month to Move a Household to Acceptable FCS

Since data on the percentage of households with acceptable FCS scores was available for all projects included in the analysis, the first iteration of the analysis examined the cost per person-month required to move a household to an "acceptable" FCS. The cost-effectiveness was determined by dividing the cost per person-month by the change in the proportion of beneficiaries with an "acceptable" FCS. The cost per person-month was used to standardize across projects, which have differing number of transfers/months.

Cost per Person-Month to Increase a Household's FCS by One Point

For projects that captured the mean FCS of beneficiaries, the cost-effectiveness analysis examined the cost per person-month to increase a household's FCS by one point.

This cost was determined by dividing the cost per person-month by the change in the mean FCS score to get the cost per person-month of improving a beneficiary household's FCS score by one point.

There were seven projects with mean FCS available, including four projects with voucher transfers and three with cash transfers. None of the projects that employed the LRP transfer modality qualified for inclusion.

IV. RESULTS

A total of 17 FFP projects were included in the cost-effectiveness analysis. Of these, eight projects used vouchers, eight used cash, and one used LRP. The average Cost to Transfer Ratios for vouchers and cash are very similar, $0.85 for vouchers (with a minimum value of $0.47 and a maximum value of $1.13) and $0.90 for cash (with a minimum value of $0.57 and a maximum value of $1.22).

In the first iteration of the cost-effectiveness analysis, all 17 selected projects were compared on the basis of their respective cost per person-month to move a beneficiary to an "acceptable" FCS.

A separate analysis was conducted for a subset of projects that reported the mean FCS at baseline and endline. A total of seven projects qualified for this analysis; three projects employed cash and four used voucher transfer modalities, though one of these was a voucher program with exceptionally high costs. No LRP projects were included in this iteration. This analysis examined the cost per person-month to increase the FCS by one point.

The results that follow need to be interpreted with great caution. The cost effectiveness based on moving a household to an acceptable FCS is based on very limited sample sizes, particularly for the median analysis where the upper and lower values are dropped out of the calculation to eliminate outliers.

The first set of results calculate the mean cost per person-month for a change in acceptable FCS and for a change in mean FCS. The results from this iteration suggest that LRP is the most cost-effective transfer modality for moving a person to an "acceptable" FCS with a mean cost of **$19.3 USD** per person-month to move a beneficiary household to an "acceptable" FCS. Cash is the most expensive, costing 60% more than vouchers. By sharp contrast, an analysis of the cost per person-month per FCS point increase suggests that cash is the most cost-effective option, with a mean cost of **$0.7** per person-month. Vouchers, at a cost of $5.8, are 700% more expensive than cash.

These results are summarized in **Table 4**.

Table 4: Summary of Results - Cost per Person-Month, Mean

	CEA based on % with acceptable FCS		CEA based on change in mean FCS	
Type of transfer	**Number of studies that report % of HH with acceptable FCS**	**Cost per person-month for HH moved to acceptable FCS - Mean (Min/Max)**	**Number of studies that report mean FCS**	**Cost per person-month per FCS point increase - Mean (Min/Max)**
Voucher	8	$35.0 ($7.6 / $75.2)	4	$5.8 ($0.3/$21.4)
Cash	8	$55.7 ($17.1/$152.2)	3	$0.7 ($0.5/$1.0)
LRP	1	$19.3 ($19.2/$19.3)	0	N/A

There were several projects with particularly low/high changes in FCS scores, which resulted in a skewing of results. As a result, the analysis was also assessed using the median cost per person-month for a change in FCS, to mitigate the effect of outliers in a final iteration of the analysis.

The median cost per person-month to move a HH to an *acceptable* FCS was **$31.7 USD** for vouchers and **$53.2 USD** for cash, suggesting that cash is more expensive than vouchers**.**

The median cost per person-month for a change in mean FCS cost **$0.16 USD** per transfer for vouchers; the sample size was not large enough to calculate a median for cash or LRP.

The results of this final iteration of the analysis is summarized in **Table 5**.

Table 5: Summary of Results, Cost per Person-Month, Median

	CEA based on % with acceptable FCS		CEA based on change in mean FCS	
Type of transfer	**Number of studies that report % of HH with acceptable FCS**	**Cost per person-month for HH moved to acceptable FCS**	**Number of studies that report mean FCS**	**Cost per person-month per FCS point increase per HH**
Voucher	8	$31.7	4	$0.16
Cash	8	$53.2	3	N/A
LRP	1	$19.3	0	N/A

V. DISCUSSION

EXTERNAL VALIDITY AND LIMITATIONS OF THE STUDY

Currently, the results of the cost-effectiveness analysis have no external validity due to incomplete or insufficient project data and consequently, the small sample of projects that the final results are based upon. A brief summary of the limitations of this study can be found in **Table 6,** which are then described in more detail below.

Table 6: Summary of Limitations

Limitation	Description	Effect on results
Quality of project data	The quality of project data was often insufficient to support a rigorous analysis.	Unclear
Reporting of FCS	The majority of projects only reported the percentage of households moved to an "acceptable" FCS score, however reporting the mean FCS score would provide more insight for a cost-effectiveness analysis.	Underestimation of effectiveness
Evaluation methodology	Evaluation reports frequently did not define the methodology employed, used insufficient sample sizes, or samples that were not representative of the whole beneficiary population.	Unclear
Timing of transfers	The timing of transfers, especially in relation to the timing of surveys or data collection, was not reported.	Underestimation of effectiveness
Representation of transfer modalities	There are very few projects included in the sample of each transfer modality, which means that there isn't a sufficient sample to compare actual costs and effectiveness.	Overestimation of cost
Selection bias of transfer modalities	Due to data quality limitations, the team could not choose projects either randomly or get a balanced distribution by modality. Instead, only the most evaluable projects were used, creating a biased sample. It's possible that projects with the best and most organized M&E (those included) also had the best management and were most effective, leading to an upward bias.	Overestimation of effectiveness
Excluded benefits	The analysis uses the FCS as a measure of effectiveness. FCS is an effective proxy for understanding food consumption, but is unable to capture benefits outside of food consumption and hence is inappropriate for comparing across types of transfer modality.	Underestimation of effectiveness

COMPARISON WITH INTERNATIONAL BENCHMARKS

Numerous other studies have examined and compared the cost-effectiveness of different humanitarian transfer modalities. In this section, the results of other studies and reviews are presented to provide a point of comparison for this analysis. A full literature review with more detail can be found in **Annex I.**

Across numerous studies, in-kind, cash, and voucher transfer modalities are all found to be effective in improving the quantity and quality of food consumed. For example, all three modalities increased

household food security among conflict-affected populations and maintained household food security during food crises and drought in multiple contexts (Doocy and Tappis, 2016). This finding is reflected in other studies and reviews as well (Bailey, 2013; Skoufias et al, 2008; Hidrobo et al, 2014; Ahmed et al, 2009).

Nonetheless, there are differences between transfer types on specific measures of effectiveness. Food aid has consistently been found to have the greatest impact on increasing caloric intake, while cash and vouchers tend to have larger impacts on dietary diversity (Hidrobo et al, 2014; Gentilini, 2016; Bailey, 2013; Doocy and Tappis, 2016). One reason for this is because in-kind food tends to increase food basket and staple grain consumption, while vouchers and cash promote a variety of food consumption (Hidrobo et al, 2014). However, the effectiveness of different transfer modalities is often contingent on other factors, including context, program design, and local market functions, among others. As a result, evidence often varies.

In addition to these variances in effectiveness, there are significant differences between the costs of transfer modalities. In-kind food aid is consistently found to be the least cost-effective transfer to improve food security outcomes, while cash-based approaches are generally found to be the most cost-efficient and cost-effective (Doocy and Tappis, 2016; Aker, 2016; Hirdobo, 2014), although there are exceptions.

A 2016 World Food Programme analysis compared cash, vouchers, and in-kind food transfers and found that cash was the most efficient and effective modality, meaning it cost the least for the highest nutritional value score. Schwab (2013) found that cash transfers increased FCS at a lower cost than what it would take to make comparable gains in HDDS or Dietary Diversity Index (DDI) in Yemen. A comparison of cost-effectiveness in Ecuador (Hidrobo et al, 2014) demonstrated slightly different results, where vouchers were the least costly means to improve daily caloric intake, anaemia, FCS, DDI, HDDS, while in-kind transfers were the most costly. In the same study, there was no difference in the cost between vouchers and cash in improving FCS.

However, another cost-efficiency study for USAID (2018) found that cash was the *least* cost-efficient, while LRP was the most cost-efficient, based on comparing the cost of delivering a standardized metric ton of food. This is again contradictory to the study by Ahmed et al. (2008), which finds that the cost of transferring 1 Taka worth of food in Bangladesh is 0.20 Taka, while the cost of transferring 1000 Taka (of cash) cost only 0.15 Taka, making cash extremely more cost-efficient. Furthermore, the goods and services that beneficiaries gain access to as a result of a cash transfer better reflect the needs and preferences of households and span aid sectors (education fees, medical supplies, household items, debt services, as well as food commodities, for example). For this reason, measuring impact against one standardized score often overlooks the multifarious impacts cash may provide, which would be unreplicable as in-kind assistance. For this reason, cash is best appreciated as a flexible, multi-sectoral tool (Cabot Venton et al., 2015).

In summary, the literature on cost-efficiency and cost-effectiveness of humanitarian assistance modalities can vary greatly in their results, depending on the methodology adopted, as well as program context. Studies consistently find that all transfer types are effective in improving food insecurity of beneficiaries, although the specific benefits vary between transfer types. Typically, cash and voucher programs are the most cost-effective options; they frequently result in positive benefits in food consumption, dietary diversity, and coping strategies while typically incurring lower program costs. They are also preferred according to beneficiary preferences and opportunity-costs. There are some exceptions to this and the

finding does not imply that cash is universally the best option, due to the contextual requirements necessary for cash to be effective.

VI. RECOMMENDATIONS

The findings of this analysis provide important insights into FFP's project monitoring and evaluation process and requirements. It also presents an opportunity to strengthen the M&E guidance for FFP emergency programming in order to promote improved data collection and indicator reporting so that more rigorous analysis can be applied. The review demonstrates that there is an evidence base that can be used to evaluate the effectiveness of FFP programming. However, there is a strong imperative to make this evidence systematic across projects so that it can be used effectively to inform program and funding decisions.

The key finding from this report is that it is not possible, based on existing data, to draw conclusions about the relative cost effectiveness of transfer modalities. The sample of projects with consistent reporting of data is simply not large enough, which makes the findings highly sensitive to adjustments in calculations. This section summarizes the issues that limited the analysis and presents a number of recommendations to improve reporting and more systematic calculation of CEA for each.

OUTCOME INDICATOR REPORTING

The current M&E guidance only specifies that projects have to report the percentage of beneficiary households that fall into each of the three categories of FCS (poor, borderline, and acceptable). While this indicator is useful, the process undertaken for this analysis suggested that changes in mean FCS were more useful as an indicator of cost effectiveness and avoided issues with threshold cutoffs and ceiling effects. Presently, very few projects report mean FCS even though the underlying data required to estimate the mean FCS is already collected.

Furthermore, projects are required to report FCS when they have activities for over 6 months, however only projects over 12 months are required to conduct baseline and endline reports (USAID, 2019). If FCS is only measured once over the course of a short-term project, it does not communicate any useful comparable data points that can be used to assess the impact of that project.

Ideally, the FCS would always be collected prior to project implementation and again towards the end of the project, close to the last transfer. Therefore, our recommendation is that FFP collect the mean FCS by either asking IPs to report it or requiring the IPs to submit their data along with the evaluation reports. The second option will allow FFP to estimate the mean FCS.

1. Report mean FCS or submit the underlying FCS data used for the estimation of the share of households in each threshold (poor, borderline, acceptable).
2. Collect FCS more frequently for shorter projects, preferably prior to implementation and at the end of the project.
3. Update PIRS for FCS to reflect these changes

DATA COLLECTION AND EVALUATION DESIGN

A major limiting factor that reduced the number of projects available for analysis was poor design and implementation of monitoring and evaluation methods.

In regards to data collection, we recommend that project reports clearly describe the timing of the transfers, as well as the timing of surveys or data collection. The former is critical to ensure projects can be compared like-for-like, depending on whether transfers were made in the lean or high season. The survey should also be distributed within a certain time frame relative to the timing of the last transfer.

Second, there should be standardized reporting of the household size of targeted beneficiaries to allow for normalization of data by household size.

Third, there should be a more detailed breakdown of cost data. It is fairly standard to report on the cost of the transfer itself, as well as the cost of its administration. For example, most cash programs report on the TCTR as a standard mechanism to compare cost effectiveness across programs. This breakdown of costs would allow for a nuanced understanding of cost effectiveness, particularly in contexts where the cost per transfer may be high due to, for example, security concerns.

The limitations that result from insufficient project data severely reduces the projects available for comparison. Any comparative analysis of transfer modalities should have a robust sample of each modality. Although there may still be selection bias because transfer modalities are not implemented randomly, it can still improve the rigour of this type of analysis by having greater representation of each type of transfer. For this study, there was a very small number of program reports for each type of transfer modality; there were no projects that used Title II food aid and only one LRP project that qualified for inclusion. This is especially problematic because it entirely excludes Title II assistance, which is the most common transfer modality, accounting for 46% of FFP programming in 2018 (USAID, 2018), as illustrated by **Figure 1**.

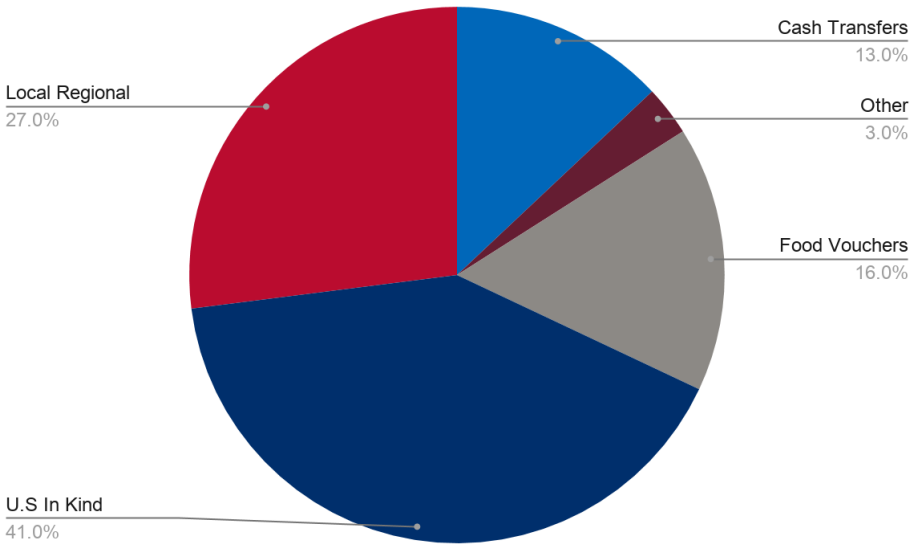


Figure 1. USAID Share Food Transfer Programs in Fiscal Year 2019

Moving forward, as reporting and evaluation improve, more data from a variety of projects and corresponding transfer types can feed into the analysis and support for more useful comparisons.

Finally, emergency projects exceeding six months are required to conduct an evaluation. Many of these project evaluation reports did not specify a clear evaluation methodology, or implemented the methodology poorly, causing problems with the ability to accurately attribute project effects. The most

common issues with evaluation methodologies included an unspecified sampling method, insufficient sample size, as well as unrepresentative sampling.

We recommend that FFP provide concrete guidance on each of these factors so that future project reporting can provide data that will allow for greater standardization across projects and a better quality CEA.

1. Provide more specific guidance and requirements for reporting on basic parameters and indicators, particularly for evaluation reports. Note that this is not asking for any new data collection, but rather clear and standardized reporting on data that could affect any CEA analysis.
2. Include the following additions to current indicator requirements for emergency programs:
    - Clear outline of sample size and strategy
    - Average HH size in study area
    - Timing of transfers
    - Timing of surveys and data collection
    - Cost data breakdown (cost of the transfer, not just the total cost of a project)

ANALYTICAL APPROACH

Cost-effectiveness analysis is one key way to monitor the effectiveness of programming, and importantly, to compare projects. However, it is recommended that any work moving forward also consider CBA. Whereas CEA measures the relative cost of achieving a given outcome, in this case a change in FCS, CBA looks more holistically at the full range of costs and benefits for each intervention, and compares benefits to cost ratios across programs.

The present analysis found a wealth of benefits associated with different types of transfer modalities outside the scope of FCS that were reported by projects, as well as by the wider literature. These are overlooked by relying solely on FCS as a measure of effectiveness and could greatly compromise the choice of investment. To illustrate this, we briefly outline the benefits that were reported for FFP projects, but excluded from the analysis, according to each transfer modality.

Cash transfers allow for flexible purchasing power so that beneficiaries can invest or purchase a variety of items according to their unique needs. Thus, cash is more economically efficient, doesn't distort individual consumption, and allows freedom of choice for beneficiaries. Project implementers commonly reported that beneficiaries of cash purchased a variety of household items other than food, and had reduced negative coping mechanisms, such as selling off livestock or household assets to buy food. This was seen in projects in Somalia, Nigeria, Niger, and Mali. Preserving assets and reducing negative coping mechanisms can, in turn, increase long term resilience to future shocks.

In addition, many cash programs make the transfer conditional upon participation in other program activities. Such activities are typically aimed at educating beneficiaries on proper WASH, nutrition, or livelihood practices. This was very common throughout FFP projects. In Yemen and Guatemala, this resulted in increased WASH awareness and improved WASH practices. In Somalia and Nigeria, it resulted in the adoption of key infant and young child feeding practices in targeted communities. Finally, in Mauritania, the project reported that children of beneficiaries were screened for malnutrition and that 70% of children identified as malnourished were referred to support centres. Such behaviour changes can

improve nutrition and health outcomes for beneficiaries, however none of these benefits will be captured by FCS or the cost-effectiveness analysis.

Cash for work modalities also result in additional benefits. Cash for work is used when there is a need to support temporary work opportunities and incomes, such as in lean seasons. It can also bring benefits to community infrastructure and has the ability to directly inject cash into local markets. Like other cash transfers, it provides flexibility in how beneficiaries are able to use or invest the value of the transfer. In Yemen and Somalia, cash for work programs improved access to communal infrastructure that supports resilient livelihoods in target communities and created temporary job opportunities during lean seasons. In Somalia, a cash for work project provided a short-term emergency cash injection to mitigate the impact of drought-related shocks. According to project reports, it also helped to prevent the erosion of household assets and livelihoods, contributed to the resilience of affected households and communities, and improved purchasing power of vulnerable food insecure households in targeted regions.

Vouchers also bring additional benefits beyond food consumption and diversity. Although they are more limited in terms of what commodities can be purchased, a project in Niger reported that vouchers increased sales for local vendors and traders and promoted price stabilization for key commodities. Vouchers can also promote the consumption of more nutritious foods due to their more restrictive purchasing power.

Similarly, LRP can boost the incomes of local farmers and create multiplier effects in the local economy that are not captured by FCS. The delivery time of LRP assistance is also much shorter than Title II food assistance, which allows beneficiaries to receive support when needed, rather than after a crisis has already set in. Finally, LRP is usually based on local grains that tend to better suit local dietary preferences.

Finally, many project reports captured benefits other than FCS through other indicators, such as the reduced coping strategy index, dietary diversity score, etc. However, these benefits were excluded from the analysis because of the need to compare projects based on a single measure of effectiveness.

An illustrative summary of non-food consumption related benefits per FFP project can be found below in **Table 7**.

Table 7: Examples of Additional Benefits of FFP Projects

Project ID	Location	Transfer modality	Additional benefits
Nigeria AID-FFP-G-15-0005	Nigeria	Cash	• Cash was used for petty trading as well as purchase of food. This reduced the dependence on casual labour for HH income
Nigeria AID-FFP-G-15-00076	Nigeria	Cash	• Cash was used to service debt, meet medical needs, and meet other basic needs, in addition to food consumption. These other purchases may have detracted slightly from food consumption benefits, however.
Nigeria AID-FFP-G-16-00122	Nigeria	Cash Vouchers In-kind	• Beneficiaries reported that the voucher system was efficient and most cost-effective for them. It was faster and non-discriminatory, which would result in time-savings benefits.
Nigeria AID-FFP-G-15-00048	Nigeria	Vouchers	• Project was able to expand to reach an additional cohort because of the cost savings that resulted from the depreciation of local currency.
Nigeria AID-FFP-G-16-00058	Nigeria	Vouchers	• Mobile e-vouchers were most cost-efficient for beneficiaries. • Bombing and security concerns meant that the program had to avoid disbursements that required gathering of large crowds. E-vouchers were able to accommodate and reduce these concerns.
Mali AID-FFP-G-16-00094	Mali	Cash	• Although the majority of the cash transfer was spent on food (65%), beneficiaries reported it was also used for health, savings, hygiene, debt refunding, productive assets, non-food products, water, and education.
Somalia AID-FFP-G-16-00102	Somalia	Cash Vouchers	• Voucher beneficiaries more willing to share food with neighbours, expanding the benefits of the transfer
Somalia AID-FFP-G-15-00069	Somalia	Cash	• Mobile money improved the quality of project implementation through increased accountability and security of the transfers
Mauritania 72DFFP18GR00021	Mauritania	Cash LRP	• 35.1% of beneficiaries indicated that with the cash distributed they were able to choose which foods to consume, rather than being forced to pick only the cheapest foods (which are not always the most preferred).

CEA is an appropriate method when the scope of analysis is limited to one type of modality, where additional benefits are more likely to be similar. When comparing across modalities, either a qualitative or quantitative analysis of these benefits should be explicitly considered.

1. Continue to document and comment on extenuating circumstances that may have an impact on cost or effectiveness, as well as any additional benefits that were observed outside of the required indicators.
2. Use CEA only to compare within modalities, and CBA to compare across modalities.

By implementing these changes or additions, it will improve the quality of project data and the quality of analysis that can be applied. For many, this can be accomplished without imposing additional labour or cost burdens on implementing partners.

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ANNEX I - LITERATURE REVIEW

PURPOSE OF THE LITERATURE REVIEW

There are multiple studies and reviews on the cost-effectiveness of humanitarian aid responses, however evidence often varies depending on context and program structure. Additionally, different crises have different impacts on food security outcomes. Natural disasters can destroy infrastructure and equipment, affecting livelihoods, housing, increased incidence of disease etc., while drought reduces food availability and access and may cause a decline in assets and each may require a different approach (WFP, 2009).

Cost effectiveness analysis allows programs to select approaches that provide the most value for beneficiaries at the least cost. However, Hodges et al. (2011) caution that it is important to be aware of critical cost drivers, limitations, and comparability of methods and measures of cost effectiveness to ensure results are accurate and robust.

The purpose of the literature review is to provide a broad overview of past studies, reviews, and approaches to cost-effectiveness analyses of food assistance modalities. This will allow our analysis to cross reference results against international benchmarks, select appropriate measures of effectiveness and costs, and ensure comparability of programs. Ultimately, the analysis will improve FFP's ability to determine when various food assistance modalities are likely to be the most cost-effective.

The literature review starts with a summary of existing indicators (measures of effectiveness), followed by summaries of evidence on effectiveness, costs, and cost-effectiveness of FFP modalities.

EFFECTIVENESS OF TRANSFER MODALITIES

Food assistance is delivered to beneficiaries through one of two methods; in-kind food aid, which consists of American commodities that are shipped internationally where needed or locally procured in-kind food, or cash-based assistance, which can include direct cash transfers or vouchers.

Across numerous studies, in-kind, cash, and voucher transfer modalities are all found to be effective in improving the quantity and quality of food consumed. For example, all three modalities increased household food security among conflict-affected populations and maintained household food security during food crises and drought in multiple contexts (Doocy and Tappis, 2016). This finding is reflected in other studies and reviews as well (Bailey, 2013; Skoufias et al, 2008; Hidrobo et al, 2014; Ahmed et al, 2009).

Nonetheless, there are differences between transfer types on specific measures of effectiveness. Food aid has consistently been found to have the greatest impact on increasing caloric intake, while cash and vouchers tend to have larger impacts on dietary diversity (Hidrobo et al, 2014; Gentilini, 2016; Bailey, 2013; Doocy and Tappis, 2016). One reason for this is because in-kind food increases food basket and staple grain consumption, while vouchers and cash promote a variety of food consumption (Hidrobo et al, 2014). Furthermore, the effectiveness of different transfer modalities is often contingent on other factors, including context, program design, local market functions, among others. As a result, evidence often varies. **Table 9** provides a broad summary of a World Bank review (2016) of the most effective transfer type according to specific measures.

Table 9. Summary of Most Effective Transfer Type per Country-Study

Country	Transfers compared	Food Consumption	Calorie Intake	Food Gap	Dietary Diversity	Poverty	Anemia	Child Malnutrition	Child Mortality
Bangladesh	Cash, food	Cash	Cash	-	-	Food	-	-	-
Cambodia	Cash, food	Cash	-	-	Food	-	-	-	-
DR Congo	Cash, vouchers	Vouchers	-	-	Cash	-	-	-	-
Ecuador	Cash, food, vouchers	Food	Food	-	Vouchers	-	-	-	-
Ethiopia	Cash, food			Food		-	-	-	-
Malawi	Cash, food, cash+food	-	-	-	Cash	-	-	-	-
Mexico	Cash, food	Cash	Food	-	-	Food	-	-	-
Niger I	Cash, food	-	-	-	Food	-	-	-	-
Niger II	Cash, food, cash+food							cash+food	cash+food
Sri Lanka	Cash, food	Cash	Cash	-	-	-	-	-	-
Uganda	Cash, food	-	-	Cash	-	-	Cash	-	
Yemen	Cash, food	Cash	Cash	-	Cash	-	-	-	-

Source: World Bank Group, 2016

In addition to this broad qualitative summary, Doocy and Tappis (2016) conducted a review of studies in order to compare the effectiveness of modalities at addressing different food security outcomes. A summary of their results, broken down by measure and study, are included in **Table 10** and **11**.

Table 10. Sample Size and Summary Statistics of Studies on Effectiveness

Indicator	Study	Sample size	Baseline point estimate			Endline point estimate		
			Mean	SD	P-value	Mean	SD	P-value
HDDS	Aker, 2011 (Niger)	T:1200	3.07	2.64	-	3.07	2.04	-
	Schwab, 2013 (Yemen)	T: 1983	7.12	-	NS	7.29	-	<0.1
		C:1983	7.26	-		7.12	-	
	Aker, 2013 (DR Congo)	T:252	2.9	1.75	-	3.36	0.17	-
	Hidrobo, 2014 (Ecuador)	Cash: 539	9.23	1.71	0.49	10.76	1.49	-
		Voucher: 573	9.19	1.90	0.61	10.89	1.47	-
		Food: 413	9.22	1.76	0.57	10.89	1.51	-
		C: 562	9.11	1.87	-	10.27	1.67	-
FCS	Schwab, 2013 (Yemen)	T: 1983	49.12	-	<0.001	51.34	-	NS
		C:1983	52.98	-	-	50.10	-	-
	Hidrobo, 2014 (Ecuador)	Cash: 539	60.00	19.63	0.57	68.16	20.42	-
		Voucher: 573	59.75	20.72	0.66	71.17	20.67	-
		Food: 413	60.93	19.22	0.35	68.72	18.98	-
		C: 562	59.05	20.59	-	61.42	18.57	-

SD: Standard Deviation
T, Cash, Voucher: Treatment groups
C: Control group (no intervention)
NS: Not Specified

Table 11. Results of Studies on Effectiveness

Indicator	Study	Effect			
		Comparison	Coefficient	SE	p-value
HDDS	Aker, 2011 (Niger)	Mobile cash transfer vs. physical cash	0.16	0.21	NS
		Placebo vs. physical cash	-0.26	0.15	NS
		Mobile cash transfer vs. placebo	0.43	0.19	<0.05
		Mobile cash transfer vs. both	0.30	0.18	NS
	Schwab, 2013 (Yemen)	Cash vs. control	-	-	-
		Food vs. control	-	-	-
		Food vs. cash	-0.41	0.15	<0.001
	Aker, 2013 (DR Congo)	Cash vs. transfer	0.13	0.19	NS
	Hidrobo, 2014 (Ecuador)	Cash vs. control	0.47	0.11	<0.001
		Voucher vs. control	0.60	0.12	<0.001
		Food vs. control	0.61	0.12	<0.001
FCS	Schwab, 2013 (Yemen)	Cash vs. control	-	-	-
		Food vs. control	-4.52	1.19	<0.001
		Food vs. cash	-	-	-
	Hidrobo, 2014 (Ecuador)	Cash vs. control	6.57	1.29	<0.001
		Voucher vs. control	9.56	1.39	<0.001
		Food vs. control	6.96	1.22	<0.001

Source: Doocy and Tappis, Cash-based approaches in humanitarian emergencies, 2016.

The remainder of this section provides a summary of each of the food assistance modalities implemented by Food for Peace, including a qualitative summary of their respective advantages and disadvantages.

Title II In-Kind Food Aid

Title II food aid consists of in-kind agricultural commodities procured from the U.S for emergency food needs, provided through governments and public or private agencies (Food for Peace Act,1954). The Title II modality can include food for labour or other conditional input (e.g. attendance), in-kind food distribution, and market assistance programs.

Title II food assistance aims to address the following issues:

- Famine or urgent relief requirements
- Malnutrition
- Alleviation of the causes of hunger, mortality, and morbidity
- Promotion of economic and community development
- Promotion of sound environmental practices
- Conducting feeding programs
- Building resilience to mitigate and prevent food crises and reduce the future need for emergency aid

Title II food aid is most frequently used under the following conditions:

1. Local markets are not functioning
2. There is insufficient food in local markets to meet beneficiary needs
3. Beneficiaries do not have physical access to markets

In-kind food baskets typically consist of a grain, a pulse, and oil and are assembled to reflect local diets as much as possible. Title II assistance is the most common modality, accounting for 46% of FFP programming (USAID, 2018).

As previously mentioned, in-kind transfers are found to have the largest impact on caloric intake. Therefore, it may be the most appropriate modality in contexts where households are below the recommended daily caloric intake (Hidrobo et al, 2014).

Hidrobo et al. (2014) also found that, although all three transfer modalities reviewed produced improvements in FCS, the size of the increase is larger for food than cash. Similarly, in a study comparing transfer modalities in Mexico, Cunha (2014) found that both transfer types led to greater consumption of essential micronutrients by both children and their mothers, but the increases of larger magnitude under the in-kind transfer appear to have had a more meaningful impact with significantly more individuals consuming above the recommended dietary allowance. In Mexico, dietary quality (consumption of iron and zinc) was also significantly better in those families receiving in-kind transfers, likely due to the inclusion of fortified milk in the basket of goods (Skoufias, et al, 2008). Furthermore, in-kind food availability seems to relax binding liquidity constraints so that poor farmers could engage in more productive agricultural activities.

In-kind transfers are often justified because they may cause non-poor may self-select out of welfare programs, facilitate pecuniary redistribution not achieved through cash, or may be more politically feasible. (Cunha, 2014).

However, due to the fact that Title II in-kind assistance is procured from surplus American commodities, it incurs more costs from shipping, storage, and delivery, and has a longer delivery time. This is the primary concern voiced by the Government Accountability Office GAO (2011) in their critique of American reliance on in-kind assistance. It takes on average 4-6 months to reach beneficiaries, although early warning data and speed of delivery factor into final program decisions. Shipping methods have been criticized by GAO due to the fact that ocean transportation represents about a third of the cost to procure and ship commodities for monetization, and because of the legal requirements to ship 75 percent of food commodities on U.S.-flag vessels, which further increases costs (GAO, 2011). Finally, in-kind food aid suffers more from lost or stolen commodities during shipping, storage, and delivery processes, compared to other modalities. Bailey (2013) found that in-kind transfers were more vulnerable to delivery delays and can suffer from poor quality, incomplete rations, or spoilage.

Title II assistance is also more logistically complex to deliver. It requires established distributional channels, usually achieved through large implementing partners that have experience delivering aid at scale.

In-kind food aid is sometimes monetized in order to promote cost-recovery, which can then be channelled back into local development efforts. However, the GAO found that the proceeds generated through monetization are less than what the U.S. government spends to procure and ship the commodities that are monetized; overall, the inefficiency of the monetization process reduced available funding by $219 million over a 3-year period (GAO, 2011). Further, the agencies conduct limited monitoring of sale prices, which may hinder their efforts to maximize cost recovery.

Some studies have also suggested that there are potential negative consequences to delivering in-kind food in conflict zones. In-kind food has the potential to increase subsequent violent patterns and increase exposure to risks for the local population. Physical aid distribution in conflict zones may create incentives for armed actors to either target civilians or aid workers using violence in order to access resources, especially if the aid agencies have associations or ties with state authorities. One study demonstrated an association between humanitarian aid and increased rebel violence in instances of aid delivery between 1998 and 2008 (Wood and Sullivan, 2015). However, this does not account for the counterfactual; namely, the consequences of not delivering aid to such contexts.

Despite these limitations, Title II assistance has a number of unique advantages. First, direct delivery of food is often the best form of assistance in the direct aftermath of serious crises to address beneficiaries' immediate needs. This may include, for example, providing hot meals at a shelter for victims of natural disasters. For this reason, may implementing partners switch from other modalities to in-kind assistance during such circumstances. Food aid is also protected from major fluctuations in local food commodity prices.

Unlike cash transfers, in-kind food aid is less vulnerable to food price and exchange rate fluctuations. Although cash transfer amounts can technically be adjusted to reflect this, it may be difficult or taxing in terms of project management or if there is a fixed program budget (Bailey, 2013). A case study by Cunha, De Giorgi and Jayachandran (2011) demonstrates large estimated price effects in Mexico. Food price fluctuations increased the programme's net transfer by 12 percent for recipients of food, but was

equivalent to a reduction of the value of the cash transfer by 11 percent. Price effects were larger in more remote villages where there was less competition among sellers. However, the food arm was already valued at 30% more than the cash arm.

In addition, beneficiaries and implementing partners have both reported that food assistance is more easily shared between beneficiaries and non-beneficiaries, promoting community cohesion, expanded benefits, risk-sharing, and support for cultural practices. Finally, USAID reports that the distribution of large, visible, and specially labelled food items fosters more goodwill with the U.S.

Table 12. Summary of Benefits and Limitations of Title II Modality

Benefits	Limitations
• Addresses immediate vulnerabilities in the wake of severe disaster or crises • Allows beneficiary sharing, promoting community cohesion • Fosters more 'goodwill' with the U.S through visibility and labelling • Protected from price increases	• Requires complex logistics and established distribution channels • More costly (transportation, shipping, handling etc.) • Requires established and quality infrastructure (warehouses and storage) • More vulnerable to stealing, loss, spoilage • May not consist of local commodities or dietary preferences • Longer time to reach beneficiaries • Potential to exacerbate existing conflict

Local or Regional Purchase

Local or Regional Purchase consists of in-kind food commodities that are purchased from nearby markets when there is a sufficient quantity of food available to supply programs without affecting prices or commercial trade.

In terms of the effect on nutrition and food security outcomes, LRP is very comparable to Title II food aid because it also provides basic foodstuffs that increase overall consumption, food security, and caloric intake. The major difference between LRP and Title II is observed in terms of procurement and delivery efficiency.

Local regional purchase is often promoted as a more cost-efficient transfer modality compared to Title II in-kind food aid because it reduces the shipping costs, reduces transportation time, and allows beneficiaries to have local, culturally familiar food options. Locally or regionally purchased food typically reaches beneficiaries within 1–2 months, compared to 4-6 months for Title II (USAID, 2019). In their multi-country study, Lentz, Barrett and Gomez (2012) find that on average LRP saves 13.8 weeks compared to similar international deliveries, a gain of more than 60 percent.

Additionally, in a report that analyzed the comparative cost-efficiency of modalities for USAID, local regional purchase was found to be, on average, 19% less expensive than Title II emergency programs, making it the most cost-efficient option. The average cost per metric ton of food was US $956, compared to an average of US $1,105 for Title II (USAID, 2018). The GAO (2011) also found that procuring local food was less expensive and faster than importing US commodities. A number of examples illustrate this

finding. In Zambia, locally procuring maize resulted in a 30-50 percent reduction in price and a 1-2 month reduction in delivery delay (Haggblade and Tschirley 2007). A USAID case study report on Haiti (2018) also claims that the response to the 2010 earthquake would have saved $10,000 if it had used local products because of the high ocean freight and transport costs incurred by imported products. LRP is not more cost-efficient across all contexts, however. Margolies and Hoddinott (2012) concluded that the improved cost-efficiency of LRP was true for programs in Sub Saharan Africa and Asia, but not for Latin America and not for particular commodities. The commodities that produce the greatest cost savings are coarse grains like maize, which is 70% more efficient when procured locally. However, commodities like sugar and processed like vegetable oil are not as efficient to procure locally.

Local purchases can also bring benefits to importers, wholesalers, local industries that mill or process grains, and local vendors through local/regional multiplier effects (this is discussed in more detail in later sections). Some local offices also report preferring this method because it benefits local markets and improves resilience trajectories (USAID Haiti Case Study, 2018). However, large purchases from NGOs or IPs risk raising local prices if the quantities are large enough (Margolies and Hoddinott, 2012).

Table 13. Summary of Benefits and Limitations of LRP Modality

Benefits	Limitations
• Shorter timeline, reduced delays in supply chain • Reduced transportation costs compared to Title II • Benefits local markets and improves resilience trajectories • Consists of local commodities and culturally familiar foods	• May include delay in the initial implementation • When combined with vouchers, may require training • Local or regional markets are not always sufficient or stable • When large quantities of food commodities are purchased, it may raise local prices or supply

Cash Transfers

Humanitarian response strategies are increasingly integrating, piloting, or changing their food assistance modalities to cash transfers because of the flexibility and efficiency they allow. Cash transfers can be implemented as cash for work (CFW), conditional, or unconditional cash transfers and have been endorsed as an effective strategy, especially when combined with other interventions, by the FAO (2018).

Cash transfers are useful in situations where beneficiaries are physically spread out or highly mobile, the program needs to respond very rapidly, or when food insecurity is so severe that the program is confident that cash will be used primarily for food. For example, cash transfers were used in Nigeria during the conflict with Boko Haram, which resulted in many internally displaced people. They can also effectively target vulnerable households, such as those supporting migrants, those who are labour-poor, or those that are physically difficult to reach. However, they are only appropriate under specific conditions. For example, when local markets are functioning and have acceptable food, but beneficiaries are unable to afford it.

Cash for Work is used when there is a need to support temporary work opportunities and incomes, such as in lean seasons. It can bring benefits to community infrastructure and also has the ability to directly inject cash into local markets. Like other cash transfers, it also provides flexibility in how beneficiaries use the cash. Some IPs in certain contexts claim that CFW is more beneficial and effective in rural settings because communities are accustomed to congregating and contributing to local activities. Urban projects also tend to require more technical or engineering expertise. In addition, the timing of CFW and food distribution is sensitive; it should coincide with planting season in order to restock depleted reserves and invest in productive activities without disrupting agricultural activities or livelihoods.

There are a variety of distribution methods for cash transfers, including physical banknotes, wire or electronic transfers, ATM cards, or vouchers (discussed separately in the next section). In some cases where telecommunication network security was a concern, implementing partners (IPs) opted to distribute SIM cards through mobile companies and then send information on the time, date, and location of physical distribution points.

Cash transfers result in a number of unique benefits compared to other transfer modalities.

In a review of five studies by Bailey (2013) cash produced larger effects on Food Consumption Scores compared to food aid. The improvement in FCS ranged from 9%-50% depending on the context. In Yemen, cash resulted in a 9% increase in FCS compared to in-kind food. In Malawi, cash produced a 50% increase in FCS, compared to 20% for in-kind food aid. In Gaza, vouchers improved FCS considerably more than food aid as well. However, this was not true for poor households in Niger, where cash was used to purchase staples in bulk and invest in agricultural activities. In Kenya, the FCS improvements per modality changed seasonally, possibly because, at certain times of the year, cash was used to pay for school fees. The results from Bailey's review are summarized in **Table 14**. In the same review, two separate studies concluded that cash and vouchers brought significantly larger benefits in dietary diversity scores among children compared to food aid as well (Bailey, 2013). This is supported by a separate study in Mexico, which found that cash transfers had a higher impact on the height for age z-score of children less than two years of age (Skoufias et al., 2008).

Overall, cash and vouchers tend to have a more positive impact on dietary diversity compared to in-kind transfers. In one study in Malawi, diversity increased by 24 percent for the cash group and 12 percent for the mixed group, while the in-kind food group did not have any statistically significant change (Bailey and Hedlund, 2012). Cash increased diversity by 27 percent more than food and by 12 percent more than mixed transfers, while mixed transfers increased diversity by 14 percent more than food transfers (Bailey and Hedlund, 2012).

Table 14. Summary of Impacts of Food Modalities on FCS

Program	Modality	Country	Acceptable FCS at Baseline (%)	Acceptable FCS at Endline (%)	Increase in FCS from Baseline
Oxfam/WFP	Vouchers	Palestine (Gaza)	55%	89% (voucher) 53% (food) 49% (no aid)	-
Concern Worldwide	Cash, Cash+Food, Food	Zimbabwe	-	57% (cash) 33% (cash+food) 18% (food)	-
SCUK/WFP	Cash+Food, Food	Swaziland	33% of children	80% (cash+food) 60% (food)	-
IFPRI/WFP	Cash Vouchers Food	Ecuador	-	-	10.8 % (cash) 15.6% (vouchers) 10.1% (food)
IFPRI/WFP	Cash Food	Uganda	-	-	2.99 points (cash) 0 points (food)
World Vision/ WFP	Cash Cash+Food Food	Malawi	-	-	50% (cash) 33% (cash+food) 20% (food)
IFPRI/WFP	Cash Food	Yemen	-	-	Cash resulted in 9.2% increase in FCS than food

Source: Bailey, 2013

The impact of cash on dietary diversity is widely supported; cash generally leads to more diverse food consumption (Hidrobo et al, 2014; Gentilini, 2016; Bailey, 2013; Doocy and Tappis, 2016). For example, in DRC, cash households purchased 2.53 more types of food and non-food items as compared with the voucher group (Aker, 2013). One exception is in Niger, where poor households used cash to buy staple grains in bulk (Bailey, 2013).

Cash also brings other programmatic and beneficiary benefits; cash is more economically efficient, doesn't distort individual consumption, allows freedom of choice for beneficiaries, provides higher satisfaction, can stimulate agricultural and non-agricultural production, and is usually cheaper to distribute (Margolies and Hoddinott, 2012). When telecommunications companies are used as distribution channels, IPs often claim it is less costly and more time-efficient than other modalities because of decreased logistics, which allows them to target greater numbers of beneficiaries (USAID Case Study Report on Haiti, 2018). It can also be effective in situations with security concerns, such as conflict zones, where IP staff are unable to reach beneficiaries in-person. Telecommunications companies also claim some benefits; in Haiti, the telecommunications company said they hired more personnel, expanded their services, and developed more partnerships as a result of participating in the program (USAID case study report on Haiti, 2018).

Finally, there are multiple channels of impact for cash transfers because of the flexibility it affords to beneficiaries in purchasing according to their needs, which may also increase resilience to shocks. To

capture the full benefits of cash for beneficiaries, it is important to understand the wide range of different potential impact channels it opens for different groups. The goods and services that households gain access to as a result of a cash transfer are different between households and spans aid sectors. For this reason, measuring impact against one standardized score often overlooks the impacts cash may provide, which would be unreplicable as in-kind assistance; therefore, cash is best appreciated as a multi-sectoral tool (Cabot-Venton et al., 2015). The largest use of cash transfers, across 15 studies, was to purchase food, ranging from 41 - 82% of the transfer value. Both the upper and lower bound of spending was found in Somalia, demonstrating that cash is used differently depending on changes in context and needs. Initially, the transfer was spent mostly on food, but towards the end of the programme, it was spent on supporting recovery. Other common expenses include household items, clothing, medical care, school fees, paying debt, and livelihoods. These expenditure patterns are also reflected in other studies. Cunha (2014) finds that cash recipients in Mexico spent the transfer on nutritious foods, such as fruits and vegetables, and on essential nonfood goods such as medicine. There is no evidence in any of the studies reviewed that cash was spent inappropriately or on "vices."

In reviewing evidence from humanitarian programs, Bailey (2013) found that all types of cash-based modalities, including vouchers, lead to improvements in dietary diversity, diet quality, IDDS, meal frequency, and a decline in negative coping strategies. In addition, in a number of contexts, cash and vouchers lead to increases in demand for diverse foods, resulting in more availability (supply) of these foods in local markets, which previously hadn't existed (Bailey, 2013).

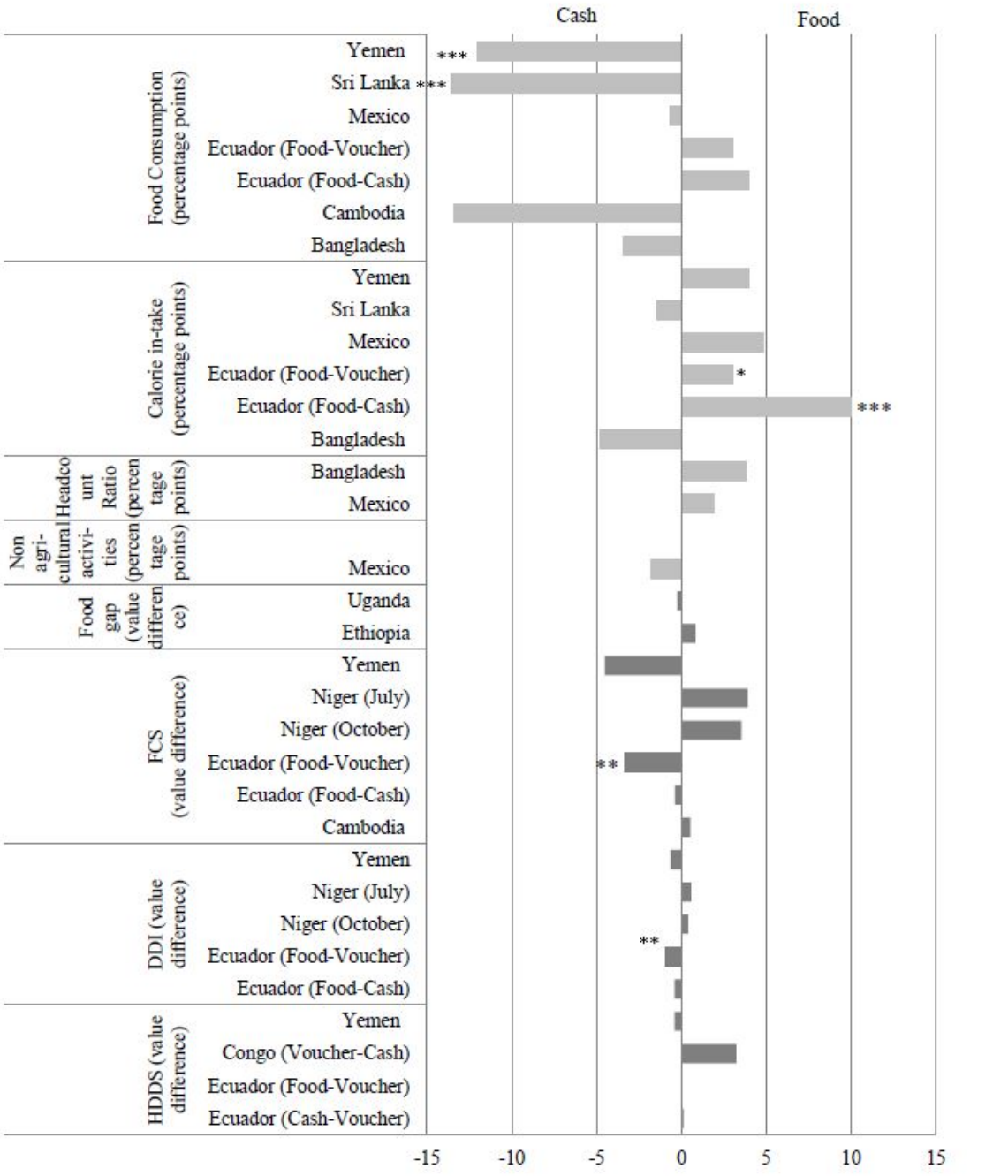
There is mixed evidence on the effects of cash on poverty and resilience outcomes. In urban Ecuador, cash did not lead to increased savings and was consumed faster (Hidrobo et al, 2014). Another review of five studies did not find evidence of cash improving household income or debt (Bailey, 2013). However, Skoufias et al (2008) concluded that although impacts on poverty were the same across transfer types, carefully targeted and designed cash interventions in rural communities can redistribute resources to poor households and reduce poverty. Aker (2013) also finds that cash households in DRC were more likely to save a portion of their transfer (about $1.50, equal to half a week of household income).

The impact of cash on the Coping Strategies Index is also mixed. In some contexts, households receiving cash or food still adopted negative coping strategies, while in other contexts, they did not (Bailey, 2013). In Ecuador, cash beneficiaries are less likely than those of vouchers or food to take out loans or borrow money, which was untrue for vouchers and in-kind beneficiary households (Hidrobo, 2014). Cash transfers in Niger did not increase asset ownership, but acted as a mechanism to protect assets (Aker, 2011). In DRC, vouchers and cash transfer households reduced negative coping strategies, but cash households were more likely to send a household member to migrate and less likely to sell off assets. IDP beneficiaries of cash and vouchers also experienced increases in asset ownership, but it is not attributable to the program because of a lack of control group (Aker, 2013).

A limitation to measuring the impact of cash transfers is that it is often consumed faster and on a greater variety of items, so their effects may be more difficult to capture in surveys based on seven-day recall.

Finally, a number of reviews by the World Bank have compared the effectiveness of cash and food transfers on various measures.

In a review by the World Bank, cash was more effective at increasing the impact of the program on food expenditures and calorie intake in Yemen, Cambodia, Sri Lanka, and Bangladesh, while the food was more effective in Ecuador (Gentilini, 2016). However, the results were more nuanced when broken down by indicator type and country. A summary of results from this study is found in **Figure 2**.



Note: Bars in light gray refer to percentage points, dark gray bars refer to changes in specific indicator values. Level of significance is indicated by the asterisks (* at the 90 percent level, ** at the 95 percent level, *** at the 99 percent level).

Figure 2. Summary of Transfer Effectiveness on Measures by Country

Source: Gentilini, 2016

The World Bank has also conducted a comparative analysis of the effectiveness of food modalities. The figures below summarize the impacts of programs on food expenditures and calorie intake, where the percentage point is derived from the average impacts among food-receiving households minus those among cash-recipients). In **Figures 3** and **4**, negative values indicate the cases for which cash is more effective, positive values indicate the cases where food is more effective.

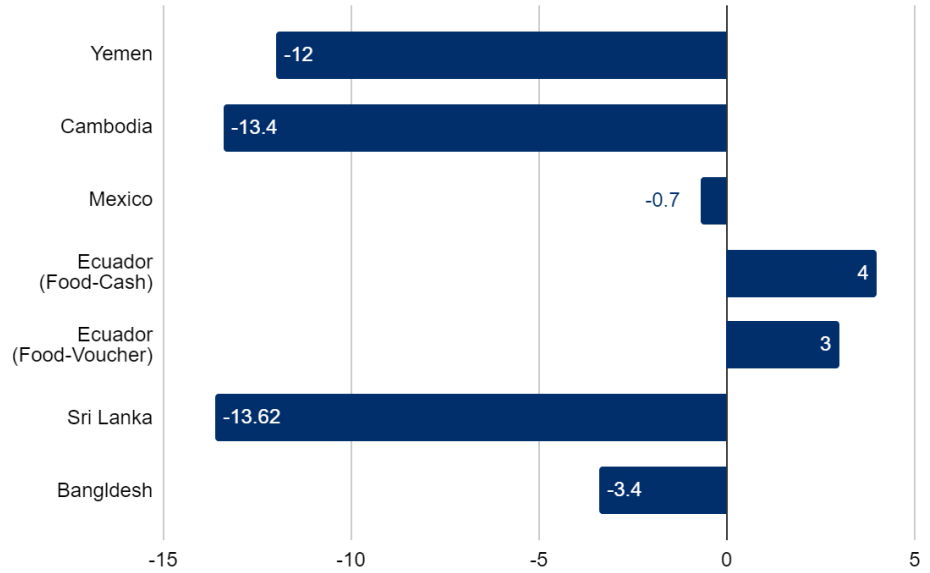


Figure 3: Impacts of Transfers on Food Expenditures (difference in percentage points)

Source: Gentilini, 2016

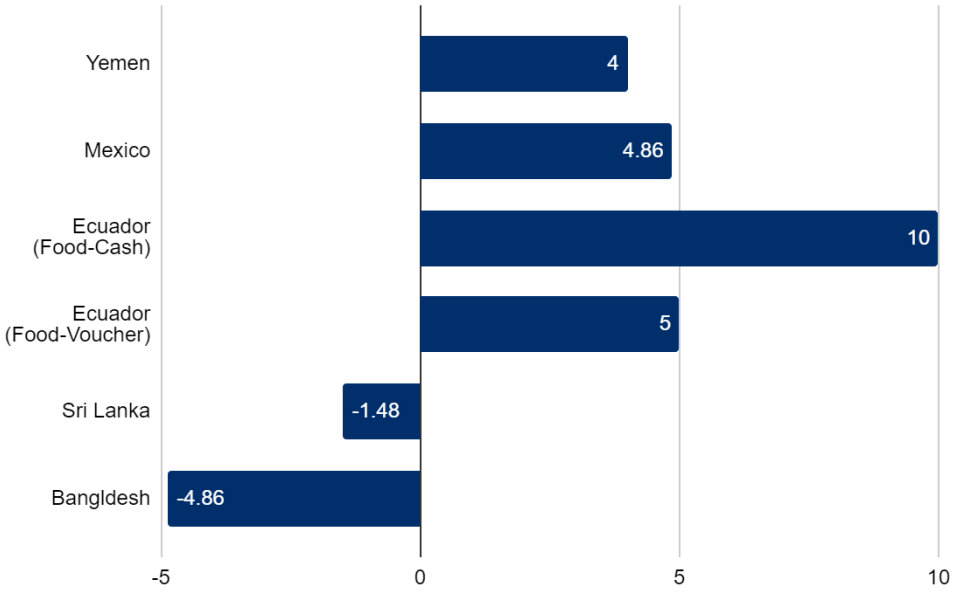


Figure 4: Impacts of transfers on calorie intake (difference in percentage points)

Source: Gentilini, 2016

Table 15. Summary of Benefits and Limitations of Cash Modality

Benefits	Limitations
• Cash transfers allow beneficiaries to buy culturally familiar food at local markets • Allow more purchasing flexibility for a range of beneficiary needs • Fast scale-up • Can be tailored to vulnerable households • Fewer logistics - more cost-effective and efficient • Can be distributed through telecommunication platforms - may also benefit these companies • Able to reach beneficiaries remotely (those who are mobile, spread out, or hard to access due to security issues) • CFW can bring benefits through improved local infrastructure • Few reports of cash being stolen or lost • Less stigma for beneficiaries	• Benefit of cash transfers may not last as long as other forms of aid • May require established telecommunications networks/electricity infrastructure • CFW has to be timed according to planting/lean season so as not to disrupt livelihood activities • Most useful when market prices are declining • Requires functioning, integrated and accessible local markets ○ Otherwise, may instigate adverse effects for non-beneficiaries • The ability of cash to mitigate negative coping strategies depends on how it is used and local context • May hinder risk management and informal support of non-beneficiaries (less sharing) • Vulnerable to price fluctuations • Sometimes more preferred by men compared to women

Vouchers

Food vouchers are used when there are specific vendors available to supply particular foods, or when security issues make accessing beneficiaries difficult. They usually take the form of debit card transfers, mobile phone cash transfers, or electronic vouchers.

Vouchers can help strengthen local markets by enabling local vendors to sell more commodities, which includes both food and mobile services. They are appropriate when local food is available and markets are accessible.

Some implementing partners claim that physical vouchers may be more beneficial in rural settings that lack electricity or telecommunications infrastructure, while electronic vouchers are much more efficient and easier to distribute in urban settings, where infrastructure is usually more established. Urban areas also have more developed market systems.

Vouchers emphasize the consumption of local foods through culturally appropriate commodities. Having food vouchers also frees up beneficiaries' money to be spent on other commodities and non-food items.

Some scholars argue that vouchers are more efficient at targeting, especially when it is costly or difficult for the program to identify beneficiaries, because only those who really need the items will opt-in. Thus, the take-up of the intervention will be less distorted than cash transfers (Hidrobo et al., 2014). Vouchers also allow policy makers or program implementers to select or control the items available for purchase.

Vouchers can be used for food commodities or agricultural inputs. Beneficiaries in Haiti report liking vouchers for agricultural inputs because it allowed them to rebuild gardens, purchase seeds that are not available locally, invest in income-generating activities, and eventually sell goods (USAID Haiti Case Study Report, 2018). However, the quality of the seeds or inputs needs to be carefully monitored and assured.

Vouchers have many of the same effects as cash transfers. They are effective at increasing the frequency households consume certain food groups and encourage consumption of a larger variety of food items compared to in-kind food (Hidrobo, 2014). Across the five studies reviewed by Bailey (2013), cash and vouchers had larger effects on FCS compared to food aid. Bailey (2013) also found that all types of cash-based modalities, including vouchers, lead to improvements in dietary diversity, diet quality, IDDS, meal frequency, and a decline in negative coping strategies.

Despite having many benefits similar to cash, voucher transfers programs have some limitations. For some households, voucher transfers are inframarginal overall, but extra-marginal for particular food items like salt, fish, and rice (Aker, 2013). Therefore, vouchers can sometimes create extra-marginal consumption effects for certain items. In DRC, this resulted in beneficiaries forfeiting up to 50 percent of the value of their voucher to obtain cash (Aker, 2013).

Compared to vouchers, cash recipients in DRC were able to purchase a more diverse set of items, including health expenses, school fees, and debt repayment. Cash households also purchased 2.53 more types of food and non-food items as compared with the voucher group. Voucher holders were more likely to share goods purchased by the transfer (Aker, 2013).

Table 16. Summary of Benefits and Limitations of Voucher Modality

Benefits	Limitations
• Can strengthen local markets • Allow beneficiaries to buy culturally familiar food at local markets • Frees up beneficiaries' money to be used to purchase other, non-food items • Can be used for food or agricultural inputs - agricultural inputs can promote livelihood resilience • Can promote the purchase of certain items or goods • Less distortionary in targeting because only those who need it will take them	• May require training and willingness of vendors • Requires local availability of food and functioning markets • When used for agricultural inputs, requires the program to monitor the quality of seeds etc. • Extra-marginal effects if there is overprovision of a commodity • Sometimes requires significant time and human resource costs to set up a program

Externalities of Food Assistance

There has been a large amount of literature written on the possible disincentive effects of food aid, including unintended consequences for both price and production of recipient's food markets. This critique was initially developed based on an analysis by Schulz in the 1960s on the negative impact of aid on local agricultural production (Schultz, 1960). There are a number of potentially negative effects put forth in the literature:

Price effect: large volumes of food imports may cause a shift in the demand curve and drive down the prices of locally produced commodities, causing a disincentive to local production. The evidence of this effect in empirical analyses is mixed.

Food aid does not appear to create dependency or present strong disincentives to labour. In Ethiopia, there was actually a potentially positive effect on labour supply. There are also no resulting disincentives to agricultural production, or effects on labour market supply of agricultural workers in Mexico. Overall, robust evidence on dependency or disincentive effects is lacking (Margolies and Hoddinott, 2012). However, if NGOs purchase large quantities of local or regionally procured commodities, it could affect local prices and supply (Margolies and Hoddinott, 2012).

A price challenge with cash transfers, as mentioned above, is that the value of the transfer can change depending on food price fluctuations and exchange rates. To address this, programs have adjusted the monthly transfer amount to reflect market changes, however, this can be difficult in terms of program management and if there is a fixed budget (Bailey, 2013).

Policy effect: the supply of inexpensive food may allow recipient governments to shift attention away from the agricultural sector (in terms of policy and developmental resources).

Conflict effect: in regards to emergency food assistance in conflict zones, there is some evidence that suggests in-kind food aid could exacerbate conflict. Nunn and Qian find (2014) that food aid prolongs the duration of small scale civil conflicts, largely through looting and taxation of goods. This is only prevalent for regular aid recipients, though and food aid has not been found to instigate the onset of conflict (Nunn and Qian, 2014). A separate review finds that all transfer modalities are successful at increasing household food security among conflict-affected populations (Doocy and Tappis, 2016).

Vice effect: one reservation commonly cited for why cash transfers should be avoided is that they can be spent to indulge in "vices," such as cigarettes, alcohol, sugary snacks that lack nutritional value, etc. However, studies rarely find any evidence of this. Two studies, in Mexico (Cunha, 2014) and DRC (Aker, 2013), find no evidence of misspending. The most common uses of cash are on food, followed by medicine, school fees, household goods, paying debt, etc.

Overall, the presence of these potentially negative effects is often ambiguous because of the diversity of context in which food aid is distributed, including the differences in food baskets provided, the targeting requirements set for aid distribution, and the lack of a closed market economy.

In addition to these negative externalities, there are also a number of positive potential externalities.

Nutrition effects: food aid may have a positive effect on nutritional status and malnutrition, particularly for low-income households and vulnerable populations like women and children by increasing the total

domestic supply of food (Awokuse, 2016). However, when interventions are limited to short-term programs, they may not be as effective at reducing food insecurity in the long term.

Social safety nets: there is some evidence that suggests even short term interventions, such as emergency food aid intended to bolster short term food and nutrition security can also serve as a safety net and protect social welfare in the long run by preserving stocks of productive assets or savings during a crisis (Gilligan and Hoddinott, 2017).

Risk-sharing: food aid is typically shared more than cash (Bailey, 2013). In DRC, voucher holders were more likely to share goods purchased by the transfer as well. However, it may be due to the extra-marginal effects of constraining the commodities available for purchase. This has implications for programme design and targeting, because cash will have less benefit for non-beneficiaries.

Although Dercon and Krishnan (2003) argue that food aid has conflicting impacts in the presence of inter-household informal insurance arrangements, there is no evidence that it crowds out private transfers. As a positive income shock, it is expected that recipients will be motivated to engage in some inter-household redistribution according to a partial risk-sharing model (Margolies and Hoddinott, 2012).

Multiplier Effects: the multiplier effects of different transfer modalities were examined throughout a number of studies, but most commonly for cash transfers. A review of five studies by Doocy and Tappis (2016) broadly concluded that cash-based transfers can have positive multiplier effects when implemented at scale. More specifically, a study in Malawi found that each dollar of cash assistance spent produced US $2.00 to US $2.79 in indirect benefits for the local economy in Dowa (Davies and Davey, 2007). Similarly, Lehman and Masterson (2014) found that in Lebanon, if 100% of the transfer was spent locally, each dollar would generate US $2.13 of GDP for the economy.

Vouchers also generate multiplier effects. Two studies measured the predictive multiplier effect for vouchers in Lebanon and Jordan. In Lebanon (WFP, 2014), vouchers indirectly generate between $0.68 and $1.51 in benefits for the economy through agriculture, livestock, fisheries, and food production multipliers. Meanwhile, Husain (2014) found that in Jordan, every dollar of food voucher spent generates between $1.02 and $1.23 in indirect economic benefits.

It is possible to observe multiplier effects of in-kind food aid distribution when beneficiaries barter portions of the food they receive as a transfer payment for milling services (in the case of maize) or for the transportation of the aid from distribution sites, or exchange for other non-food items that beneficiaries need (Staunton and Collins, 2011). In these scenarios, the additional local gain is experienced by traders.

Beneficiary Preferences

When considering the cost and cost-effectiveness of transfer modalities, beneficiary preferences and levels of satisfaction can also factor into measures of effectiveness.

In northern Ecuador, beneficiaries preferred vouchers the least and cash the most (Hidrobo et al, 2014). In a series of case study reports for USAID (2018), cash was also preferred by beneficiaries of WFP interventions in Kenya, Syrian refugees in Jordan and Lebanon, and IDPs in the Democratic Republic of Congo. In DRC, beneficiaries preferred cash transfers as well, but only as banknotes, rather than mobile money, because of liquidity issues in villages and limited network connection.

Food is often more preferred in contexts where traders increase prices when cash is provided, where food commodities are limited, or where women do not have a lot of decision making power over cash expenditures (Margolies and Hoddinott, 2012).

Ahmed et al (2009) found that beneficiaries had the highest preference for the transfer modality they were currently receiving. However, when measured against household income levels, their results demonstrated that poorer households preferred food transfers, while households with more income preferred cash.

COST-EFFICIENCY AND COST-EFFECTIVENESS OF TRANSFER MODALITIES

Numerous studies have examined and compared the cost-effectiveness of different transfer modalities.

Although food aid is consistently found to be the least cost-effective transfer to improve food security outcomes, and cash-based approaches are generally found to be the most cost-efficient and cost-effective modality (Doocy and Tappis, 2016; Aker, 2016; Hirdobo, 2014), different program contexts and methodologies have produced varying results.

Due to the variance in outcomes, this section provides a summary of results that can illustrate some benchmarks for cost-effectiveness. This includes a summary of cost-transfer ratios (for studies where this was provided), as well as other methods for calculating cost-effectiveness of modalities.

The different costs per modality have significant consequences for coverage and welfare benefits. A number of studies have compared the cost-efficiency and cost-effectiveness of multiple transfer modalities, which are summarized throughout this section.

Cost per Beneficiary

The costs of three transfer modalities per beneficiary is summarized in **Table 17**. Overall, the cost per beneficiary of in-kind aid is highest, followed by vouchers, then cash.

Table 17: Summary of the Cost per Beneficiary by Transfer Modality Across Studies.

Study	Country	Cash (USD)	Voucher (USD)	Food (USD)
Aker, 2011	Niger	Mobile transfer: $8.80 Physical cash: $12.76		
Schwab, 2013	Yemen	$52.04		$58.84
Aker, 2013	DR Congo	$11.34	$14.35	
Hidrobo, 2014	Ecuador	$17.97	$19.61	$68.75
Margolies and Hoddinott, 2014	Ecuador	$17.96	$19.60	$68.70
	Uganda	$22.72		$44.88

	Yemen	$9.13		$29.53
	Niger	$26		$92.44

In a separate study, Ahmed et al. (2009) found that food-based programmes in Bangladesh spent 1.20 Taka (Tk) to transfer 1 Taka worth of food. By contrast, the delivery cost of cash was virtually zero - it only cost 15 paisa to transfer Tk 1,000 to a cash recipient.

Cost per Transfer

Numerous studies have evaluated the cost efficiency of programs by applying a activity-based costing-ingredient methodology (ABC-I), which narrows the analysis to only look at the costing data specific to each modality examined, rather than include costs that apply to all (Margolies and Hoddinott, 2014). A summary of results across multiple studies is included in **Table 18**.

Table 18. Summary of Cost-Efficiency Findings for Transfer Modalities

Study	Country	Cost per cash transfer (USD)	Cost per voucher transfer (USD)	Cost per food transfer (USD)
Kardan (2010)	Zimbabwe	Total: $9.66 Operational: $2.43	-	Total: $9.45 Operational: $4.98
		Total: $9.69 Operational: US $4.14		
Schwab (2013)	Yemen	$3.04		$9.81
Margolies and Hoddinott (2014)	Ecuador	$2.99	$3.27	$11.46
	Uganda	$3.24		$6.41
	Yemen	$3.04		$9.84
	Niger	$2.89		$10.27
Cunha (2014)	Mexico	$0.31		$2.29

According to the comparative study of the costs of food and cash transfer modalities across Ecuador, Niger, Uganda, and Yemen, the per-transfer cost of cash is always less than food (Margolies and Hoddinott, 2014). Consequently, given their budget, almost 45,000 more people could have received assistance at no additional cost if the transfer modality was exclusively cash.

This finding supports those of other studies, which consistently finds that cash transfers are significantly more cost-efficient than food, and somewhat more than vouchers. Hidrobo et al (2014) also concludes that in-kind transfers are the least cost-effective transfer modality, but comparing cash and vouchers is not as straightforward; they are both most cost-effective than in-kind, but differ slightly in terms of impacts and beneficiary preferences.

The cost-effectiveness of cash demonstrated through these studies does not necessarily imply that cash is the best transfer modality across all contexts. Cash transfers still require access to markets, sufficient local supply of commodities by traders, reasonable price stability, and competition in food markets. Cash transfers are also vulnerable to price effects; in a case study by Cunha, De Giorgi and Jayachandran (2019) local price increases lead to an increase in the programme's net transfer by 12 percent for food recipients, but was the equivalent to reducing the value of the cash transfer by 11 percent. Price effects were larger in more remote villages where there is less competition among sellers. However, the food arm was worth 30% more than the cash arm.

Cost per Metric Ton of Food

In a separate study commissioned by USAID, a cost efficiency analysis was conducted using a different methodology. The analysis compared the cost required to provide a metric of food, referred to as 'cost per metric ton.' The cost per metric ton of food delivered is only applicable to in-kind transfers, so the study adapted the metric for cash and vouchers to reflect their purchasing power equivalents (USAID, 2018). The results are summarized in **Table 19.** The formulas used are as follows:

Title II and LRP: Cost/metric ton = total program costs / total metric tons

Cash and vouchers: total program costs/ (beneficiaries * month * % kcal * 0.0176MT)

Where:

- Beneficiaries = number of beneficiaries reached
- Months = number of months of distribution
- % kcal = percentage of beneficiary's daily kilocalorie needs met by transfer
- 0.0176 MT = average weight of a food basket meeting 100% of a beneficiary's kilocalorie needs

Table 19. Average Cost of Providing a Metric Ton of Food by Transfer Type

Modality	$/MT Range	Average $/MT
Cash and Food Voucher	$528 - $5,210	$1,183
Cash	$527 - $4,558	$1,220
Food Voucher	$415 - $5,648	$1,311
LRP	$326 - $7,499	$956
Title II	$447 - $6,154	$1,133

Source: USAID, 2018

In this analysis, LRP is the most cost-efficient modality overall, followed by Title II. However, the measure of cost-efficiency is very biased towards in-kind assistance. It does not account for other measures, such as food consumption, dietary diversity, or the number of beneficiaries reached by LRP or Title II.

Cost to Scale

A World Bank study examined cost efficiency through yet another method. They examined the cost of scaling programs to different sizes of beneficiary populations and by humanitarian context. The results of this study are summarized in **Table 20** and **Table 21**.

Table 20. Cost of Transfer Modalities by Scale of Operations in USD

Beneficiaries ('000)	Cash	Vouchers	In-Kind	Combinations	Total (USD)
<10	$2.72	$3.23	$2.40	$1.82	$2.74
10-50	$1.46	$1.87	$1.86	$2.08	$1.70
50-100	$1.30	$1.44	$1.55	$2.37	$1.70
100-500	$1.28	$1.36	$2.05	$1.68	$1.60
>500	-	-	$1.63	-	$1.63
Average	$1.93	$2.11	$1.84	$2.03	$1.96
Number of cases	76	34	30	23	163

Source: World Bank Group, 2016

Table 21. Cost of Transfer Modalities by Humanitarian Context in USD

Context	Cash	Vouchers	In-Kind	Combinations	Total (USD)
Complex emergency	$2.81	$2.11	$1.86	$2.33	$2.37
Slow onset	$1.64	$1.54	$2.44	$1.96	$1.81
Sudden onset	$1.39	$2.72	$1.46	$1.61	$1.62
Refugees	$1.15	$1.81	$1.48	$1.40	$1.44
Average	$1.93	$2.11	$1.84	$2.03	$1.96
Number of cases	76	34	30	23	163

Source: World Bank Group, 2016

Cost Drivers

For each kind of transfer, there are different fixed and variable costs. In regards to cash transfers, fixed costs include setting up contracts and operations with banks. For vouchers, fixed costs include setting up contracts and operations with supermarkets, setting up market fairs, or establishing contracts with other local vendors. Food aid incurs fixed costs through per-unit costs of packaging and distributing commodities.

Variable costs of cash transfers include the production of debit cards, procurement and set up of mobile ATMs, or the cost of wire transfers. For vouchers, it includes the production and printing of vouchers and the human resource costs of validating and reconciling voucher transactions. Finally, for food aid variable costs consist of transportation and storage of commodities.

The cost of cash and vouchers are only expected to increase minimally over time because of the low production costs of printing extra vouchers or producing extra debit cards once contractual agreements are in place, the smoothing of staff efforts over time once the programs have been initially established, and because of economies of scale. This is untrue for food, however, because it incurs significant fixed costs that remain constant over time; for example, the cost of packaging rations (Margolies and Hoddinott, 2014). Food aid also involves significantly higher transportation costs. In the same study, the human resource cost of cash was less than food, even though it included the costs of setting up the program for the first time in that context.

Administrative costs are another major driver across all modalities, but is generally higher for in-kind transfers, which are 20-25% higher than cash transfers (WFP, 2009). A summary of median administration costs is provided in **Figure 5**.

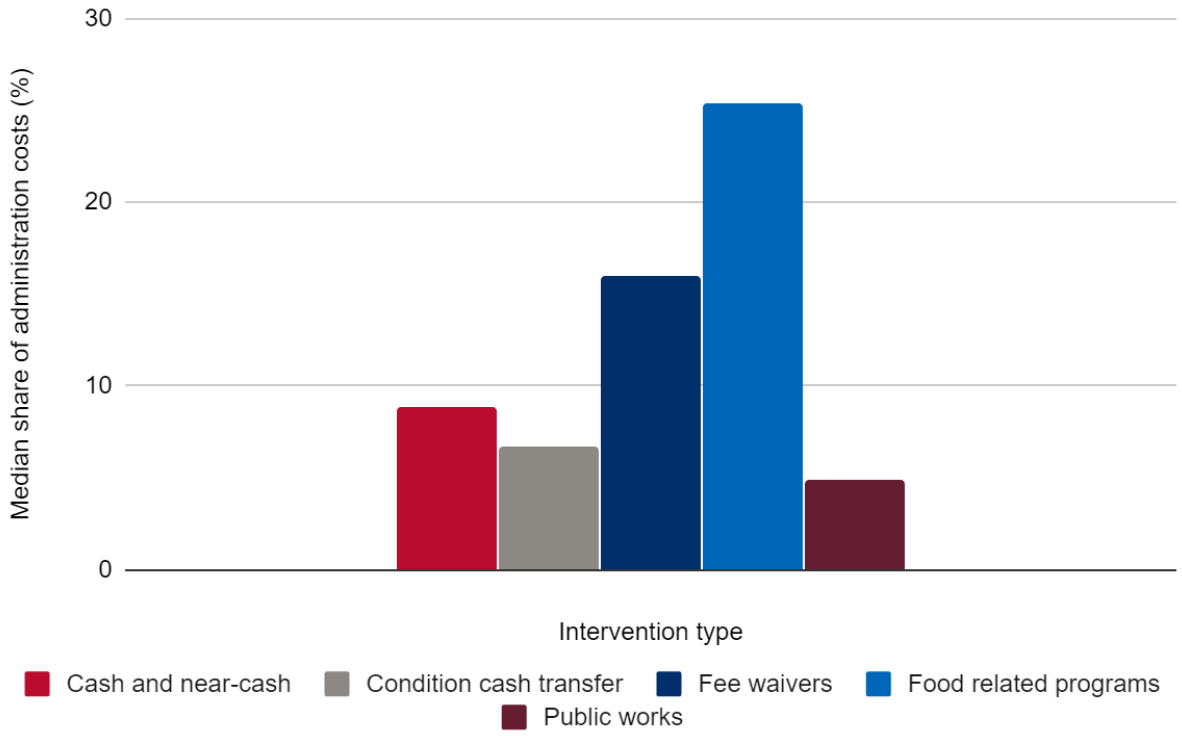


Figure 5. Median Share of Administrative Costs per Transfer Type

Source: Grosh et al, 2008

Private Costs to Beneficiaries

Another important consideration is the private beneficiary costs of obtaining transfers, which are often derived from the time required to queue in lines, travel to distribution points or markets, or cost of transporting commodities home from distribution points. In the Margolies and Hoddinott (2014) study,

there was no difference in time or monetary cost between cash and food transfers in Niger and Uganda, however food transfers carried higher private costs in Ecuador because of long waits and necessity of purchasing public transport to bring rations home. In Yemen, food aid was distributed directly to the villages, making the private costs for this modality lower than all others.

The private costs of transfers for IDP beneficiaries in the Democratic Republic of Congo were different, however. The costs of private costs of vouchers were more because beneficiaries were constrained to using them on a set market day, creating limits to how much and what kind of commodities they could purchase due to the need to transport everything simultaneously back to their residence. Beneficiaries of cash were able to attend regular markets as needed and so transport heavier items individually (Aker, 2013).

The private costs to beneficiaries in urban, Northern Ecuador was slightly more for in-kind transfers compared to cash and vouchers due to the opportunity costs of extra travel required; cash required 45 minutes of travel time, compared to 93 minutes for food and 92 minutes for vouchers (Hidrobo et al, 2014).

Cost-Transfer Ratio

Numerous studies have also conducted studies comparing the cost-transfer ratios of different transfer modalities. A cost-transfer ratio indicates how much it costs to deliver every $1 received by the beneficiary. **Table 22** presents the results of a review of the Department for International Development, UK (DFID)'s programming.

Table 22. Summary of Cost-Transfer Ratios Across Different DFID Programs

Country	Program	Year	Cost-transfer ratio	Determining factors
Ghana	Livelihood Empowerment Against Poverty (LEAP)	2008 - 2010 cumulative	1.0 approx.	New government-run pilot for extremely poor households. Nationwide coverage, but thinly spread with complex community + PMT targeting system. CTR affected by payment delays. (White, 2011)
Kenya	Cash Transfer -OVC programme	2006/07-2008/09 cumulative	1.03 Down to 0.34 by 2008/09.	New pilot for poor OVCs in 7 districts. Complex community + PMT targeting. (OPM, 2010)
Mozambique	Food Subsidy Programme (PSA)	2007	0.55	Government-run cash transfer, begun 1990 in urban areas, expanded to rural areas in 2006. Thinly spread, high travel costs, lengthy targeting procedures, low transfer level (only 5% of the minimum wage by 2010). (Walker et al, 2008; Ellis et al, 2009; Hodges & Pellerano, 2010)
Burkina Faso	Mobile cash transfer	2013	0.82	Less cost-efficient than other mobile transfer programs due to coordination challenges between partners, resulting in long wait times for beneficiaries, particularly in the first year. Sensitivity analyses indicated potential 6% reduction in CTR through reducing beneficiary wait time by one-half. Coordination challenges improved during the project, therefore inefficiencies likely would be resolved after pilot phase.
Malawi	Dedza Safety nets Pilot (cash)	2001-2002	0.65	
Zambia	Kalomo cash transfer pilot, (cash)	2004-2006	0.09	
Zambia	Targeted food security packs	2003-2004	0.67	
Malawi	Starter pack (farm input transfers)	1999-2000	0.46	
Malawi	Winter targeted input programme (farm input transfers)	2003	0.23	
Zambia	WFP relief and recovery operations	2005	1.91	
Zambia	WFP country programme	2005	1.20	
Zambia	WFP assistance for Angolan refugees	2005	0.79	

Source: Hodges et al, 2011

In addition to the review of DFID, the International Rescue Committee (IRC) has also published the cost-efficiency results of their programs. However, they only report on unconditional cash transfers. Nevertheless, it highlights the great variation in cost between contexts for the same type of transfer modality. The results are summarized in **Figure 6**.

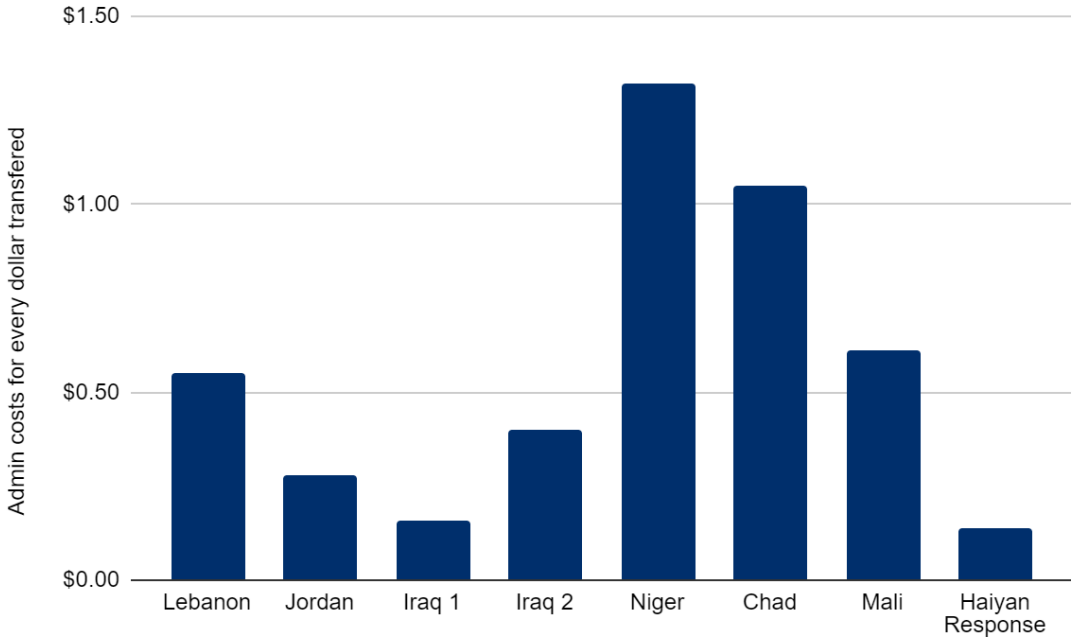


Figure 6. Cost-transfer ratios of IRC Programs

Cost-Effectiveness

Finally, many studies have also conducted cost-effectiveness analyses, much like the current analysis, where different modalities are compared on the basis of the cost required to produce a predefined improvement of a particular measure (e.g. X% increase in FCS).

Hodges et al. (2011) compared the cost-effectiveness of food consumption subsidies (in the form of VAT or import tariff exemptions) and cash transfers targeted to households below the national poverty line using a proxy means test (PMT), taking into account the inclusion and exclusion errors predicted by the PMT formula. The cost-effectiveness was demonstrated by measuring the benefits against a counterfactual scenario of no action. Impacts and cost-effectiveness were simulated with respect to monetary poverty, caloric poverty (hunger), school participation, child labour and access to health services. The results varied across the three countries examined (Burkina Faso, Cameroon, and Ghana), but overall the cash transfer was the most cost-effective. **Figure 7** shows the results, which measures the change in the poverty gap during a crisis where beneficiaries either received no intervention, a food subsidy, or targeted cash transfers for the poor. The food subsidy only partially offset the negative impact of the crisis in Burkina Faso and Cameroon, but had no effect in Ghana. The cash transfer more than offset the negative effects of the crisis, especially in Cameroon (Hodges et al, 2011).

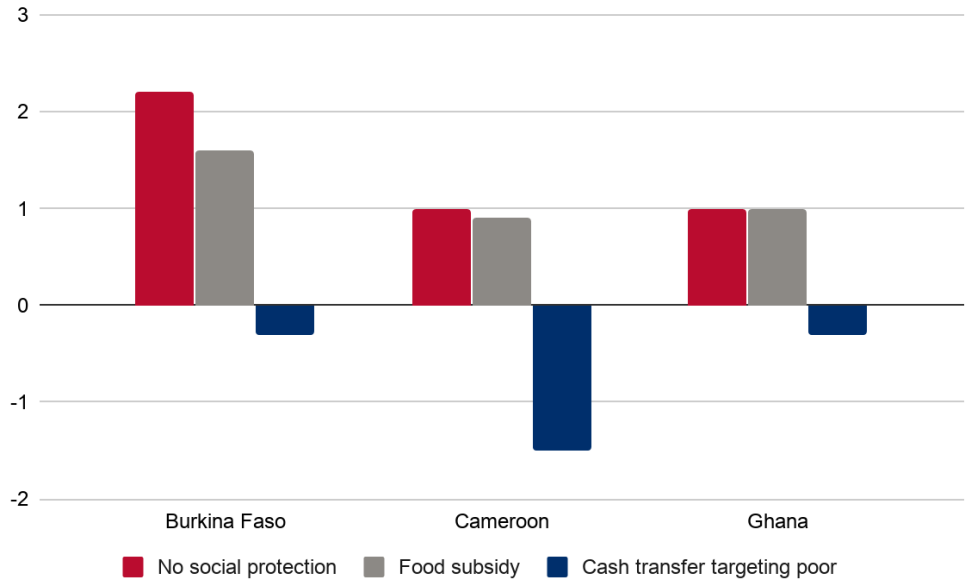


Figure 7. Simulated change in poverty gap per transfer modality costing 1% of GDP

Source: Hodges et al, 2011

A separate study by Hirdobo et al. (2014) calculated the cost-effectiveness of different transfer modalities by estimating the cost necessary to achieve a 15% increase in beneficiaries outcomes per modality, summarized in **Figure 8**.

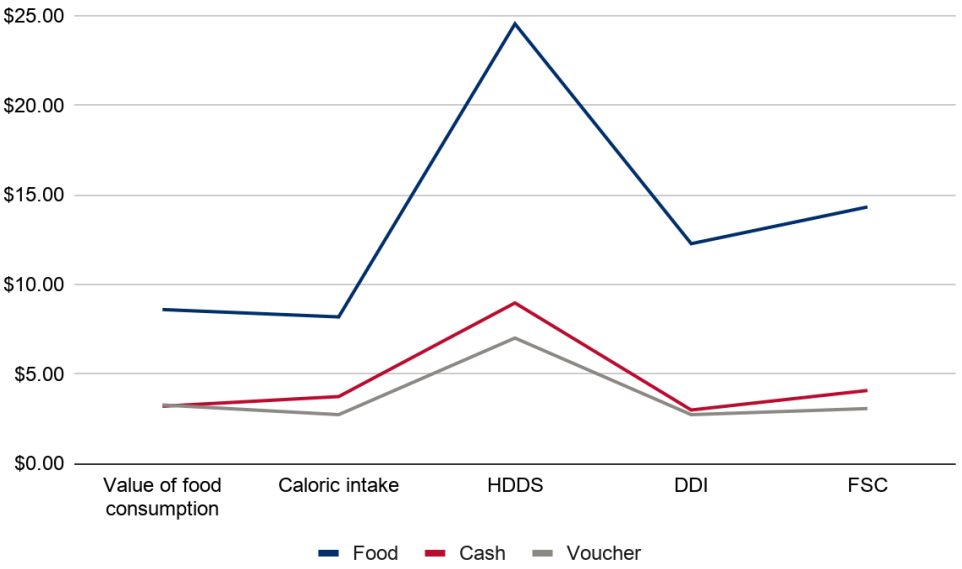


Figure 8. The modality-specific costs per transfer (USD) to increase each outcome indicator by 15%

Source: Hidrobo et al, 2014