Impact Evaluation Report: Egypt's *Takaful* Cash Transfer Program

Second Round Report

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CONTENTS

TABLES

FIGURES

ACRONYMS

AEU	**Adult Equivalent Unit**
BMI	**Body Mass Index**
CAPI	**Computer-Assisted Personal Interview**
CAPMAS	**Central Agency for Public Mobilization and Statistics**
CCT	**Conditional cash transfer**
CPI	**Consumer Price Index**
DHS	**Demographic Household Survey**
GAD	**Generalized Anxiety Disorder**
GDP	**Gross Domestic Product**
HH	**Household**
HIECS	**Household Income, Expenditure, and Consumption Survey**
IFPRI	**International Food Policy Research Institute**
IRB	**Internal Review Board**
IYCF	**Infant and Young Child Feeding**
IYCN	**Infant and Young Child Nutrition**
MoSS	**Ministry of Social Solidarity**
PCA	**Principal components analysis**
PMT	**Proxy Means Test**
RD	**Regression Discontinuity**
RDD	**Regression Discontinuity Design**
TKP	**Takaful and Karama Program**
WHO	**World Health Organization**
WHZ	**Weight-for-Height Z-score**

EXECUTIVE SUMMARY

BACKGROUND AND METHODOLOGY

Egypt introduced the Takaful and Karama Program (TKP), a pair of targeted cash transfer schemes in March 2015. Takaful and Karama was designed as a conditional cash transfer program providing income support targeted to the poor and most vulnerable; namely poor families with children (under 18 years of age), poor elderly (aged 65 years and above) and persons with severe disability. Originally implemented as an unconditional cash transfer, the program is now a conditional cash transfer program, but the conditionalities have yet to be monitored. Starting July 2017, households received EGP60 for each child under 6 years old, EGP80 for each child in primary education, EGP100 for children in preparatory education, and EGP140 for secondary education. As of June 2017, 90% of TKP beneficiaries were women.

In 2018, the International Food Policy Research Institute (IFPRI) completed the first round of impact evaluation of TKP, based on household survey data collected after the first 15 months of the program. The evaluation found that TKP substantially improved wellbeing for poor households, increasing household consumption per adult equivalent by 8.4 percent. and reducing the probability that a beneficiary household is poor (< USD1.90 per capita per day) by 11.4 percentage points, which is comparable to several of the well-known, large-scale programs in Latin America where consumption impacts are on the order of 7-8 percent.

In the period between the first-round evaluation and the data collection for this report in January 2022, Egypt faced an enormous economic shock in the COVID-19 pandemic with a complete loss of tourism, which before the crisis was responsible for 12% of GDP and 10% of employment (IMF, 2021). Partial lockdowns and restrictions on large public gatherings further reduced economic activity. Tax revenues decreased substantially, and international investors withdrew. The Ministry of Social Solidarity expanded targeting of Takaful and Karama, adding an additional 411,000 households to the beneficiary list. Egypt undertook several measures to respond to the economic crisis posed by the pandemic, including expansion in some safety net programs and introduction of some new social protection programs.

This follow-up evaluation was designed to assess whether impacts estimated from the first round have been sustained and whether longer duration of treatment has led to impacts on additional outcome variables. The follow-up evaluation focuses only on Takaful. The evaluation assesses the program's impact on indicators that have been covered by the first evaluation and adds new insights on some outcomes, such as COVID-19 related impacts and responses. Data from a household survey collected in January and February 2022, and administrative data on registration into the program are used for the impact evaluation.

This follow-up impact evaluation was conducted using a regression discontinuity (RD) design similar to the first round but using a different sample of households much more tightly concentrated around the 4500 threshold to address concerns about the smaller discontinuity. Regression discontinuity is the most scientifically rigorous

methodology available given the program's approach to targeting and timing of the evaluation.

TAKAFUL IMPACT RESULTS

Households invested in assets, particularly productive assets. There are large and significantly positive effects on household asset holdings. Beneficiary households own more assets in general, and importantly, they own more productive and livestock assets. Specifically, households invested in tractors, plows, and irrigation. With regards to livestock, households purchased buffaloes, cattle, goats, and sheep, and reduced their investments in smaller animals such as chickens, geese, pigeons, and ducks. These large and lumpy productive and livestock investments are important for future income generation. Many households cannot afford to make these larger investments and the Takaful program may have given households the ability to redirect funds for these investments.

Takaful households reduced their debt burdens. We see statistically significant differences between beneficiaries and non-beneficiaries with beneficiary households carrying substantially less debt. This is also a positive result as it frees households from being forced to pay down loans for specific items rather than using the money in more beneficial ways, and because it reduces the burden of interest.

There were no measurable impacts of the Takaful program on household consumption or poverty. Compared to the first round, statistical power of the analysis was more limited with results not being statistically distinguishable from zero, although the confidence intervals do rule out that the impacts on consumption could have been as large as those found in the first round. Importantly, we note that the consumption aggregates are calculated per adult equivalent unit (AEU), which adjusts for the amount of consumption needed by adult and child household members (children are given less weight). In particular, households reduced their consumption of grains, eggs, oils and fats, and fruits. Households also spent less on construction and communications.

Changes in household demographics may partly explain the lack of impact on consumption. We find that Takaful beneficiaries had more household members, and particularly more children 0-5 years old and 6-11 years old. The higher number of household members ages 6-11 years old is likely an artifact of the PMT score construction which was not completely near the 4500 cutoff. We also see some suggestive evidence that Takaful induced increases in number of children born in the past 5 years, including among households that already had at least 2 children at the time of registration.

Takaful changed household labor patterns. We see a small difference in the types of occupations among beneficiaries. Beneficiaries are significantly more likely to be employed in the informal sector.

Takaful improved school enrollment and attendance. Children of primary school age were almost 9 percentage points more likely to be enrolled in school and children of preparatory school age were 21 percentage points more likely to be enrolled in school. Further, we see improvements in attendance rates among secondary school children. Secondary school children who are enrolled in school attend more regularly, and the result is driven by in-

creased participation among girls. This positive result will have implications for future generations – increased education among women is associated with several positive outcomes for their children (better nutrition, higher learning levels, higher earning potential, etc.).

Impacts on nutrition outcomes are weak and mixed. Household level dietary is reduced household level dietary diversity in one specification. One the other hand, beneficiary households had lower rates of wasting among children 6-23 months of age. Mother's anthropometric outcomes were also not affected.

Women's ability to make decisions within their households did not differ between beneficiaries and non-beneficiaries. While the first-round evaluation found decreases in measures of women's decision-making power, particularly among women with no formal education, we do not find this same pattern in our analysis. Overall, there are no impacts in any domain of decision-making. For the sample of women who have some formal education, there is a slight negative effect on decision-making regarding taking children to the doctor, and for women without any formal education there is a slight positive impact on deciding what food to cook. However, overall, Takaful did not have any substantive impact on women's decision-making within their households. We also see some evidence of higher levels of gender positive norms among beneficiary households. We do not find any effects on mental health – worries, generalized anxiety, or self-esteem.

Takaful contributed to households' ability to cope with shocks. When faced with shocks in the past five years, the predominant method Takaful households used to cope was selling gold/jewelry. We also see a reduction in borrowing to cope with shocks. This is a positive result since it is coping strategy with less potential for long-term negative impacts than others such as child labor or having daughters marry early.

RECOMMENDATIONS

Takaful should be continued and even possibly extended. The program enabled households not to resort to coping with shocks in negative ways. Particularly considering increasingly frequent global shocks like COVID-19 and the Russian invasion of Ukraine, social protection programs, including cash transfer programs like Takaful, could be an effective way to protect against large-scale shocks since the infrastructure to reach people is largely in place.

Proceed with plans for recertification and graduation of beneficiaries who have achieved self-sufficiency while using a generous cut-off for self-sufficiency given that many households have not managed to substantially increase their consumption despite increased productive assets.

Improve communication regarding exclusion restrictions, program length, and recertification so that beneficiaries understand that they will not be excluded from the program for formal sector work with income below a certain threshold and to ensure that beneficiaries are not surprised by sudden changes in program status or unnecessarily worried about the short-term continuity of the transfers.

Consider greater coordination with communication campaigns related to family planning if the behavioral response by families of having more children is confirmed and seen as in conflict with other national policy goals.

Continue to work towards a comprehensive social protection strategy that helps to continue protecting the poor as well as contributing to achieving longer-term developmental goals. Coordinating with the Ministry of Education to provide high quality public service delivery will magnify the impacts of increased school enrollment and with the Ministry of Health regarding diets and nutrition.

Complementary programming would also be beneficial. In general, complementary programming on issues such as nutrition practices or financial training need to be quite intensive to be impactful. There are currently programs that are implemented by the Government of Egypt on these topics, particularly a nation-wide nutrition campaign. However, it would be worth considering pairing these programs and intensifying them by leveraging Takaful to link to already vulnerable households.

1. INTRODUCTION

1.1 Context for the initiation of the Takaful and Karama Program

Since 2014, Egypt has undertaken a broad program of macroeconomic reforms designed to reduce government spending, liberalize the economy, promote employment and economic growth, and strengthen the social safety net. These reforms included a devaluation of the exchange rate, substantial reductions in energy subsidies, changes to the tax code, and freezing of public sector hiring (World Bank 2019). The government also initiated a series of changes to social programs, in part to help smooth the effects of the economic reforms and to improve the functioning of the social safety net through changes in program designs and improved targeting.

Egypt has long provided substantial social support. Major programs include a large social solidarity pension and a system of broad food subsidies initiated after World War II. These reach millions of households, but they are costly and inefficient as a form of redistribution. The food subsidy alone cost 1.6% of GDP and reached 70% of the Egyptian population (Ministry of Finance, 2017). In 2015, the government reformed food subsidies, instituting a ration card that served as a voucher for discounted purchases of selected food items (Moselhy, 2017; Ecker et al. 2016). During the macroeconomic reforms, the government increased the size of voucher payments to help offset the negative impacts of the reforms (Breisinger et al. 2018).

In the context of these reforms, Egypt introduced the Takaful and Karama Program (TKP), a pair of targeted cash transfer schemes in March 2015. Takaful and Karama was designed as a conditional cash transfer program providing income support targeted to the poor and most vulnerable; namely poor families with children (under 18 years of age), poor elderly (aged 65 years and above) and persons with severe disability. The introduction of the program represented a significant step on behalf of the Egyptian government to increase the share of social spending reaching poor households. Takaful and Karama is implemented by the Ministry of Social Solidarity (MoSS), and co-financed by the Government of Egypt and the World Bank. *Takaful* (Solidarity), the larger of the two programs, is a family income support scheme. The program was initially rolled out as an unconditional cash transfer, but planned education and health conditionalities were introduced in 2018. Continued receipt of Takaful transfers was conditioned on school children aged 6-18 years maintaining attendance of at least 80% of the school days, and on mothers and children below 6 years completing three visits to health clinics per year, in addition to maintaining child growth monitoring records, and attending nutrition awareness sessions. Takaful transfers start from a basic amount of EGP325 per household, per month, which increases depending on the number of children in the households and their educational level. At the beginning of the program, household received EGP60 for each child in primary education, EGP80 for each child in preparatory education and EGP100 in secondary education. The nominal value of the transfers was increased over time. For example, starting July 2017, households received EGP60 for each child under 6 years old, EGP80 for each child in primary education, EGP100 for children in preparatory education, and EGP140 for secondary education. Households can receive benefits for up to three children only, who are usually the oldest three children in the households. *Karama* (Dignity) is an unconditional income support scheme targeted at the poor elderly

and persons with severe disability, and orphans. Orphans were added as Karama beneficiaries in 2017 and receive EGP350 per beneficiary. Karama monthly transfers for poor elderly and person with disability started at EGP350 per beneficiary and were increased in July 2017 to EGP450 per beneficiary. Karama also has a maximum of three beneficiaries per household (World Bank, 2015). Families can be entitled to both Takaful and Karama benefits. As of June 2017, 90% of TKP beneficiaries were women.

1.2 Evidence of impact from the first-round evaluation of the Takaful and Karama Program

In 2018, the International Food Policy Research Institute (IFPRI) completed the first round of impact evaluation of TKP, based on household survey data collected after the first 15 months of the program. The evaluation was conducted using a regression discontinuity design, a methodology that provides rigorous estimates of program impact for programs like TKP targeted using a proxy means score with a fixed threshold for household eligibility. The evaluation found that TKP substantially improved wellbeing for poor households, increasing household consumption per adult equivalent by 8.4 percent. and reducing the probability that a beneficiary household is poor (< USD1.90 per capita per day) by 11.4 percentage points. The consumption impact of Takaful is comparable to several of the well-known, large-scale programs in Latin America. A review of conditional cash transfer programs in Latin America (Fizbein et al, 2009) found that impacts on household expenditure ranged from 7-10 percent among four programs in Brazil, Mexico, Colombia, and Honduras that providing transfers of similar size to Takaful as a share of household expenditure. The first-round impact evaluation also showed that Takaful increased the value of household food consumption and improved the quality of household diets.

The first round of evaluation also identified some limitations in the program's impact. For example, there were no significant impacts of Takaful on school enrollment or heath care utilization, which may be explained by the absence of conditionalities at the time of the evaluation. Also, estimates showed a negative and significant impact of the program on women's control over decision making, which was driven primarily by households in Lower Egypt and by women with less than primary education. The first-round evaluation did not find any measurable impacts of the Karama program, due to methodological challenges introduced by variation in the eligibility threshold as program leaders sought to expand its coverage.

1.3 COVID-19 and the Government of Egypt's response

In the period between the first-round evaluation and the data collection for this report in January 2022, Egypt faced an enormous economic shock in the COVID-19 pandemic. The pandemic had several immediate, severe negative effects on the economy. For example, Egypt experienced a complete loss of tourism, which before the crisis was responsible for 12% of GDP and 10% of employment (IMF, 2021). Partial lockdowns and restrictions on large public gatherings further reduced economic activity. In addition, tax revenues fell and the country experienced capital outflows of more than $15 billion as investors withdrew from emerging markets. Despite these challenges, Egypt was one of the few emerging markets to experience positive, though modest, economic growth in 2020. Economic growth was projected to further accelerate in 2021, to 5.5% (World Bank 2022).

Egypt undertook several measures to respond to the economic crisis posed by the pandemic, including expansion in some safety net programs and introduction of some new social protection programs. These changes included an increase in the social pension and new transfers targeted to pregnant women, women with young children, individuals with disabilities, the elderly, and informal and self-employed workers, such as in the tourism and agriculture sectors (Gentilini, 2022). In addition, the Ministry of Social Solidarity expanded targeting of Takaful and Karama, adding an additional 411,000 households to the beneficiary list. With this expansion, through July 2021, the project has reached 3.37 million direct project beneficiaries (including 75% women), while 11.85 million direct and indirect beneficiaries benefited from the project. Not surprisingly, these changes in eligibility rules used to expand the TKP created some challenges in measuring impacts of the program, which we discuss below.

1.4 The second round of impact evaluation of the Takaful and Karama Program

In 2018, the World Bank contracted IFPRI to conduct the first round of impact evaluation of the Takaful and Karama Program, in conjunction with the Ministry of Social Solidarity and with funding from the United Kingdom Foreign and Commonwealth Office (UK FCO). For the second round, IFPRI has been contracted by the World Bank again, this time with funding from the United States Agency for International Development (USAID) for the data collection. As with the first-round evaluation, IFPRI has worked in conjunction with the Ministry of Social Solidarity in conducting this second-round impact evaluation of the Takaful program.

The follow-up evaluation focuses only on Takaful, which is the largest of the two programs, and where more human capital accumulation is expected with the implementation of the conditionalities. The main objective of conducting a second round of evaluation is to assess whether impacts estimated from the first round have been sustained and whether longer duration of treatment has led to impacts on additional outcome variables. This evaluation round also follows the implementation of conditionalities, which were not in place when the first evaluation was conducted. The second round of evaluation rigorously assesses the program's impact on indicators that have been covered by the first evaluation, such as household consumption, poverty, asset ownership, as well as other measures of well-being, such as the prevalence of overweight and obesity in adult women and children, as well children's education and health. This second round of evaluation also adds new insights on some outcomes, such as COVID-19 related impacts and responses. Data from a household survey collected in January and February 2022, and administrative data on registration into the program are used for the impact evaluation.

The Takaful program continues to be targeted using a Proxy Means Test (PMT), which is an index of well-being based on household demographics, income, housing quality, assets, and other characteristics. Households with a PMT score below a preset threshold are considered eligible for the program, while those above it are not. The PMT cut-off point as well as the PMT function used by MOSS have been changed between both evaluations. The design of the program creates a quasi-experiment which IFPRI researchers utilized to rigorously assess the impact of the program.

1.5 Outline of this Report

The remainder of this report is organized as follows Chapter 2 provides a brief overview and updates about the Takaful Program. Chapter 3 presents the impact evaluation design. Chapter 4 describes the evaluation survey and sample. Chapter 5 summarizes beneficiary and non-beneficiary household characteristics, providing context to the study. Chapter 6 presents the impact estimates for Takaful. Finally, Chapter 7 concludes and provides policy recommendations.

2. TAKAFUL AND KARAMA PROGRAM

2.1 Program Description

Egypt launched the Takaful and Karama Program in March 2015. The initiation of the program followed the implementation of a series of economic reforms that were implemented in Egypt starting 2014. The program aimed to protect the most vulnerable population groups from the impacts of the economic reforms, as well as to improve the targeting of social protection in Egypt (World Bank, 2015). Takaful and Karama is a conditional cash transfer program that seeks to provide income support to the poor and most vulnerable; namely poor families with children (under 18 years of age), poor elderly (aged 65 years and above) and persons with severe disability. The program has two main sub-programs: Takaful, and Karama.

"Takaful" (Solidarity) is a family income support scheme aimed at protecting poor families with children. The program is *de jure* conditioned on school attendance and health outcomes but *de facto*, the conditionalities are not enforced. Receiving the cash transfers is conditional on attendance of at least 80% of the school days by children aged 6–18 years, and on receiving three health monitoring visits per year, by mothers and children below 6 years in addition to maintaining child growth monitoring records and attending nutrition awareness sessions. Takaful transfers start from a basic amount of EGP 325 per household, per month, and increase depending on the number of children in the households and their educational level, with a maximum amount of EGP 625 Transfers were originally delivered on a quarterly basis but were shifted to monthly transfers in 2017.

With the outbreak of COVID-19 and the global economic crisis that followed, MOSS has been expanding Takaful to 411,000 more households to shield more households from the loss of employment and the inflationary pressures.

2.2 Targeting

When the program was first launched, targeting beneficiaries combined geographical targeting with a Proxy Means Test (PMT) mechanism. With respect to the geographical targeting, the program was first launched in the poorest districts within the poorest governorates in Egypt. Currently, the program is available in all of Egypt's governorates. The PMT is used to identify the poor, based on selection criteria and a set cutoff score, based on the poverty line derived from Egypt's Household Income, Expenditure and Consumption Survey (HIECS). The cutoff score for Takaful has been changed several times throughout the life of the program but the cutoff faced by the overwhelming majority of applicants is 4,500 points. Any

household can apply to the program if they meet the following criteria: 1) the household head is 35 years or older, 2) the household's monthly income is less than EGP 400 per month from the public or private sector, 3) the household does not benefit from social insurance, 4) the household has children, and 5) the household resides in Egypt (Al-Masry Al-Yom, 2022).

The PMT uses poverty predictors from the 2012–2013 Household, Income, Expenditure and Consumption Survey (HIECS). A PMT formula was developed based on the following criteria:

▷ Household head characteristics (e.g., gender, marital status, age, education, work status etc.)
▷ Household members characteristics (e.g., number of elderly, children, members enrolled in education, illiterate, employment situation)
▷ Money transfers received by household (e.g., pensions, remittances, allowances, etc.)
▷ Housing unit characteristics (e.g., type of unit, ownership, ceiling, flooring, water connection, etc.)
▷ Ownership of assets (e.g., private car, internet connection, refrigerator, etc.)

The PMT formula is based on a regression with the logarithm of per capita annual expenditure (adjusted to regional differences, price variations and age differences of HH members) as the dependent variable (El-Sheneity, 2014). Different PMT models are used for the different geographic regions in Egypt; namely urban Upper Egypt, rural Upper Egypt, urban Lower Egypt, rural Lower Egypt, Metropolitan, and Frontier governorates, however the same PMT eligibility threshold is used for all regions.

2.3 Program experience

Satisfaction from Takaful program seems to have declined between 2018 and 2022. Most applicants seem to have a positive experience and are satisfied with the program. Yet, in 2018, 68.1% of surveyed households were very satisfied from the program and 89.2% were either very satisfied or somewhat satisfied (from a nationally representative sample). Meanwhile, in 2022, only 48.7 percent of our surveyed households were very satisfied with Takaful, and 76.1 percent were either very satisfied or somewhat satisfied, see Figure 2.3.1.

Figure 2.3.1. Program Satisfaction
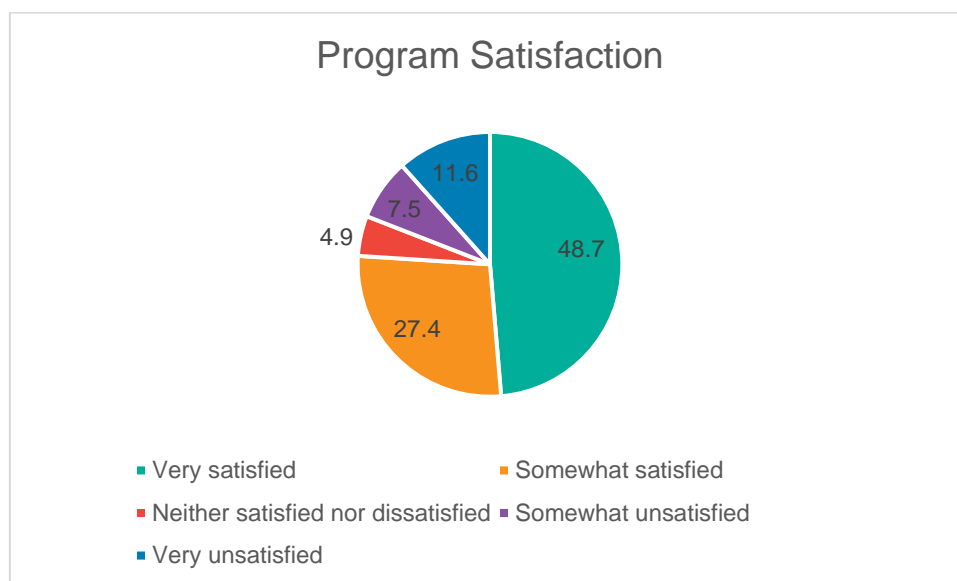
Source: Authors' calculations

The average transfer amount reported by beneficiaries in the past 2 months was EGP 432 per month. On average, administrative data shows that households have been receiving payments for 3.8 years.

Table 2.3.1. Self-reported Transfer Amounts

	Mean	Standard deviation
Average amount last 2 months – EGP	431.5	(65.5)
No of months since first transfer	42.2	(20.9)
No of years since first acceptance	3.5	(1.7)

Note: Standard deviations are reported in parentheses

The evaluation investigated the challenges that households experienced during the registration process, as well as in receiving the transfers. Table 2.3.3 shows the challenges that registrant households faced while applying for Takaful. The most common challenge among registrants was that queues for program application were long, which was reported by 20 percent of Takaful beneficiaries and 30 percent of non-beneficiaries. The second most common challenge was preparing the needed documents, which required time and effort. Registrants who did not end up as Takaful beneficiaries were more likely to report this issue (20 percent), compared to Takaful beneficiaries (14 percent). Meanwhile, 64 percent of Takaful beneficiary household reported no challenges, while 43 percent of non-beneficiaries also reported no challenges.

Table 2.3.2. Challenges in Applying to Takaful

Variable	Takaful Beneficiaries	Takaful Non-Beneficiaries
The social workers were not helpful in explaining the needed documents	0.13	0.25
	(0.33)	(0.43)
Getting the needed documents require a lot of money	0.10	0.18
	(0.30)	(0.38)
Getting the needed documents require traveling	0.08	0.10
	(0.27)	(0.30)
Getting the needed documents is difficult and time consuming	0.14	0.20
	(0.35)	(0.40)
There were long queues for program application	0.20	0.30
	(0.40)	(0.46)
The time to travel to apply was prohibitive	0.04	0.05
	(0.20)	(0.22)
The application is time consuming	0.04	0.09
	(0.21)	(0.29)
The application form was too difficult	0.02	0.06
	(0.15)	(0.23)
Other challenges	0.01	0.04
	(0.07)	(0.19)
No challenges met during application to TKP	0.64	0.43
	(0.48)	(0.49)
Number of households	2,543	3,932

Note: Standard deviations are reported in parentheses

In terms of receiving the transfers, the only commonly reported issue is that the working hours of payment delivery units were not convenient, which was reported by 15 percent of Takaful households.

Table 2.3.3. Challenges in Receiving Transfers

Variable	Takaful Beneficiaries
Requires traveling for long distances	0.02
	(0.14)
Travel costs are costly	0.05
	(0.23)
Informal facilitation fees need to be paid to receive payment	0.01
	(0.10)
Did not know where or how to receive it	0.01
	(0.08)
Payments are regularly delayed	0.07
	(0.25)
Do not know when the payment should be received	0.01
	(0.11)
Lost the card and found difficulty in renewing it	0.01
	(0.07)
Lost the pin code and found difficulty in renewing it	0.01
	(0.07)
Working hours at payment delivery units are not convenient	0.15
	(0.35)
Other challenges	0.01
	(0.09)
Number of households	2,543

Note: Standard deviations are reported in parentheses

3. IMPACT EVALUATION DESIGN

3.1 Motivation for the Regression Discontinuity Approach

Impact evaluation is a valuable tool for policy makers because it allows them to understand the causal impact of programs - i.e., the amount of difference in household welfare caused by the program being evaluated rather than any other factor.

As recognized in the baseline impact evaluation of Takaful and Karama (Breisinger et al., 2018), the ideal impact evaluation approach to use to measure the impacts of the Takaful program is regression discontinuity. Other common strategies that economists use to identify impact such as a randomized control trial or differences-in-differences were not feasible due to inability to collect pre-program data or randomly assign participants to treatment and control groups. A third common approach, matching, was also discarded because of the significant role of self-selection in determining which households applied to the program and the large number of observable characteristics already included in the PMT score. By contrast, regression discontinuity works well, as it takes advantage of the program's targeting approach which uses a strict cutoff in the PMT score.

Figure 3.1.1 shows the intuition behind the regression discontinuity evaluation approach: households just above and just below the cutoff are compared, while controlling for the underlying relationship between the outcome and the PMT score variable. As highlighted in the baseline evaluation, this approach is recognized as a rigorous impact evaluation strategy in the international literature. One disadvantage, however, is that the impact estimated using the regression discontinuity approach should be interpreted as the average impact of the program specifically for households in the neighborhood of the cutoff. In practice, this means that the estimated impacts of Takaful are for the relatively better off among all Takaful beneficiary households.

Note that another option considered was defining the "treatment" group as those currently receiving Takaful transfers, and the "control" group as those not currently receiving transfers. However, there are many factors that determine whether a household is receiving transfers. The first is of course whether they meet the eligibility criteria: primarily, a PMT score below 4500 points when the household applied. That criterion is exogenous, meaning that the household cannot do anything to influence it (and we can check whether that is the case in the data) so there are no confounding factors that would influence the results. Accordingly, it is considered exogenous and impacts using this eligibility criterion allows for a causal interpretation of results. Since our sample comprises households who applied to Takaful several years ago, they were eligible at the 4500 point cutoff. However, the cutoff has changed since then and household status has also changed for many households. Some households graduated from the program and are no longer receiving transfers, some households were newly eligible and added to the program and are now receiving transfers even though they were previously ineligible, and some households who stopped receiving transfers applied again under a new ID and are now receiving transfers. These factors are not exogenous – they are factors that households can affect, and household who can affect these changes are different from those who cannot, making them an invalid comparison group. Consequently, using a definition of whether the household is a current beneficiary would not result in a causal interpretation of estimates.

Figure 3.1.1 Intuition Behind Regression Discontinuity
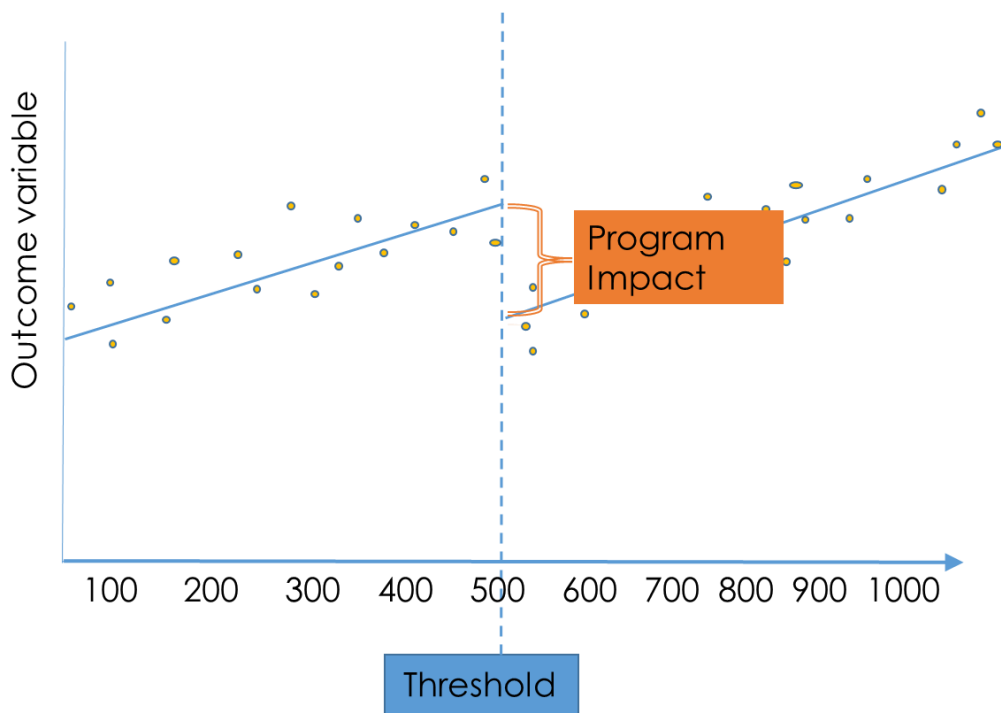
Source: Authors' illustration

3.2 Sample Selection

In order to measure the medium-term impact of Takaful, we constrained our sample for this evaluation round only to households that had registered in May 2016-December 2016. Eligible households in this sample – i.e., households with PMT scores below the 4500 cutoff-started receiving Takaful transfers in late 2016 or early 2017 given the several month delay between registration and program entrance. This means that households still receiving transfers as of the second-round evaluation survey had been in the program for approximately five years.

Not all households continued in the program, however, and some households that had originally been excluded from the program eventually re-registered and were included. However, we define our "treatment" and "control" groups based on the original eligibility in 2016 in order to maintain a causal identification strategy. Whether households met the eligibility criteria(a PMT score below 4500 points) when the household applied is exogenous, meaning that the household cannot do anything to influence it (and we can check whether that is the case in the data) so there are no confounding factors that would influence the results. Accordingly, impacts using this eligibility criterion allows for a causal interpretation of results. Some households graduated from the program and are no longer receiving transfers, some households were newly eligible and added to the program and are now receiving transfers even though they were previously ineligible, and some households who stopped receiving transfers applied again under a new ID and are now receiving transfers. These factors are not exogenous – they are factors that households can affect, and household who can affect these changes are different from those who cannot, making them an invalid comparison

group. Consequently, using a definition of whether the household is a current beneficiary would not result in a causal interpretation of estimates.

3.3 Heterogeneity analysis

In recognition of the limitation of the regression discontinuity approach, an associated complementary analysis of administrative data is planned to estimate the degree to which households farther from the cutoff point may have benefited differently from the Takaful program than households in the immediate neighborhood of the cutoff. The heterogeneity analysis portion of the evaluation report is expected to be available by December 2022 depending on the timing of the administrative data collection.

3.4 Regression Discontinuity Validity

The remainder of this chapter provides details about the regression discontinuity specification used for this impact evaluation and shows tests used to ensure that the regression discontinuity estimate is valid for estimating an impact in this particular sample. Readers less interested in the technical details may skip to Chapter 4.

The general justification for use of a regression discontinuity design based on the Proxy Means Test (PMT) was presented in the baseline evaluation report and remains relevant. The use of a Proxy Means Test to create an indicator of well-being for program registrants and use of a threshold PMT score to determine program eligibility provides the conditions needed to measure impact using a regression discontinuity (RD) design.

While the eligibility cutoff changed several times in recent years, our sample was selected to include only households that initially registered for Takaful between May 2016 and December 2016. This sample was specifically selected such that the 4500 cutoff was relevant for determining household eligibility. The 4500 cutoff was applied from September 2016 to April 2017 and during this period in the Takaful program, registrants who applied in May 2016-August 2016 and who were not eligible according to the previous cutoff of 4296 were automatically included in the program when the cutoff increased.

Nevertheless, the 4500 cutoff is not perfectly predictive of program participation. In contrast to the baseline evaluation when approximately 90% of registrants below the threshold were current beneficiaries, in round 2, only approximately 50% of registrants who were below the threshold are still listed in the MoSS database as beneficiaries. This is because MoSS used data from other departments to ensure that all eligibility criteria were met (for example, not receiving remittances, not owning a car, etc.). Based on the original household registration, the strictness of the threshold was very strong with less than 2% of applicants with PMT scores above the 4500 cutoff being beneficiaries, and more importantly, we learned that many households that were initially rejected re-registered later for the program under a different application number. Nevertheless, the household PMT score at the time of registration relative to the 4500-cutoff remained a substantial determinant of program participation.

Table 3.4.1 demonstrates the probability of ever having been a beneficiary, being a current beneficiary (defined as receiving a transfer in the past two months), and the average amount received if a household's PMT score is less than or equal to 4500. When the PMT score is less than or equal to 4500, the household is almost twice as likely to have ever received transfers from the Takaful program, was 26% more likely to report a transfer in the past two months (indicating that some households who were beneficiaries are no longer beneficiaries) and received 109 EGP more than non-beneficiary households. Additionally, beneficiary households received transfers for almost two years longer than non-beneficiary households (non-beneficiary households are coded as zero months). Another potential definition of having been "treated", is to consider households who are currently beneficiaries but and have also received at least 24 transfers.[1] While we know the number of transfers received, we do not know whether a household began receiving transfers, stopped receiving them, and then started receiving them again, or whether they have not recently received transfers. We do know, however, that 17% of households reported ever having ever received a transfer but are no longer receiving them. No households who received ever having received a transfer reported that they do not currently receive transfers. This alternative definition captures the combination of more recent transfers and what could be considered a "sufficient" history substantial period of receiving transfers equal to at least 40% of the maximum possible period of transfer receipt. Using this definition, households whose PMT score fell below the 4500 point threshold were 32% more likely to be treated compared to those below the threshold. Overall, the PMT threshold is a very strong predictor for all three outcomes, meaning that RD is a valid strategy. As a result, as in the baseline evaluation, we employ a 'fuzzy' regression discontinuity design. We estimate local linear regressions on either side of the cutoff with robust bias-corrected confidence intervals (Calonico et al, 2014).

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[1] 25% of households have a PMT score below 4500, are still receiving transfers, and have had 36 or more months of transfers. 26% of households have a PMT score below 4500, are still receiving transfers, and have had 24 or more months of transfers. This indicates that the choice of 24 months versus a longer period would not change the treated sample very much.

Table 3.4.1. Beneficiary Status as Determined by the PMT Threshold

	(1) HH ever received transfers from Takaful	(2) HH reported a Takaful transfer in the past two months	(3) Average amount of Takaful transfers received in the last two months	(4) Number of monthly Takaful transfers ever received
PMT score ≤ 4500	0.481***	0.264***	108.5***	23.17***
	(0.0128)	(0.0133)	(5.973)	(0.699)
Mean Dep. Var.	0.568	0.393	169.2	23.97
R^2	0.236	0.470	0.065	0.196
F-statistic	293.56***	82.28***	67.82***	226.93***
N	6449	6475	6475	6449

The RD estimation strategy, as described above, is a local linear regression model that identifies impacts around the threshold of participation in the program. The estimating equation is as follows.

The treatment effect is estimated as the difference in the expected value of the outcome conditional on the PMT score on either side of the threshold relative to the change in probability of participation *(P)* at the cutoff:

$$\tau = \frac{\lim_{score \uparrow 4500} E[Y|score] - \lim_{score \downarrow 4500} E[Y|score]}{\lim_{score \uparrow 4500} E[P|score] - \lim_{score \downarrow 4500} E[P|score]} \tag{1}$$

where τ represents the impact of the *Takaful* program on a particular outcome. To estimate *E[Y|score]* and *E[p|score]* we use local unweighted linear regressions including strata fixed effects to account for the minor differences in the formula used for calculating the PMT score variable in different regions and cluster standard errors at the community level.

We estimate two separate specifications: one based on current beneficiary status, and one based on having ever received *Takaful* transfers. We define a household as a current beneficiary if they reported receiving a Takaful transfer in the past two months, and as ever having been a beneficiary if they reported ever receiving Takaful transfers. As a robustness check, we also use the number of months that a household reports receiving transfers as the "treatment". We do this for a select number of our main outcomes only, since the estimates for program participation on average are easier to interpret and participation in the program is our main object of interest rather than intensity of participation.

Figure 3.4.1 shows the probability of being a *Takaful* participant in the past two months, among those who registered, by PMT score. The vertical line denotes the 4500 threshold. While approximately 45% of households above the threshold are receiving transfers, notably, almost 25% of households above the threshold are also receiving transfers. This finding is important in interpreting our results because the size of the difference in probability of receiving transfers is relatively small at around 20%. In the first-round evaluation of *Takaful*, the equivalent difference was about 55% and that larger difference enabled us to estimate effects more precisely. The small size of this discontinuity compared to the baseline evaluation means that our statistical power is still lower than ideal, despite the sampling approach

in the second-round evaluation being designed to maximize statistical power. The implication of this reduced statistical power for our impact evaluation is that while larger impacts are still discernable, the confidence intervals on our estimates are large enough that there may be small but meaningful impacts that we are not able to statistically distinguish them from zero. Figure 3.4.2 shows the discontinuity in whether a household has ever been a Takaful recipient. While 80 percent of households below the threshold report that they have received Takaful transfers, approximately 25 percent above the threshold also report ever having received transfers. Finally, Figure 3.4.3 shows that there is also a discontinuity in the duration of transfers received by households. The outcome variable is the number of months that a household reported receiving Takaful transfers. Below the 4500 point threshold, the average number of months is approximately 35 months, while above the threshold the average is about 10 months. This is a fairly large gap in the duration of transfers.

Figure 3.4.1: Probability of having received a *Takaful* transfer in the past two months, by PMT score (Self-Reported)
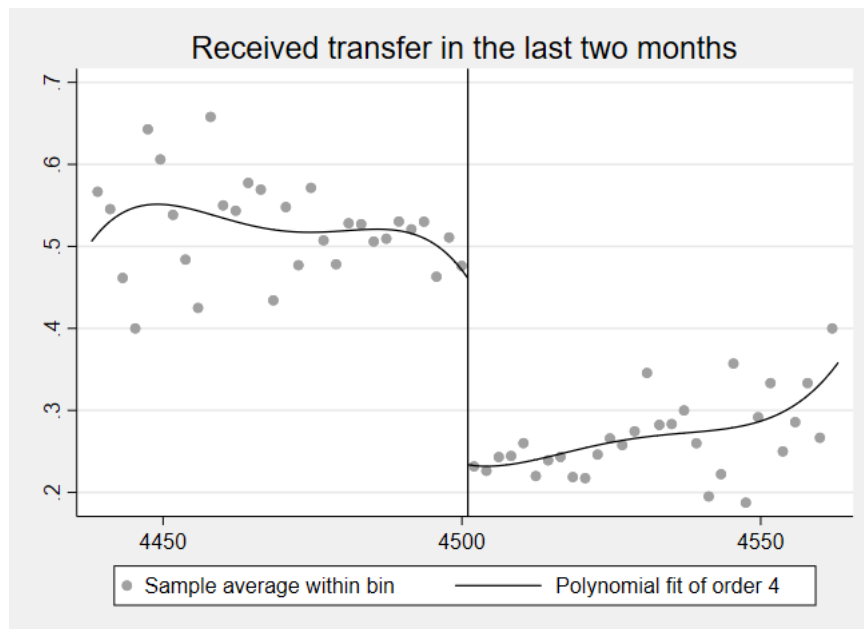
Notes: Estimated using rdplot with uniform kernel and 30 equally spaced bins.

Figure 3.4.2: Probability of Ever Having Received a *Takaful* Transfer, by PMT Score (Self-Reported)
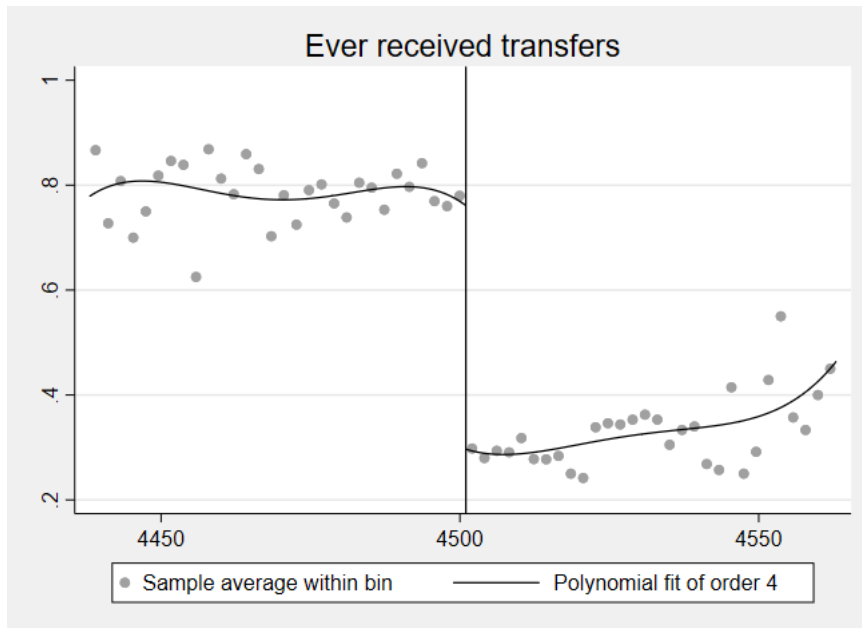
Notes: Estimated using rdplot with uniform kernel and 30 equally spaced bins.

Figure 3.4.3: Number of Months Transfers Were Received (Self-reported)
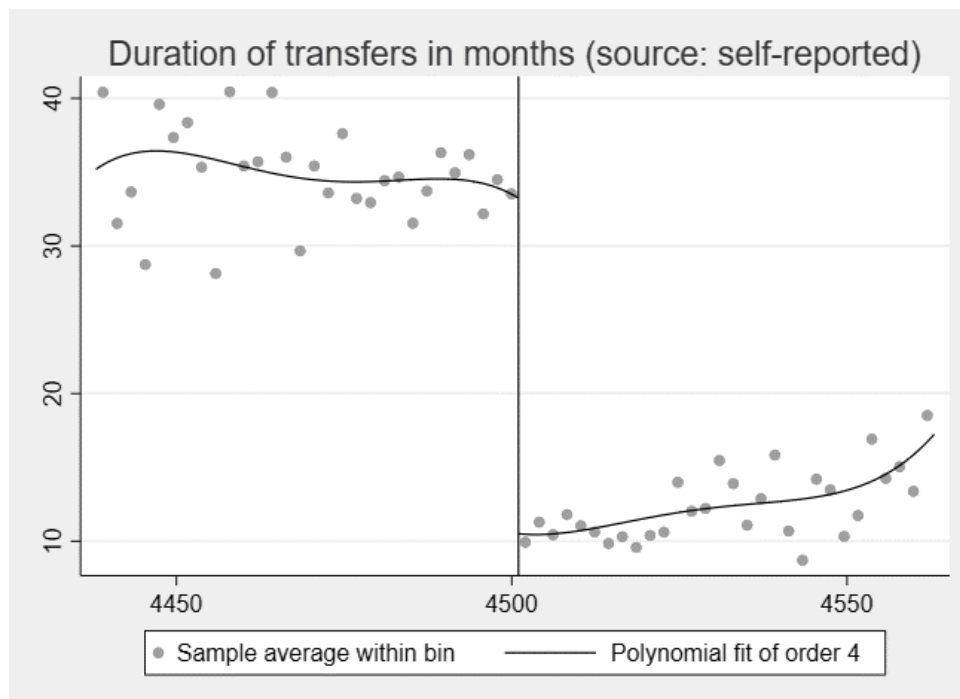
3.5 Regression Discontinuity Specification

To estimate the treatment effect described in equation (1), we use the 'rdrobust' package in Stata, developed by Calonico, Cattaneo, and Titiunik (2014).

There were two main decisions to be made when estimating this equation: the choice of bandwidth and the kernel. As will be described in Chapter 4, we chose to sample from the beginning from a very narrow window around the 4500 cutoff to maximize statistical power. Consistent with the baseline evaluation in which we found that when the initial sample is already concentrated around the cutoff, data-driven bandwidth selection is not feasible, we chose to set the bandwidth such that all data collected was used. Equally consistent with our choices in the baseline evaluation, we used a uniform kernel.

Following the suggestion of Calonico et al. (2014), we report conventional, bias-corrected, and robust bias-corrected estimates. The conventional results approximate a linear regression both above and below the cutoff. The concern, however, is that if the true underlying relationship is non-linear, the conventional estimates may be affected by leading bias caused by the non-modeled curvature of the relationship. The bias-corrected point estimate allows for quadratic regressions on each side of the cutoff and the robust estimate shows the bias-corrected point estimate together with recentered confidence intervals. The confidence interval in the robust bias-corrected estimates is more robust to the choice of bandwidth than the conventional approach. To the extent that we are confident in the assumption that the underlying relationship between the PMT score, and the outcome variable is linear, however, the conventional estimates remain valid.

4. SAMPLE AND SURVEY DATA

4.1 Sample

The sampling strategy was designed to provide a sample of Takaful households that had had the opportunity to receive transfers for approximately five and half years with PMT scores as close as possible to the 4500 threshold to maximize the statistical power. To make the data collection feasible, we targeted 12 households per village.

We began with administrative data on all registrants in the program. After extracting all households that registered in the period of May 2016-December 2016 and removing any overlaps with ongoing Forsa or Haya Karima interventions, we selected villages in which it was possible to find 16 Takaful registrant households within the smallest possible distance of the 4500 cutoff. To identify 540 villages for a sample size comparable to the baseline evaluation, we ended up using a window of PMT scores from 4448 to 4562 (for geographic representativeness, we also allowed the inclusion of two villages in the frontier region for which 14 Takaful registrant households with PMT scores from 4444 to 4564 could be found). The initial sample included an extra four households per village as replacement households, to account for anticipated difficulties with locating households based on registration data.

Compared to the baseline evaluation, the sample for the second-round evaluation has a dramatically narrower bandwidth: 62 compared to 600. This narrower bandwidth is expected to increase the precision of our estimates, partially making up for the large loss in statistical power resulting from the much smaller discontinuity in program participation at the cutoff.

4.2 Data Collection

Data was collected by the survey firm El-Zanaty and Associates between January 8 and February 13, 2022. The field staff consisted of 8 teams of 1 male interviewer and 4 female interviewers each. Households were interviewed by female interviewers, with male interviewers collecting the community questionnaire.

The main enumerator training took place in July 2021, but as the data collection was considerably delayed due to security clearance issues, a refresher training was held for four days in January 2022 prior to the start of the data collection.

Our initial sample for the Takaful and Karama analysis components consisted of 6,480 households. Due to the anticipated difficulties in locating all households listed in the registration data, the replacement households in each community were used. Within the main sample, 77% of households were located and surveyed. Considering only households which could be located and including the replacement households used in these cases, the overall response rate was 94.6%. The final sample size was 6,475 households. Table 4.2.1 shows the distribution of our sample by governorate.

Table 4.2.1 Distribution of Sample by Governorate

Governorate	Number	Percent
Cairo	72	1.11
Alexandria	72	1.11
Suez	12	0.19
Kalyubia	96	1.48
Kafr El-Sheikh	132	2.04
Gharbia	24	0.37
Menoufia	36	0.56
Behera	552	8.53
Ismailia	96	1.48
Giza	276	4.26
Beni Suef	1,105	17.07
Fayoum	828	12.79
Menya	1,311	20.25
Assuit	336	5.19
Souhag	780	12.05
Qena	420	6.49
Aswan	192	2.97
Luxor	120	1.85
New Valley	15	0.23
Total	6,475	100

4.3 Survey

Data was captured in CAPI (computer assisted personal interview).

The household survey instrument consisted of the following modules:

a) Household Roster: ages, educational attainment, and disability status
b) Children's Schooling: enrollment, grade level, school type, and tuition payments
c) Employment: time spent in small business or agriculture, unemployment, time spent in wage employment, sector, and average monthly wage
d) Housing Conditions: number of rooms, building materials, water and sanitation facilities
e) Household Assets, Debt, and Income from Sources other than Wages
f) Household Program Participation: including both Takaful and Karama participation and transfers from other government programs
g) Shocks: description of type and severity of shocks in past 3 years and coping strategy employed
h) Food Consumption: 7 day recall period
i) Nonfood Consumption: 30 day recall period
j) Dietary Diversity: for mother/ caretaker, one child age 6-23 months, and one child age 24-59 months
k) Women's Use of Antenatal and Postnatal Care: only for women with children under 5 years
   • Infant and Young Child Feeding Practices: only for women with child under 2 years
l) Mental Health and Preferences: depression, anxiety, risk, ambiguity, and time preferences
m) Intrahousehold Decision-Making: Who makes decisions on various aspects of household affairs
n) Anthropometry: for woman or caretaker of children under 18, one child 6-23 months, and one child 24-59 months
o) COVID-19
p) Cognition: Digit span forwards and backwards
q) Mental Health of Mother: depression

Compared to the baseline evaluation, four modules were dropped (agriculture, health, infant and young child feeding knowledge, and Raven's test) and four modules were added (P, S, T and V), while there was also substantial revision of modules B and M to include additional outcomes and reflect lessons learned from the baseline evaluation.

Households were read an informed consent statement in which the purpose of the data collection was explained, respondents were told that they did not have to participate in the interview and could stop at any time, and we emphasized that individual-level data would not be shared with MoSS or impact program participation and that it would be stored on an encrypted, password protected file. All COVID-19 protocols set out by the Government of Egypt were strictly adhered to.

The community questionnaire included responses informed leader of the community on shocks faced recently by the community as a whole as well as services offered at the nearest health center.

Internal Review Board (IRB) approval was sought and received through the International Food Policy Research Institute's IRB. Questionnaires and a protocol for data collection and protection were submitted along with certificates in data collection for human subjects for all PIs and researchers involved.

5. SUMMARY STATISTICS FOR THE IMPACT ANALYSIS SAMPLE

5.1 Household Characteristics

This section will provide a picture of the characteristics of households within our sample. Table 5.1.1 displays means and standard deviations (in parentheses) of several demographic characteristics of Takaful beneficiaries (column 1) and non-beneficiaries (column 2).

The total number of household members in both samples is just under five. Of these, about 2.5 are children between the ages of 0-18, with beneficiary households having slightly more children. This result is expected, of course, since Takaful targets households with children. The PMT score is also as expected – below 4,500 for beneficiaries and above 4,500 for non-beneficiaries.

Household heads are also younger in the beneficiary sample at 40 years old versus 42 years old for non-beneficiaries. Heads of households are almost exclusively male and the proportions are the same in the two samples. The main household demographics are extremely similar between the two groups: levels of education of the household head and their spouse hardly differ and there is no consistent pattern to show that some households may be much worse off in these pre-determined characteristics. This result is important and encouraging because it means that the non-beneficiary households serve as a valid control group for the beneficiary households. Characteristics that are pre-determined and would not be affected by the program should indeed not be substantially different between the two groups.

In examining assets as a measure of wealth, however, it is clear that there are differences between beneficiaries and non-beneficiaries. We examine indices of livestock assets, productive assets, household durables, and total assets, and in all cases, Takaful beneficiaries have lower index scores. This result is also expected since the beneficiaries are indeed poorer – they fall below the 4,500 threshold whereby they are eligible to receive the program.

Table 5.1.1 Summary Statistics of Household Demographic Characteristics

Variable	(1) Takaful Beneficiaries	(2) Takaful Non-Beneficiaries
Number of members in the household	4.97	4.82
	(1.12)	(1.26)
Total children 0-18 in the household	2.77	2.53
	(1.19)	(1.38)
PMT Score	4,492.91	4,502.27
	(22.03)	(21.90)
Age of household head	40.19	42.29
	(8.22)	(9.17)
Household head is male	0.96	0.96
	(0.20)	(0.21)
Household head did not attain any education	0.34	0.33
	(0.47)	(0.47)
Household head attained primary education level	0.14	0.11
	(0.34)	(0.31)
Household head attained preparatory education level	0.10	0.08
	(0.30)	(0.27)
Household head attained secondary education level	0.39	0.44
	(0.49)	(0.50)
Spouse did not attain any education	0.39	0.37
	(0.49)	(0.48)
Spouse attained primary education level	0.10	0.09
	(0.30)	(0.28)
Spouse attained preparatory education level	0.14	0.13
	(0.35)	(0.33)
Spouse attained secondary education level	0.32	0.34
	(0.46)	(0.47)
Index of Livestock Assets	-0.06	0.04
	(0.94)	(1.57)
Index of Productive Assets	-0.01	0.01
	(1.27)	(1.41)
Index of Durable Assets	-0.09	0.06
	(1.39)	(1.39)
Index of all household assets	-0.05	0.03
	(1.48)	(1.66)
Number of households	2,543	3,932

Note: Standard deviations are reported in parentheses. Asset index is based on principal component analysis of reported household assets, segregated into livestock assets, productive assets, household durable goods, and livestock.

6. IMPACT OF THE TAKAFUL PROGRAM

6.1 Variables and Outcomes

In this chapter, we report the impact estimates of the Takaful program. We report on our main outcomes of household expenditure, poverty, household composition, labor supply, assets, savings, and debt, child schooling, mother's and children's anthropometry, dietary diversity, household, mother, and child dietary diversity, antenatal care and infant and young child feeding (IYCF) practices; maternal overweight and obesity, women's control over decision-making and shocks and coping strategies, including COVID-19.

In each table, we report three estimates. The first row reports the standard coefficients esti-mated without any corrections, i.e., the base, standard specification. The second row reports estimates that have been bias-corrected. Finally, the third row reports estimates that are bias-corrected and robust. Estimates marked with stars are statistically significant, meaning that we are confident that there is a non-zero impact for these results. For other results, the estimate is not measured precisely enough to determine whether there is an impact.

As stated in Chapter 3, we define two separate treatment variables. The first is an indicator variable equal to one if the household has received a transfer from Takaful in the past two months. This variable is interpreted as indicating the household is a current beneficiary. Due to the way that the sample was drawn (i.e., households who applied in 2017), these are households who were recipients in 2017 and reported being current recipients. The second variable is an indicator variable equal to one if the household has ever been a Takaful bene-ficiary, which can be thought of as more of a persistence interpretation of the program. Both variables are self-reported by the household. The correct variable to use differs depending on the outcome. For outcomes that would only be affected by the current state of household liquidity such as consumption, schooling, or diets, the correct treatment variable is whether the household is currently a Takaful beneficiary. For outcomes that take time to change, such as assets holdings and anthropometry, the correct treatment variable is whether the household has ever been a Takaful participant. Consequently, for most outcomes we report only the treatment variable of currently being a Takaful participant. For other outcomes, we report both and compare the consistency of the two.

Table 6.1.1 shows the concordance between the two variables. We see that, as expected, all households who have received transfers in the past two months are also recorded as ever having received a transfer. For those who are not currently receiving transfers, 28.6% of households report having received a Takaful transfer in the past. This means that these households stopped receiving the program at some point.

Table 6.1.1. Current Beneficiary Versus Ever Beneficiary Status

	Has never received Takaful transfers	Has received Takaful trans-fers at some point	Total
Has not received Takaful trans-fers in the past 2 months	2,788.0 (71.4%)	1,118.0 (28.6%)	3,906.0 (100.0%)
Has received Takaful transfers in the past 2 months	0.0 (0.0%)	2,543.0 (100.0%)	2,543.0 (100.0%)
Total	2,788.0 (43.2%)	3,661.0 (56.8%)	6,449.0 (100.0%)

Because we are using a regression discontinuity impact evaluation strategy, all results should be interpreted as the program impact on a household near the cutoff point.

We first note that there are outcomes directly related to spending of the transfers received, and other outcomes that are related to the way in which the transfers and other income are spent. The first type of outcomes are decisions that households make in how to spend trans-fers. Households can either increase (or decrease) consumption, save the transfers, pay down debts, or invest in assets (durables or productive assets). We examine each below.

The second type of outcomes are the result of the decisions made in spending. For example, if a household spends more on food, dietary diversity could increase, or antenatal and post-natal outcomes could improve. If a household decreases debt, perhaps households can afford to keep children in school for longer. We will examine these types of outcomes in the second part of Chapter 6.

6.2 Household Total Expenditure and Poverty

We do not detect statistically insignificant impacts of Takaful and Karama on household expenditure or on moving households over the poverty line. Table 6.2.1 reports total monthly consumption, monthly food consumption, and monthly non-food consumption in Adult Equivalent Units (AEU) using the standard definition in the literature.[2] While two coefficients are negative and statistically significant at the 10% level, we do not interpret this as an overall negative effect. For the same outcome, the other estimates are not statistically significant, and the overall effect size is quite small. Additionally, the standard errors are large, indicating that we do not have sufficient power to detect precise effect sizes.

Comparing these estimates to the first round of the Takaful evaluation, these are in the opposite direction. In the first round, consumption increased by 7% overall, and this was primarily driven by an increase in food consumption (an increase of 8%). Recall that this sample of respondents comprises households who may have graduated from the program but reapplied and are now receiving transfers even though their PMT score is recorded in our application data as being below the threshold. Also recall that the difference in the probability of receiving Takaful at the threshold based on the PMT score is only 20%, reducing our ability to detect smaller effect sizes. It is also important to note that estimated impacts on total consumption value (not in AEU) are also consistent with Table 6.2.1; we do not detect any effects on consumption.

Importantly, estimating no effect on consumption is not an outlier in the literature. There are not many studies estimating long-term effects on consumption, but the studies that do show mixed results with a couple of studies showing continuing improvements, and others showing no effects. In a review of cash transfer studies conducted by Bastagli et al (2016), only 2 out of 7 evaluations that studied long term consumption effects showed positive results. In the Egyptian context, inflation may have played a role. More recently, Haushofer and Shapiro (2018) show that while a cash transfer program in Kenya had positive short-term effects on consumption, the effects did not persist in the longer term. Instead, households invested in assets. Investment in assets is common in the literature on cash transfers and will be discussed further below. We note that current consumption is indicative of where households might fall in the distribution of basic versus longer-term needs. Once households become less poor, they do not have to put most of their transfer income into consumption but rather, can put more money towards productive investments, which would increase their future income. This is a natural progression that is a very positive potential impact of cash transfer programs.

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2 Adult equivalent units in our analysis are defined as giving a weight of 1 to the first adult, 0.7 to additional adults and, 0.3 to children under age 18 (Hagenaars, de Vos, and Zaidi, 1994).

Table 6.2.1 Impacts of Takaful Program on Household Consumption Expenditure

	Treatment variable: household received Takaful transfers in the past two months		
	(1)	(2)	(3)
	Monthly food consumption expenditure	Monthly non-food consumption expenditure	Monthly total (food & non-food) consumption expenditure
Conventional	-0.0176	-0.0555	-0.0338
	(0.0717)	(0.0744)	(0.0608)
Bias-corrected	-0.105	-0.143*	-0.106*
	(0.0717)	(0.0744)	(0.0608)
Robust	-0.105	-0.143	-0.106
	(0.0924)	(0.0974)	(0.0785)
Mean Dep. Var.	6.791	6.526	7.396
N	6475	6475	6475

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. Consumption aggregates shown are winsorized at the 2nd and 99th percentiles, calculated as Adult Equivalent Units (AEU), and transformed using Inverse Hyperbolic Sine (IHS). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Next, we turn to poverty. Table 6.2.3 shows impact estimates on poverty outcomes using whether a household received a Takaful transfer in the past two months as our treatment indicator. We examine whether the household is living under USD 1.90 per day and under USD 3.20 per day (the World Bank definitions of poverty and extreme poverty, respectively). We also examine whether the household is under the Egyptian 2017/2018 poverty line (defined at the regional level, whereby each region has a different poverty line that is relevant to that context).

In interpreting our results on poverty, it is necessary to keep in mind first that our results are sensitive to the exact poverty line chosen and secondly to realize that our sample comprises a population that is already near the regional poverty line (in fact, that is how the threshold was selected). All the coefficients are positive, but only one is marginally statistically significant. We do not interpret this as strong evidence that there was an increase in poverty, however. These findings are consistent with the findings on consumption.

Table 6.2.2. Impacts of Takaful Program on Household Poverty Measures

	Treatment variable: received a transfer in the past two months		
	(1)	(2)	(3)
	Household living under US$1.90 per person per day	Household living under US$3.20 per person per day	HH living under 2017/2018 regional poverty line
Conventional	0.0156	0.0350	0.0866
	(0.0340)	(0.0734)	(0.0610)
Bias-corrected	0.0422	0.0833	0.106*
	(0.0340)	(0.0734)	(0.0610)
Robust	0.0422	0.0833	0.106
	(0.0468)	(0.0995)	(0.0801)
Mean Dep. Var.	0.0604	0.413	0.811
N	6475	6475	6475

Standard errors in parentheses. Linear Trend on PMT Score, Uniform Kernel, Bandwidth=63, Strata dummies included (Frontier and Upper Egypt (rural) combined to single stratum); excluded category: Metropolitan. (1) and (2) show the World Bank's International Poverty Line at US$1.90 (2011 PPP) and the Lower Middle Income Class Poverty Line at $3.20 (2011 PPP), respectively. The national-level core CPI was used to express 2011 PPP figures in 2022 EGP values. Similarly, the regional poverty line in (3) uses the latest regional poverty lines available (2017/2018) and was compared to our consumption survey data collected in 2022 which was deflated to 2017/2018 values. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.3 Components of Household Consumption

We next examine the impact of the Takaful program on the value of (log) expenditure of specific food groups. There are 12 food groups (grains, potatoes, vegetables, fruits, meat, eggs, fish, legumes, dairy, oils and fats, sweets, and other foods) and we also examine impacts on expenditures incurred on food consumed outside of the household. The treatment indicator is whether the household is a current Takaful beneficiary.

Table 6.3.1 reports the results of log expenditures per AEU. We find that there are statistically significant negative effects on four of the food groups: grains, fruits, eggs, and dairy. Unfortunately, these food groups have high nutritional value, though we note that expenditures on meat, fish, vegetables, and legumes are not affected by the program, and these items are also high in nutritional content. For fish, the evidence is weakly suggestive of a positive impact. Encouragingly, there are no effects of the program on the consumption of sweets and salty snacks or drinks and beverages, which are low in nutritional content. There is also no impact on expenditures on food consumed outside the household. There is a negative impact on the amount spent on oils and fats, which could be interpreted as a positive result, depending on what types of oils and fats are being consumed (processed versus unprocessed).

The magnitude of these differences is large. There is a more than 20% decrease in the consumption of grains, 77% for fruit, 66% for eggs, and 57% for dairy. Since many of the coefficients are negative (even though not statistically significant), these patterns are consistent with the effects on food consumption expenditure, with a negative but statistically insignificant coefficient.

We also examine the impact of the Takaful program on the log expenditure per AEU of specific non-food groups. Table 6.3.2. presents the results, again using current beneficiary status as the treatment variable. We do not see many changes in patterns of non-food consumption as a result of the Takaful program. There is weak and suggestive evidence that expenditures were lower on construction and communications/entertainment, but the results

are not consistently statistically significant. Schooling expenditures, while not statistically significant, have a large coefficient. We will return to this result in subsequent sections below but recall the previous result that the number of school-aged children in the household increased. Consequently, the amount spent per child may have decreased. The effect on expenditure on clothes is also large and statistically insignificant. Note again that these are in AEU so the spending per person would have decreased. Notably, the magnitudes of the coefficients on healthcare and medicines are large and are also negative. It is possible that household members required less healthcare and medicine as a result of being healthier. We will also return to this result in later sections. Encouragingly, there are no effects on smoking expenditures as a result of the program.

Table 6.3.1. Impacts of Takaful Program on Food Consumption Expenditure by Category

	(1) Monthly Expenditures on Grains per AEU- log values (screened)	(2) Monthly Expenditures on Potatoes per AEU - log values (screened)	(3) Monthly Expenditures on Vegetables per AEU - log values (screened)	(4) Monthly Expenditures on Fruits per AEU- log values (screened)	(5) Monthly Expenditures on Meat per AEU - log values (screened)	(6) Monthly Expenditures on Eggs per AEU- log values (screened)	(7) Monthly Expenditures on Fish per AEU -log values (screened)
Treatment variable: household received Takaful transfers in the past two months							
Conventional	-0.111	-0.0823	0.129	-0.467*	0.00396	-0.0234	0.355
	(0.101)	(0.122)	(0.0925)	(0.255)	(0.308)	(0.245)	(0.245)
Bias-corrected	-0.221**	-0.191	0.0478	-0.775***	-0.480	-0.660***	0.474*
	(0.101)	(0.122)	(0.0925)	(0.255)	(0.308)	(0.245)	(0.245)
Robust	-0.221*	-0.191	0.0478	-0.775**	-0.480	-0.660**	0.474
	(0.133)	(0.160)	(0.118)	(0.333)	(0.405)	(0.333)	(0.330)
Mean Dep. Var.	4.056	2.683	3.941	2.111	3.829	1.762	0.909
N	6475	6475	6475	6475	6475	6475	6475

	(8) Monthly Expenditures on Legumes per AEU - log values (screened)	(9) Monthly Expenditures on Dairy per AEU - log values (screened)	(10) Monthly Expenditures on Oils and Fats per AEU- log values (screened)	(11) Monthly Expenditures on Sweets/Salty Snacks per AEU- log values (screened)	(12) Monthly Expenditures on Drinks/Beverages per AEU- log values (screened)	(13) Monthly Expenditures Outside the HH per AEU- log values (screened)
Conventional	0.355	-0.148	-0.408*	0.118	0.0139	0.000164
	(0.245)	(0.236)	(0.225)	(0.102)	(0.0893)	(0.121)
Bias-corrected	0.474*	-0.0221	-0.570**	0.0587	-0.0347	-0.116
	(0.245)	(0.236)	(0.225)	(0.102)	(0.0893)	(0.121)
Robust	0.474	-0.0221	-0.570*	0.0587	-0.0347	-0.116
	(0.330)	(0.309)	(0.299)	(0.131)	(0.116)	(0.154)
Mean Dep. Var.	0.909	2.194	2.676	3.855	3.171	3.081
N	6475	6475	6475	6475	6475	6475

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. Consumption aggregates shown are winsorized at the 2nd and 99th percentiles, calculated as Adult Equivalent Units (AEU), and transformed using Inverse Hyperbolic Sine (IHS). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6.3.2. Impacts of Takaful Program on Non-food Consumption Expenditure by Category

	Treatment variable: household received Takaful transfers in the past two months					
	(1)	(2)	(3)	(4)	(5)	(6)
	Monthly Expenditures on school (total) per AEU - log values (screened)	Monthly Expenditures on Transportation per AEU - log values (screened)	Monthly Expenditures on Rent and Utilities per AEU- log values (screened)	Monthly Expenditures on Communications and Entertainment per AEU - log values (s	Monthly Expenditures on Personal Care and Hygiene Items per AEU - log values (sc	Monthly Expenditures on Smoking per AEU - log values (screened)
Conventional	0.379	0.115	-0.0183	-0.0460	0.0247	0.0284
	(0.305)	(0.139)	(0.0755)	(0.184)	(0.109)	(0.336)
Bias-corrected	0.200	0.262*	-0.0303	-0.332*	-0.116	-0.284
	(0.305)	(0.139)	(0.0755)	(0.184)	(0.109)	(0.336)
Robust	0.200	0.262	-0.0303	-0.332	-0.116	-0.284
	(0.400)	(0.191)	(0.0994)	(0.239)	(0.141)	(0.445)
Mean Dep. Var.	4.152	0.346	4.667	2.305	3.779	1.645
N	6475	6475	6475	6475	6475	6475
	(7)	(8)	(9)	(10)	(11)	(12)
	Monthly Expenditures on Clothes per AEU - log values (screened)	Monthly Expenditures on Construction per AEU - log values (screened)	Monthly Expenditures on HH Durables per AEU - log values (screened)	Monthly Expenditures on Occasions per AEU - log values (screened)	Monthly Expenditures on Healthcare per AEU - log values (screened)	Monthly Expenditures on Medicine per AEU - log values (screened)
Conventional	0.263	-0.0739*	0.0257	-0.00615	-0.0362	-0.146
	(0.224)	(0.0439)	(0.0334)	(0.0475)	(0.222)	(0.160)
Bias-corrected	-0.287	-0.0747*	0.0269	-0.0451	-0.150	-0.219
	(0.224)	(0.0439)	(0.0334)	(0.0475)	(0.222)	(0.160)
Robust	-0.287	-0.0747	0.0269	-0.0451	-0.150	-0.219
	(0.307)	(0.0564)	(0.0433)	(0.0643)	(0.292)	(0.210)
Mean Dep. Var.	2.553	0.0554	0.0350	0.0648	1.949	3.231
N	6475	6475	6475	6475	6475	6040

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. Consumption aggregates shown are winsorized at the 2nd and 99th percentiles, calculated as Adult Equivalent Units (AEU), and transformed using Inverse Hyperbolic Sine (IHS). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.3.1 Household Composition

To dig deeper into the consumption effects we estimate, we examine household composition since the consumption results are in AEU, meaning that the denominator depends on household size. Consequently, we investigate whether changes in household composition could also be affecting our estimates. We estimate the impacts of Takaful on the total number of household members, and split the number of household members into age groups as well (children 0-5, children 6-11, and adolescents 13-18 years old). The results are presented in Table 6.2.2. In Panel A our treatment variable is an indicator equal to one if the household received transfers from Takaful in the past two months, and in Panel B our outcome variable is an indicator equal to one if the household has ever received a Takaful transfer. The latter can be interpreted as more of a cumulative effect; the effect even if a household is not currently receiving transfers. Results are consistent across panels.

In Panel A Column 1, we find that the number of household members has increased by approximately 0.3 members in Takaful households (0.2 in Panel B). The increase in household members is primarily driven by an increase in household members aged 6-11 (Column 3).

These results raise the question of whether Takaful households are more likely to have a child (extensive margin) or are having more children as a result of the program (intensive margin). To dig into this question further, we restrict the sample to households who already had two or more children at the time of registration and examine whether, among that sample, there are increases in the number of children aged 0-3 (Column 5) or 0-5 years old (Column 6). Takaful beneficiaries who already had two or more children at registration are indeed more likely to have more children. However, this result should not be too strongly interpreted because households just under the threshold at registration we more likely to have 2 or more children (the discontinuity is significant at the 10 percent level).

The interpretation of these results is not straightforward. Increases in fertility could possibly be driven by different factors: the desire to have more children coupled with the newfound ability to afford them, or a mistaken view that further transfers will be received if there are more children in the household (i.e., households do not know that Takaful pays transfers for a maximum of two children). We do not have data on the latter, but we do see that the average desired number of children is 3.52 and the average number of children delivered is 3.68, which is neither a large difference nor indicative of the transfers enabling households to fulfill their desire for more children.

Table 6.3.3. Household Composition

	Panel A: Received Takaful transfers in the past two months					
	Number of household members				Number of household members (HHs who had 2 or more children at registration)	
	(1)	(2)	(3)	(4)	(5)	(6)
	Number of total household members	0-5 years old	6-11 years old	12-18 years old	0-3 years old	0-5 years old
Conventional	0.314*	0.178	0.221*	0.0385	0.165*	0.194
	(0.187)	(0.134)	(0.131)	(0.102)	(0.0996)	(0.134)
Bias-corrected	0.450**	0.252*	0.287**	0.0610	0.244**	0.378***
	(0.187)	(0.134)	(0.131)	(0.102)	(0.0996)	(0.134)
Robust	0.450*	0.252	0.287	0.0610	0.244*	0.378**
	(0.251)	(0.180)	(0.175)	(0.141)	(0.138)	(0.181)
Mean Dep. Var.	4.876	0.811	1.156	0.542	0.844	0.914
N	6475	6475	6475	6475	3895	3895
	Panel B: Ever received Takaful transfers					
Conventional	0.182*	0.0996	0.122*	0.0223	0.203**	0.239**
	(0.0988)	(0.0710)	(0.0691)	(0.0540)	(0.0909)	(0.112)
Bias-corrected	0.259***	0.138*	0.156**	0.0362	0.229**	0.288**
	(0.0988)	(0.0710)	(0.0691)	(0.0540)	(0.0909)	(0.112)
Robust	0.259**	0.138	0.156*	0.0362	0.229*	0.288*
	(0.132)	(0.0957)	(0.0929)	(0.0746)	(0.124)	(0.153)
Mean Dep. Var.	4.876	0.811	1.156	0.542	0.844	0.914
N	6449	6449	6449	6449	2770	2275

Standard errors clustered at the village level. The treatment variable in Panel A is an indicator variable equal to one if the household reported a Takaful cash transfer in the two months prior to being interviewed, and the treatment variable in Panel B is an indicator variable equal to one if the household reported ever having received a transfer. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * p < 0.10, ** p < 0.05, *** p < 0.01.

6.4 Assets, Savings, and Debt

In this section, we examine three other choices households can make with regards to spending transfer and other income. In addition to consumption, households can either invest in assets, increase their savings, or reduce their debts. Assets, savings, and debt are cumulative and reflect a history of past investments. Consequently, we use the treatment status indicator equal to one if the household reports that they have ever received a Takaful transfer in addition to the indicator for being a current beneficiary.

We construct four indices using principal components analysis: 1) an index of total household assets including durable assets (such as furniture, television), productive assets (those that can enable increased income generation), and livestock assets (such as cows, chickens) comprising 37 items; 2) household durable assets comprising 20 items, 3) an index of productive assets comprising 8 items, and 4) an index of livestock assets comprising 9 types of livestock. Table 6.4.1 displays the impact estimates on these outcomes, using the treatment indicator of receiving a Takaful transfer in the past two months in Panel A, and using whether the household ever received a Takaful transfer in Panel B. In Panel A we see that there is a statistically significant impact on total assets and this effect appears to be driven by investments in productive assets (using the conventional estimates). While the bias-corrected and robust specifications show a negative value for total assets and for durable assets, the magnitudes are extremely small and not economically meaningful so we do not interpret this as a negative effect. For productive assets, the conventional estimate is positive and statistically significant and the bias-corrected and robust estimators are not significant but they are also positive and relatively large. In Panel B we see that the estimates are consistent, but the coefficients are smaller. We conclude that households used Takaful transfers to invest in productive assets, and that there is suggestive evidence that more recent participation in the program matters more for asset ownership.

Table 6.4.1. Impacts of Takaful Program on Asset Indices

	Panel A: Household received Takaful transfer in past two months			
	Asset index for			
	(1)	(2)	(3)	(4)
	Total assets	Durable assets	Productive assets	Livestock assets
Conventional	0.517**	-0.0514	0.467**	0.349
	(0.218)	(0.226)	(0.189)	(0.230)
Bias-corrected	-0.00418	-0.0254	0.167	0.0643
	(0.218)	(0.226)	(0.189)	(0.230)
Robust	-0.00418	-0.0254	0.167	0.0643
	(0.310)	(0.300)	(0.261)	(0.356)
N	6474	6474	6474	6474
Panel B: Household ever received a Takaful transfer				
Conventional	0.278**	-0.0111	0.249**	0.191
	(0.115)	(0.120)	(0.0991)	(0.122)
Bias-corrected	-0.00703	-0.00594	0.0838	0.0346
	(0.115)	(0.120)	(0.0991)	(0.122)
Robust	-0.00703	-0.00594	0.0838	0.0346
	(0.163)	(0.160)	(0.137)	(0.189)
N	6449	6449	6449	6449

Standard errors clustered at the village level. The treatment variable in Panel A is an indicator variable equal to one if the household reported a Takaful cash transfer in the two months prior to being interviewed, and the treatment variable in Panel B is an indicator variable equal to one if the household reported ever having received a transfer. All indices are constructed based on the first principal component from principal component analysis (PCA). The index that includes all assets uses dummies for assets ownership. The same for the durables and productive assets indices. The livestock index is composed using a count of the livestock owned by the household. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Note that the mean dependent variable is not reported as the outcomes are indices constructed to have mean zero.

We next delve further into the specific types of assets that households were investing in – agricultural assets in Table 6.4.2 and livestock assets in Table 6.4.3. A substantial proportion of households invested in large and lumpy assets such as tractors, machine and animal plows, and drip irrigation. These particular investments enable households to make their agricultural production more efficient and diversify their labor into other income generating activities. As with the asset indices, it appears that more recent transfers are associated with higher investments in these productive assets.

Livestock investments were also lumpy, with larger animals being purchased. Households decreased the number of small animals they owned (chickens, geese, pigeons, and ducks) and increased their stock of buffaloes, cattle, goats, and sheep. The purchase of buffaloes and cattle is consistent with the result that households invested in animal plows. These larger animals can also result in increased efficiency of agricultural production, further freeing up time for other income-generating activities. We will explore labor outcomes in the next section.

Table 6.4.2. Impacts of Takaful Program on Individual Agricultural Assets

	(1) Tractor	(2) Machine pulled plow or har-rower	(3) Animal pulled plow	(4) Mechanical water pump	(5) Animal or manual powered water pump	(6) Drip irrigation network	(7) Rice winnower	(8) Ox cart or donkey cart
Panel A: household received a Takaful transfer in the past two months								
Conventional	0.0107**	0.00887*	0.0149*	0.00941	0.000739	0.00609*	-0.000397	0.0139
	(0.00452)	(0.00526)	(0.00867)	(0.00877)	(0.00350)	(0.00359)	(0.000402)	(0.0113)
Bias-corrected	0.0114**	0.00969*	0.00728	-0.00398	0.000243	0.00840**	-0.00167***	-0.0118
	(0.00452)	(0.00526)	(0.00867)	(0.00877)	(0.00350)	(0.00359)	(0.000402)	(0.0113)
Robust	0.0114*	0.00969	0.00728	-0.00398	0.000243	0.00840	-0.00167	-0.0118
	(0.00582)	(0.00731)	(0.0121)	(0.0122)	(0.00482)	(0.00547)	(0.00166)	(0.0153)
Mean Dep. Var.	0.000927	0.00124	0.00402	0.00386	0.00124	0.000463	0.000154	0.00834
N	6474	6474	6474	6474	6474	6474	6474	6474
Panel B: household ever received a Takaful transfer								
Conventional	0.00570**	0.00474*	0.00794*	0.00503	0.000402	0.00325*	-0.000210	0.00745
	(0.00238)	(0.00278)	(0.00458)	(0.00465)	(0.00186)	(0.00191)	(0.000212)	(0.00596)
Bias-corrected	0.00592**	0.00505*	0.00371	-0.00222	0.000128	0.00439**	-0.000885***	-0.00639
	(0.00238)	(0.00278)	(0.00458)	(0.00465)	(0.00186)	(0.00191)	(0.000212)	(0.00596)
Robust	0.00592*	0.00505	0.00371	-0.00222	0.000128	0.00439	-0.000885	-0.00639
	(0.00308)	(0.00387)	(0.00641)	(0.00650)	(0.00257)	(0.00291)	(0.000887)	(0.00810)
Mean Dep. Var.	0.000927	0.00124	0.00402	0.00386	0.00124	0.000463	0.000154	0.00834
N	6449	6449	6449	6449	6449	6449	6449	6449

Standard errors clustered at the village level. The treatment variable in Panel A is an indicator variable equal to one if the household reported a Takaful cash transfer in the two months prior to being interviewed, and the treatment variable in Panel B is an indicator variable equal to one if the household reported ever having received a transfer. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6.4.3. Impacts of Takaful Program on Livestock

	(1) Buffaloes/ Cattle	(2) Goats/Sheep	(3) Donkeys/ mules	(4) Horses	(5) Chicken/geese/ pigeons/ducks	(6) Turkeys	(7) Rabbits
Panel A: household received a Takaful transfer in the past two months							
Conventional	0.0823*	0.152**	0.0252	0.00136	-0.436	0.0133	0.00741
	(0.0441)	(0.0740)	(0.0204)	(0.00136)	(0.955)	(0.0155)	(0.0310)
Bias-corrected	0.0163	0.0537	-0.00855	0.000959	-1.956**	0.0233	0.0121
	(0.0441)	(0.0740)	(0.0204)	(0.00136)	(0.955)	(0.0155)	(0.0310)
Robust	0.0163	0.0537	-0.00855	0.000959	-1.956	0.0233	0.0121
	(0.0618)	(0.0824)	(0.0307)	(0.000912)	(1.336)	(0.0260)	(0.0479)
Mean Dep. Var.	0.0513	0.0539	0.0188	0.000154	2.599	0.00154	0.00618
N	6474	6474	6474	6474	6474	6474	6474
Panel B: household ever received a Takaful transfer							
Conventional	0.0442*	0.0795**	0.0135	0.000723	-0.154	0.00707	0.00396
	(0.0233)	(0.0387)	(0.0108)	(0.000721)	(0.503)	(0.00823)	(0.0165)
Bias-corrected	0.00807	0.0264	-0.00471	0.000494	-0.976*	0.0122	0.00640
	(0.0233)	(0.0387)	(0.0108)	(0.000721)	(0.503)	(0.00823)	(0.0165)
Robust	0.00807	0.0264	-0.00471	0.000494	-0.976	0.0122	0.00640
	(0.0327)	(0.0430)	(0.0163)	(0.000485)	(0.706)	(0.0138)	(0.0255)
Mean Dep. Var.	0.0513	0.0539	0.0188	0.000154	2.599	0.00154	0.00618
N	6449	6449	6449	6449	6449	6449	6449

Standard errors clustered at the village level. The treatment variable in Panel A is an indicator variable equal to one if the household reported a Takaful cash transfer in the two months prior to being interviewed, and the treatment variable in Panel B is an indicator variable equal to one if the household reported ever having received a transfer. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The literature has shown strong precedent for cash transfer programs increasing investments in assets, and productive assets in particular. Bastagli et al (2016) find that out of 8 impact evaluations of cash transfer programs, 3 had positive and statistically significant effects on agricultural productive asset accumulation. The rest either had positive but statistically insignificant effects, or null effects. Additionally, 6 of the studies also show increases in agricultural input adoption, which are also considered productive investments. Finally, 12 out of 17 studies showed that cash transfers increased livestock holdings. Accordingly, there is substantial evidence that cash transfers are used to build up productive assets as investments in the future.

One consideration in this context is whether assets were received by other programs rather than the Takaful program necessarily leading to asset investments. There are many programs that provide productive assets to the poor. For our results to be biased, it would need to be the case that the asset transfers are also targeted to Takaful participants, or at least with similar characteristics to beneficiaries whose PMT score is below 4500. To check whether this might be a concern, we run the same specification as above but include a control variable for whether the household received any other source of income from: family members or friends, religiously motivated support, divorce allowance, cash transfers from other organizations, a private insurance fund, or rental earnings. Unfortunately, we do not have specific information on whether the household received asset transfers, so this variable serves as a proxy. When we include the control variable, the results barely change.

Households also reduced the amount of debt they carried. Table 6.4.4 shows that there are no differences in rates of saving among beneficiary households (column 1). In column 2, the outcome is a dummy variable equal to one if the respondent says that the amount they had in savings increased since July 2020. The coefficients are positive but not statistically significant. We do see that beneficiary households have lower levels of debt and the effect is statistically significant and meaningful in size. There is no evidence that beneficiary households had different levels of debt with regards to instalment payments (column 4).

Table 6.4.4. Impacts of Takaful Program on Household Savings and Debt

	Treatment variable: household received a Takaful transfer in the past two months				
	(1)	(2)	(3)	(4)	(5)
	Amount of savings (EGP)	Amount of savings increased or remained the same between July 2020 and Feb 2022	Total amount of debt currently owed to anyone - formal/informal lenders (EGP), IHS	Amount owed of debt owed for purchases on credit (EGP)	Total amount of debt owed to informal lenders or owed for purchases on credit
Conventional	-209.6	0.340	-1.151	-332.4	-4326.0*
	(157.6)	(0.701)	(0.716)	(748.4)	(2359.7)
Bias-corrected	-255.0	1.030	-1.835**	-218.7	-5479.2**
	(157.6)	(0.701)	(0.716)	(748.4)	(2359.7)
Robust	-255.0	1.030	-1.835*	-218.7	-5479.2
	(241.0)	(0.934)	(0.965)	(966.5)	(3342.1)
Mean Dep. Var.	53.53	0.909	3.219	827.7	4430.5
N	6475	88	6475	6475	6475
	Treatment variable: household ever received a Takaful transfer				
	(1)	(2)	(3)	(4)	(5)
	Amount of savings (EGP)	Amount of savings increased or remained the same between July 2020 and Feb 2022	Total amount of debt currently owed to anyone - formal/informal lenders (EGP), IHS	Amount owed of debt owed for purchases on credit (EGP)	Total amount of debt owed to informal lenders or owed for purchases on credit
Conventional	-111.4	0.122	-0.640*	-174.1	-2315.4*
	(83.83)	(0.228)	(0.379)	(398.1)	(1254.0)
Bias-corrected	-132.4	0.345	-0.977**	-101.4	-2855.7**
	(83.83)	(0.228)	(0.379)	(398.1)	(1254.0)
Robust	-132.4	0.345	-0.977*	-101.4	-2855.7
	(127.9)	(0.322)	(0.511)	(513.9)	(1770.0)
Mean Dep. Var.	53.53	0.909	3.219	827.7	4430.5
N	6449	88	6449	6449	6449

Standard errors clustered at the village level. The treatment variable in Panel A is an indicator variable equal to one if the household reported a Takaful cash transfer in the two months prior to being interviewed, and the treatment variable in Panel B is an indicator variable equal to one if the household reported ever having received a transfer. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.5 Household Labor

In this latter part of this chapter, we examine outcomes that are the product of the decisions made as to how to spend transfer and other income. We begin with labor supply. Depending on how households are choosing to use their transfers, labor supply patterns may be different.

In Table 6.4.1 we report impact estimates on the likelihood that a household member aged 5 or older engages primarily in unpaid work, participates in agricultural activities for household

consumption, works in the formal sector, and works in the informal sector. The share of household members who participate primarily in unpaid work is already very low at 0.4% and we see no impacts on this outcome. Only 4% of household members engage in agricultural activities for household consumption and there are also no impacts of the program on this outcome. While there is a negative and statistically significant coefficient on the likelihood that beneficiaries are engaged in formal labor, the evidence is not strong. There is, however, a higher likelihood that beneficiary households are engaged in informal labor. However, we do see a difference in formal and informal labor participation, with a movement away from the formal sector to the informal sector. Column 5 shows that the average monthly wages of all household members slightly decreased as well.

Table 6.5.1. Impacts of Takaful Program on Employment Outcomes

| | Treatment variable: household received a Takaful transfer in the past two months | | | | |
| | (1) | (2) | (3) | (4) | (5) |
	Household member participates in unpaid work	Household member participates in agricultural activities for own household consumption	Household member participates in formal work	Household member participates in informal work	Total monthly wage income (EGP) all HH members
Conventional	0.00627	0.0126	-0.0396	0.0246	-366.5[*]
	(0.00650)	(0.0170)	(0.0272)	(0.0216)	(191.2)
Bias-corrected	0.00840	-0.0119	-0.0570[**]	0.0546[**]	-225.4
	(0.00650)	(0.0170)	(0.0272)	(0.0216)	(191.2)
Robust	0.00840	-0.0119	-0.0570	0.0546[*]	-225.4
	(0.00846)	(0.0221)	(0.0384)	(0.0297)	(255.1)
Mean Dep. Var.	0.00410	0.0398	0.0408	0.973	1848.1
N	26096	26096	7213	7213	6475

Standard errors clustered at the village level. Models run at the household member-level. Details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. Samples in (1) and (2) include all household members over age 5. Samples in (3) and (4) include household members who participate in economic activities. The sample in column (5) includes individuals who report earning a wage, either from formal or informal employment. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.6 Child schooling and Child Labour

In this section, we examine the impacts of the Takaful program on children's schooling and labour. Depending on the amount of liquid cash and the extent to which children are needed to help at the home or family business, school enrolment and attendance could be affected. Table 6.6.1 first presents results on children's enrollment in school by level (nursery, primary, preparatory, secondary, and university or higher).[3] In column 1 the sample is all children of school going age, and in columns 2-6 the samples are children who are of the age range for that level. There are no impacts of Takaful on enrollment in school of 6-18 year olds. However, 96% of 6-18 year olds are enrolled in some level of schooling so we do not expect to see much of an impact on such a high base. While very few children attend nursery, 87% and 84% of children attend primary and preparatory school, respectively. For both levels, we see positive and significant impacts on enrollment. The probability of a child of primary school age being enrolled in primary school increased by about 6-8 percentage points and the probability of a child of preparatory school age being enrolled in preparatory school increased by 2-3 percentage points. These are economically meaningful effects –

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3 Primary school comprises grades 1-6, preparatory comprises grades 7-9, secondary comprises either grades 10-12 (general secondary) or grades 10-14 (technical secondary).

they suggest that almost all primary school aged children in the beneficiary group were attending primary school and most were attending preparatory school. There are no significant effects on enrollment at the secondary school level, and there are actually decreases in enrollment at the university level or above. However, this decrease can be explained by the changing demographics of the household. With younger households in the beneficiary sample, there are fewer university-age students residing in these households.

With regards to attendance, we see that across all levels of schooling there is no impact of the program. However, there is suggestive evidence that secondary school students attend school more regularly as a result of the program. In particular, it is girls who are driving the result (see column 10). This is an encouraging result as secondary school participation for girls is a substantial driver of income, empowerment, and their children's outcomes (Glewwe 2002; Hanushek and Zhang 2009).

Table 6.6.1. Impacts of Takaful Program on Enrolment and Attendance

	Treatment indicator: household received Takaful transfers in the past two months					
	Currently enrolled in:					
	(1)	(2)	(3)	(4)	(5)	(6)
	Any level	Nursery	Primary	Preparatory	Secondary	University or higher
Conventional	0.0296	-0.0191	0.0870**	0.210***	-0.0156	-0.0647
	(0.0218)	(0.0306)	(0.0439)	(0.0801)	(0.136)	(0.0701)
Bias-corrected	0.0179	-0.0374	0.0615	0.315***	0.0391	-0.148**
	(0.0218)	(0.0306)	(0.0439)	(0.0801)	(0.136)	(0.0701)
Robust	0.0179	-0.0374	0.0615	0.315***	0.0391	-0.148
	(0.0286)	(0.0381)	(0.0576)	(0.112)	(0.186)	(0.0964)
Mean Dep. Var.	0.969	0.0257	0.873	0.840	0.647	0.0403
N	11314	4700	8354	2699	1936	818
	Currently attending secondary:					
	(7)	(8)	(9)	(10)		
	Regularly attending (all levels)	All	Boys	Girls		
Conventional	0.0337	0.161	0.148	0.101		
	(0.0506)	(0.127)	(0.151)	(0.177)		
Bias-corrected	0.0471	0.266**	0.152	0.338*		
	(0.0506)	(0.127)	(0.151)	(0.177)		
Robust	0.0471	0.266	0.152	0.338		
	(0.0696)	(0.172)	(0.207)	(0.231)		
Mean Dep. Var.	0.882	0.838	0.802	0.886		
N	10967	1253	717	536		

Standard errors clustered at the village level. Models run at the household member-level. Details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. Sample in (1) includes all 6-18 year-old children. Samples in (2)-(7) include children who fall within the age range of that level of education. Samples in (8)-(10) include children currently attending secondary school. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.7 Household, mother, and child dietary diversity

In this section, we examine household, mother, and child dietary diversity. These outcomes can be affected by spending decisions on food, non-food, and other expenditures and investments. We first look at the entire household, and then dietary diversity of the mother and children.

Table 6.7.1 shows that most households consumed between 9 and 11 food groups out of 12, which is reasonably high. In that respect, we may not actually expect to see much more improvement.

Table 6.7.1. Number of Food Groups Consumed by Households

	<8	8	9	10	11	12	Total
Number of households	329	670	1,365	1,966	1,814	331	6,475
Percentage of households	5.1	10.3	21.1	30.4	28.0	5.1	100.0

In Table 6.7.2 we present impact estimates on the dietary diversity of the household, of mothers in the household, as well as the dietary diversity a randomly selected child aged 6-23 (up to 2 years old) months and one aged 24-59 months (between 2 and 5 years old). The outcome variables are sums of the number of different food groups consumed in the past 7 days. For households there are 12 groups,[4] for mothers, there are 9 groups,[5] for children aged 6-23 months there are 7 food groups,[6] and for children aged 24-59 months there are 8 food groups.[7]

In general, dietary diversity at the household level is reasonable – on average, 10 groups out of 12. However, for mothers and young children, it is relatively low. Out of 9 food groups, mothers consume an average of 4, children 6-23 months old consume an average of 3.3 out of 7 groups, and children aged 24-59 months consume an average of 5 of 8 groups.

The impacts on household dietary diversity are negative, but not significant except when using the robust specifications. Also, while there is not strong evidence of statistical significance, there is a negative coefficient for dietary diversity of children aged 24-59 with a large effect size at 0.8 food groups.

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[4] The 12 food groups are: cereals, potatoes and tubers, vegetables, fruits, meat, eggs, fish, legumes nuts and seeds, dairy, oils and fats, sweets, and spices condiments and beverages.

[5] The 9 food groups are: starchy foods, dark green leafy vegetables, vitamin A rich fruits, other fruits and vegetables, organ meat, meat and fish, eggs, legumes nuts and seeds, and milk and milk products.

[6] The 7 food groups are: grains, roots, and/or tubers, legumes, nuts and/or seeds, milk and/or milk products, flesh foods, eggs, vitamin A rich fruits and/or vegetables, and other fruits and/or vegetables.

[7] The 8 food groups are: grains, roots, and/or tubers, legumes, nuts and/or seeds, milk and/or milk products, flesh foods, eggs, vitamin A rich fruits and/or vegetables, other fruits and/or vegetables, and foods cooked in oil/fat.

Table 6.7.2 Impacts of Takaful Program on Dietary Diversity Outcomes

	Treatment variable: household received Takaful transfers in the past two months			
	(1) Household dietary diversity score (0-12)	(2) Mother's dietary diversity score (0-9)	(3) Children's dietary diversity score (0-7), 6-23 months old	(4) Children's dietary diversity score (0-8), 24-59 months old
Conventional	-0.287	-0.267	0.684	-0.273
	(0.226)	(0.293)	(1.039)	(0.370)
Bias-corrected	-0.707***	-0.419	0.133	-0.811**
	(0.226)	(0.293)	(1.039)	(0.370)
Robust	-0.707**	-0.419	0.133	-0.811
	(0.294)	(0.401)	(1.436)	(0.494)
Mean Dep. Var.	9.772	3.842	3.344	4.909
N	6475	3340	483	2468

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Sample in (1) is all households, sample in (2) includes adult women who have children under 5 years (60 months) of age, and samples in (3) and (4) are children of that age range. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.8 Mother and child anthropometry, overweight and wasting, and morbidity and treatment

In this section, we examine anthropometry measures for mothers and children health outcomes, which are influenced by dietary diversity. We first look at mother's body mass index (BMI), then at child anthropometry, including overweight and wasting. Since anthropometric outcomes reflect a series of prior decisions and investments, we again present results using both treatment variables: whether the household received a Takaful transfer in the past two months and whether the household ever received a Takaful transfer.

We first examine anthropometry outcomes of mothers, estimating impacts the mother's body mass index (BMI), as well as indicators for whether the mother is considered overweight (BMI between 25 and 30) or obese (BMI above 30).[8] Table 6.8.1 displays the results. There are no statistically significant impacts on women's BMI, nor on the likelihood of a mother being overweight or obese with either treatment variable. It is reassuring that women are not becoming more overweight as a result of the program. However, we do note that the average BMI for all mothers in the sample is 28.96, which means that the average mother is indeed overweight and is bordering on obese. This finding is important for integrated programming within Takaful and for any complementary programming on diets and weight.

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[8] Body Mass Index (BMI) is calculated as a person's weight in kilograms (or pounds) divided by the square of height in meters (or feet).

Table 6.8.1. Impacts of Takaful Program on Mother Anthropometrics Outcomes

	(1)	(2)	(3)
Panel A: household received a Takaful transfer in the past two months			
	Mother's Body Mass Index (BMI)	Mother is overweight (BMI between 25-30)	Mother is obese (BMI above 30)
Conventional	0.160	-0.109	0.0926
	(0.736)	(0.0788)	(0.0774)
Bias-corrected	-0.681	-0.0516	-0.0119
	(0.736)	(0.0788)	(0.0774)
Robust	-0.681	-0.0516	-0.0119
	(0.978)	(0.105)	(0.103)
Mean Dep. Var.	28.96	0.486	0.350
N	5711	5711	5711
Panel B: household ever received a Takaful transfer			
	(1)	(2)	(3)
	Mother's Body Mass Index (BMI)	Mother is overweight (BMI between 25-30)	Mother is obese (BMI above 30)
Conventional	0.0454	-0.0548	0.0459
	(0.390)	(0.0416)	(0.0410)
Bias-corrected	-0.397	-0.0219	-0.0101
	(0.390)	(0.0416)	(0.0410)
Robust	-0.397	-0.0219	-0.0101
	(0.518)	(0.0553)	(0.0544)
Mean Dep. Var.	28.96	0.486	0.350
N	5690	5690	5690

Standard errors clustered at the village level. The treatment variable in Panel A is an indicator variable equal to one if the household reported a Takaful cash transfer in the two months prior to being interviewed, and the treatment variable in Panel B is an indicator variable equal to one if the household reported ever having received a transfer. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$.

In Table 6.8.2 we look at children's anthropometry for children aged 6-23 months old 24-59 months old. We examine BMI, whether the child is overweight, and the height-for-age Z-score for the two randomly selected children in the household. There are no program impacts on any of these outcomes. Children are much less likely to be overweight than mothers.

Next, we examine stunting and wasting, in Table 6.8.3. Stunting is an indicator equal to one if the height-for-age Z-score is two standard deviations below the population mean, defined by the WHO. It is a measure of whether a child is considered "short". Wasting an indicator equal to one if the weight-for-height Z-score is two standard deviations below the population mean and is a measure of whether a child is considered too "thin". Both height and weight are indicators of whether the child receives proper nutrition in turn determines many outcomes like cognition and schooling performance, and recovery from illness. There are no program impacts on any of the outcomes when the treatment variable is that the household is currently a Takaful beneficiary. However, when we look at whether the household has ever been a beneficiary, we see a reduction in wasting for children aged 6-23 months. The effects are also large in magnitude and are economically meaningful. This result is an encouraging finding of the program – sustained investments in people can lead to meaningful longer-term benefits.

Table 6.8.2. Impacts of Takaful Program on Child Anthropometrics Outcomes

	(1) BMI (0-23 months)	(2) BMI (24-59 months)	(3) Overweight (0-23 months)	(4) Overweight (24-59 months)	(5) HAZ score (0-23 months)	(6) HAZ score (24-59 months)
Panel A: household received a Takaful transfer in the past two months						
Conventional	0.341	-0.567	-0.205	-0.0337	-0.586	-0.104
	(0.986)	(0.479)	(0.180)	(0.0731)	(0.972)	(0.360)
Bias-corrected	-0.670	-0.806*	-0.289	-0.0397	-0.399	-0.0430
	(0.986)	(0.479)	(0.180)	(0.0731)	(0.972)	(0.360)
Robust	-0.670	-0.806	-0.289	-0.0397	-0.399	-0.0430
	(1.397)	(0.611)	(0.256)	(0.0985)	(1.340)	(0.475)
Mean Dep. Var.	0.353	0.358	0.125	0.0672	-0.108	-0.639
N	904	2408	905	2412	886	2392
Panel B: household ever received a Takaful transfer						
Conventional	0.164	-0.266	-0.0965	-0.0162	-0.276	-0.0620
	(0.443)	(0.233)	(0.0802)	(0.0360)	(0.438)	(0.177)
Bias-corrected	-0.257	-0.396*	-0.146*	-0.0196	-0.213	-0.0376
	(0.443)	(0.233)	(0.0802)	(0.0360)	(0.438)	(0.177)
Robust	-0.257	-0.396	-0.146	-0.0196	-0.213	-0.0376
	(0.629)	(0.297)	(0.115)	(0.0485)	(0.601)	(0.233)
Mean Dep. Var.	0.353	0.358	0.125	0.0672	-0.108	-0.639
N	900	2399	901	2403	882	2383

Standard errors clustered at the village level. The treatment variable in Panel A is an indicator variable equal to one if the household reported a Takaful cash transfer in the two months prior to being interviewed, and the treatment variable in Panel B is an indicator variable equal to one if the household reported ever having received a transfer. Models run at the household member-level. Details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6.8.3. Impacts of Takaful Program on Child Stunting and Wasting

	(1) Child Stunted (6-23 months)	(2) Child Stunted (24-59 months)	(3) Child Wasted (6-23 months)	(4) Child Wasted (24-59 months)
Panel A: Household received Takaful transfers in the past two months				
Conventional	-0.0411	-0.0440	-0.225	0.00879
	(0.190)	(0.0838)	(0.145)	(0.0532)
Bias-corrected	-0.180	-0.0673	-0.236	-0.0166
	(0.190)	(0.0838)	(0.145)	(0.0532)
Robust	-0.180	-0.0673	-0.236	-0.0166
	(0.257)	(0.112)	(0.202)	(0.0696)
Mean Dep. Var.	0.134	0.105	0.0673	0.0374
N	886	2392	892	2377
Panel B: Household ever received Takaful transfers				
Conventional	-0.0212	-0.0208	-0.0996*	0.00176
	(0.0847)	(0.0411)	(0.0590)	(0.0258)
Bias-corrected	-0.0869	-0.0325	-0.116**	-0.0108
	(0.0847)	(0.0411)	(0.0590)	(0.0258)
Robust	-0.0869	-0.0325	-0.116	-0.0108
	(0.115)	(0.0551)	(0.0822)	(0.0341)
Mean Dep. Var.	0.134	0.105	0.0673	0.0374
N	882	2383	888	2368

Standard errors clustered at the village level. The treatment variable in Panel A is an indicator variable equal to one if the household reported a Takaful cash transfer in the two months prior to being interviewed, and the treatment variable in Panel B is an indicator variable equal to one if the household reported ever having received a transfer. Models run at the household member-level. Details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.9 Antenatal and postnatal care and infant and young child feeding (IYCF) practices

This section explores outcomes related to antenatal and postnatal care and infant and young child nutrition (IYCN) practices. These outcomes are also influenced by spending decisions and cash liquidity since they have cost implications. We first explore whether the program caused more mothers to get antenatal and postnatal care during their last pregnancy. The sample includes adult females with children born between July 2020 and February 2022. Table 6.9.1 reports the results.

There are no impacts of the program on whether the mother of the index child received antenatal care (ANC) during her last pregnancy, the number of ANC sessions received, whether she took iron supplements, gave birth in a safe place, or received postnatal care within two days of giving birth. Many of the coefficients on receipt of antenatal and postnatal care are positive but none are statistically significant. We interpret this as suggestive evidence of a positive impact, but we are not able to reject that the coefficients are zero.

Table 6.9.1. Impacts of Takaful Program on Antenatal Care (ANC) Outcomes

| | Treatment variable: household received Takaful transfers in the past two months | | | | |
| | (1) | (2) | (3) | (4) | (5) |
	Mother received ANC during last pregnancy	Number of ANC sessions received during last pregnancy	Took iron supplements during last pregnancy	Gave birth in a save place (public or private facility)	Received post-natal care within 2 days of giving birth
Conventional	0.184	2.123	-0.0145	0.0425	0.0461
	(0.136)	(1.873)	(0.188)	(0.137)	(0.206)
Bias-corrected	0.157	1.968	-0.175	-0.0606	0.0192
	(0.136)	(1.873)	(0.188)	(0.137)	(0.206)
Robust	0.157	1.968	-0.175	-0.0606	0.0192
	(0.184)	(2.632)	(0.273)	(0.190)	(0.300)
Mean Dep. Var.	0.899	6.640	0.766	0.900	0.654
N	829	745	820	829	829

Standard errors clustered at the village level. This sample includes adult women with children born between July 2020 and February 2022. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Next, we examine IYCN practices, specifically, whether someone helped put the baby to breast just after birth, whether anything but breast milk was given to the baby within the first three days, whether the child was given colostrum, and the age at which the mother stopped breastfeeding the child. The sample includes women with a baby less than two years old. Table 6.9.2 contains the results.

Table 6.9.2. Impacts of Takaful Program on Infant and Young Child Feeding (IYCF) Practices

| | Treatment variable: household received Takaful transfers in the past two months | | | |
| | (1) | (2) | (3) | (4) |
	Someone helped mother put the baby to the breast after birth	Baby received only breast milk during the first 3 days	Mother gave baby colostrum	Age at which mother stopped breastfeeding (in months)
Conventional	0.193	-0.272	0.0427	-1.983
	(0.196)	(0.181)	(0.102)	(1.378)
Bias-corrected	0.112	-0.0987	0.158	-1.214
	(0.196)	(0.181)	(0.102)	(1.378)
Robust	0.112	-0.0987	0.158	-1.214
	(0.281)	(0.254)	(0.146)	(2.032)
Mean Dep. Var.	0.466	0.718	0.937	4.420
N	1205	1204	1204	1099

Standard errors clustered at the village level. This sample includes adult women with children <2 years. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.10 Women's decision-making and gender norms

Women's control over decision-making within the household was measured using a series of 9 questions asking women to describe their ability to influence decisions on a scale of 1-4, corresponding to ability to influence decisions "to a great extent" (4), "a medium extent" (3),

"a small extent" (2), or "not at all" (1). The domains were: wage employment, major and minor household expenditures, how to use cash transfers, what food can be cooked, getting medical treatment and buying clothes for herself, taking a child to the doctor, and children's schooling. Table 6.10.1 reports the results of indicator variables equal to one if the woman can influence decisions "to a great extent" on these domains in columns 1-9. We see that there is no impact of the program on any of these outcomes. Some coefficients are positive and some are negative, so there are no clear patterns in the results. While one coefficient is statistically significant, give the number of tests for significance being conducted, we should not interpret this as a negative effect. The main conclusion is that the program did not, on average, have any impact on women's ability to make household decisions.

In addition, an index for women's control over decision-making was constructed using principal component analysis (PCA). Column 10 in Table 6.10.1 reports this result and we see that there is no impact of the program on the index either, which is not surprising given that there were no impacts on any of its components.

In the first round Takaful evaluation, we found negative and statistically significant impacts of the program on women's decision-making, both in the overall index and in the domains of using government subsidies, taking a child to the doctor, and children's schooling. These impacts are further explored in detail in Elenbaby et al (2021), where four findings emerge. First, the decreases in women's decision-making are concentrated among women who did not have any formal education. Second, men began to participate more in household decisions; decision-making became more joint. Third, women who were working out of necessity stopped working as a result of the transfers. Fourth, qualitative evidence found that the program was generally well-perceived and that the pattern of results can be explained partly by a relaxation of the household's budget constraint (there were more decisions to make about what to spend money on) and partly by the context. In Egypt, the relevant contextual factor is that men are perceived and expected to be primary decision-makers in the household, so the joint decision-making resulting from the transfers is not perceived poorly.

Table 6.10.1 Impacts of Takaful Program on Women's Decision-Making, All Women

	Treatment variable: household received a Takaful transfer in the past two months				
	Woman can make own decisions to a great extent on:				
	(1)	(2)	(3)	(4)	(5)
	Wage employment	Major house-hold expenditures	Minor house-hold expenditures	How to use cash transfers	What food can be cooked every day
Conventional	0.00336	0.100	0.00547	0.0958	0.0710
	(0.0607)	(0.0654)	(0.0744)	(0.0780)	(0.0621)
Bias-corrected	0.0342	0.0901	-0.102	-0.0271	0.0477
	(0.0607)	(0.0654)	(0.0744)	(0.0780)	(0.0621)
Robust	0.0342	0.0901	-0.102	-0.0271	0.0477
	(0.0819)	(0.0885)	(0.0983)	(0.105)	(0.0817)
Mean Dep. Var.	0.218	0.286	0.605	0.516	0.742
N	6473	6473	6473	6473	6473
	Woman can make own decisions to a great extent on:				
	(6)	(7)	(8)	(9)	(10)
	Getting medical treatment for herself	Buying clothes for herself	Taking a child to a doctor	Children's schooling	Women's decision-making index
Conventional	0.0905	0.0631	-0.00451	-0.00961	0.0446
	(0.0714)	(0.0712)	(0.0725)	(0.0752)	(0.163)
Bias-corrected	0.0444	0.0886	0.0332	-0.170**	-0.135
	(0.0714)	(0.0712)	(0.0725)	(0.0752)	(0.163)
Robust	0.0444	0.0886	0.0332	-0.170	-0.135
	(0.101)	(0.0958)	(0.0977)	(0.104)	(0.215)
Mean Dep. Var.	0.507	0.450	0.572	0.478	-0.0866
N	6473	6473	6473	6055	6055

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Consequently, we next split the sample into women who have some formal education and those who have no formal education to examine whether the pattern uncovered in Elenbaby et al (2021) still holds. There is no evidence that the pattern was maintained – there are no effects of the program on the decision-making of women when they have some formal education. However, for women with no formal education, decision-making regarding what foods to cook every day increases by about 20 percentage points, which is large. There are no systematic patterns in the results, so we interpret these findings as the program having a small positive impact on this one domain of women's decision-making among women who have no formal education.

Table 6.10.2. Impacts of Takaful Program on Women's Decision-Making for Women with Some Formal Education

	Treatment variable: household received Takaful transfer in the past two months				
	Woman can make own decisions to a great extent on:				
	(1)	(2)	(3)	(4)	(5)
	Women deci-sion-making in-dex	Wage employ-ment	Major house-hold expendi-tures	Minor house-hold expendi-tures	How to use cash transfers
Conventional	0.0807	0.0402	0.151*	0.0286	0.0884
	(0.195)	(0.0735)	(0.0820)	(0.0895)	(0.0937)
Bias-corrected	-0.179	0.0604	0.120	-0.114	-0.0896
	(0.195)	(0.0735)	(0.0820)	(0.0895)	(0.0937)
Robust	-0.179	0.0604	0.120	-0.114	-0.0896
	(0.260)	(0.101)	(0.111)	(0.119)	(0.126)
Mean Dep. Var.	-0.0866	0.218	0.286	0.605	0.516
N	4365	4540	4540	4540	4540
	(6)	(7)	(8)	(9)	(10)
	What food can be cooked every day	Getting medical treatment for her-self	Buying clothes for herself	Taking a child to a doctor	Children's schooling
Conventional	0.00806	0.114	0.122	-0.0441	-0.0131
	(0.0793)	(0.0884)	(0.0893)	(0.0881)	(0.0910)
Bias-corrected	-0.00997	0.0153	0.147	0.0582	-0.133
	(0.0793)	(0.0884)	(0.0893)	(0.0881)	(0.0910)
Robust	-0.00997	0.0153	0.147	0.0582	-0.133
	(0.104)	(0.123)	(0.122)	(0.117)	(0.125)
Mean Dep. Var.	0.742	0.507	0.450	0.572	0.478
N	4540	4540	4540	4540	4365

Standard errors clustered at the village level. Sample includes women who have some formal education. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6.10.3. Impacts Of Takaful Program on Women's Decision-Making for Women with No Formal Education

	Treatment variable: household received Takaful transfers in the past two months				
	Woman can make own decisions to a great extent on:				
	(1)	(2)	(3)	(4)	(5)
	Women decision-making index	Wage employment	Major household expenditures	Minor household expenditures	How to use cash transfers
Conventional	-0.0373	-0.0829	-0.0156	-0.0458	0.107
	(0.277)	(0.104)	(0.113)	(0.122)	(0.132)
Bias-corrected	0.00505	-0.0217	0.0119	-0.0806	0.123
	(0.277)	(0.104)	(0.113)	(0.122)	(0.132)
Robust	0.00505	-0.0217	0.0119	-0.0806	0.123
	(0.368)	(0.140)	(0.154)	(0.167)	(0.184)
Mean Dep. Var.	-0.0866	0.218	0.286	0.605	0.516
N	1690	1933	1933	1933	1933
	(6)	(7)	(8)	(9)	(10)
	What food can be cooked every day	Getting medical treatment for herself	Buying clothes for herself	Taking a child to a doctor	Children's schooling
Conventional	0.207**	0.0415	-0.0640	0.0830	-0.00492
	(0.105)	(0.130)	(0.124)	(0.122)	(0.132)
Bias-corrected	0.195*	0.124	-0.0410	0.0119	-0.243*
	(0.105)	(0.130)	(0.124)	(0.122)	(0.132)
Robust	0.195	0.124	-0.0410	0.0119	-0.243
	(0.138)	(0.180)	(0.169)	(0.175)	(0.187)
Mean Dep. Var.	0.742	0.507	0.450	0.572	0.478
N	1933	1933	1933	1933	1690

Standard errors clustered at the village level. Sample includes women who have no formal education. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Another aspect of women's empowerment concerns gender norms. In the questionnaire, we ask several questions regarding gender norms, including whether men should make the important household decisions, whether men should help with housework if a woman works outside the home, whether a husband should allow his wife to work outside the home, whether a woman has the right to express her opinion even if she disagrees with a man, and whether a woman must accept if her husband beats her. We also ask the female respondent whether she has money that she can use for whatever she wants, how often she talks to a non-household family member, and about her mobility. We construct a mobility index using PCA with four questions on how often the woman can go to the market, to a friend or family member's house that is an hour away, to a place outside the village, and to see a healthcare provider. Table 6.10.4 shows the results. We see that Takaful beneficiaries seem to have more gender-equal norms compared to non-beneficiaries. Using both definitions of participation, the impact estimates for the gender norms index is positive and statistically significant using conventional estimates. Other variables are not statistically significant. We take this as some evidence, but not strong evidence, that Takaful improved gender norms.

Table 6.10.4. Impacts of Takaful Program on Gender Norms

	Panel A: Household received Takaful transfers in the past two months			
	(1)	(2)	(3)	(4)
	Norms and attitudes around gender (higher index=more liberal)	Do you have your own money that you can use for what you want to use it?	How often do you talk to a family member not living in the HH?	Mobility index
Conventional	0.465**	0.0191	0.106	0.0712
	(0.224)	(0.0482)	(0.195)	(0.185)
Bias-corrected	0.176	-0.0632	0.232	-0.0874
	(0.224)	(0.0482)	(0.195)	(0.185)
Robust	0.176	-0.0632	0.232	-0.0874
	(0.297)	(0.0635)	(0.254)	(0.242)
Mean Dep. Var.	2.76e-09	0.105	6.021	-0.157
N	5832	6473	6473	6203
	Panel B: Household ever received Takaful transfers			
Conventional	0.245**	0.00916	0.0605	0.0257
	(0.115)	(0.0256)	(0.104)	(0.0988)
Bias-corrected	0.0900	-0.0336	0.126	-0.0632
	(0.115)	(0.0256)	(0.104)	(0.0988)
Robust	0.0900	-0.0336	0.126	-0.0632
	(0.153)	(0.0336)	(0.135)	(0.129)
Mean Dep. Var.	2.76e-09	0.105	6.021	-0.157
N	5813	6449	6449	6179

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.11 Mental Health

In this section, we examine program impacts on the mental health of the survey respondent. This was almost always the head of the household, who is predominantly male. It is now widely documented that cash transfers have the potential to improve mental health outcomes (Ridley et al 2020). The poor face a lot of uncertainty and stressors and face constant worry. These issues can then lead to poor mental health in the form of depression and anxiety. The evidence base is mixed, with some transfer programs having large effects on mental health and others having no impacts (negative impacts are very rare).

In Table 6.11.1 we examine three outcomes related to mental health. The first is a worry scale calculated from 12 questions regarding the extent of worry about having enough money to purchase essentials, having enough money to purchase other items, being able to find consistent work, having the ability to sufficiently feed the family, being able to repay debt, being able to repay installment payments, the death of a household member, illness of a family member, being able to pay medical bills, being able to pay education expenses, a natural disaster, or that the family's economic situation will become worse. The choices were not worried at all (1 point), a bit worried (2 points), quite worried (3 points), or extremely worried (4 points). We summed responses over all 12 questions and the outcome is represented in Column 1. In Column 2 we present results on general anxiety using the Generalized Anxiety Disorder (GAD-7) scale (Spitzer et al, 2006). The GAD-7 includes questions regarding various indications of generalized anxiety rather than specific worries. In Column 3, we estimate impacts on self-esteem. Self-esteem is important in feeling optimistic about the future and in feelings of agency, helping people to make decisions in a better way. We use the

Rosenberg Self-Esteem Scale as our measure (Rosenberg, 1965). In all three measures, we see that there are no significant impacts of the Takaful program.

Table 6.11.1. Impacts of Takaful Program on Mental Health Indicators

	(1) Worry score	(2) General Anxiety Disorder (GAD-7) score	(3) Rosenberg Self-Esteem score
Conventional	0.546	-0.212	0.356
	(1.413)	(0.789)	(0.888)
Bias-corrected	1.412	-0.316	-0.146
	(1.413)	(0.789)	(0.888)
Robust	1.412	-0.316	-0.146
	(1.900)	(1.044)	(1.157)
Mean Dep. Var.	17.63	7.309	37.27
N	6473	6473	6473

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Worry score sums the level of worry over 12 items, ranges between 0 and 36. General Anxiety Disorder (GAD-7) score sums anxiety level over 7 items, ranges between 0 and 21. Rosenberg Self-Esteem score sums 10 self-esteem items, ranges between 0 and 50. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6.12 Shocks and coping strategies

In this section we examine the impacts of the Takaful program on shocks experienced by households, and the types of ways that households cope with shocks. We examine shocks in general and shocks specifically caused by COVID-19. This type of social protection program may help shield households from certain types of shocks, and/or may help households to better cope with shocks. We first look at the number of shocks experienced by the household in the past five years in Table 6.12.1.

We report whether the household experienced any shock, the number of shocks experienced, and whether any of the shocks experienced were a result of COVID-19. Shocks are relatively common, with 61% of households having experienced a shock in the past 5 years and 23% of households reporting that a shock experienced in 2020 or 2021 was due to the pandemic. The probability of experiencing a shock, the number of shocks, and the probability of a shock being due to the pandemic do not differ between recipient and non-recipient households. This result is expected because we do not expect that the program would change the *likelihood* of a shock, but rather, the way that households cope with shocks.

Table 6.12.1 Impacts of Takaful Program on Shocks Experienced by Household

	Treatment variable: household received Takaful transfer in the past two months		
	(1) Household experienced any shocks in past 5 years	(2) Number of shocks in past 5 years	(3) Household experienced a shock in 2020/21 due to COVID-19
Conventional	0.0567	0.0515	0.0397
	(0.0805)	(0.119)	(0.0659)
Bias-corrected	0.0714	0.0559	0.0691
	(0.0805)	(0.119)	(0.0659)
Robust	0.0714	0.0559	0.0691
	(0.105)	(0.152)	(0.0871)
Mean Dep. Var.	0.605	0.764	0.231
N	6473	6475	6475

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * p < 0.10, ** p < 0.05, *** p < 0.01.

We then look at potentially detrimental ways that households tend to cope with shocks: selling productive assets, household goods or jewelry, borrowing money from relatives, a bank, or NGO, eating less or lower quality food, reducing spending on school or healthcare, changing occupations, using savings, or having children work outside the home. The impact estimates for these outcomes are reported in table 6.12.2. There are no statistically significant impacts on most of these outcomes. The main coping strategy was selling gold or jewelry, but the magnitude of the impact is quite small. There is also weak evidence that borrowing from relatives, traders, and banks was lower. Unfortunately, there is also weak and suggestive evidence that households responded to shocks by eating less food and eating less nutritious food to reduce food expenditures.

Reassuringly, very few households engaged in extremely harmful processes like having their daughters marry early (this is very rare in the data so not reported in the table), spending less on health and education, or having children work outside the home.

Table 6.12.2. Impacts of Takaful Program on Coping Methods for Shocks Experienced by the Household

	Treatment variable: household received a Takaful transfer in the past two months						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Sold productive asset	Sold household good	Sold gold/ jewelry	Borrowed money from relatives	Borrowed money from trader or bank	Took a loan from NGO/institution	Ate less food to reduce expenses
Conventional	0.00307	0.000491	0.0218*	-0.109	-0.0124	0.0139	0.0207
	(0.00512)	(0.00735)	(0.0119)	(0.0865)	(0.0266)	(0.0213)	(0.0824)
Bias-corrected	0.00807	-0.0136*	0.0245**	-0.159*	-0.00343	0.0150	0.144*
	(0.00512)	(0.00735)	(0.0119)	(0.0865)	(0.0266)	(0.0213)	(0.0824)
Robust	0.00807	-0.0136	0.0245*	-0.159	-0.00343	0.0150	0.144
	(0.00697)	(0.0113)	(0.0144)	(0.116)	(0.0368)	(0.0296)	(0.112)
Mean Dep. Var.	0.00102	0.00204	0.00587	0.321	0.0263	0.0128	0.310
N	3914	3914	3915	3919	3917	3914	3922
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Ate lower quality food to reduce expenses	Reduced spending on education	Reduced spending on health care	Adult household member temporarily took job elsewhere	Forced to change occupation	Used savings	Children started working outside the home
Conventional	0.0680	-0.0399	0.00139	-0.00471	0.00272	0.0113	-0.00317
	(0.0733)	(0.0367)	(0.0166)	(0.00730)	(0.00787)	(0.0213)	(0.00825)
Bias-corrected	0.0409	0.00783	-0.0103	-0.00422	0.00338	-0.0135	-0.0106
	(0.0733)	(0.0367)	(0.0166)	(0.00730)	(0.00787)	(0.0213)	(0.00825)
Robust	0.0409	0.00783	-0.0103	-0.00422	0.00338	-0.0135	-0.0106
	(0.101)	(0.0511)	(0.0206)	(0.0104)	(0.0109)	(0.0311)	(0.0115)
Mean Dep. Var.	0.221	0.0470	0.0102	0.00204	0.00204	0.0135	0.00255
N	3921	3914	3914	3914	3914	3916	3914

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * p < 0.10, ** p < 0.05, *** p < 0.01.

6.13 COVID-19

The COVID-19 pandemic has disrupted life around the globe since early 2020 when its existence was first announced. Millions of people globally have died or become severely ill, lost their livelihoods, gone hungry, lost years of learning, and suffered mental health problems, among many other negative effects. In this section, we examine the ways in which households in our sample suffered due to the pandemic, as well as the ways in which they coped with the negative effects.

Table 6.13.1 presents the results. On average, one third of households were negatively impacted by COVID-19 in some way, and there were many negative shocks experienced. More than half of households experienced job loss and/or a pay cut, and 16% of households experienced were actually infected with COVID-19.[9] Of those infected, two thirds sought medical care, and 44% needed to borrow money to cover the associated medical costs. There are no impacts of the program on the likelihood of being negatively affected by the pandemic, nor the type of negative effect suffered, nor the coping strategies used to address negative effects. The interpretation is that the Takaful program did not lead to less suffering from COVID-19, and also did not particularly cushion any negative effects experienced by households.

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[9] We should not take this figure at face value as there may be substantial misreporting. The availability of testing for COVID-19 was generally sparse in most of the country.

Table 6.13.1. Impacts of Takaful Program on Experiences with The COVID-19 Pandemic

	Treatment variable: household received a Takaful transfer in the past two months				
	(1) Household was affected by COVID-19	(2) Household experienced job loss	(3) Household experienced pay cut	(4) Household was infected with COVID-19	(5) Household borrowed to cope with COVID-19
Conventional	0.0280	-0.0115	-0.0975	0.0679	-0.0000475
	(0.0798)	(0.153)	(0.157)	(0.110)	(0.0637)
Bias-corrected	-0.102	-0.0413	-0.311**	0.0722	-0.0445
	(0.0798)	(0.153)	(0.157)	(0.110)	(0.0637)
Robust	-0.102	-0.0413	-0.311	0.0722	-0.0445
	(0.106)	(0.202)	(0.211)	(0.152)	(0.0844)
Mean Dep. Var.	0.321	0.555	0.590	0.161	0.206
N	6473	2075	2076	2075	6472
	(6) Household lent money to help another household cope with COVID-19		(7) Household member(s) migrated for work before the pandemic	(8) Household member infected with COVID-19 sought medical care	(9) Household borrowed money to cover COVID-19 medical care costs
Conventional	-0.00151		-0.00239	0.0379	0.0199
	(0.0103)		(0.00422)	(0.357)	(0.364)
Bias-corrected	0.00286		-0.00636	-0.284	0.495
	(0.0103)		(0.00422)	(0.357)	(0.364)
Robust	0.00286		-0.00636	-0.284	0.495
	(0.0152)		(0.00479)	(0.487)	(0.494)
Mean Dep. Var.	0.00556		0.000927	0.673	0.435
N	6472		6470	352	352

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6.14 Robustness to alternate definition of beneficiary status

In this report, we have focused on two ways of defining a Takaful beneficiary: whether the household reports ever having received a Takaful transfer and whether the household has received a Takaful transfer in the past two months. We believe that these are the two most relevant definitions of beneficiary status. The first definition can be interpreted as whether any program participation had an impact on the outcomes. The second definition can be interpreted as whether recent transfers have had an impact on the outcomes. For some outcomes, one is more relevant than the other and for other outcomes, both definitions could be relevant. Accordingly, we have presented our results as such.

Another way to think about beneficiary status is intensity of treatment, and rather than designate a household as a beneficiary or non-beneficiary, focus on the number of months that the household received transfers. Those who have never received a transfer are coded as zero months. The interpretation here is whether a higher intensity of treatment, a longer duration of transfers, has an effect on the outcomes considered. We consider this definition as less informative because the interpretation is difficult. The transfers may have been received for several years and then stopped, or they could have been received for the same number of months but more recently. The "treatment" would be the same, but we could not distinguish between the two. Consequently, our main results focus on the first two definitions.

Nonetheless, in Table 6.14.1 we use this alternate definition and estimate impacts on our main outcomes: total consumption, non-food consumption, food consumption, savings, debt, and investments in durable, productive, and livestock assets. We see that all of the results are in the same direction and of similar statistical significance. Accordingly, all three definitions result in consistent estimates and the results should be considered robust.

In Table 6.14.2, we consider another alternative definition: whether a household is a current beneficiary (received transfers in the past 2 months) and received at least 24 transfers. This definition captures recent transfers and a longer duration of transfers. Once again, the results are robust to this definition and suggest that our results are robust to this alternative definition as well. It also reflects the fact that few households (17%) experienced disruptions in transfers and that stopping to receive transfers during the past few years did not substantially affect household behaviour.

Table 6.14.1. Impacts of Takaful Program Duration (Self-reported)

	(1) Monthly food consumption expenditure	(2) Monthly non-food con-sumption ex-penditure	(3) Monthly total (food & non-food) consumption ex-penditure	(4) Amount of savings (EGP) (IHS)	(5) Total amount of debt currently owed to infor-mal lenders or for pur-chases on credit (IHS)	(6) Durables	(7) Productive assets	(8) Livestock
Conventional	-0.000202	-0.000671	-0.000419	-0.00235	-0.0133	-0.000237	0.00534**	0.00408
	(0.000814)	(0.000848)	(0.000692)	(0.00146)	(0.00813)	(0.00257)	(0.00212)	(0.00261)
Bias-corrected	-0.00124	-0.00172**	-0.00129*	-0.00271*	-0.0177**	-0.000124	0.00173	0.000691
	(0.000814)	(0.000848)	(0.000692)	(0.00146)	(0.00813)	(0.00257)	(0.00212)	(0.00261)
Robust	-0.00124	-0.00172	-0.00129	-0.00271	-0.0177	-0.000124	0.00173	0.000691
	(0.00105)	(0.00111)	(0.000891)	(0.00185)	(0.0111)	(0.00341)	(0.00293)	(0.00404)
Mean Dep. Var.	6.791	6.526	7.396	0.0956	3.717	2.51e-09	6.72e-09	-3.06e-09
N	6449	6449	6449	6449	6449	6449	6449	6449

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Consumption aggregates shown are winsorized at the 2nd and 99th percentiles, calculated as Adult Equivalent Units (AEU), and transformed using Inverse Hyperbolic Sine (IHS). Asset indices are constructed based on the first principal component from principal component analysis (PCA). The index that includes all assets uses dummies for assets ownership. The same for the durables and productive assets indices. The livestock index is composed using a count of the livestock owned by the household. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * p < 0.10, ** p < 0.05, *** p < 0.01

Table 6.14.2. Impacts of Takaful program receipt in last 2 months, and having received at least 24 transfers overall

	(1) Monthly food consumption expenditure	(2) Monthly non-food consumption expenditure	(3) Monthly total (food & non-food) consumption expenditure	(4) Amount of savings (EGP) (IHS)	(5) Total amount of debt currently owed to informal lenders or owed for purchases on credit (IHS)	(6) Durables	(7) Productive assets	(8) Livestock
Conventional	-0.0146	-0.0459	-0.0280	-0.171	-0.937	-0.0425	0.386**	0.289
	(0.0594)	(0.0614)	(0.0503)	(0.106)	(0.592)	(0.187)	(0.155)	(0.190)
Bias-corrected	-0.0868	-0.118*	-0.0872*	-0.202*	-1.316**	-0.0203	0.132	0.0483
	(0.0594)	(0.0614)	(0.0503)	(0.106)	(0.592)	(0.187)	(0.155)	(0.190)
Robust	-0.0868	-0.118	-0.0872	-0.202	-1.316	-0.0203	0.132	0.0483
	(0.0765)	(0.0805)	(0.0650)	(0.135)	(0.809)	(0.249)	(0.214)	(0.294)
Mean Dep. Var.	6.791	6.526	7.396	0.0956	3.717	2.51e-09	6.72e-09	-3.06e-09
N	6475	6475	6475	6475	6475	6474	6474	6474

Standard errors clustered at the village level. The full sample (N=6475) consists of 2539 households who reported a Takaful cash transfer in the two months prior to being interviewed, and 3936 households who did not. Consumption aggregates shown are winsorized at the 2nd and 99th percentiles, calculated as Adult Equivalent Units (AEU), and transformed using Inverse Hyperbolic Sine (IHS). Asset indices are constructed based on the first principal component from principal component analysis (PCA). The index that includes all assets uses dummies for assets ownership. The same for the durables and productive assets indices. The livestock index is composed using a count of the livestock owned by the household. Model details: Linear Trend on PMT Score; Uniform Kernel; RD Bandwidth=63. The following strata indicators are included as covariates: Lower Egypt (urban), Lower Egypt (rural), Upper Egypt (urban), Upper Egypt/Frontier (rural), excluded category: Metropolitan. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

7. CONCLUSIONS AND RECOMMENDATIONS

This report has presented the findings from a second-round evaluation of the Takaful cash transfer program. The first-round evaluation reported on data collected in 2017, and this second round evaluation uses data collected in 2021. The goal of this second evaluation is to assess whether there may have been medium term and sustained impacts for Takaful beneficiaries who have been in the program for several years.

Takaful is a cash transfer program that provides income support to the poor and most vulnerable; namely poor families with children (under 18 years of age) and the poor elderly (aged 65 years and above). It is implemented by the Ministry of Social Solidarity (MoSS) and co-financed by the Government of Egypt and the World Bank. Targeting for the program uses a combination of geographical targeting and application of a Proxy Means Test (PMT), an index of well-being based on household demographics, income, housing quality, assets and other characteristics. In poor districts, potentially eligible households were registered and interviewed to collect information for the PMT. Households with a PMT score below a preset threshold, 4,500 points, were considered eligible for the program and received transfers.

A household survey for the impact evaluation was conducted in early 2022 by the firm El-Zanaty and Associates. The sample for the evaluation includes 6,473 households. The evaluation sample was selected from the administrative database of registrants for the program and the sample was first restricted to households who had been in the program for the longest. Subsequently, households who fell within 63 points above or below the 4500 threshold were sampled.

The impact evaluation was designed using a regression discontinuity (RD) methodology, which is effective for measuring the impact of programs that use a threshold level of a continuous measure of well-being, like a PMT score, to determine access to the program. The RD approach compares outcomes for beneficiaries just below the threshold for eligibility to outcomes for non-beneficiaries just above the threshold. Because the specific level of the eligibility threshold is not within the control of program applicants, whether households near the threshold end up below it or above is nearly random and cannot be affected by their actions. Consequently, the application of the threshold PMT score creates a quasi-experiment locally around the threshold that is used to measure impact of the program.

Because the PMT score is not a perfect predictor of program participation (some households above the threshold participate in the program and some households below the threshold do not participate) we use a 'fuzzy' regression discontinuity design. The fuzzy RD adjusts for the fact that the threshold PMT score does not perfectly predict participation by estimating the model in two stages: the first stage predicts the probability of participating in the program as a function of being below the eligibility threshold on the PMT score and the second stage measures impact as the change in the level of the outcome variable that is due to the difference in predicted probability of participating in the program as a result of the use of the threshold level of the PMT score.

Households have four major ways to spend transfers and income: consumption, savings, debt reduction, or investments in assets. We first examine these four choices. We then examine outcomes that

may depend on the choice of where transfers and income were used, such as dietary diversity, schooling, infant and young child feeding practices, ante- and post-natal care, and anthropometry. We also examined women's empowerment, gender norms, mental health, and shocks. Given the prominence of the COVID-19 pandemic and the resulting severely negative impacts on poor households, we also collected data on how households were affected by the pandemic and the strategies they used to cope with it.

We do not detect effects on food and non-food consumption expenditures per adult equivalent unit (similar to per capita) compared to non-beneficiaries. This result contrasts with the results in the first-round evaluation, which found a statistically significant increase in the value of monthly food consumption per AEU by 8.3 – 8.9%. It is worth highlighting that this is not a precise estimate as the statistical power of the second-round evaluation is reduced compared to the first round, so it is possible that there is a positive but smaller impact on consumption than in the first round.

The difference in food consumption is driven by a few food categories: grains, fruits, eggs, oils, and fats. Some of these groups are nutritious (grains, fruits, and eggs) but the reduction in oil and fat consumption should not have a negative nutritional impact. Encouragingly, consumption of unhealthy snacks and beverages, as well as food consumed outside of the household, has not increased.

The decrease in non-food consumption expenditures is due to a decrease in construction expenditures and a decrease in expenditures on communications, such as phones and televisions. Rather than purchasing these items, it is possible that households instead were investing in their capacity to generate future income. We see increases in asset holdings, and in particular, productive assets. These assets include both agricultural technologies and livestock. Beneficiary households invested in large items such as tractors, plows, irrigation, buffaloes, and cows. These are lumpy expenditures that many households may not be able to save for and should generate a persistent increase in income. Beneficiary households also had lower levels of debt than non-beneficiary households.

We find that beneficiary households had more children 6-11 years old due to a slight imbalance across the 4500 cutoff at the time of registration. Additionally, we find suggestive evidence that beneficiary households had more children in the past 5 years as a result of receiving the transfers. This result may explain part of the null effect on consumption.

Beneficiary households did not save differentially compared to non-beneficiary households, but they did lower their debt owed to informal lenders and paid off their installment payments. Additionally, they invested in assets, primarily productive assets in the form of items for small businesses and livestock. These behaviors indicate that households may have moved out of the stage of needing to increase consumption because minimum needs are not being met and may have transitioned into the next phase where they are able to build their assets and improve their future income.

In terms of labor supply, we see a difference between beneficiary and non-beneficiary households. Beneficiary households are significantly more likely to be engaged in informal labour and significantly less likely to be engaged in formal labor This result may possibly be driven by the increased productive asset holdings of households. The assets purchased may have enabled households to start their own businesses.

There are very encouraging results with regards to children's schooling. The likelihood that children are enrolled in both primary and preparatory school increased substantially, by between 4 to 5 percentage points. This is also an investment in households' future – these children should go on to earn more and may further push their families out of poverty. Girls attending secondary school are also more likely to attend school regularly as a result of the program.

There are mixed results when it comes to child nutrition, and the results depend on the age of the child. Dietary diversity is lower for 2-5 year olds among beneficiaries, but wasting is reduced for children aged 6-23 months for those who have ever received transfers. It is possible that the increased number of children led households to focus their attention on fewer foods.

The previous evaluation of Takaful found a decrease in women's decision-making power among women who had no formal education. We test whether this pattern still holds, and we find that it does not. There continues to be no impact of the program on women who have some formal education, but now, beneficiary women with no education are more likely to be able to influence decisions regarding what food can be cooked every day. We do not interpret these results as a large positive shift in women's decision making, but it is encouraging that women's decision-making was not reduced by the program. We also see some evidence of higher levels of gender positive norms among beneficiary households. We do not find any effects on mental health – worries, generalized anxiety, or self-esteem.

The households in our sample were indeed exposed to shocks, including COVID-19 and its resulting repercussions on movement and availability of foods. However, households did not use harmful coping strategies such as pulling children out of school and having them work, having daughters marry early, or reducing food consumption. The only response from beneficiary households is that they are more likely to sell gold/jewelry to cope with shocks.

This evaluation has shown that the Takaful program caused several positive shifts in households. There were investments in physical and human capital. The overall message is that while some aspects of household behavior were either not affected by the program or even had negative effects, these investments may reflect shorter term decisions that households believe will pay off in the future.

Several policy recommendations emerge from these findings:

Takaful should be continued and even possibly extended. The program enabled households not to resort to coping with shocks in negative ways. Particularly in light of increasingly frequent global shocks like COVID-19 and the Russian invasion of Ukraine, social protection programs, including cash transfer programs like Takaful, could be an effective way to protect against large-scale shocks since the infrastructure to reach people is largely in place.

Proceed with plans for recertification and graduation of beneficiaries who have achieved self-sufficiency while using a generous cut-off for self-sufficiency (and generous duration of exposure to the program) given that many households have not managed to substantially increase their consumption in spite of increased productive assets.

Improve communication regarding exclusion restrictions, program length, and recertification so that beneficiaries understand that they will not be excluded from the program for formal sector work with income below a certain threshold and to ensure that beneficiaries are not surprised by sudden changes in program status or unnecessarily worried about the short-term continuity of the transfers.

Consider greater coordination with communication campaigns related to family planning if the behavioral response by families of having more children is seen as in conflict with other national policy goals.

Continue to work towards a comprehensive social protection strategy that helps to continue protecting the poor as well as contributing to achieving longer-term developmental goals. Coordinating with the Ministry of Education to provide high quality public service delivery will magnify the impacts of increased school enrollment.

Complementary programming would also be beneficial. In general, complementary programming on issues such as nutrition practices or financial training need to be quite intensive to be impactful. There are currently programs that are implemented by the Government of Egypt on these topics, particularly a nation-wide nutrition campaign. However, it would be worth considering pairing these programs and intensifying them by leveraging Takaful to link to already vulnerable households.

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