ENDLINE REPORT OF A RANDOMIZED CONTROLLED TRIAL TO DETERMINE THE EFFECT OF ACCESS TO CHILDCARE ON THE PRODUCTIVITY AND PROFITABILITY OF WOMEN-OWNED BUSINESSES IN MARKETS IN KAMPALA

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ACRONYMS AND ABBREVIATIONS

APRI	Ace Policy Research Institute
CAPI	Computer-Assisted Personal Interview
CCC	Childcare Corners
DIME	Development Impact Evaluation Division
IDRC	International Development Research Centre
KCCA	Kampala Capital City Authority
MAGNET	Measures for Advancing Gender Equality
MDEs	Minimum Detectable Effects
MoGLSD	Ministry of Gender, Labour and Social Development
NDP III	Third National Development Plan
OECD	Organization for Economic Co-operation and Development
PPP	Public Private Partnership
RCT	Randomized Control Trial
REC	Ethics Review Board
UCW	Unpaid Care Work

EXECUTIVE SUMMARY

The study is a three-arm, individual-level RCT testing two distinct interventions against a control group over a period of eight months. The RCT aims to determine the primary (labour market and well-being effects including women's labour force participation and productivity, women's wellbeing, and child development) and secondary (willingness to pay for childcare services, and women's agency/locus of control) effects of gaining access to childcare services.

The study involves the randomization of eligible women into one of three groups – control and the two treatment groups (Arm 1 and Arm 2). Women in treatment arm 1 were allowed to en-roll one child aged eight to 48 months, into a market-based childcare facility located within the market where they work for a period of up to eight months. Women in treatment arm 2 were provided with a bursary to enrol one child within the same age range into a childcare facility of their choice up to the end of the 2023 school calendar (community-based childcare). The bursa-ry provided to women under treatment arm 2 was non-transferable and is capped at UGX 450,000 (USD $120) per term in line with the average cost of childcare in and around Kampala. Control arm participants did not receive any financial benefits beyond the token of appreciation given to all respondents during the baseline survey.

Following the logic model for the study, the uptake outcome measures include the reduced women's time in caring for the children and increased stay of the children in the childcare centres. The primary and secondary outcomes measures for the study and their respective hypothesized changes are as follows,

The primary outcomes

i. Increased women's labour force participation
ii. Improved women's business performance in terms of sales and profits
iii. Improved women's wellbeing
iv. Better child development

The secondary outcomes

v. Willingness to pay for childcare services.
vi. Improved Women's agency or locus of control

Data collection for the end line was undertaken in two rounds with the first

round of December 2023 covering five markets that started earlier. The second round of data collection took place in March 2024 in Kame Valley market in Mukono. The total sample for the baseline and raffle 972. A total of 883 women were surveyed at the end line, representing 90.84.% of the 927 women in the sample: Market (254), Community (257) and Control (372).

We find that access to childcare increases take-up and usage of childcare services by businesswomen working in markets with slightly higher uptake for community-based childcare. Interestingly, while access to childcare reduced, time spent by the women caring for the target child, women in the community group spent more time as a primary caregiver. This may be due to additional time spent preparing the child for school in the community compared to market-based childcare. Surprisingly, the findings show that access to childcare reduced the time women spent on work-related activities. Given that childcare is usually done alongside other activities, access to childcare enabled women to concentrate on work thereby making them more efficient. These findings agree with Ajayi et. al (2022) and Bjorvatn et al. (2022) The effect of childcare on most business outcomes was not statistically significant except for profits in the market group which were still small and only marginally significant. Furthermore, the findings show that access to childcare had a positive effect on the overall well-being of the women and life satisfaction. The positive effects on child development too are in line with the two studies cited here whose findings too showed improvements in child development from access to access to childcare. Finally, while the effects of access to childcare on willingness to pay were positive, they were marginal (USD 3).

This paper offers further evidence of multiple benefits of offering women childcare- economic (though noisy), psychosocial, and child development. While these findings demonstrate the value proposition of providing childcare for women working in markets, the low amounts they are willing to pay cannot cover the costs of this service unless it is highly subsidized. Scaling up childcare services will certainly require the provision of space in the markets at non-commercial fees, and contributions from market fees in addition to use fees.

1. CONTEXT OF THE SUPPORTING CHILDCARE FACILITIES IN MARKETS TO REDUCE UNPAID CARE WORK FOR VULNERABLE BUSINESSWOMEN IN UGANDA PROJECT

1.1 Introduction

The disproportionately heavy burden of Unpaid Care Work (UCW) borne by women and its effects on women's productivity, income and wellbeing has become an increasingly important development issue (UNDP, 2016; World Bank, 2021; Gates, 2015). Gender allocation of roles in many parts of Africa charges women with UCW which encompasses unremunerated domestic services/activities provided within a household for its members, including care of persons, housework, and voluntary community work (Elson, 2000). It involves everyday activities, such as cooking, washing, cleaning, shopping for own household, as well as care of children, the elderly, the sick, and the disabled. UCW is considered essential for the health, well-being, maintenance, and protection of members of the households, and involves substantial mental and physical effort, as well as time costs (Gaëlle et al, 2014).

While the overall division of time between paid and unpaid work depends on many factors, including among others age, gender, type of household structure, social class, geographic location, and presence of children, historical, cultural, and social norms and practices also perpetuate gender inequalities in UCW (Mwesigye, 2019). For example, a study by Oxfam (2018) showed that in Uganda, while women are generally responsible for childcare, in rural areas, taking care of children was shared almost equally between men and women with a paltry difference of 4.4% compared to the wide disparity in urban areas where 21.1% of women were responsible for childcare compared to their male counterparts.

There is agreement that UCW can heavily reduce education/training,

mobility, health and wellbeing, participation in development initiatives (including political and community initiatives), leisure, personal care, and sleep. Furthermore, UCW can disadvantage women's participation in the labor market and gainful employment opportunities outside the household (Razavi, 2007; Ferrant, Pesando and Nowacka, 2014; Folbre, 2018; World Bank, 2012). In their study of female business owners and the baby profit gap in Uganda, Delecourt and Fitzpatrick (2021) found out that 37% of female owners bring small children to work, compared with 0% of men. Further, women's businesses where children are present had 48% lower profits as compared to other female-owned businesses where a child was not present.

In Uganda, proponents of women's economic empowerment and advocates for gender equality have turned their focus on reducing UCW for women in a bid to increase women's labor participation and income. For example, there have been calls to recognize UCW by including it in the collection and analysis of labor and employment statistics (UBOS, 2021). Uganda also conducted its first Time Use Survey 2017/18 in 2017 with the aim of increasing the visibility of UCW through better recognition of the value of UCW to the economy in national statistics (UBOS, 2019). The survey showed that, more men than women spent a large proportion of their time in a day on paid work (24%) compared to women (13.8%). The opposite was true concerning UCW with only 3% of the men indicating having spent some of their time in each day on unpaid care activities, compared to 18.2% of the women.

Childcare has been singled out as the most prevalent form of UCW in Uganda. In response, the government has focused on enacting policies and other interventions to reduce the burden of childcare for different key groups of women. The recent policies include: the National Integrated Early Childhood Development Policy Action Plan (2016-2021), Guidelines for Establishment and Management of Childcare and Breastfeeding Facilities in Public Places (MoGLSD, 2018), The Employment (Breastfeeding and Childcare Facilities) Regulations (2019), Markets Act (2024), National Family Action Plan (2020-2025), and Third National Development Plan III (2020/21–2024/25). The effect of these policies on the UCW burden of women in Uganda remains unclear.

The efficacy of these policies and plans in reducing the burden of childcare for women and realization of associated benefits depends on appropriate intervention design and policy formulation. Yet there is a dearth of information and evidence on what works and the factors at play. It is against this backdrop that Ace Policy Research Institute (APRI) designed a project to explore and test childcare facilities as a cost-effective and scalable

intervention to reduce the burden of childcare work to allow productive work for women in Uganda. The specific objectives of the project are:

1. To deepen the evidence, based on whether and how reducing women's unpaid childcare burden increases their productivity and income.
2. To examine the factors that impede access to childcare facilities among vulnerable wom-en engaged in business markets in Uganda and how these could be mitigated.
3. Evaluate the effects of childcare on the productivity of mothers and profitability of their businesses.
4. To inform government action through tested and proven models for scaling up childcare corners to both structured and unstructured markets
5. To provide proof of concept on how governments can introduce affordable, effective, and sustainable childcare models that work for vulnerable mothers who work in infor-mal markets in Uganda.

The project focused on businesswomen working in markets in the Greater Kampala Metropolitan Area (GKMA) and sought to answer the question: what is the effect of access to childcare on businesswomen's productivity, profitability and well-being? The subsequent RCT tested the effects of access to two forms of childcare: market-based and community-based. The study hypothesizes that the two interventions could lead to positive effects on women's earnings and labor participation, hours spent on different activities in a day including childcare, work-related activities, personal care, leisure, travel etc, willingness to pay for future childcare services, and both personal well-being and that of their young children. The RCT covered 972 women in six markets in the GKMA. This report presents the results of the experiment after eight months of intervention/treatment.

The rest of this report is organized as follows: the next subsections of Section 1 describe the setting in the markets covered in the evaluation, the process of setting up childcare centers in markets, eligibility and selection of participants, and management of the childcare centers. Section 2 presents the methodology of RCT including research questions, study design, and limitations. Section 3 describes the data collection processes for the baseline and endline. Section 4 presents the sample characteristics for the units of analysis for the RCT namely businesswomen, business performance, and target child. Section 5 presents the empirical strategy and effects of the treatments on key outcomes while Section 6 presents the conclusion.

1.2 The Setting

The experiment covered six markets located in the Greater Kampala Metropolitan Area (GKMA) namely, Nakawa, Kibuye, Kalerwe and Nateete Markets located in the Capital Kampala, and Kireka and Kame Valley Markets located in neighboring municipalities of Kira and Mukono respectively. The markets were selected following listing exercises that assessed the potential number of eligible women working in each of the markets. Given that the project involved setting up childcare centers at the selected markets, having enough eligible women businesswomen to justify the associated fixed costs and the possibility of securing operating space were major considerations for market selection.

In terms of ownership, four of the markets selected are owned by local governments, i.e., Nakawa and Nateete are owned by Kampala Capital City Authority (KCCA), Kireka Market is owned by Kira Municipal Council, and Kame Valley Market owned by Mukono Municipal Council. Kalerwe Market is a conglomerate of several private markets while Kibuye Market is owned by Buganda Kingdom, a cultural institution with its seat located nearby. Below are summary profiles of the markets.

Nakawa Market: It is the largest market in Nakawa Municipality with an estimated vendor space of 4,000 (KCCA Statistical Abstract 2019). At the time of setting up the childcare center, this market was under a Public Private Partnership (PPP) arrangement. Before the COVID-19 outbreak, a childcare center for women working in the market had been set up at by an NGO, Katutandike, at St Jude Primary School Naguru about 150 meters away. This initiative did not resume after the COVID-19 lockdown due to lack of funding. The projected number of women with children in the age bracket of interest i.e eight months to four years s 480. The childcare center in Nakawa Market was set up in a space created by combining and converting two adjoining shops. The capacity of the center is approximately 50 children.

Kalerwe Market: Located in Kawempe Municipality, the Market is an amalgamation of over 20 privately owned markets. The projected number of women with children aged eight months to four years was 779. There was no history of availability of childcare within any of the markets. Space for setting up the childcare center for Kalerwe market was secured in a building adjacent to Bivamuntuyo Market which is reportedly the largest of all the constituent markets. The center is big enough to accommodate 120 children.

Nateete Market: Located in Rubaga Municipality, the Nateete Market is a PPP with KCCA owning the land, but the facilities thereon are privately owned. The projected number of women within the age group of interest from the market scoping was 240. Nateete is one of the markets previously covered by Katutandike's childcare at markets initiative. However, the childcare facility at the market did not reopen after lifting the COVID-19 lockdown from 2020 to 2021. KCCA leadership at the market provided part of their office for establishment of the childcare center for Nateete. The center has a capacity of up to 55 children.

Kireka Market: This market is in Kira Municipality on the outskirts of Kampala City. The market is along the same highway as Nakawa Market in Wakiso District. The market largely comprises makeshift structures and occupies a strip between the highway and railway line. The projected number of women with children aged eight months and four years was 261. There are several nursery and day care facilities near the area occupied by the market. Space for the childcare for Kireka market was secured near the office of the market leadership. The structure had previously been used as a clinic. The center at Kireka has a capacity of 50 children.

Kibuye Market: This market is located in Rubaga Municipality and is owned by the Buganda kingdom. The market features a structured market nucleus and sprawl as the market expanded beyond its original boundaries. The projected number of women with children aged eight months to four years was 234. There are many nursery schools in the surroundings of the market. Space for the childcare center for this market was secured within the market. The center for Kibuye Market has a capacity of 50 children.

Kame Valley Market: This market is in Mukono Municipality in Mukono Town. The market is located behind the Kampala Jinja Highway. Before the COVID-19 lockdown, there was a childcare center operated by Katutandike and NGO however like in Nakawa, the center did not reopen after the lockdown. While the market was designed as structured, it has since taken on characteristics of an unstructured market i.e., sprawling beyond its original boundaries. The projected number of women with children aged eight months to four years was 131. There are many nursery schools nearby. The capacity for the childcare center at Kame Valley Market was up to 50 children.

1.3 Eligibility and Randomization Process

The eligibility criteria for women to participate in the experiment was providing care for at least one child aged between eight months and four years old at the time of the listing exercise. The eligibility was established through a listing exercise which yielded a total of 1,264 eligible women out of the 2,792 women covered in the six participating markets as shown in Table 1. Application of extra eligibility criteria i.e., willingness to enroll a child into a childcare facility to the baseline survey that covered 1,120 women restricted the sample to 1,095 women. Only 972 women took part in the raffle to allocate the women into the different groups i.e., Arm 1, Arm 2, and control. Thus, the sample size for this RCT is 972 women and it is the basis for calculating uptake and attrition rates. For the first five markets, the raffles were allocated by applying the following proportions to the restricted sample- market-based 27.5%, community-based 27.5 and control 45%. For Mukono, equal proportions of 33.3% were used. The disaggregation of the sample into the three groups is presented in Chapter 3.

Table 1: Eligibility and sample size

Market	Listed	Eligible	Completed Baseline	Restricted sample	Raffle
Kalerwe	779	421	388	382	316
Nakawa	666	211	192	183	159
Nateete	366	136	111	111	107
Kireka	261	198	158	158	143
Kibuye	234	167	135	133	121
Mukono	423	131	130	128	126
Total	**2,792**	**1,264**	**1,120**	**1,095**	**972**

1.4 Components of the Intervention

This section presents the details of the two interventions and their implications for the intensity of the treatment and choice to take up the intervention by the women.

1.4.1 Arm 1: Child enrolment at a market-based childcare center

This treatment involved women being selected to enroll their eligible child of choice in a childcare facility set up under the project in the market where

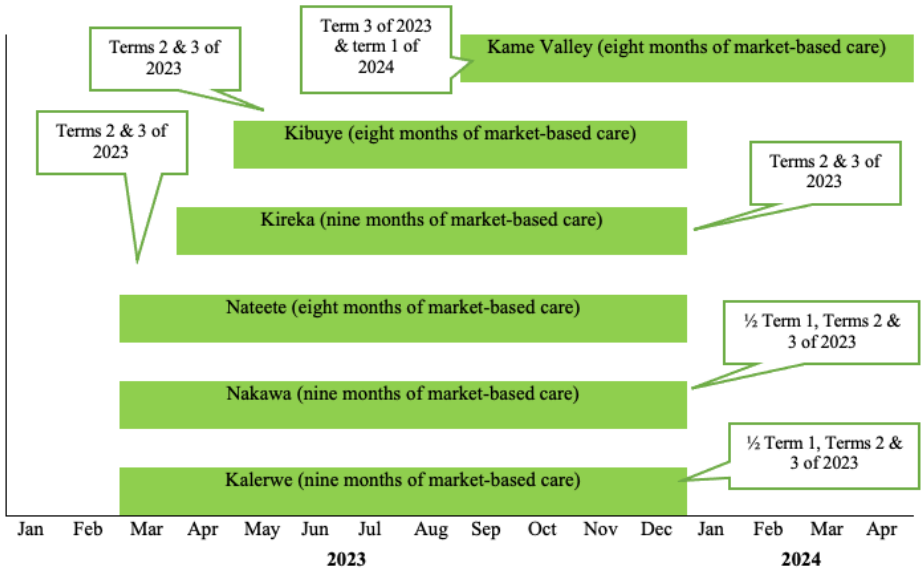
the woman held the business. This was associated with some benefits namely, i) the mother could check on the child and breastfeed the child where applicable, ii) access to childcare services on Saturdays and school holidays when community childcare facilities are largely closed, iii) provision of meals for children unlike at some community-based centers where the parents were required to pack a snack for the children. See Figure 1 for the chronology of the treatments. Women in Arm 1 were asked to bring the child the next weekday. Those who did not bring the children after a month and were followed up at least three times. The same was done for women in Arm 2 who did not bring admission documents after one month.

It is difficult to compare the per capita cost for childcare across Arm 1 and Arm 2 and markets for Arm 1. The costs of utilities and meals varied from market to market. What was standardized was the number of meals per day (three meals).

1.4.2 Arm 2: Bursaries for use at a community-based childcare center

The second treatment involved awarding bursaries to women to enrol their child in a community-based childcare center of their preference provided the fees per term did not exceed UGX 450,000 (USD 123). This amount was arrived at following a scan of school fees in Kampala that showed this would cover the fees of low to middle-range daycare and nursery schools. The fees were paid directly to the schools. Where the school was above the threshold, the women topped up otherwise they would have to find a school that fits within the bursary. This option was associated with additional costs depending on the practices of the different schools, and less intense treatment with the centers closed on Saturdays and during school holidays. Following the raffle, women in Arm 2 were given two weeks to find and enroll their children in preferred community-based childcare facilities. During the verification of enrolment and attendance at the schools that happened at the end of the first term under the intervention, APRI staff followed up with parents of children that had not shown up or had not attended for extended periods of time i.e., over three weeks. The callouts in Figure 1 are for the chronology of Arm 2.

Figure 1: Duration of the intervention in the different markets



1.4.3 Uptake

The uptake of the treatment signified by the enrolment of the target child in the respective childcare facility was 65.5% overall. For the two types of treatments, the uptake was higher for community-based childcare at 74.6% compared to market-based childcare at 56.6%. Some of the reasons for the non-take-up of the offers cited by the women include refusal by the father of the child (spouse), the perceived inappropriateness of the services provided at the market-based childcare facilities, ability to pay for childcare, and moving the child to other localities.

1.5 Setting up and Management of Market-based Childcare Centers

The childcare facilities in the markets were set up by APRI. This involved the identification of suitable space, entering contractual arrangements with the landlord, constructing or repairing the structure and retrofitting it for use as a childcare facility. The design of the facilities was guided by the MGLSD guidelines for Early Child Development Centers (ECDCs).

The management of the centers was contracted out to three service providers each running two centers. The service providers were responsible for recruiting and supervising caregivers and supporting staff including guards, cleaners and cooks. In terms of gender composition, one out of

the three service providers were male, all guards were male and only one cook was male. The guards were responsible for security and order at the childcare facilities and were responsible for receiving, registering children and other visitors, and releasing the children to rightful persons at pick-up. Table 2 shows the level of staffing and average enrollment for the different markets.

Table 2: Enrollment and staffing at market-based childcare facilities

Market	Average daily attendance	Average daily capacity (space) utilization	Number of caregivers	Number of support staff
Kalerwe	43	36%	5	4
Nakawa	13	26%	3	3
Nateete	7	18%	3	3
Kireka	17	34%	3	3
Kibuye	10	20%	2	3
Mukono	21	42%	3	3
Total	**111**	**31%**	**17**	**19**

2. METHODOLOGY OF THE RANDOMIZED CONTROL TRIAL

2.1 Research Questions

The aim of this study was to test the impacts of gaining access to childcare in one of two differ-ent forms - access to childcare corners in the markets where women work or access to childcare centers of women's choice in or near the market or in the communities where they live. The study specifically sought to answer the question what is the effect of access to different forms of childcare services on the productivity and profitability of women-owned businesses in mar-kets? In summary, the primary objective of the RCT was to determine the labour market and well-being effects market and community-based childcare, including women's labour force par-ticipation and productivity, willingness to pay for childcare services, women's well-being, and child development.

2.2 Study Design

The study is a three-arm, individual-level RCT testing two distinct interventions against a control group over six to eight months. This RCT sought to answer the research question and address the objectives through a rigorous comparison of two childcare services: market-based and community-based childcare. Data collection for the baseline was undertaken in two rounds. The first round took place in January through February 2023, and it covered the first five markets. The second round took place in June 2023, and it exclusively covered Kame Valley Market in Mukono, which started the intervention later. Data collection for the end line followed a similar pattern with the first round taking place in November 2023 followed by the second in March 2024. The total sample for the study was 972 whose breakdown is presented in table 3.

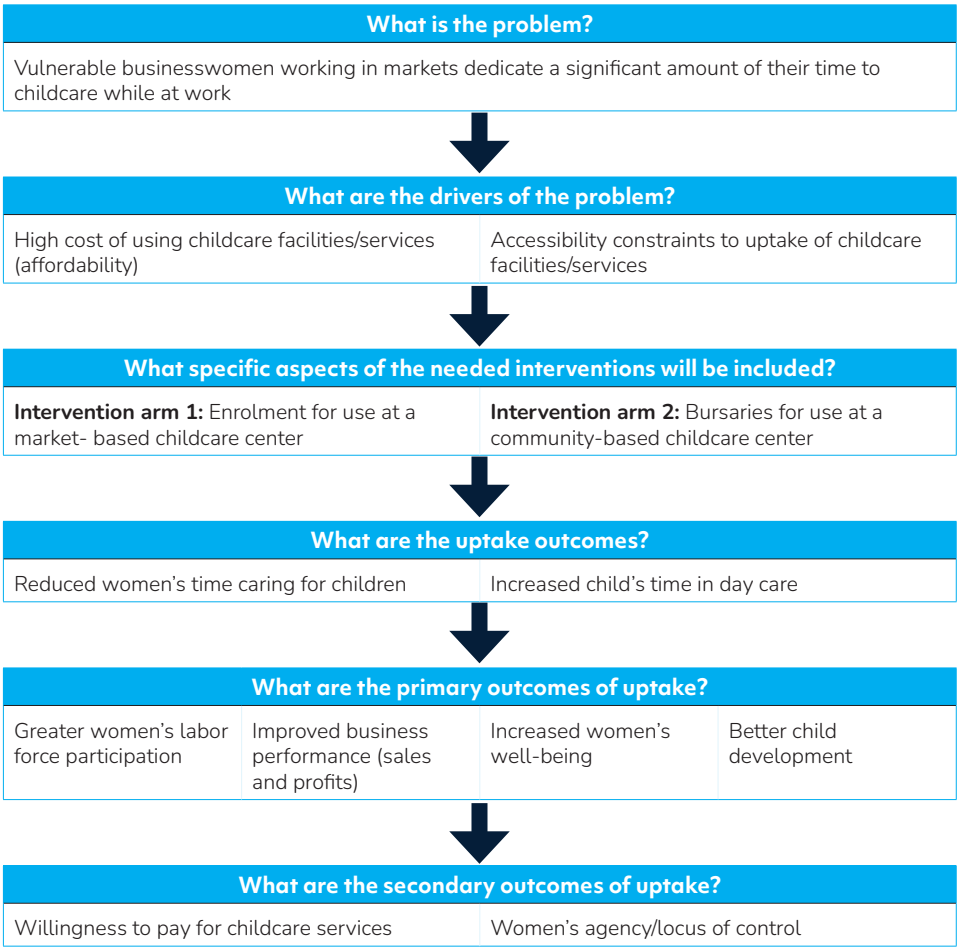
Table 3: Number of women per study arm

Market	Market Childcare	Community Childcare	Control	Total
Kalerwe	88	88	140	316
Nakawa	46	42	71	159
Nateete	29	30	48	107
Kireka	39	38	66	143
Kibuye	35	32	54	121
Mukono	42	42	42	126
Total women	**279**	**272**	**421**	**972**

2.2.1 Logic model

The two interventions were developed in consideration of the findings of an earlier scoping study by APRI on the forms and causes of disproportionate allocation of UCW between men and women in Uganda. The findings of the study showed that there was a widespread view that reducing the burden of UCW including childcare would lead to increased productivity and income for women. For women working in markets in Kampala, the additional burden of childcare while operating business adversely affects the performance of their businesses including, reduced time dedicated to the business, limited mobility which translates into limited sales and profits, as well as stockouts of merchandise. The major factors responsible for women's limited use of childcare services include the absence of childcare facilities at the markets, the high cost of enrolling children into childcare facilities, and the limited appreciation of childcare facilities. The trial was expected to have three levels of outcomes: i) uptake/preliminary outcomes, ii) primary outcomes, and iii) secondary outcomes as depicted in Figure 2.

Figure 2: Logic Model for Supporting Childcare Corners in Markets to Reduce Unpaid Care Work for Vulnerable Businesswomen in Uganda



Source: Authors' own constructions

The primary outcomes and direction of hypothesized changes include:

(i) Increased women's labour force participation

(ii) Improved women's business performance in terms of sales and profits

(iii) Improved women's wellbeing

(iv) Better child development

The secondary outcome measures on the other hand include:

(v) Willingness to pay for childcare services.

(vi) Improved women's agency or locus of control

2.3 Study Design Limitations

The experiment is a three-arm RCT, testing two distinct interventions against a control group with women being randomly assigned to the different groups. Since this is an individually randomized trial, there may be spillovers between the study arms that cannot be accounted for. For example, women in the intervention arms may talk to women in the control arms to give them information or advocate for use of childcare centers (creating demand among the control group). In addition, if women in treatment arms become much more profitable, this may hurt businesses of women in the control group. In the first instance, this treatment effect would be biased downward, but in the second instance, the treatment effect would be upward biased. Therefore, results should be interpreted with these caveats.

Secondly, self-reported data are prone to omission and exaggeration, recall bias, deliberate misinformation, and failure to understand the questions. All these are especially true where revenue and costs are involved with poor record keeping. The team included checks in the questionnaire to double-check inconsistent responses.

3. DATA COLLECTION

3.1 Sample and Baseline Survey

The study design for the RCT was finalized in November 2022. It was clear at this point that, the number of markets to be covered would be cumulatively determined by the number of eligible women in the markets covered. In the end a total of six markets and 972 women participated in the raffle and therefore constituted the sample for the study. For each market, data collection started with a listing exercise followed by baseline data collection, a raffle to assign women to treatments and control groups, and finally the endline survey. The raffles to be drawn for each market were prepared in the following proportions differentiated by colors, 27.5% Arm 1, 27.5% Arm 2, and control 45% except in Mukono where the proportions were equal 33%. Data collection for the study largely took place in 2023 except the endline in Mukono which took place in March of 2024. Table 4 shows the dates for the different rounds of data collection in the different markets.

Table 4: Baseline and endline implementation dates

Market	Listing	Baseline	Intervention starts	Endline
Kalerwe	26 Jan – 1 Feb	13 Feb – 1 Mar	13 Mar	3 Nov – 10 Nov
Nakawa	26 Jan – 1 Feb	16 Feb – 1 Mar	15 Mar	3 Nov – 10 Nov
Nateete	25 Jan – 1 Feb	20 Feb – 28 Feb	27 Mar	10 Nov – 15Nov
Kireka	6 Feb – 9 Feb	21 Feb – 2 Mar	4 Apr	10 Nov – 17 Nov
Kibuye	7 Jan – 9 Feb	24 Feb – 1 Mar	3 May	15 Nov – 21 Nov
Mukono	15 Jun – 17 Jun	22 Jun – 30 Jun	1 Aug	19 Mar – 25 Mar (2024)

3.2 Endline Survey

3.2.1 Questionnaire

The questionnaire had several parts that can be categorized into five? major parts. The first part covered identification particulars including the enumerator details, date and time of the interview, name of the market, name of the respondent, and contact. The second part is household information including new household members and those that left, and

the social economic situation. The third category is on business operations, financing and challenges. The fourth category is about the selection of women's wellbeing agency and time use diary. The fifth category is childcare and child development information. The tool was designed using Survey CTO and included several checks and in some cases randomization. The interviews took on average 73 minutes to complete. The questionnaire for the end line included the following modules:

- Household roster
- Household employment
- Food vulnerability
- Childcare
    - Caregiver's attitude
    - Caregiver's decision making
    - Childcare support and childcare services
    - Willingness to pay for childcare
- Market and earnings
    - New businesses
    - Earnings
    - Business hours
    - Working week
    - Revenues
    - Employee earnings
    - Profit management
- Decision-making and wellbeing
    - Respondent's participation in decision making
    - Respondent's wellbeing
    - Gender norms
- Measures for Advancing Gender Equality (MAGNET) locus of control module
- Woman's time use
- Early child development

3.2.2 Field Preparation and Data Collection

For all data collection rounds, the market leadership were formally notified of the impending exercise through an introduction letter form APRI. The letter also requested the market leadership to inform the market vendors and mobilize the participants. Data collection during the first phase of the endline which covered five markets was undertaken by a team of 15 enumerators over 21 days. This was smaller than the team that collected data during the baseline, with only those with the highest aptitude in terms of the number of returns per day with minimal issues being recalled. At the start, all enumerators deployed in Kalerwe Market. Later enumerators that exhausted or covered most of the target respondents were deployed to other markets. In Mukono, data for the endline was collected by a team of five enumerators over six days. Throughout data collection, a data analyst was at hand to undertake quality assurance throughout the fieldwork.

3.2.3 Data Quality

The purpose of the quality assurance process was to maximize the coverage of the sample, identify errors to prevent reoccurrence and guide the mop-up exercise. The first step of quality assurance was to include checks in the tool to minimise the possibility of inconsistent entries. Secondly, the field supervisors daily checked to establish the level of coverage of the lists by enumerators. Where lists had been exhausted or respondents could not be reached after at least three attempts, the supervisors sent requests for additional lists were sent to the field coordinators. Thirdly, the data analyst checked the data to establish the following:

1. Which enumerators spent a notably shorter time completing the interviews overall?
2. Which sections of the interviews took a shorter time than expected to complete and by which enumerators?
3. Which enumerators had incomplete and/or inconsistent responses?

3.2.4 Data Management

The aim of data management was largely to ensure the integrity of results, and it largely involved data cleaning and labelling. Data cleaning was conducted to catch any errors that could have escaped the quality control checks in the field during data collection and prepare the data for analysis. After ensuring that observations were uniquely and fully identified, the data analyst proceeded with data quality assurance checks: inspecting key treatments and outcome variables to ensure data quality and consistency of responses. Then, a de-identified version of the dataset was created. Data labelling that followed involved revising the automatically generated

labels to improve clarity and ease of use during analysis.

3.2.5 Survey Attrition

A total of 883 women were surveyed at the end line, representing 90.84.% of the 927 women in the sample. The response rate per treatment arm and control is shown in Table 5. Additional tests showed that community versus control differences were significant while those in the market were not. While the magnitude in the difference in rates was not large, we will take this seriously in further analysis.

Table 5: Response Rate per arm at Endline

Variable	Market	Community	Control	Overall
Number of observations	254	257	372	883
Response rate	91.04%	94.49%	88.36%	90.84%

3.2.6 Ethical Considerations

The study complied with all the research ethical procedures and requirements governing the conduct of an RCT study. In this regard, the study protocol was subjected to an independent Research Ethics Review Committee (REC) from the School of Social Sciences, Makerere University before the fieldwork. After obtaining REC clearance, APRI obtained another clearance from the Uganda National Council of Science and Technology, from the office of the President. During the field survey, informed consent was obtained from each respondent as required and in compliance with ethical standards before engaging them in any interview.

3.2.7 Challenges

The study team faced four major challenges in this study. Firstly, it was difficult to make the participants appreciate that the undertaking was first and foremost a study and that the methodology had to maintain fidelity. Many participants were disappointed that they could not be moved from one group to another or switch from one child to another even after presenting what they considered compelling reasons to back up their request. In their view the selection process was unfair as the bursaries did not go to those that needed them the most. This was an issue caused by individual randomization where women were aware of the lottery outcomes of others. While a clustered randomization could have been cleaner, it was not feasible in this urban market setting and given the large, fixed costs of setting up childcare centers in each market. Secondly, and related was the refusal to respond to the endline survey by those who were aggrieved. Thirdly, tracing women especially those in the control group was a cumbersome task with up to 82 women in the sample being

untraceable thereby contributing to attrition. Fourth was lower response rates to some questions by the women particularly on revenue which was a sensitive issue and child development with some children moving away from the household. We acknowledge that our business performance measures, including revenue were especially noisy and thus in later rounds we switched to other commonly used approaches that have shown to be more effective such as aggregation instead of line-by-line accounting.

3.3 Description of Key Outcome Variables

This section presents a description of the variables used in the operationalization of the key outcome for the study namely, take up of childcare services, Business outcomes, Earnings, Time use, Women's life satisfaction, Anxiety and depression, Overall well-being, Locus of control, Child development index, and Willingness to pay as shown in Table 9. The recall time is also presented.

Table 6: Description of key outcome variables

Key Outcomes	Description of variables	Recall time
Take up of childcare services	Use of childcare services	Eight months (intervention period)
	The number of days childcare services were used in the week preceding the interview.	Last week
	Hours spent as a primary caregiver for the selected child on the preceding weekday.	Last 24 hours
	Hours spent as a primary or secondary caregiver for the selected child on the preceding weekday.	Last 24 hours
Business outcomes	Costs: Aggregate amounts spent the previous week on purchasing products for resale, input for production, communication costs for the business, labor costs, and market charges.	Last week
	Revenues: Self-reported revenue from the business over the preceding week.	Last week
	Profits: Calculated by subtracting costs from revenues.	Last week
Earnings	Wage earnings: Self-reported wages over the previous week including commissions and tips.	Last week
	Earnings: Self-reported monthly income earned.	Last month
Time use	Hours spent on the preceding weekday on personal activities	Last 24 hours
	Hours spent on the preceding weekday on travel/transport to the market.	Last 24 hours

Key Outcomes	Description of variables	Recall time
	Hours spent on the preceding weekday on work-related activities	Last 24 hours
	Hours spent on the preceding weekdays on domestic activities	Last 24 hours
	Hours spent on the preceding weekday leisure activities.	Last 24 hours
	Hours spent asleep on the preceding weekday	Last 24 hours
Women's life satisfaction	Current life satisfaction: Self-rating on Cantril's (wellness) ladder with steps numbered from 0 (the worst possible life for the respondent) at the bottom to 10 at the top (the worst possible life for the respondent) at the time of the interview.	At the time of the interview
	Life satisfaction in five years: Self-rating on Cantril's (wellness) ladder with steps numbered from 0 (the worst possible life for the respondent) at the bottom to 10 at the top (the worst possible life for the respondent) five years from the time of the interview.	At the time of the interview
	Difference: Calculated by subtracting the rating on satisfaction in five years from current life satisfaction.	N/A
Anxiety and depression	Depression measure: Flipped ranking on a scale of 1 to 4 on how often they feel depressed or have little interest in doing things over the preceding two weeks, the the larger the score the less negative the depression outcomes and vice versa.	Last two weeks
	Anxiety measure: Flipped ranking on a scale of 1 to 4 on how often they feel anxious or unable to control worrying over the preceding two weeks—the larger the score the less negative the anxiety outcome and vice versa.	Last two weeks
	Depression and Anxiety (Both): Combined measure of depression and anxiety.	Last two weeks
Overall wellbeing	It was calculated by aggregating and standardizing all measures of life satisfaction, depression and anxiety, and locus of control.	N/A
Locus of control	Women's locus of control based on MAGNET. The range of our measure is from -27 to 9. A negative locus of control index shows a tendency to be external while a positive index is internal.	At the time of the interview
Child development index	Derived from the Caregiver Reported Early Development Index (CREDI) with a higher index indicating better child development outcomes.	At the time of the interview
Willingness to pay		At the time of the interview

4. SAMPLE CHARACTERISTICS

To verify that treatment and control households were comparable, APRI tested whether there were statistically significant differences between treatment (market and community) and control groups with respect to their baseline measures. Table 6 shows the balance for the analysis sample of women with baseline and endline (panel) measures. The first three columns show the means of women in the three different treatment groups (with standard deviations below in parentheses). The next three columns show differences between those treatment groups with stars indicating conventional levels of statistical significance for those differences. Table 7 is similarly constructed showing balance using baseline measures of the target child of each woman that responded to the endline survey.

The tests show that for the women that responded to the endline, three and two differences were statistically significant at the 10% level (marital status, time to the market, number of children living in the household, and hours spent on leisure) and at the 5% level (woman completed primary school and her last week's earnings), respectively. For the children, only two differences (being female and regularly attend daycare) and one difference (hours spent at daycare) were statistically significant at 10% and 5% levels, respectively. Overall significant tests make up 8% of tests conducted for women (Table 6: 5 out of 61 tests), and 13% of tests conducted for children (Table 7: 3 out of 24 tests). Therefore, balance across treatment groups on observable characteristics provides support that, indeed, the randomization was conducted appropriately. Also, the baseline balance across treatment groups using data from the endline survey appears to be satisfactory. Looking both at mother and child-level outcomes, the incidence of significant differences is in line with what we would expect due to pure chance.

Table 7: Balance of baseline characteristics for women (panel sample)

Variable	(1) Market Mean (SE)	(2) Community Mean (SE)	3) Control Mean (SE)	(1)-(2) Mean difference	(1)-(3) Pairwise t-test Mean difference	(2)-(3) Mean difference
Age	34.480 (0.615)	34.922 (0.585)	34.642 (0.508)	-0.442	-0.162	0.280
Marital status	0.508 (0.031)	0.545 (0.031)	0.567 (0.026)	-0.037	-0.059	-0.022
No education	0.059 (0.015)	0.058 (0.015)	0.048 (0.011)	0.001	0.011	0.010
Completed primary education	0.594 (0.031)	0.650 (0.030)	0.653 (0.025)	-0.055	-0.059	-0.003
Completed secondary education	0.094 (0.018)	0.086 (0.017)	0.091 (0.015)	0.009	0.003	-0.006
Household members	5.067 (0.113)	4.984 (0.127)	4.909 (0.098)	0.082	0.158	0.076
Children living in the household	2.949 (0.093)	2.946 (0.107)	2.839 (0.080)	0.003	0.110	0.107
Business owner	1.122 (0.021)	1.132 (0.021)	1.137 (0.018)	-0.010	-0.015	-0.005
Distance to market (in km)	3.395 (0.228)	3.463 (0.218)	3.978 (0.269)	-0.068	-0.583	-0.515
Time to the market (in minutes)	29.378 (1.462)	30.658 (1.361)	28.185 (1.061)	-1.280	1.192	2.472

Variable	(1) Market Mean (SE)	(2) Community Mean (SE)	3) Control Mean (SE)	(1)-(2) Mean difference	(1)-(3) Pairwise t-test Mean difference	(2)-(3) Mean difference
Hours spent on work-related activity (last 24 hours)	8.357 (0.231)	8.921 (0.229)	8.423 (0.191)	-0.564*	-0.066	0.498*
Hours spent on leisure (last 24 hours)	1.144 (0.104)	1.045 (0.103)	1.033 (0.084)	0.099	0.111	0.012
Hours spent doing childcare as primary activity (last 24 hours)	0.816 (0.065)	0.801 (0.069)	0.847 (0.057)	0.015	-0.030	-0.045
Hours spent doing childcare as primary and secondary activity (last 24 hours)	9.389 (0.375)	9.240 (0.394)	9.459 (0.318)	0.148	-0.071	-0.219
Hours spent on domestic work (last 24 hours)	2.030 (0.127)	1.967 (0.118)	2.118 (0.104)	0.063	-0.088	-0.152
Women's life satisfaction today (Cantril ladder)	3.134 (0.114)	3.342 (0.113)	3.231 (0.094)	-0.209	-0.097	0.111
Women's life satisfaction in five years (Cantril ladder)	5.925 (0.154)	5.872 (0.136)	5.935 (0.118)	0.054	-0.010	-0.064
Locus of control (MAGNET scale)	-0.015 (0.077)	0.026 (0.076)	0.028 (0.065)	-0.041	-0.043	-0.001
Last weeks costs (in 1000s UGX)	292.096 (27.025)	248.741 (21.427)	261.153 (19.507)	43.355	30.943	-12.411
Last week revenues (in 1000s UGX)	252.312 (25.649)	220.863 (21.005)	221.736 (18.041)	31.449	30.577	-0.872
Last week wage earnings (in 1000s UGX)	4.120 (0.831)	3.977 (0.707)	4.587 (0.715)	0.143	-0.468	-0.611

Variable	(1) Market Mean (SE)	(2) Community Mean (SE)	3) Control Mean (SE)	(1)-(2) Mean difference	(1)-(3) Pairwise t-test Mean difference	(2)-(3) Mean difference
Number of observations	254	257	372	511	626	629
Response Rate	91.0%	94.1%	88.6%	92.6%	89.6%	90.8%
Number of observations (CDI)	253	256	363	509	616	619
Response Rate (CDI)	90.7%	93.8%	86.4%	92.2%	88.1%	89.5%
Numbers of observations (Wage Earnings)	251	257	372	508	623	629
Response Rate (Wage Earnings)	90.0%	94.1%	88.6%	92.1%	89.5%	90.8%

*Notes: * $p < 0.1$, *** $p < 0.01$. Columns (1), (2), and (3) display the baseline means for the market-based childcare treatment arm, community-based childcare treatment arm, and the control group respectively, among participants in the midline survey. Standard errors are shown below the means in parentheses. The last three columns present the differences in means between these groups. The last six rows provide the total number of non-missing observations for all variables, revenues, and wage earnings, respectively. Revenues and earnings have been winsorized at the 99th percentile.*

Table 8: Balance of baseline characteristics for target child (endline respondents)

Variable	(1) Market Mean (SE)	(2) Community Mean (SE)	(3) Control Mean (SE)	(1)-(2) Mean difference	(1)-(3) Pairwise t-test Mean difference	(2)-(3) Mean difference
Female	0.559 (0.031)	0.521 (0.031)	0.487 (0.026)	0.038	0.072*	0.035
Child's age (in months)	26.004 (0.690)	26.327 (0.704)	27.559 (0.587)	-0.323	-1.555*	-1.232
Mother as primary caregiver	0.701 (0.029)	0.716 (0.028)	0.739 (0.023)	-0.015	-0.038	-0.023
Hours spent with the mother as primary caregiver (last 24 hours)	6.555 (0.394)	6.276 (0.403)	6.321 (0.331)	0.279	0.234	-0.045
Hours spent at childcare/nursery school (last 24 hours)	0.567 (0.129)	0.765 (0.149)	0.966 (0.137)	-0.198	-0.399**	-0.202
Days child spends at market (last week)	3.253 (0.205)	3.099 (0.195)	3.313 (0.169)	0.155	-0.060	-0.214
Regularly attend daycare (last week)	0.084 (0.019)	0.112 (0.021)	0.137 (0.019)	-0.027	-0.052*	-0.025
Child development index (CDI)	-0.033 (0.065)	0.007 (0.063)	-0.016 (0.048)	-0.040	-0.017	0.022
Number of observations	254	257	372	511	626	629
Response Rate	91.0%	94.1%	88.6%	92.6%	89.6%	90.8%
Number of observations (CDI)	251	251	362	502	613	613
Response Rate (CDI)	90.0%	92.0%	86.2%	90.9%	87.7%	88.5%
Number of observations (Days spent at market and Daycare)	225	233	329	458	554	562
Response Rate (Days spent at market and Daycare)	80.6%	85.3%	78.3%	83.0%	79.3%	81.1%

*Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Columns (1), (2), and (3) display the baseline means for targeted eligible children in the market-based treatment arm, community-based childcare treatment arm and control group, respectively for the entire sample. Standard errors are shown below the means in parentheses. The last three columns present the differences in means between these groups. The last six rows provide the total number of non-missing observations for all variables, the child development index, and the number of days spent at the market and the daycare, respectively.*

5. RESULTS

5.1 Empirical Strategy

Impacts of access to childcare are estimated using a regression model with outcomes measured during the endline. The primary analysis estimated the intention-to-treat impact of access to either of the childcare services using an Analysis of Covariance (ANCOVA) specification:

$$\text{outcome}_{it} = \beta 0 + \beta 1 \text{Childcare}_i + \beta 2 \text{outcome}_{it-1} + X_i + \psi m + \varepsilon \quad (1)$$

Where outcome$_{it}$ is one of a set of pre-specified outcome variables including women's time use, labor outcomes, measures of women's well-being, and child's well-being. Childcare$_i$ indicates if woman i, was randomly assigned to either of the treatment groups where $\beta 1$ is the coefficient capturing the effects of this access. Outcome$_{it-1}$ is the lagged dependent variable (where available), X_i are a set of individual controls chosen using double-selection LASSO for precision, and ψm are a set of market (strata) fixed effects. Standard errors are clustered at the individual level.

When assessing differential impacts of the two childcare models, the treatment was split into two separate groups in the following specification:

$$\text{outcome}_{it} = \alpha 0 + \alpha 1 \text{MarketCC}_i + \alpha 2 \text{CommunityCC}_i + \alpha 3 \text{outcome}_{it-1} + X_i + \psi m + \varepsilon \quad (2)$$

Where MarketCC$_i$ indicates if individual i, was assigned to the market-based childcare group and CommunityCC$_i$ will similarly indicate if that individual was assigned to the community-based childcare group. $\alpha 1$ and $\alpha 2$ capture the average treatment effects of these two treatment assignments respectively. Finally, when examining differential impacts by subgroups, the treatment assignment interacted with the relevant measure of heterogeneity along with the control variables.

5.2 Power Calculations

The final study sample (post-attrition) consists of a total of 883 total women who were randomly assigned to three groups: Control sample (372 women), Market-based childcare sample (254 women), and the Community-based childcare sample (254 women). This sample composition sufficiently powered the study to detect medium-sized effects of between 0.19 - 0.25 standard deviations. Power calculations suggest that we would be able to detect differences of 0.2 standard deviations when testing bundled

treatments against the control group (with power=0.8 and alpha=0.05), 0.23 standard deviations testing either of the treatments separately against the control group, and of 0.23 standard deviations when tested against each other as shown in panel A of Table 9. The top row shows a pooled analysis, putting both childcare groups together and testing against the control. The left column shows these results on this full sample of 883.

Panel B summarizes a set of key outcome variables to provide a sense of how big these standardized effect sizes are in practice. It shows the mean and standard deviation of some of our anticipated key outcome variables from the baseline. Using the standard deviation of these variables in Panel B and multiplying by the values in the standardized minimum detectable effect size in Panel A will show the size of change needed for different types of comparisons. Overall, the expectation was that we would be able to detect medium-sized effects. Whereas power was expected to be a little low when trying to contrast the market versus community childcare for some outcomes, nevertheless we are confident that we will be able to detect direct impacts on childcare and labor, and other meaningfully impacted outcomes. Power will improve with the addition of the lagged dependent variable as well as other key covariates as specified in the pre-analysis plan.

Table 9: Power Calculations

Panel A: Standardized Outcome Power Calculations		
Control v Bundled	0.18	
Control v Market	0.22	
Control v Community	0.22	
Market v Community	0.24	
Panel B: Main Outcomes		
Variables:	**Mean**	**SD**
Hours on Childcare (Last 24 hours)	9.34	6.15
Hours of Labor (Last 24 hours)	8.58	3.67
Hours on Domestic Work (Last 24 hours)	2.06	1.96
Hours of Leisure (Last 24 hours)	1.06	1.66
Earnings Last Week	38.90	30.25
Revenues Last Week	262.72	371.73
Wellbeing Outlook	2.69	1.92

Notes: Panel A shows minimum detectable standard effects assuming power=0.8 and alpha=0.05. Panel B summarizes a set of key outcome variables to provide a sense of how big these standardized effect sizes are in practice.

5.3 Effects on Key Outcomes

5.3.1 Take-up of childcare services

The respondents were asked about the childcare arrangements for the target children, including whether they had used non-nanny childcare services for the target child for the last six to eight months, the number of days they had used the childcare services in the preceding week, the hours they were either the primary or secondary caregiver for the target child over the previous weekday. Table 10 shows the effect of access to childcare services regardless of type (market or community-based childcare) on the take-up of childcare services and the primary respondent's childcare burden. Positive, statistically significant effects were registered for the use of childcare services and the number of weekly days childcare services are used. The estimates in columns 1 and 2 confirm that the interventions were used. Column 1 indicates a nearly 50 percentage point increase in the use of childcare. Column 2 shows that childcare was used on average for two additional days per week in the two treatment groups. The effects of access to childcare services on hours spent per day providing childcare whether as a primary or secondary caregiver was not statistically significant. Columns 3 and 4 suggest contrary findings to our expectations: despite greater use of childcare services, time spent caring for or being responsible for children did not change as we had anticipated. This could be attributed to two possible factors. First, is that the women were still responsible for the other children other than the selected child. Secondly, the women still felt responsible for their children while in the childcare facility at the market.

Table 10:Take-up of childcare services

	Use Childcare (1)	Weekly Days Used (2)	Hours Primary Childcare (3)	Hours Primary or Secondary Childcare (4)
Any child Treatment	0.491***	2.008***	0.087	-0.413
	(0.028)	(0.142)	(0.085)	(0.354)
Control Mean	0.22	0.97	0.075	7.24
Observations	883	883	883	883

*Notes: all regressions include controls for market fixed effects and the baseline value of the outcome. Additionally, the regressions control for covariates selected using Post-Selection Double LASSO (PDS LASSO). Standard errors are clustered at the individual level and reported below the coefficient estimates in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The control mean represents the mean value of the outcome in the control group at midline. Column (1) presents the results for the binary outcome indicating whether a woman used any childcare service within the past 6 or 8 months. Column (2) shows the number of days the target child attended a childcare center in the last week. Column (3) reports the self-reported total number of hours sent by the woman on childcare as*

their primary activity. Column (4) combines the self-reported time the woman spent on childcare as a primary and secondary activity. The primary activity time is calculated similarly to column (3), while the secondary activity time is based on self-reported hours on childcare during their waking hours, after completing the primary activities.

When the type of childcare was differentiated, the results show that the market-based arm increased use by 43 percentage points and the community arm increased use by 55 percentage points as shown in Table 11. Moreover, the coefficients are statistically different from each other. On hours spent on childcare, community-based increased hours spent as primary caregiver per day by 0.23 of an hour. However, community-based childcare reduced the hours spent per day as a primary or secondary caregiver by 0.77 of an hour. The effect of market-based childcare on hours spent as a primary and /or secondary caregiver per day were negative but not statistically significant. In general, take-up and childcare usage appear to be slightly higher in the community group than in the market group. Correspondingly, we also see a significant drop in the time spent per day as a primary caregiver as well as a marginally significant drop in the time spent per day on childcare in the community treatment group.

Table 11: Take-up of childcare services by treatment

	Use Childcare (1)	Weekly Days Used (2)	Hours Primary Childcare (3)	Hours Primary or Secondary Childcare (4)
Market	0.426***	1.700***	-0.038	-0.164
	(0.035)	(0.180)	(0.096)	(0.430)
Community	0.549***	2.298***	0.228**	-0.769*
	(0.033)	(0.175)	(0.106)	(0.403)
Control Mean	0.21	0.97	0.75	7.24
Market = Community	0.00	0.01	0.02	0.17
Observations	883	883	883	883

*Notes: All regressions include controls for market fixed effects and the baseline value of the outcome. Additionally, the regressions control for covariates selected using Post-Selection Double LASSO (PDS LASSO). Standard errors are clustered at the individual level and reported below the coefficient estimates in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The control mean represents the mean value of the outcome in the control group at midline. Column (1) presents the results for the binary outcome indicating whether a woman used any childcare service within the past 6 or 8 months. Column (2) shows the number of days the target child attended a childcare center in the last week. Column (3) reports the self-reported total number of hours sent by the woman on childcare as their primary activity. Column (4) combines the self-reported time the woman spent on childcare as a primary and secondary activity. The primary activity time is calculated similarly to column (3), while the secondary activity time is based on self-reported hours on childcare during their waking hours, after completing the primary activities.*

5.3.2 Impacts on Business Outcomes and Earnings

The business outcomes for the study are self-reported costs and revenues of the previous week and the profits are calculated by subtracting self-reported costs from self-reported revenues. The respondents were also asked to indicate their earnings from wages for the previous week and monthly income from employment and self-employment. The results shown in Table 12 show that there were no statistically significant effects of treatment on business outcomes and earnings.

Table 12: Impacts on business outcomes and earnings (UGX'000)

	Costs (1)	Revenues (2)	Profits (3)	Wage Earnings (4)	Earnings (5)
Any childcare Treatment	12.573 (26.403)	23.073 (28.793)	5.897 (6.895)	-1.199 (0.951)	27.654 (24.600)
Control Mean		283.28	2.09	3.63	304.45
Observations	883	855	855	880	819

*Notes: All regressions include controls for market fixed effects and the baseline value of the outcome. Additionally, the regressions control for covariates selected using Post-Selection Double LASSO (PDS LASSO). Standard errors are clustered at the individual level and reported below the coefficient estimates in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Costs, revenues, wage earnings, and earnings are winsorized at the 99th percentile, while profits are winsorized at the 5th and 99th percentile. All values are reported in thousands of Uganda shillings. Column (1) aggregates the amounts spent last week on buying products for resale, inputs for production, communication costs for business, labour payments, and market charges by self-employed women. Column (2) presents the self-reported earnings from the last week by self-employed women. Column (3) shows profits, calculated by subtracting costs from revenues. Column (4) reports last week's self-reported wages, including additional wages from commissions and tips earned by employed women. Column (5) displays the self-reported monthly income earned by both employed and self-employed women.*

When the type of childcare was differentiated, the results show that profits for women in the market group were UGX 13,422 higher, albeit marginally statistically significant as shown in Table 13. The effects of either type of childcare were not statistically significant for the other business outcomes and earnings.

Table 13: Impacts of treatment arms on business outcomes and earnings

	Costs (1)	Revenues (2)	Profits (3)	Wage Earnings (4)	Earnings (5)
Market	16.459 (30.732)	38.024 (34.722)	13.422* (8.133)	-0.841 (1.034)	23.049 (29.860)
Community	20.158 (29.023)	13.868 (30.504)	-0.281 (8.234)	-1.007 (0.867)	36.733 (29.410)
Control Mean	295.61	281.83	2.09	3.53	304.90
Market = Community	0.91	0.49	0.13	0.87	0.68
Observations	883	855	855	880	819

*Notes: All regressions include controls for market fixed effects and the baseline value of the outcome. Additionally, the regressions control for covariates selected using Post-Selection Double LASSO (PDS LASSO). Standard errors are clustered at the individual level and reported below the coefficient estimates in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Costs, revenues, wage earnings, and earnings are winsorized at the 99th percentile, while profits are winsorized at the 5th and 99th percentile. All values are reported in thousands of Uganda shillings. Column (1) aggregates the amounts spent last week on buying products for resale, inputs for production, communication costs for business, labour payments, and market charges by self-employed women. Column (2) presents the self-reported earnings from the last week by self-employed women. Column (3) shows profits, calculated by subtracting costs from revenues. Column (4) reports last week's self-reported wages, including additional wages from commissions and tips earned by employed women. Column (5) displays the self-reported monthly income earned by both employed and self-employed women.*

5.3.3 Impacts on Time use

Increased participation of women in the labor force is one of the hypothesized outcomes of access to childcare in this study. The study examined the effect of access to childcare on time spent on personal activities, transport/commuting, work-related activities, domestic activities, leisure, and sleep on the preceding weekday. The results in Table 14 show that access to childcare reduced the time spent on work-related activity by 0.55 of an hour. Given that childcare is usually done alongside other activities, this result suggests that access to childcare relieves the women who then can focus on work thereby reducing time taken to complete work-related tasks, hence increasing their efficiency.

Table 14: Impacts on time use

	Hours spent on:					
	Personal activity (1)	Transport (2)	Work-related activity (3)	Domestic activity (4)	Leisure activity (5)	A sleep (6)
Any childcare Treatment	0.119 (0.128)	0.096 (0.067)	0.551** (0.269)	0.124 (0.174)	0.047 (0.090)	0.038 (0.107)
Control Mean	2.79	1.02	8.90	2.28	0.61	7.57
Observation	883	883	883	883	883	883

*Notes: All regressions include controls for market fixed effects and the baseline value of the outcome. Additionally, the regressions control for covariates selected using Post-Selection Double LASSO (PDS LASSO). The control mean represents the mean value of the outcome in the control group at midline. Standard errors are clustered at the individual level and reported below the coefficient estimates in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Column (1) presents the time spent on personal activities, including washing, dressing, going out, and having a meal. Column (2) reports the time spent on travel. Column (3) presents the time spent on work related activities, such a work, study, job seeking, or related activities. Column (4) shows the time spent on domestic activities including housework, household tasks, or shopping. Column (5) reports the time spent on leisure activities, such as socializing, watching TV or listening to the radio, and playing sports. Column (6) presents the time spent sleeping, calculated from the self-reported time the woman wakes up and goes to bed.*

When differentiated by type of childcare, the results show that there was a slightly bigger reduction in time spent on work related activities (0.61 of an hour) for the market group compared to the community group (0.56 of an hour) although the results were marginally statistically significant at 10% level as shown in Table 15. On the other hand, hours spent on transport were about 0.17 of an hour higher for the community group while the change for the market group was not significant. This may suggest that women spent additional time dropping and picking up children in community-based childcare compared to those in market-based care. The effect of either type of childcare on time spent on personal activity, domestic activity, leisure, and sleep was not statistically significant.

Table 15: Impacts on time use

	Hours spent on:					
	Personal activity (1)	Transport (2)	Work-related activity (3)	Domestic activity (4)	Leisure activity (5)	A sleep (6)
Market	0.091 (0.152)	0.045 (0.075)	-0.608* (0.333)	0.174 (0.210)	0.155 (0.112)	0.146 (0.130)
Community	0.132 (0.156)	0.168** (0.081)	-0.557* (0.304)	0.068 (0.202)	-0.060 (0.104)	0.030 (0.121)
Control mean	2.80	1.02	8.90	2.28	0.61	7.57
Market = Community	0.81	0.13	0.88	0.64	0.07	0.19
Observations	883	883	883	883	883	883

*Notes: All regressions include controls for market fixed effects and the baseline value of the outcome. Additionally, the regressions control for covariates selected using Post-Selection Double LASSO (PDS LASSO). The control mean represents the mean value of the outcome in the control group at midline. The p-values shown for the market = community test the null hypothesis of equal treatment effects between the market and community intervention arms. Standard errors are clustered at the individual level and reported below the coefficient estimates in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Column (1) presents the time spent on personal activities, including washing, dressing, going out, and having a meal. Column (2) reports the time spent on travel. Column (3) presents the time spent on work related activities, such a work, study, job seeking, or related activities. Column (4) shows the time spent on domestic activities including housework, household tasks, or shopping. Column (5) reports the time spent on leisure activities, such as socializing, watching TV or listening to the radio, and playing sports. Column (6) presents the time spent sleeping, calculated from the self-reported time the woman wakes up and goes to bed.*

5.3.4 Impacts on Women's Wellbeing and Child Development

Improved women's well-being and child development were also hypothesized as primary outcomes in this study. The study used several measures to assess women's wellbeing namely, overall well-being, life satisfaction, anxiety and depression, and locus of control. The recall period for well-being measures was the two weeks preceding the interview. Child development was assessed using an Early Child Development Index (ECDI2030), developed by UNICEF to track progress and capture the achievement of key developmental milestones by children between the ages of 24 and 59 months. The results in Table 16 show that access to childcare improved women's overall well-being, life satisfaction today, and in 5 years by 0.14 standard deviations, 39 percentage points and 26 percentage points respectively. It also increased the child development index by 18 percentage points. The effect of access to childcare was positive but not statistically significant for anxiety and depression, and

locus of control.

When the type of childcare was differentiated, the results show that overall well-being increased by 0.16 standard deviations in the community group but the increase in the market group was not statistically significant as shown in Table 17. On the other hand, the market group registered a 52 percentage points increase in life satisfaction today and a 30 percentage points increase in life satisfaction in five years. The change in life satisfaction for the community group was not statistically significant. On anxiety and depression (the larger the score the less negative the anxiety outcome and vice versa), there was a reduction in anxiety and depression in the community group. The change in anxiety and depression was not statistically significant for the market group. Also, the effect of either type of childcare on locus of control was not statistically significant.

Access to community-based childcare improved the child development index by 24 percentage points but the effect of market-based care on the child development index though positive was not statistically significant.

Table 16: Impact on women's well-being

	Overall wellbeing	Women's Life Satisfaction			Anxiety and Depression			Locus of Control	Child development index
	(1)	Today (2)	In 5 years (3)	Difference (4)	Depression (5)	Anxiety (6)	Both (7)	(8)	(9)
Any childcare Treatment	0.142** (0.061)	0.393*** (0.150)	0.259** (0.113)	0.124 (0.123)	0.175 (0.120)	0.123 (0.121)	0.317 (0.222)	0.036 (0.095)	0.181** (0.072)
Control mean	-0.01	6.22	3.42	2.79	-2.70	-2.81	-5.51	-0.02	-0.10
Observations	883	883	883	883	883	883	883	872	741

*Notes: All regressions include controls for market fixed effects and the baseline value of the outcome. Additionally, the regressions control for covariates selected using Post-Selection Double LASSO (PDS LASSO). The control mean represents the mean value of the outcome in the control group at midline. The p-values shown for the market = community test the null hypothesis of equal treatment effects between the market and community intervention arms. Standard errors are clustered at the individual level and reported below the coefficient estimates in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Column (1) presents the overall wellbeing index for women, calculated by aggregating and standardizing all measures of life satisfaction, depression and anxiety, and locus of control. Column (2), (3), and (4) presents the overall women's life satisfaction, measured using Cantril's Ladder questions from the survey. Column (5), (6), and (7) present the depression and anxiety index, measured using the Patient Health Questionanaire-4 (PHQ-4), all values in these columns have been flipped to negative, with larger (less negative) values indicating more positive outcomes. Column (5) displays the depression measure, where women rank on a scale of 1 to 4 how often they feel depressed or have little interest in doing things. Column (6) presents the anxiety measure, where women rank on a scale of 1 to 4 how often they feel anxious or unable to control worrying. Column (7) shows the combined measure of depression and the anxiety. Column (8) present the women's locus of control, based on questions from MAGNET. Column (9) presents the childcare development index, derived from the Caregiver Reported Early Development Index (CREDI), Early Childhood Development Index 2030 (ECDI2030), and Anchor Items for Measurement of Early Childhood Development (AIM-ECD) index.*

Table 17: Impact of different treatments on women's well-being

	Overall wellbeing	Women's Life Satisfaction			Anxiety and Depression			Locus of Control	Child development index
	(1)	Today (2)	In 5 years (3)	Difference (4)	Depression (5)	Anxiety (6)	Both (7)	(8)	(9)
Market	0.102 (0.071)	0.524*** (0.172)	0.2303** (0.136)	0.202 (0.143)	0.137 (0.144)	-0.019 (0.144)	0.022 (0.265)	-0.005 (0.113)	0.131 (0.085)
Community	0.164** (0.071)	0.216 (0.180)	0.167 (0.131)	0.019 (0.148)	0.315** (0.138)	0.249* (0.140)	0.582** (0.255)	0.080 (0.109)	0.242*** (0.084)
Control mean	-0.00	6.22	3.42	2.79	-2.70	-2.81	-5.51	-0.02	-0.10
Market = Community	0.39	0.10	0.34	0.24	0.06	0.08	0.04	0.46	0.21
Observations	883	883	883	883	883	883	883	872	741

*Notes: All regressions include controls for market fixed effects and the baseline value of the outcome. Additionally, the regressions control for covariates selected using Post-Selection Double LASSO (PDS LASSO). The control mean represents the mean value of the outcome in the control group at midline. The p-values shown for the market = community test the null hypothesis of equal treatment effects between the market and community intervention arms. Standard errors are clustered at the individual level and reported below the coefficient estimates in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Column (1) presents the overall wellbeing index for women, calculated by aggregating and standardizing all measures of life satisfaction, depression and anxiety, and locus of control. Column (2), (3), and (4) presents the overall women's life satisfaction, measured using Cantril's Ladder questions from the survey. Column (2) indicates current life satisfaction, Column (3) indicates life satisfaction projected for 5 years, and Column (5) shows the difference between the two. Column (5), (6), and (7) present the depression and anxiety index, measured using the Patient Health Questionanaire-4 (PHQ-4), all values in these columns have been flipped to negative, with larger (less negative) values indicating more positive outcomes. Column (5) displays the depression measure, where women rank on a scale of 1 to 4 how often they feel depressed or have little interest in doing things. Column (6) presents the anxiety measure, where women rank on a scale of 1 to 4 how often they feel anxious or unable to control worrying. Column (7) shows the combined measure of depression and the anxiety. Column (8) present the women's locus of control, based on questions from MAGNET. Column (9) presents the childcare development index, derived from the Caregiver Reported Early Development Index (CREDI), Early Childhood Development Index 2030 (ECDI2030), and Anchor Items for Measurement of Early Childhood Development (AIM-ECD) index.*

5.3.5 Willingness to pay for childcare services

The respondents were asked to indicate how much they would pay to enroll a child into a care facility with specified amenities for a three-month term. The results show that the effect of access to any form of childcare increased willingness to pay for childcare by UGX 11,338 (USD 3) as shown in Table 18. When the type of childcare was differentiated, the community group registered a UGX 16,670 (USD 4.6) increase in willingness to pay. The effect of market-based childcare was not statistically significant. Given that the control mean on willingness to pay was UGX 104,465 (USD 28.6), it is reasonable to say that it is affordability at play here. The baseline showed that the average weekly revenues for the women was UGX 244,400 (USD 67). Thus, these are low-income earners who can hardly afford the UGX 450,000 (USD 123) per term provided for community-based childcare under this study.

Table 18: Effects on willingness to pay for childcare (UGX)

	(1)	(2)
Any childcare Treatment	11338* (5965)	
Market		5922 (7643)
Community		16670** (6606)
Control mean	104,465	104,465
Market = Community		0.17
Observations	876	876

*Standard errors in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01*

6. CONCLUSION

In this report, we present findings from an RCT that offered businesswomen working in markets who had a child aged eight months to four years either, eight months of childcare for the selected child in the market where they work or a bursary to enroll the selected child in a preferred childcare facility in the community for at least two school terms. A third group of businesswomen remained as the control group. The study design was beset with two challenges firstly individual randomization meant that women were aware of the lottery outcomes of others. While a clustered randomization could have been cleaner, it was not feasible in this urban market setting and given the large, fixed costs of setting up childcare centers in each market. Secondly, was that the business performance measures were especially noisy, and thus in later rounds we switched to other commonly used approaches that have shown to be more effective such as aggregation instead of line-by-line accounting. The findings of this study nevertheless confirm some of the effects of childcare reported by studies in Uganda and elsewhere.

We find that access to childcare increases take-up and usage of childcare services by businesswomen working in markets with slightly higher uptake for community-based childcare. This finding is in line with a study by Ajayi et. al (2022) in Burkina Faso use of childcare services in communities where childcare centers were newly set up was found to increase use of the service by 37%. Interestingly, while access to childcare reduced, time spent by the women caring for the target child, women in the community group spent more time as primary caregivers. This may be due to additional time spent preparing the child for school in the community compared to market-based childcare where they were not required to pack eats for the children.

Surprisingly, the findings show that access to any form of childcare reduced the time women spent on work-related activities. Given that childcare is usually done alongside other activities, access to childcare enabled women to concentrate on work, making them more efficient (completing work related activities in less time). This finding agrees with a study by Bjorvatn et al. (2022) in Uganda which attributed the increased income effect of access to childcare to increased women's productive time. The effect of childcare on most business outcomes was not statistically significant except for profits in the market group which were still small and only marginally significant. It is important to note that the Bjorvatn study also involved the provision of cash vouchers which was not present

in this study. Furthermore, the findings show that access to childcare had a positive effect on the overall well-being of the women and life satisfaction. The two studies cited above also found positive effects of childcare on women's wellbeing. Bjorvatn et al. found that access to childcare increases the mother's happiness and satisfaction with life while Ajayi et al. found evidence of some improvements in the mental health of the women. The positive effects on child development too are in line with the two studies cited here whose findings showed improvements in child development from access to access to childcare.

Finally, while the effects of access to childcare on willingness to pay were positive, they were small in real terms (USD 3). While we attribute this to affordability, Bjorvatn et al. attribute the unwillingness to spend on childcare by families to lower immediate returns in income than the cost of formal childcare. They argue that to families, the substantial effects on child development can only bring long-term benefits.

This paper offers further evidence of multiple benefits of offering women childcare-economic (though noisy), psychosocial, and child development. While these findings demonstrate the value proposition of providing childcare for women working in markets, the low amounts they are willing to pay cannot cover the costs of this service unless it is highly subsidized. Scaling up childcare services will certainly require the provision of space in the markets at non-commercial fees, and contributions from market fees in addition to user fees.

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