

Improving Childcare Quality through Social Franchising: A Pre-Results Review Report Proposal

November 14, 2024

Abstract

Childcare quality is important for children's development and parental labor market outcomes. However, in low-income settings there is little regulation of the childcare industry, raising concerns about child safety and health. In this project, we partner with a social enterprise dedicated to improving childcare quality through training and facility improvements. We randomize their entry into 51 communities across 11 counties in urban informal settlements of Kenya. Using a sample of 978 providers, we test whether childcare quality improves, whether providers revenues change in response to quality, and whether daycare enrollment changes 12, and 24 months after entry. We combine those three rounds of firm data with data from 2,820 households with small children to examine the effect of improving childcare quality on household labor force participation and children's development. This study informs whether a social-franchising model can improve childcare quality and improve child well-being in settings with limit regulation.

Keywords: childcare, daycare, quality, profits, microenterprise, labor supply, child development

JEL Codes: J13, D1, D4, O12

Study Pre-Registration: This study will be pre-registered in the AEA registry prior to the collection of post-intervention data.

Publication Timeline

If accepted to the JDE pre-results review, our results will be published after the collection and cleaning of the endline data. This date is tentatively scheduled for October 2026.

1 Introduction

Access to high-quality paid childcare (“daycare”) is central to advancing women’s economic and social agency while also promoting child development.¹ However, in many low and middle-income countries, high-quality daycare is unavailable. In Kenya, where our study takes place, the quality of daycare provided in the unregulated private sector is often of poor quality, while also expensive for low-income households. High quality, affordable daycare may be under-supplied by caregivers due to inadequate training and information, limited access to financing, high operational costs, and a lack of regulations and oversight on industry safeguards. Furthermore, societal norms to look after children may create pressure for providers to provide care despite late or missing payments from families. These structural supply-side challenges are compounded by notoriously low profits in the industry as a whole (Blau, 2001). As a result, providers may not have sufficient profits to regularly invest in improving their business quality, and may also live in poverty themselves. On the demand side, parents may either struggle to afford high-quality daycare, or else be unable to observe daycare quality; they may also lack information about best practices (Devercelli and Beaton-Day, 2020a).

In this paper, we analyze a potential solution to the challenge of improving daycare quality in low-income areas and measure the subsequent downstream effects on providers and families. We partner with a Kenya-based social enterprise that provides training and support to childcare providers in informal settlements across urban areas in Kenya. Our partner recruits owners of existing daycare centers and schools and provides training, mentorship, and quality assurance. Firms that complete the training and meet data quality standards are invited to become franchise owners, for which they will pay a monthly fee scaled to their firm size. These firms also receive capital improvements worth approximately \$200, plus regular feeding support for the children they serve.

We conduct a clustered randomized evaluation in 51 communities spread across 11 counties of Kenya to evaluate the impacts of this social franchising model. Specifically, we randomize the entry of our partner organization into the communities and assess the impacts on both the supply and demand for daycare.

In this document, we pre-specify and outline our hypotheses, data collection and analysis plan. For providers, we examine the impact on daycare quality, enrollment, and revenues as our primary outcome measures. For providers also we examine a rich set of secondary outcomes ranging from profits, provider agency, and pride in profession. For households, we similarly include a rich set of secondary outcomes including impacts on labor force participation, employment of caretakers, and select measures of child development. We also leverage our research design to look at market-level impacts, specifically firm entry and exit, and subsequent impacts on the market from the emergence of high-quality competitors. We will follow up with firms in mid-2025, approximately 6 months after completion of the training , to measure the impact of the program on profits and quality. We

¹Throughout this paper, we refer to market-provided care as “daycare,” rather than “childcare” which we think of as also including unpaid care provided by household members.

will conduct a second follow-up with firms and households in mid-2026, approximately 18 months after completion of the training, to measure the program impacts on longer-term firm outcomes as well as child development and household employment outcomes.

This project makes three contributions to the literature. First, this study causally identifies whether a non-governmental approach can improve the quality of private sector daycares and how providers adjust other firm operations when their quality improves. The large literature on microenterprises has focused on finding policies and interventions that increase profits, firm size, and business practices, such as capital grants (De Mel et al., 2013; Fiala, 2013), mentorship (Brooks et al., 2018; McKenzie and Puerto, 2021), business training (Bakhtiar et al., 2022; McKenzie et al., 2021), or consulting (Bruhn et al., 2018; Anderson and McKenzie, 2020).² There is comparatively less work on programs to improve the *quality* of privately-provided services in low-income settings. We fill that gap by collecting a rich set of data measuring the quality of daycare firms and testing a way to improve it in a market of substantial importance for both families and stakeholders.³ Furthermore, the nature of our setting identifies whether the social franchising model can improve profitability and other related outcomes specifically for female entrepreneurs. This project adds more nuance, as home-based daycare is also often devalued as “women’s work”; the training and professionalization that are part of this intervention may also have non-financial benefits to entrepreneurs, such as improved confidence and pride in their businesses. We hypothesize that the capital grant and intensive training may help home-based daycare providers, who themselves often remain in poverty (Howard et al., 2020). Thus, this study contributes to our understanding of how vulnerable women’s self-esteem may respond to an increase in the quality of their service, the training and professional support they receive, and profits, adding to the evidence on the emotional and psychological roles of work that are only recently being explored by economists (Hussam et al., 2022).

Second, this project contributes new information on how competitors respond to quality improvements in a market. While economists typically assume quality and price are positively correlated, the introduction of quality competition can result in theoretically ambiguous effects on market prices and quality (Gaynor and Town, 2011). In particular, new firms may lower quality as they lower prices in a “race to the bottom”, which may also accompany market segmentation into “high quality” and “low quality” firms. Alternatively, lower-quality firms may decide to exit, reducing overall market availability. Previous empirical work has found that the introduction of a new competitor leads to lower prices and higher service quality (Busso and Galiani, 2019). However, the nature of childcare, and the accompanying challenges for parents of observing higher quality provision, may lead to different outcomes. Other work on improving firm quality via training and mentorship found little spillover effects onto competitor firms (McKenzie and Puerto, 2021). Thus, our study provides novel and rare empirical evidence on how firms adjust operations to quality improvements and how their competitors respond.

²See Jayachandran (2021) or Quinn and Woodruff (2019) for a more extensive summary of the literature.

³For example, in Kenya, where our study takes place, children-to-staff ratios in preschools are frequently over 30:1 (Devercelli and Beaton-Day, 2020b).

Third, this study provides new evidence on how access to childcare affects parents. Affordable, high-quality daycare is out of reach for many parents in both high- and low-income settings (Neuman and Powers, 2021). Given the lack of options, mothers typically work shorter hours or bring their children to work, a pattern correlated with lower earnings (Delecourt and Fitzpatrick, 2021; Delecourt et al., 2022). Similarly, existing research has shown that providing daycare—either through subsidies or creating new centers—improves maternal (and paternal) earnings (Bjorvatn et al., 2022; Ranganathan and Pedulla, 2018; Cascio, 2009; Donald et al., 2023). A recent study by Clark et al. (2019) from the same setting as ours found that a free voucher for childcare increased household earnings by 8% and also encouraged mothers to switch to occupations for which it was difficult to bring along their children. However, in many markets the challenge is not simply creating new facilities but also improving the quality of care that the children already being served receive. Improving public sector quality has been shown to have substantial benefits for children, especially disadvantaged children (Andrew et al., 2024). However, improving private sector quality without direct government intervention may be more challenging and raises concerns about its sustainability. In settings where the private sector is already present and government services are limited, such impacts may be substantial, as mothers in focus groups consistently report that the quality, not only the price, of daycare is a barrier to enrolment. Thus, whether improving the quality of the private sector can achieve similar observed benefits remains unknown.

Fourth, our study will contribute new information to the growing literature on the effects of daycare for children. Investments in early childhood education have been shown to increase a variety of longer-term outcomes ranging from the likelihood of having a bank account to voting to completing high school (Heckman and Karapakula, 2019; Cohodes and Feigenbaum, 2021; Gray-Lobe et al., 2021; Bartik, 2022). Yet, some studies have found that participation in childcare harms children (Baker et al., 2008), or that the benefits fade out over time (Jakiela et al., 2024), suggesting that the quality of care received is crucial for children to receive and maintain its benefits. Our study empirically identifies the impact of higher-quality childcare for children in a vulnerable population.

2 Intervention

We evaluate an existing intervention designed to improve daycare quality in informal settlements in Kenya by establishing a network of vetted and supported childcare centers in these areas. In its normal operations, the partner organization identifies communities that it will enter according to need, safety, and other viability considerations. Together with local workers, it canvases the chosen communities and invites all eligible daycare providers to a free, half-day workshop in which they introduce their social enterprise model to attendees (owners, principals, or teachers) and explain their program, which involves training, nutritional support, and capital transfers.

After this half-day introduction, interested daycare owners can opt to participate in a three-day training for a fee of 200 KES (USD 1.50).⁴ This training includes lessons in effective early

⁴We use the average exchange rate from March–May 2024, \$1 USD = KES 132.76, when converting from Kenyan

educational practices as well as topics related to business and transforming the self-image of the daycare owners and directors (largely women in this context) from childminders to professional caregivers, as the aim of this program is not only to improve but also professionalize daycare services. Following this short training, those who decide they want to continue onto being a franchisee pay an additional fee of 1000 KES and join a mentoring program that lasts three months, during which they receive regular visits from mentors and can opt to participate in additional childcare professional development sessions. The mentoring and training cover a wide variety of topics including (but not limited to): provider-child interactions, safety and health (WASH) training, business training and bookkeeping, and teaching and learning materials. For example, providers in the program will gather in their with their mentor and learn to make homemade books for the children to use out of cardboard and other readily available materials. Daycare providers also learn to leverage items like stacking cups and bottle tops as low-cost teaching and learning materials.

Following the three-month program, owners who meet quality standards may choose to become a franchisee, which they can advertise to the community. They receive a one-time capital-improvement grant used to improve the physical characteristics of their establishment to ensure that it is safe and hygienic.⁵ This grant is worth approximately US\$200. Owners also receive a smartphone with the partner’s app, and continued mentoring and support from a person from within their own community hired to fulfill that role; this individual works to ensure best practices, answer questions, and generally support the owner. To receive continued mentoring and support and continue to display the franchise logo, they must pay a franchise fee of KES 500–1500 per month (USD 4–11.50), depending on the number of children served. This fee is not payable during school breaks, and our implementing partner has noted that the requirement has not been strictly enforced; only approximately half of providers regularly pay fees on time.⁶

Workshop

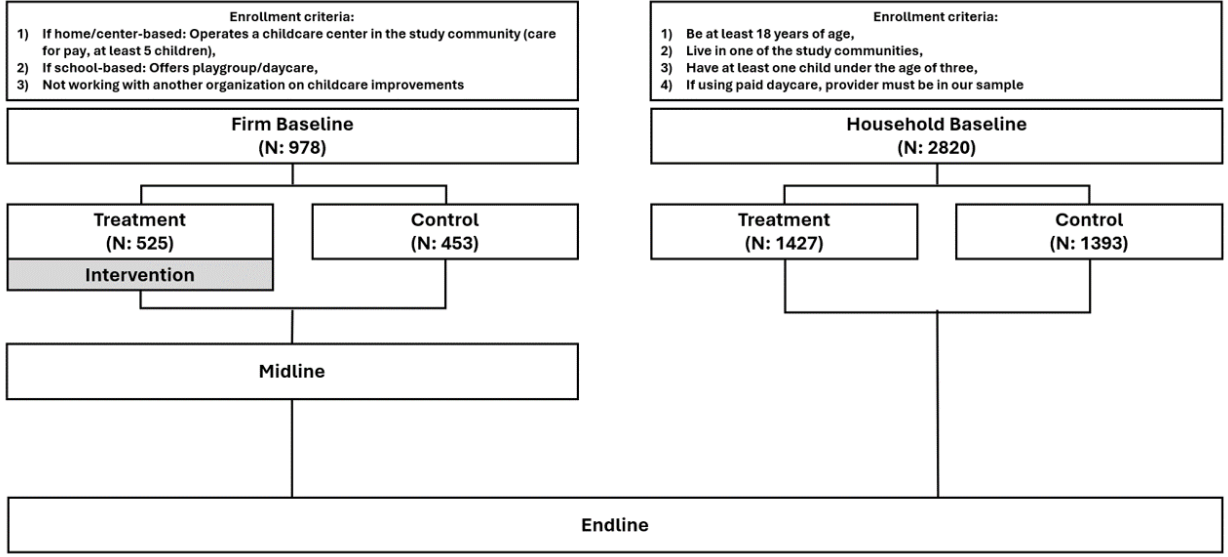
According to our implementation partner, the take-up rate of the social franchise (i.e., participating in the training program and ultimately opting to become a franchisee) among daycare providers in the areas they currently operate is between 30–50%, as center owners can choose to join the franchise or not. To increase statistical power, as well as identify the counterfactual likely enrollees in the control group, our partner organization agreed to conduct a half-day workshop in both treatment and control groups in May 2024. In control groups, this workshop covered “responsible caregiving and the role of a caregiver,” a topic that was selected to be relevant to participants and worth their time but not in sufficient depth in such a short time to lead to longer-term outcomes and

Shillings to USD (OANDA, 2024).

⁵For example, as part of their capital improvement grant, our partner may facilitate the building of a changing table and create a separate location for diapering. Alternatively they may erect barriers to keep children away from kitchen areas or open flames used during meals. The exact improvement will vary depending upon the needs and the status quo of a particular provider.

⁶In collaboration with our implementing partner, we opted to have them treat the study centers the same as their other member centers for purposes of enforcement, as we felt it would be most useful to learn about the effects of the program as it currently exists.

Figure 1: Study Design Figure



because our implementation partner also includes this topic within its regular training program. In treatment communities, our partner delivered its usual half-day workshop, introducing participants to its program, including mission, values, and offering an overview of the training and mentorship program. In both cases, the workshops were delivered inside the community to all interested center owners or managers, lasted half a day, and was free. In total, just over 800 caregivers (83%) in our sample participated in these activities. We will use this group who participated in these half-day workshops as a subsample of “Likely program takers” in both treatment and control groups (see empirical strategy, below).

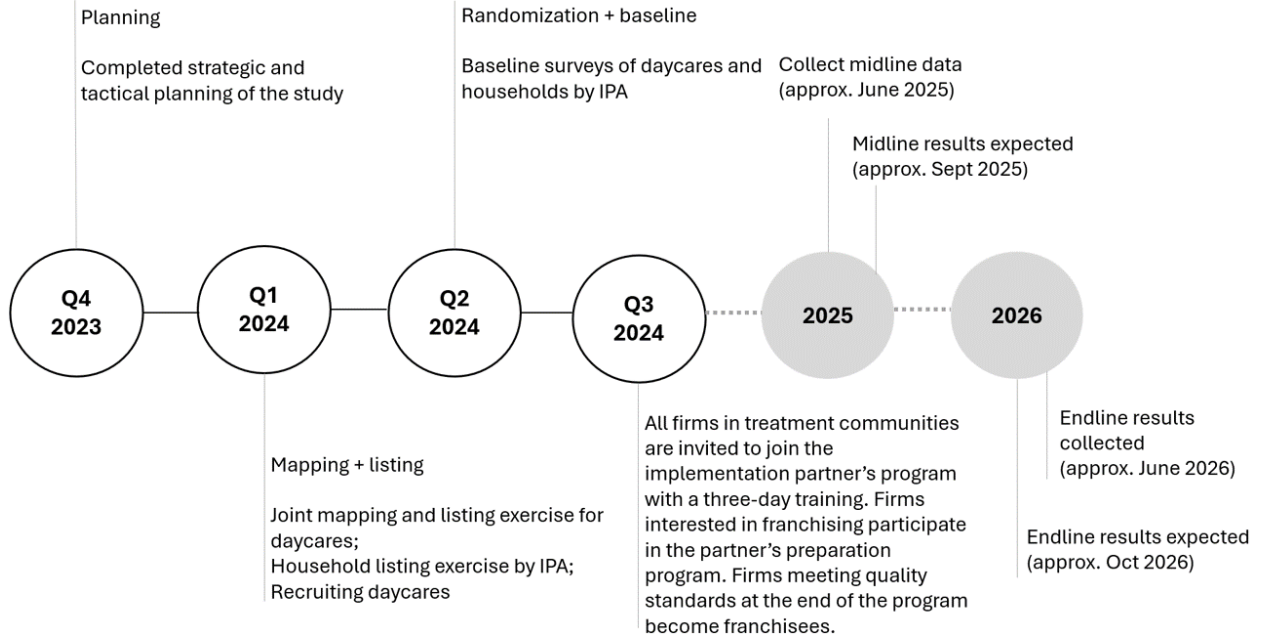
3 Evaluation design

3.1 Methodological Framework

To evaluate the impact of improved childcare quality, we design a clustered randomized controlled trial (RCT), where each cluster is a community. We define “community” in our evaluation as a contiguous geographic area within an informal settlement. The RCT described below includes 51 communities across 11 counties that our partner organization identified in 2023 as communities they would be interested in serving and willing to enter.

For this study, we define a daycare provider as any entity caring for at least five children aged 3 and under and charging a fee for at least some of those children. These include home-, center-, and school-based providers. We present our study design graphically in Figure 1; our study timeline is in Figure 2.

Figure 2: Study Design Timeline



3.2 Theory of Change

We hypothesize that due to training, mentorship, and a grant that improves the quality of infrastructure, our partner organization will directly improve the quality of daycare provided through improved safety, sanitation, child engagement, and the provision of food. Profit-maximizing providers will then increase prices. Parents will feel more comfortable sending their children to these providers, and enrollment at these facilities will also increase despite increased rates.⁷ As a result, revenues and profits will increase. We hypothesize that part of this response may reflect increased market segmentation. As this is a low-income, highly price-sensitive setting, some parents may be unwilling or unable to pay for the quality improvements. Thus, competitors who have not become franchisees might not improve quality and instead compete on price.

For households, we hypothesize that as a result of the increased availability of high-quality daycare in their area, they will be more likely to enroll their child in daycare or increase their use of daycare. With this, parents will be more likely to work; will work more hours; and will earn more money, partly as a result of switching occupations from casual day labor to more regular jobs. We also hypothesize that child development will improve due to a combination of improved feeding; improved stimulation; and improved parental income. Parents who are priced out of the improved daycares may continue to use the non-franchisee providers.

Because the childcare sector is largely informal, parents may have limited information about how care quality differs between centers and which centers offer high-quality care. Thus, how quickly information regarding improved quality spreads through the market is an open question. We will

⁷The effect on student-caretaker ratios will depend on whether firms are currently operating at capacity or not.

specifically seek to measure the attributes that households value in earlier rounds to determine early-on if households indeed have a willingness to pay for quality, and whether they are aware of any high-quality providers in their area.

3.3 Hypotheses

3.3.1 Primary Hypotheses

The following hypotheses are central to our study and we have designed our study to detect changes in the following outcomes:

1. **HA1. The social franchising model will improve daycare quality**, where quality is defined according to different taxonomies below:

Daycare quality is a multi-dimensional aspect of substantial importance to the study and its conclusions. We define several sub-indices of daycare quality following Anderson (2008); we will also combine them into one aggregate “Firm quality index.”

- **Hygiene and Safety Index** (Questions H04, H20, and M03). This index encompasses several key dimensions, including the presence of a basin or sink for handwashing, a jug or bottle for handwashing, a first-aid kit or box, potties for toilet training, a changing table or diapering area, and mattresses or mats for napping.
- **Infrastructure Index** (Questions H04, L011/L011a, and K05). This index includes key elements such as the availability of electricity, the presence of light fixtures or bulbs, fans, the predominant floor material in the main dwelling unit, and the number of windows in the room.
- **Toys and Manipulatives Index** (Question H05). This index covers the types of toys and manipulatives available to children at the facility.
- **Childcare Experience Index** (Questions H01, H02, H03, H07, K07, and H04). This index covers various aspects of the childcare environment, including whether children follow a daily schedule, if caregivers sing songs or read to the children, the presence of a posted schedule or timetable, the availability of an outdoor play area, and the presence of wall decorations.

2. **HA2. The social franchising model will increase the number of children served and provider revenue.**

The number of children served will be measured based on asking each firm how many children attended their center in the past 7 days.

Firm revenue (Questions Q1, Q2, and Q3) will be calculated using the number of children in attendance for each day of the week, rates charged (which may vary by length of time; age; payment compliance rate, and additional fees received).

We log and winsorize revenue at the 99th percentile.

3.3.2 Secondary Hypotheses

We also plan to examine the following hypothesis, although our study is not specifically powered to detect these changes:

1. **HB1. The social franchising model will have spillover effects onto competing providers**, as measured by market entry (or exit), as well as the total number of children in attendance, aggregated to the community level

2. **HB2. The social franchising model will increase provider profits**

We will also measure impact on **profit** but note that this is a secondary outcome because we expect considerable imprecision in costs, particularly for school-based centers, for which it is harder to think of or calculate the marginal cost of just the daycare/ playgroup classrooms.

We log and winsorize profits at the 99th and 1st percentile, and we log and winsorize costs at the 99th percentile.

3. **HB3. The social franchising model will increase provider agency and pride in profession:** : We will create an index of variables related to agency and empowerment. These include whether the respondent thinks that running a daycare is more respected in their community than all other competing common sources of female entrepreneurship (selling chapati or styling hair, D03 and D04); questions on self-efficacy and social standing (D08-D09) as well as a ladder question (D18).

4. **HB3. The social franchising model will increase household usage of childcare.**

Household’s daycare use, extensive margin: Whether a child under age 4 (up to 47 months) ever attended daycare (regardless of type) school in the past 30 days (Question G3).

Household daycare use, intensive margin: Number of days a child under age 4 attended a daycare center or school in the past 30 days (Question G10).

5. **HB4. The social franchising model will increase maternal employment and household earnings**, as measured by the labor market activities module.

Primary caregivers’ labor supply, extensive margin: This variable is measured by whether child’s primary caregiver has worked for pay in the past 7 days. This could include (a) working for wages/salary (including domestic and farm work) (Question F1); (b) working on a business/income-generating activity they own or operate (Question F5); and/or (c) helping on a business or income-generating activity that someone else owns or operates (Question F9). The child’s primary caregiver is self-designated by the respondent to the household survey at baseline.

Primary caregivers’ labor supply, intensive margin: Number of hours child’s primary caregiver worked for pay in the past 7 days, summed across the above 3 categories (Questions F3, F7, and F11). We plan to include this variable both a) imputing zeros for households

that are either unemployed or not in the labor force; conditioning values among households that are employed.

Primary caregivers’ earnings over the past 30 days (Question F4 and F8). We calculate a caregiver’s total earnings by adding together their income from employment and their income from running their own business.

6. **HB5. The social franchising model will increase select measures of child development**, as measured by caregiver-reported benchmarks across several domains.

Child development outcomes, as measured through caregiver-reported responses. Note that these measures were not collected at the time of the baseline survey. We will file an amendment to the pre-analysis plan once the post-intervention household survey scheduled for June 2026 is appropriately piloted.

3.4 Data and Sample

In this section, we outline how we defined a community, the unit of randomization. We next explain how we selected daycare owners to participate in the provider survey, and how we selected households to participate in the caregiver survey.

3.4.1 Boundary Mapping Communities and Listing Daycares

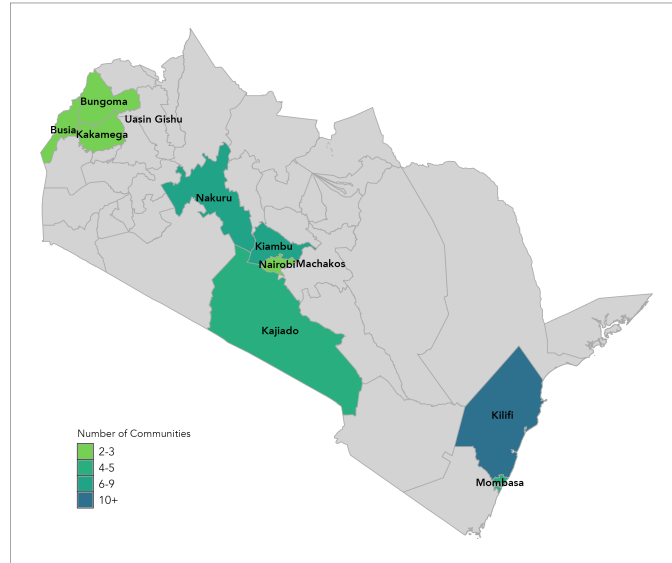
In 2023, our implementation partner identified 55 potential neighborhoods for entry. However, while the general neighborhoods of informal settlements are known, there are no clear administrative boundaries. Thus, for purposes of this study we conducted an exercise to delineate the boundaries of each “community” with the support of local community health providers, local leaders, and our partner organization. This exercise was done in January 2024 by walking in each neighborhood, using GPS to trace polygon boundaries of the communities. The end result is a set of maps that delineate each community’s boundary in our study; each of these bounded areas is a community in our study.

Once the mapping was complete, we canvassed the mapped communities to create a census of all daycare providers in each community that serve children ages 3 and younger.⁸ These providers are further distinguished between (1) home- and center-based providers and (2) school-based providers. In the latter group, daycare/ playgroup classrooms are offered within a school that also serves kindergarten and primary school students.

Through this phase, communities were jointly screened by our partner and field staff for our study primarily on the basis of security and enumerator safety. Additionally, our partner organization required approximately 10 daycares to operate in a community in an effort to make the

⁸As these are informal providers working in informal settlements, there are no administrative lists that could be used to develop the sample frame. Instead, there was extensive engagement with local stakeholders to ensure that we found all providers operating in the area. In instances where there were additional daycare providers found through the workshops (see “Workshop” section above), we reconciled data to ensure that new providers were in fact within the community boundary and that they did meet the study criteria.

Figure 3: Number of study communities, by county



intervention's costs sustainable.⁹ Thus, some candidate communities were either excluded from the study or combined with nearby communities to meet the minimum requirement for operations per area. Finally, we ensured that many daycare providers within the community were not already receiving benefits from any other care-focused NGO.¹⁰ The result of this process is 51 communities suitable for randomization. Prior to randomizing at the community level, we conducted baseline surveys of both firms and households, as described in the next section.

⁹Four communities did not have a sufficient number of eligible daycare providers but were otherwise suitable. We randomized these 4 communities to treatment or control groups within their own strata, and will follow up with them if our partner decides to revise downward the minimum number of identified providers.

¹⁰In collaboration with our partner, we also then re-visited a subset of communities to re-draw the polygon map boundary, and conducted a second round of boundary mapping and listing to ensure clear coordination and that each community fit the study criteria.

Figure 4: Sample community boundary and firms



Note: Coordinates jittered to mask firm locations

3.5 Baseline: Firms

Firm Listing

Following the boundary mapping, we conducted a longer firm listing carried out in February 2024. This listing also serves as the sample frame for the firm baseline. Through this activity, we captured basic characteristics of each daycare provider in the mapped areas, including business and owner name, contact information, GPS coordinates, type of provider, and number of children served by age group. Through this activity, we found 1,222 eligible daycare centers eligible for our baseline survey.

Firm Baseline Survey

Our firm baseline was conducted in person, using the firm listing as a sample frame. We randomly selected a sample of firms to participate in the baseline firm survey, ordering the remainder to

Table 1: Firm Sample Frame and Baseline

	Total	Control	Treatment
Listed	1,222	562	660
Attempted	1,106	510	596
Completed	978	453	525
Response rate	88%	89%	88%

Note: Listing was conducted prior to randomization. The observations in the control and treatment groups for listing represent the number of firms listed in control and treatment communities, respectively.

serve as a backup in the event of refusals or non-response and excluding those for which we did not have phone numbers.¹¹ To ensure a minimum number of surveys per community, we enacted the following decision rule for inclusion in the study: In communities with 20 firms or fewer, we included all firms in the baseline.; in communities with more than 20 firms, firms were randomly selected, with the number proportional to the total number of firms identified in the community to arrive at our minimum sample size.

Of the 1,222 eligible firms, we ultimately attempted to reach 1,089 firms, after dropping those without contact information and dipping into the backup list as needed for different communities. We completed surveys with 978 firms, for an overall response rate of 89%. Of the firms we did not survey, 5% could not be reached, and 5.2% declined to participate.

The 978 baseline firms were visited in March–April 2024. The baseline survey interviewed the primary owner or school principal, and captured a rich set of details on costs, revenues, and firm operations. At school-based centers this individual is not typically the person who interacts daily with the children. Thus, at school-based centers, we also interviewed the teacher for the youngest grade served. Overall, our survey includes information on enrollment numbers, ages served, revenue and costs; socio-economic variables of the teacher; and the infrastructure and features of the classroom, care provided, and feeding program availability.

To increase statistical power, we also included in our baseline survey any firm that was not included in our original baseline sample but that attended the workshop. The final sample of firms with complete information is 978.

3.6 Baseline: Households

Listing Activity for Household Recruitment

Recruiting a random sample of households that currently or may eventually rely upon paid daycare is difficult in this context. For example, urban informal settlements feature complex and varied housing structures with poor infrastructure and paths that make it difficult to navigate, making

¹¹Even though this survey was in person, we excluded those without phone numbers with our midline and endline in mind, as these firms and firm owners will be harder to locate a year or two later.

other traditional canvassing approaches (such as a random walk) error-prone. In our context additionally, caregivers who are home during any canvassing activity are disproportionately likely to not have children in daycare. Similarly, households that rely upon paid daycare are typically not at home because they are at work. Finally, the population of urban informal settlements tends to be highly mobile. Due to these challenges, we elected to do a convenience sample of households with at least one child aged 3 or under living in the community as defined by the boundary exercise. Households were recruited within the mapped communities in early April 2024 through two methods: (1) Recruitment outside daycare centers in our baseline firm survey and (2) approaching individuals who are around the community.

To recruit households who are highly likely to have children exposed to the intervention, we focused on households who were using paid daycare at baseline. Following the firm baseline survey enumerators asked permission to recruit parents with children under age 3 at daycare drop-off or pick-up. If permitted, enumerators approached parents, recruiting those who have a child born between 2021–2024. Parents with a child older than 3 in the daycare and a younger, eligible child who is not enrolled are included in this recruitment activity.

Separately, households were also recruited from the community through visits to homes and markets following the boundary maps. Adults in the community were invited to participate if they have a child born between 2021–2024 living in the household, regardless of whether they use daycare services.

Among eligible adults willing to participate, enumerators collected their name, detailed contact information, and basic information on their use of daycare services. We listed 1,735 daycare users and 1,084 non-daycare users across our 51 communities.

Household Baseline Survey

We randomly selected households from the household recruitment listing activity for the baseline survey, stratifying by daycare usage. We targeted 3,000 households in the baseline survey, or approximately 52 per community, providing a backup list to account for refusals or inability to reach the household by phone. Through phone calls, we interviewed the primary caregiver (self-identified) of a child under age 3 in the households in June and July 2024. The survey includes questions on the socio-economic status of the household, labor force participation, time use of the primary caregiver (for a child under age 3 in the household), and daycare use and expenses. We surveyed 3,027 households out of 3,612 attempted, with a 83.8% response rate. This response rate is balanced between treatment and control communities (see Table 2). The final sample of households for our baseline analysis is 2,820.

Table 2: Household Sample Frame and Baseline

	Total	Control	Treatment
Listed	5,396	2,659	2,737
Attempted	3,624	1,805	1,819
Completed	2,820	1,393	1,427
Response rate	77.8%	77.1%	78.4%

Note: Listing was conducted prior to randomization. The observations in the control and treatment groups for listing represent the number of firms listed in control and treatment communities, respectively.

3.7 Randomization

In April 2024, after the conclusion of the firm survey we randomly assigned the study communities into treatment or control groups, stratifying at the county level.¹²

Table 3 presents the balance between these two groups at the firm level. It demonstrates that randomization created comparable groups as measured by the majority of characteristics. In both treatment and control groups, 83% of owners are female, and the mean age is between 42-43 years old. There is a slight imbalance in the percent of owners that report secondary school as their highest degree (18% as compared to 14%, significant at the 10% level), although the share that has completed some post-secondary schooling is approximately equal at 65%.

Mean characteristics are similarly balanced at the firm level. Around 68% of all daycares are school-based. The mean daycare has 10.6–12 children present, and approximately 1.2 caregivers were present; the number of caregivers is slightly imbalanced when including strata fixed effects. Profits and revenues are also balanced; because these measures are highly skewed, we present them logged and winsorized at the 1st and 99th percentile. We create various indices to capture various dimensions of quality: hygiene and safety; infrastructure; toys and manipulatives; children’s activities. For these measures, we normalize with respect to the control group, following Anderson (2008). All of these measures are balanced between treatment and control communities.

3.8 Midline: Firms

We will conduct a midline, post-intervention survey of all firms tentatively scheduled for June 2025. In this data collection activity we will a) re-map the study area and determine the number of firms in each community; b) re-visit all firms that were part of the baseline and ask them largely the same set of questions.

3.9 Endline: Firms and Households

We will conduct a second, post-intervention survey of all firms tentatively scheduled for June 2026. In this data collection activity we will a) re-map the study area and determine the number of firms

¹²We pool two counties in close proximity, for 10 strata.

Table 3: Balance Table: Firm Characteristics

Variable	(1) Control		(2) Treatment		(1)-(2) Pairwise t-test		(3) Randomization Inference
	N/Clusters	Mean/(SE)	N/Clusters	Mean/(SE)	N/Clusters	Mean difference	p-values
Panel A: Owner Characteristics							
Female	453	0.828	525	0.857	978	-0.029	0.412
	25	(0.027)	26	(0.022)	51		
Respondent's age	453	41.915	525	43.109	978	-1.194	0.221
	25	(0.730)	26	(0.528)	51		
Highest Degree: Secondary	453	0.183	525	0.139	978	0.044**	0.062
	25	(0.016)	26	(0.023)	51		
Highest Degree: Post-secondary	453	0.638	525	0.648	978	-0.010	0.947
	25	(0.034)	26	(0.049)	51		
Any childcare-specific training	453	0.488	525	0.550	978	-0.063	0.269
	25	(0.038)	26	(0.035)	51		
Panel B: Firm Characteristics							
School-based Daycare	453	0.673	525	0.670	978	0.003	0.852
	25	(0.039)	26	(0.054)	51		
Number of children present	453	10.606	525	11.739	978	-1.133	0.181
	25	(0.696)	26	(0.666)	51		
Number of caregivers present	453	1.203	525	1.288	978	-0.085**	0.054
	25	(0.023)	26	(0.032)	51		
PPI Score	453	63.075	525	62.621	978	0.454	0.53
	25	(1.100)	26	(1.372)	51		
Monthly profits (USD)	453	877.929	525	910.645	978	-32.715	0.81
	25	(102.715)	26	(80.723)	51		
Monthly revenues (USD)	453	1022.007	525	1048.514	978	-26.506	0.88
	25	(107.180)	26	(85.279)	51		
Hygiene and Safety Index	453	-0.009	524	-0.007	977	-0.002	0.89
	25	(0.092)	26	(0.099)	51		
Infrastructure Index	453	0.001	525	0.023	978	-0.022	0.816
	25	(0.082)	26	(0.069)	51		
Toys and Manipulatives Index	453	-0.016	524	0.082	977	-0.098	0.343
	25	(0.066)	26	(0.071)	51		
Childcare Experience Index	453	-0.023	524	-0.073	977	0.051	0.536
	25	(0.094)	26	(0.117)	51		
F-test of joint significance (F-stat)						2.993***	0.7760
F-test, number of observations						977	977
F-test, number of clusters						51	51

Notes: The observations are based on completed surveys.

in each community; b) re-visit all firms that were part of the baseline and ask them largely the same set of questions.

During this activity we will also attempt to re-contact households that were part of the baseline survey. This activity will be done in person.

3.10 Power analysis

We have conducted rigorous power calculations that vary our assumptions and assess the sensitivity of our statistical power to different assumptions. Overall, we conclude that this study is well-powered for outcomes of interest,.

We begin with daycare quality, the first variable in our theory of change. Our experimental design is well-powered to detect provider-level impacts on daycare quality,. We assume a significance level of 0.05, and we use a quality index normalized to the control group. In the baseline survey, the ICC of our childcare quality index, after controlling for strata, is 0.096. We assume a follow-up response rate of 90% and base our calculations on one round of follow-up.

Table 4: Balance Table: HH Background Characteristics

Variable	(1) Control		(2) Treatment		(1)-(2) Pairwise t-test		(3) Randomization Inference
	N/Clusters	Mean/(SE)	N/Clusters	Mean/(SE)	N/Clusters	Mean difference	<i>p</i> -values
Panel A: Household Characteristics							
Household Head	1392	0.420	1426	0.413	2818	0.006	0.976
	25	(0.016)	25	(0.017)	50		
Married	1391	0.150	1424	0.150	2815	-0.000	0.735
	25	(0.013)	25	(0.012)	50		
No education	1392	0.022	1426	0.015	2818	0.006	0.702
	25	(0.006)	25	(0.004)	50		
Highest Degree: Pre-primary	1392	0.011	1426	0.006	2818	0.004	0.325
	25	(0.002)	25	(0.002)	50		
Highest Degree: Primary	1392	0.067	1426	0.054	2818	0.013	0.635
	25	(0.012)	25	(0.009)	50		
Highest Degree: Junior Secondary	1392	0.262	1426	0.243	2818	0.020	0.68
	25	(0.014)	25	(0.019)	50		
Highest Degree: Senior Secondary	1392	0.412	1426	0.464	2818	-0.051**	0.051
	25	(0.015)	25	(0.020)	50		
Highest Degree: Above Form 4	1392	0.226	1426	0.218	2818	0.008	0.236
	25	(0.023)	25	(0.017)	50		
Child under 5 y/o	1392	1.166	1426	1.160	2818	0.006	0.959
	25	(0.017)	25	(0.012)	50		
Mother is the primary caregiver	1390	0.864	1424	0.856	2814	0.008	0.496
	25	(0.011)	25	(0.013)	50		
Pay for care during March 2024	1390	0.618	1424	0.604	2814	0.014	0.29
	25	(0.012)	25	(0.015)	50		
Monthly childcare costs (KES)	1392	1416.024	1426	1384.602	2818	31.422	0.794
	25	(119.956)	25	(90.261)	50		
Panel B: Labor Force							
Paid work in the past 7 days	1392	0.440	1426	0.427	2818	0.013	0.57
	25	(0.018)	25	(0.019)	50		
Working mother	1201	0.428	1219	0.405	2420	0.023	0.293
	25	(0.018)	25	(0.017)	50		
Total hours worked while providing childcare	1392	2.004	1426	1.972	2818	0.032	0.777
	25	(0.223)	25	(0.177)	50		
F-test of joint significance (F-stat)							0.9530
F-test, number of observations							2417
F-test, number of clusters							50

Notes: The observations are based on completed surveys. Monthly childcare costs include zeros.

With 453 control firms in 26 communities and 525 treatment firms in 25 communities at baseline, we are therefore powered for a minimum detectable effect size of 0.29 standard deviations across the entire treatment population during the first year of follow-up data collection. If the take-up rate among treated communities is 39%, in line with incoming administrative data, and we assume no improvements in non-participating treated centers then we are powered to detect an improvement of 0.74 standard deviations, which is reasonable given that the treatment directly provides substantial, relatively durable investments that will directly affect component indices. Any improvements caused by spillovers to treated non-compliers will further reduce this MDE. In the second year of data collection, we would expect the quality difference to grow as well, as the intervention includes sustained provider training and support, further improving quality.

Second, pre-study focus groups with existing providers suggest that attendance and revenues may be slower variables to change. Hence, our power calculations assume that childcare attendance and revenue may be slower to detect changes. In terms of the number of children served, at baseline daycare facilities serve an average of 13.2 children, with a standard deviation of 10.5. Attendance is highly correlated with daycare type, as school-based centers are much larger than home- and

center-based providers. Indicators for daycare type and strata predict 18% of the variance in the outcome variable. With these assumptions, we have 80% power to detect a minimum detectable effect size of 2.6 children, a 19.6% increase, when comparing treatment and control communities. This seems reasonable, as that translates into 1-2 additional children at non-school-based daycare facilities and 2-3 at school-based. We will have adequate power after one year and excellent power after two years.

Because revenue is noisy, we measure provider revenue through two follow-up surveys and do power calculations using simulation. We assume our specification will be ANCOVA, an approach that will increase statistical power (?). We assume revenue is autocorrelated with $\rho = 0.35$ between periods, in line with the average autocorrelation of small enterprise profits (?). For revenue, the baseline mean is \$1036 with a standard deviation of \$1,306, and ICC of 0.04. Estimating power based on pooling our two rounds of follow-up data, assuming 10% of firms attrit before the first follow-up and that another 10% attrit before the second follow-up, we are powered for a minimum detectable effect size, based on ITT estimates, of \$390 across all firms, or 38%. This figure is smaller than three of the firm training papers cited in the ? literature review, for a population that is operating at a much smaller scale, and thus such a percentage increase is reasonable. Furthermore, the training and intervention in this study are arguably much more intense, as the quality of the business will directly change in a way observable to clients, as well as the provider’s ability to run a business.

An underlying concern of our power analysis is incomplete take-up. Administrative records indicate that take-up is currently 39%. To contextualize the impact of incomplete take-up on statistical power, in the (unlikely) absence of spillovers this would reflect a treatment-on-the-treated (TOT) effect on revenue of \$1,000, or 0.77 standard deviations, and a TOT effect on children served of 6.7, or 0.5 standard deviations. While these MDEs are fairly large, our partner is planning to do an additional round of recruitment efforts, and take-up rates are expected to rise over time. Additionally, trainers encourage providers to increase daily rates (typically from 50 Ksh to 100 Ksh per day), but they have not observed declines in enrollment, in part because parents value the improved quality and because providers now provide nutritious meals.

4 Empirical Analysis

4.1 Econometric specification and outcomes

In this section, we present our econometric specification and discuss our primary and secondary outcomes of interest.

We measure the intention-to-treat effect of community-level assignment on our outcomes of interest using the following specification:

$$Y_{ic} = \alpha + \beta_1 \text{Treatment}_c + Y_{ic}^{BL} + \phi_c + \epsilon_{ic} \quad (1)$$

where Y is the outcome of interest for respondent i in community c . *Treatment* is an indicator variable indicating the randomly assigned treatment status of the community. We include, when available, the baseline measure of the outcome variable, Y_{ic}^{BL} , and a set of strata (county) fixed effects, ϕ_c . Although we present for brevity the estimating equation for a given follow-up wave, we will also examine both follow-up rounds combined together in the panel dataset for all variables of interest. All standard errors will be clustered at the community level, our unit of randomization.

To improve the precision of our estimates, we will also estimate a version that includes other baseline covariates chosen following a double-selection lasso procedure, following Urminsky et al. (2016). If this specification meaningfully improves our precision, we will use these as our main results and present the version without additional covariates in the appendix.

4.1.1 Spillover Analysis

A simple strategy to identify the effects of our partner’s franchising on firms that do not join their program (non-franchise firms) would be to compare (within treatment areas) whether average prices, enrollment, or other outcomes change due to the intervention. However, firms that participate in our partner’s program may differ from non-franchise firms due to either observable or unobservable characteristics. To resolve this difficulty, we leverage the one-day workshop. We anticipate that firms who attend the one-day workshop will be those most likely to enroll in the program. Attending the workshop identifies those in the treatment group, and also which owners in the control group would have been most likely to join had they been in a treatment community. We plan to examine the extent to which attendance predicts ultimate take-up, and if it is effective, to also conduct our planned analysis restricting to this group of “likely joiners.”

Formally, we estimate:

$$Y_{ict} = \beta_0 + \beta_1 T_{ic} \times 1Year_t + \beta_2 T_{ic} \times 2Years_t + \beta_3 S_{ic} \times 1Year_t + \beta_4 S_{ic} \times 2Year2_t + \beta_5 1Year + \beta_6 2Years + \beta_6 Y_{ic,t=1} + \delta' X_{ic} + \mu_{ict} \quad (2)$$

where T is a dummy variable for whether or not the daycare provider was predicted to enroll in the Treatment program based upon attendance at the workshop, and was located in a Treatment community, S is a dummy variable for whether or not the daycare provider was *not* predicted to enroll our partner’s program but was located in a Treatment community. The terms β_3 and β_4 measure the potential spillover effects at the one- and two-year marks post-intervention by comparing “control” daycares in treatment communities to “control” daycares in control communities.

4.1.2 Multiple Hypothesis Testing

To avoid over-rejecting our null hypotheses as a result of multiple hypothesis testing, we will report MHT-adjusted p-values alongside unadjusted standard errors. We will adjust within families of outcomes (where families are described above).

4.1.3 Missing Baseline Variables

For any baseline variables that are missing due to refusal, non-response, or respondent indicating “don’t know,” we will recode missing values as zero and include missing value flags in our analysis.

4.2 Additional outcomes

We also plan to include a set of other outcomes that are relevant for families and/or policymakers looking to improve the quality of daycare in the private sector.

- **Labor supply of spouse/ partner** of primary caregiver
- **Wages of the primary caregiver**, calculated as the earnings over the past 30 days divided by total hours worked during the same period (Questions F3, F4, F7, and F8).
- **Household income** over the past 30 days (Question C05).
- **Community-level daycare closures**. We will measure whether the presence of the partner organization led to entry or exit of daycare firms in the community.
- **Community-level non-franchise enrollment**. We will measure whether the presence of the partner organization affected enrollment in non-franchise centers in the community.

4.3 Heterogeneous Effects

4.3.1 Firm-Level Analysis

At the firm level, we anticipate the effectiveness of the intervention may depends on the initial quality of the enrolling firm and the number of children served. As shown in Table 3, school-based centres tend to be larger and higher quality, but they also differ in their management structure and characteristics of providers. We plan to test for treatment heterogeneity based on the following three dimensions:

1. (1) whether a center is school-based or non-school based (home or center-based; Question A16);
2. (2) the number of children served, splitting at the overall median; and (Questions C02 and Q1);
3. (3) the overall firm quality index, splitting at the community-level median.

4.3.2 Household-Level Analysis

Among households, we anticipate that those with any children in daycare may be most likely to be directly affected by improved daycare quality; they would receive the largest “dosage” if their daycare becomes a franchisee. Alternatively, the opposite dynamic could happen: if improvements

in quality lead non-using households to be more likely to use care, we may see the largest impacts on mothers' labor supply and earnings among this group.

Similarly, child age at baseline will affect their responsiveness to improved quality, with younger children potentially benefiting most, but it will also affect the period of exposure before they proceed to primary school. For this reason, we plan to test for household-level treatment heterogeneity based on (a) whether their child born in 2021–2024 was attending daycare at baseline (Questions D04 and D05); (b) whether the mother was working for pay at baseline (Questions F1 and G2); and (c) child age (Question C04). We also plan to test for heterogeneity based on (d) baseline Household PPI score, above/below the community-level median.

5 Limitations and Challenges

There are several limitations and challenges to the completion of this study. First, residents of informal settlements may be reluctant to trust outsiders due to sporadic, unplanned raids and demolitions. Our risk mitigation strategy was to extensively liaise and engage with local stakeholders and policymakers to maintain trust and buy-in. Relatedly, we also acknowledge risks from unplanned closures of daycares from specific communities due to sporadic crack-downs. As in these events, daycares typically reopen after some time, we plan to adjust field operations to minimize study attrition.

Secondly, residents living in urban informal settlements are disproportionately likely to be in poverty and may be unable to engage fully in the intervention. Thus, there may be substantial opportunity costs of time and money leading to insufficient take-up and completion of the intervention. We have attempted to minimize this risk by completing a workshop in all activities that identify those providers with a high propensity to participate in the intervention.

Finally, due to the ever-changing political situation in Kenya there may be protests that may delay field activities, or require adaptation from the plan. Protests may unexpectedly turn violent and thus data collection needed to be carefully executed to ensure enumerator safety. Now that the baseline survey frame is completed, the risk mitigation strategy will be to shorten the midline and endline surveys and conduct surveys by phone.

6 Administrative Information

6.1 Funding

This work is funded by the UK Foreign, Commonwealth & Development Office (FCDO) and the Institute of Labor Economics (IZA) within the G²LM—LIC Programme. We are grateful for additional financial support provided by the Bill and Melinda Gates Foundation and the Livelihood Impact Fund. One author also gratefully acknowledges support from J-PAL Gender and Economic Agency Initiative that funded large-scale pilot work related to this project.

6.2 Ethical Review

The Strathmore University Institutional Scientific and Ethical Review Committee (SU-ISERC) has provided ethical review for this study, initial approval SU-ISERC1602/23. This study has also received IRB approval from The Ohio State University (submission #2023B0300).

6.3 Declarations of Interest

Declaration of interest: None.

6.4 Acknowledgements

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Table 5: Data Appendix: Primary Hypothesis

Primary Hypothesis	Data Source
HA1. The social franchising model will improve daycare quality	• Hygiene and Safety Index: Which of the following are present in the facility? (check all that apply, ask if not obvious): basin/sink for handwashing, jug/bottle for handwashing, potties for toilet training, changing table/ diapering area, mattress or mats for napping, first-aid-kit or box; Excluding medicines provided by parents, do you ever give medicine to the children to help them sleep or calm down? (yes/no); Business appeared clean (strongly disagree, disagree, agree, strongly agree) • Infrastructure Index: Which of the following are present in the facility? (check all that apply, ask if not obvious): electricity, light fixtures/bulbs, fan; (if home-based (observe but do not ask) and center-based) What is the predominant floor material of the main dwelling unit?: Natural floor (earth/sand or dung) or palm/bamboo, or Other (including wood planks/shingles, parquet or polished wood, vinyl or asphalt strips, ceramic tiles, cement, or carpet); How many windows are in this room? (If children use part of a room, consider all windows in the room; Multiple responses if multiple rooms)
<i>Continued on next page</i>	

Primary Hypothesis	Data Source
	• Toys and Manipulatives Index: (If toys checked) What kind of toys do you have for the children?: Cups for playing/stacking, blocks for building/stacking, vehicles/rolling items, dolls, rattles/shakers, musical instruments, costumes/dress up, art supplies (paint, crayons, etc), string/laces for stringing beads. • Childcare Experience Index: Do the children typically follow a daily schedule?: yes/no; Think about the yesterday or the last day you provided care. Did you sing songs with the children?: yes/no; Think about the yesterday or the last day you provided care. Did you read to the children?; (Do not ask) Is the schedule/time table of the day posted on the wall?; Which of the following are present in the facility? (Check all that apply. Ask if not obvious): decorations on walls; Is there an outside area that children can use for playing?
HA2. The social franchising model will increase demand for daycare	Total number of children that have attended at least 1 day in the past 7 days, Number of children by age group • What is the total number of children that have attended at least 1 day in the past 7 days? (Include both daycare and part-time/ after school attendees.) • How many children in each age group attended at least 1 day in the past 7 days? (Tick all that apply): < 6 months, 6 months – 1 year, 1 – 2 years, 2 years, 3 years, 4 years, 5 years, 6 years and older
<i>Continued on next page</i>	

Primary Hypothesis	Data Source
HA3. The social franchising model will increase provider revenue	Number of children, Days per week attend, Daily rate • Number of children • Days per week attend • Daily rate

Table 6: Data Appendix: Secondary Hypothesis

Secondary Hypothesis	Data Source
HB1. The social franchising model will have spillover effects onto competing providers	Total number of children that have attended at least 1 day in the past 7 days, Number of children by age group • What is the total number of children that have attended at least 1 day in the past 7 days? (Include both day-care and part-time/ after school attendees.) • How many children in each age group attended at least 1 day in the past 7 days? (Tick all that apply): < 6 months, 6 months – 1 year, 1 – 2 years, 2 years, 3 years, 4 years, 5 years, 6 years and older
HB2. The social franchising model will increase provider profits	Not explicitly listed •
HB3. The social franchising model will increase household usage of childcare	Household’s daycare use extensive margin, Household’s daycare use intensive margin • Household’s daycare use, extensive margin: During the month of March 2024, did you or anyone in your household ever pay anyone money to take care of [CHILD NAME]? (Please do not include if swap care-giving or make in-kind payments to a provider) • Household’s daycare use, intensive margin: On a typical day that they attended, about how many hours did [CHILD NAME] spend at [day-care] during the month of March?
<i>Continued on next page</i>	

Secondary Hypothesis	Data Source
HB4. The social franchising model will increase maternal employment and household earnings	Primary caregivers' labor supply extensive and intensive margin - Primary caregivers' labor supply, extensive margin: In the past 7 days did you work for at least one hour as an employee for wage, salary, commission, including doing paid domestic work or farm work not on your own farm?; In the past 7 days did you work for at least one hour on a business or income-generating activity that you own or operate? Do not include own farm labor. (Can clarify: For example, as a trader, shopkeeper, barber, dress-maker, carpenter, taxi driver, car washer, etc.); In the past 7 days did you help (for at least one hour) in any non-farm business enterprise belonging to or run by someone else in your household? - Primary caregivers' labor supply, intensive margin: How many total hours did you work in the last 7 days as an employee?, How many overall hours did you work in the last 7 days at your own business?, How many overall hours did you work on this enterprise or enterprises?
HB5. The social franchising model will increase select measures of child development	Child development outcomes Child development outcomes:
<i>Continued on next page</i>	

Secondary Hypothesis	Data Source
HB6. Improved information about child-care quality will increase demand	Caretaker use of paid (quality) daycare • Caretaker use of paid (quality) daycare: During the month of March 2024, did you or anyone in your household ever pay anyone money to take care of [CHILD NAME]? (Please do not include if swap caregiving or make in-kind payments to a provider)