

Pre-analysis Plan

Title: Impacts of Childcare Vouchers on Women's Labor Supply, Child Development, and Sibling Schooling in Addis Ababa

1. Research question and hypotheses

This study evaluates whether subsidized access to formal childcare increases women's economic participation, improves child development, and improves educational outcomes for older siblings in low-income households in Addis Ababa.

The study focuses on the following hypotheses:

- H1. Women offered childcare vouchers will have higher employment, hours worked, and earnings than women not offered vouchers.
- H2. Women offered childcare vouchers will have better psychological wellbeing outcomes than women not offered vouchers.
- H3. Young children in voucher households will have better developmental outcomes than children in control households.
- H4. Older siblings in voucher households will have higher school attendance and learning outcomes than those in control households.
- H5. Women offered childcare vouchers will have better intra-household relations than women not offered vouchers.

2. Intervention

Eligible women are offered a digital childcare voucher that covers the cost of enrolling a child aged 6–48 months in a participating formal childcare center. Vouchers are redeemable only at a pre-screened network of childcare providers that are affordable, have spare capacity, and have agreed to participate in the voucher scheme. Payments are administered through a digital platform operated by Awash International Bank.

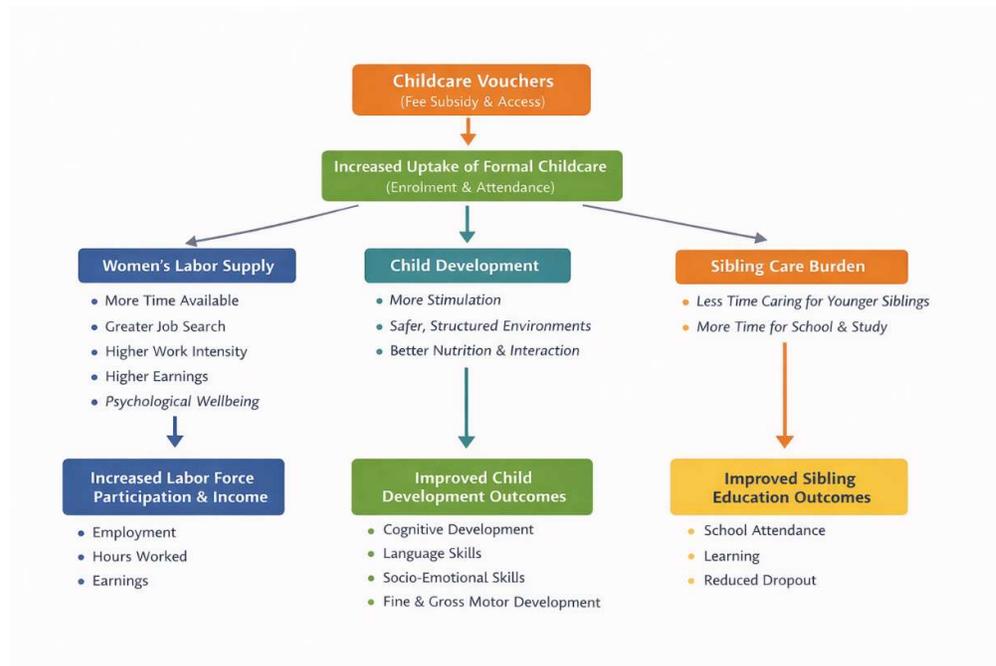
Childcare capacity is limited: 42 participating providers can admit up to 788 children in total. But this should not lead to reallocation of childcare access among the sampled households since none of them have been utilizing external childcare services prior to the intervention.

3. Theory of change

The voucher reduces the effective price and uncertainty of formal childcare, increasing enrollment and attendance. Increased childcare use frees women's time and reduces caregiving constraints, allowing greater labor force participation and

earnings as well as improved psychological wellbeing for mothers. It also places young children in safer and more stimulating environments, improving cognitive, language, and socio-emotional development. Finally, by shifting younger children into formal care, older siblings face reduced caregiving responsibilities, enabling greater school attendance and learning. Figure 1 presents the theory of change.

Figure 1: Childcare voucher impact pathways



Mothers may choose not to use the voucher at all or use it partially. The primary estimand is therefore the intention-to-treat effect of voucher offers in this supply-constrained market.

4. Study population and sampling

The study population consists of low-income women in nine sub-cities of Addis Ababa who:

- i. Have at least one child aged 6-48 months who is not currently attending an external childcare facility
- ii. Live within walking distance of a participating childcare provider, and
- iii. Are willing to place a child in formal childcare

Eligible women are drawn from sub-city Early Childhood Development and social-assistance rosters. In addition, ECD experts conducted door-to-door visits to register women who satisfied the eligibility criteria. For each childcare provider catchment area, the list of eligible women contains approximately twice as many candidates as available childcare slots. The target sample size is approximately 1,300 women.

5. Data collection

A baseline survey is administered to all eligible women prior to randomization. It includes:

- Household demographics
 - Household assets
 - Employment and income
 - Childcare use
 - Parent-reported child development measures
 - Mother’s psychological wellbeing
 - School attendance for older siblings
 - Early Grade Reading Assessment (EGRA) for older siblings
 - Intra-household relations

A tracking survey will be conducted to collect interim data on mother’s employment and childcare use. The endline survey will collect the same data as the baseline survey.

6. Randomization

Randomization occurs after determination of childcare provider catchment areas based on service provider mapping and completion of the baseline survey.

Surveyed women are randomly assigned to either:

- Treatment: offered a childcare voucher, or
- Control: not offered a voucher

Randomization is stratified by childcare provider catchment area, which overlaps with the city’s administrative district boundaries, and whether the household is refugee or belongs to the host community.

7. Outcome variables

The following table presents the outcome variable corresponding to each hypothesis specified in section 1.

	Hypothesis	Outcome
H1	Women offered childcare vouchers will have higher employment, hours worked, and earnings than women not offered vouchers.	<ul style="list-style-type: none">• Employment status• Hours worked• Earnings
H2	Women offered childcare vouchers will have better psychological wellbeing outcomes than women not offered vouchers.	<ul style="list-style-type: none">• Warwick-Edinburgh Mental Wellbeing Scale(WEMWBS) total score

H3	Young children in voucher households will have better developmental outcomes than children in control households.	<ul style="list-style-type: none"> • CREDI (Caregiver Reported Early Development Instruments) total score • CREDI z-scores
H4	Older siblings in voucher households will have higher school attendance and learning outcomes than those in control households.	<ul style="list-style-type: none"> • School attendance (self-reported) • EGRA scores (for 2nd and 3rd graders)

8. Estimation strategy

8.1. Intention-to-treat (primary)

For individual i in cluster j :

$$Y_{ij} = \alpha + \beta T_{ij} + \gamma Y_{ij0} + \delta_s + \varepsilon_{ij}$$

where:

- T_{ij} is assignment to voucher,
- Y_{ij0} is the baseline value (when available),
- δ_s are randomization-strata fixed effects.

Standard errors will be clustered at the childcare-provider catchment level.

8.2. Treatment-on-the-treated (secondary)

Actual childcare enrollment will be instrumented using voucher assignment. This estimates the causal effect of formal childcare use among compliers.

9. Attrition

Attrition will be reported by treatment status. If attrition differs significantly between groups, Lee bounds will be calculated for primary outcomes.

10. Heterogeneity of effect

The heterogeneous impacts of the voucher intervention on different groups will be analyzed as follows:

Hypothesis	Sub-population for heterogeneity analysis
Women offered childcare vouchers will have higher employment, hours worked, and earnings than women not offered vouchers.	<ul style="list-style-type: none"> • Refugee vs host-community households • Baseline employment status • Baseline childcare situation • Marital status • Level of education • Age of eligible child (6–24 vs 25–48 months)
Women offered childcare vouchers will have better psychological wellbeing outcomes than women not offered vouchers.	<ul style="list-style-type: none"> • Refugee vs host-community households • Baseline childcare situation • Marital status • Age of eligible child (6–24 vs 25–48 months)
Young children in voucher households will have better developmental outcomes than children in control households.	<ul style="list-style-type: none"> • Refugee vs host-community households • Baseline childcare situation • Age of eligible child (6–24 vs 25–48 months)
Older siblings in voucher households will have higher school attendance and learning outcomes than those in control households.	<ul style="list-style-type: none"> • Refugee vs host-community households • Baseline childcare situation • Gender of the sibling • Level of school of the sibling

11. Timeline

Baseline data collection was completed prior to randomization. Follow-up surveys will be conducted after sufficient exposure to the voucher program to allow effects on labor supply and child outcomes to materialize.