



# Uncovering Hidden Care Networks: Evidence from a Childcare Survey Experiment in El Salvador

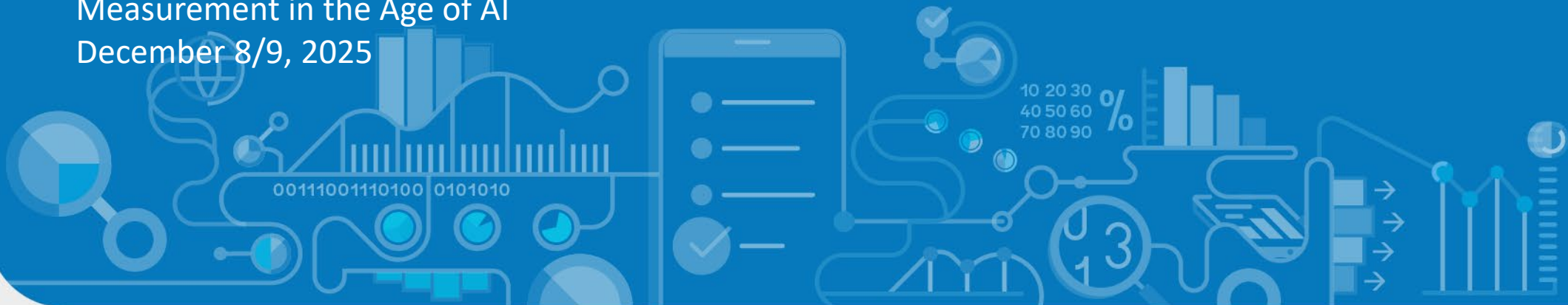
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Better Data for Better Jobs and Lives: Innovations in Survey

Measurement in the Age of AI

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# This paper

Access to quality childcare is central to advancing child development and women's economic empowerment, yet **data on childcare arrangements—particularly in low- and middle-income countries (LMICs)—remain limited.**

This paper addresses **the measurement gap** by experimentally testing alternative survey modules in El Salvador to capture the complexity of childcare provision.

**Experimental Approach:** Randomly assigned households in El Salvador to one of three survey modules:

- 1 Standard module (control)
- 2 Caregiver listing module (detailed list of all caregivers)
- 3 Child time-use module (tracks child's activities and who is present)



# This paper

## Key Findings



- Detailed modules reveal much broader caregiving networks—including fathers, grandparents, and siblings—than the short module.
- A new Caregiver Concentration Index (CCI) shows that richer survey methods uncover hidden informal support systems.
- The short module overstate caregiving concentration, often identifying the mother as the sole caregiver.

## Policy Implications



- More comprehensive data collection is crucial for understanding real caregiving dynamics and designing policies that support women's labor force participation and child development.



# Outline

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# Motivation

## Measurement of Childcare Arrangements in Household Surveys



The policy space remains limited by an incomplete understanding of how childcare is organized in practice, particularly in LMIC contexts. **A central challenge is the lack of reliable data on both formal and informal childcare arrangements.**

In a desk review of national household surveys conducted between 2015 and 2022, we identified 77 countries with at least one publicly available, nationally representative, multi-topic survey and we found that:

- **56 of them included at least one question related to childcare (72%)**
- However, **most of them only included three basic questions**: one about the **main caregiver** (55 of them), another on whether the child attends **daycare** (56 of them), and whether the **child was left alone** for more than one hour (46 of them).
- **Missing out several dimensions of childcare arrangements**, for example, only 5 of them included a question on the cost of childcare services.



# Motivation

## The Complexity behind measuring Childcare Arrangements

- Even detailed time-use surveys face difficulties in capturing the **full spectrum of childcare activities** (Allard et al., 2007). Parental care can range from direct (primary) care to co-presence (secondary care) and casual supervision, each varying in intensity and visibility.
- In addition to parental care, measuring **non-parental childcare**, such as that provided by extended family, neighbors, or informal providers, adds **further complexity**.
- **These measurement challenges are even more pronounced in LMICs**. Informal care arrangements are the most common ones, and caregiving patterns are shaped by cultural norms, limited availability and awareness of childcare options, and practical constraints—all of which make these arrangements difficult to observe and measure (Mateo-Diaz and Rodriguez-Chamussy 2013; Devercelli and Beaton-Day 2020; Talamas and Angel 2023).



# Experimental Design



## Focus Groups Discussions

- To understand the different childcare arrangements
- 10 FGDs with different types of population



## Survey Modules Design

- Desk review of household surveys
- Developing the first draft of the survey modules



## Cognitive Testing

- To assess the quality of the draft survey modules
- 18 interviews



## Randomized Survey Experiment

- Testing three different approaches to collect childcare data
- 1,008 households

# Experimental Design

## Randomized Survey Experiment

Households were distributed across 3 different groups:

	Control Group	Treatment group T1	Treatment group T2
Number of observations	336 Households	336 Households	336 Households
Questionnaire type	Short childcare module	List of child caregivers (LOC)	Child Time Use (CTU)
Period	Morning / afternoon	Last 4 weeks	Previous day
Level	Child level	Child-caregiver level	Child level

### Common modules

All groups completed a multi-purpose household survey with different modules such as: Demographic characteristics, Education, Labor, Migration, Time use, Center-based childcare



# Experimental Design

## Outcome Variables:

### Types of caregivers (extensive margin)

- Different types of caregivers including mother, father, siblings, grandparents, aunts, uncles.
- We also identify whether the child only has one caregiver and if the mother is the only caregiver.

### Caregiver Concentration Index (intensive margin)

This measure adapts the well-known Herfindahl-Hirschman Index (HHI), The [CCI](#) is defined according to the following specification:

$$CCI_i = \sum_{j=1}^J \left( \frac{h_{ij}}{H_i} \right)^2$$

Where:

- $C$  is the number of caregivers,
- $h_{ij}$  is the number of hours that caregiver  $j$  provides to child  $i$ ,
- $H_i$  is the total number of caregiving hours received by child  $i$ .

The index takes a value between 0 (**perfect diversification**) and 1 (**perfect concentration**).



# Experimental Design

## Empirical Strategy

We exploit the random assignment of households to the survey modules in treatment groups 1 and 2 (relative to the control group) and estimate **the intent-to-treat (ITT) effects of being assigned to these modules** on the childcare outcomes described above using the following specification at the child-level.

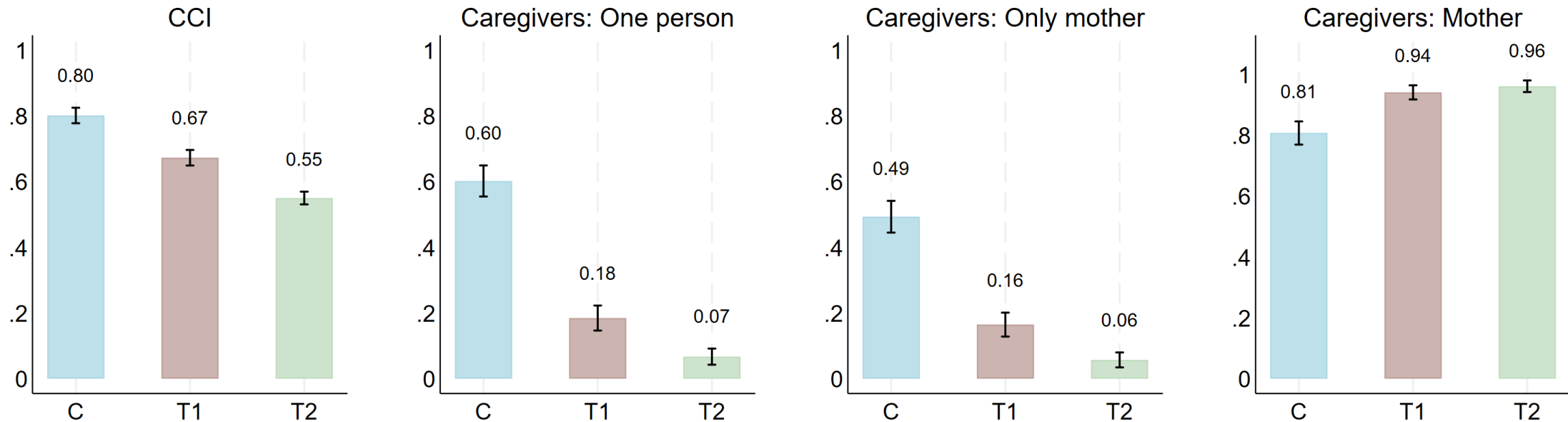
$$y_{ihc} = \alpha + \beta_1 T1_{hc} + \beta_2 T2_{hc} + \gamma X_{ihc} + \delta Z_{hc} + \theta_c + \varepsilon_{ihc}$$

Here,

- $y_{ihc}$  is the outcome of interest for child  $i$  from household  $h$  within the enumeration area  $c$ .
- The **outcomes** of interest are the CCI as well as the dummy variables related to the concentration and the identity of the caregivers.
- $T1_{hc}$  and  $T2_{hc}$  are two binary variables taking the value of 1 for households randomly assigned to the LOC and the CTU survey module (0 otherwise), respectively.
- $X_{ihc}$  is a vector of child characteristics, and
- $Z_{hc}$  is a vector of household characteristics.

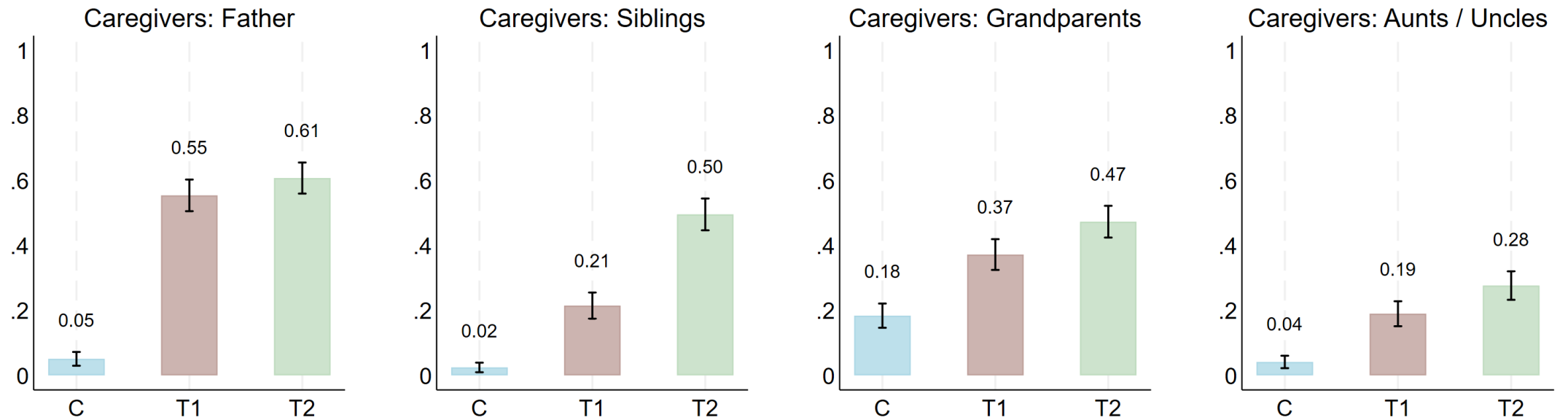
# Main Results

Mean values of the outcome variables by treatment status



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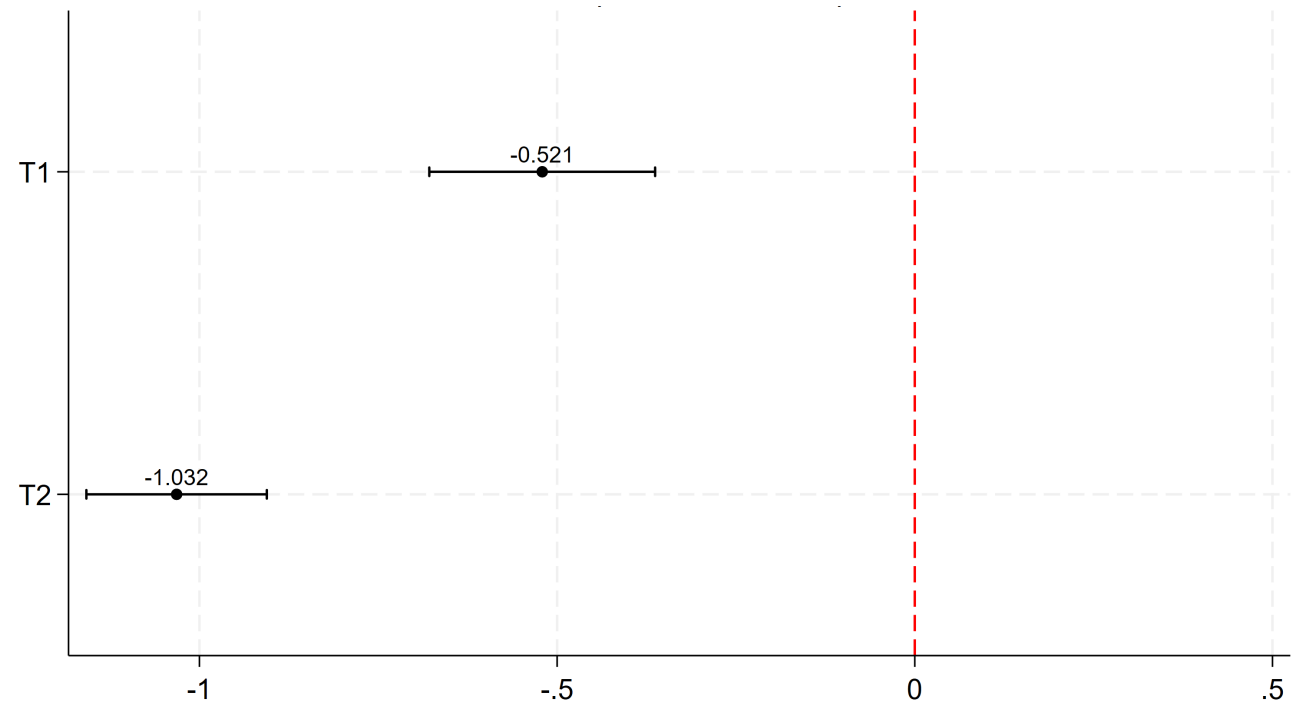


# Main Results

The figure reports **the impact of the treatments on the standardized version of the CCI**, where the variations are expressed in standard deviations.

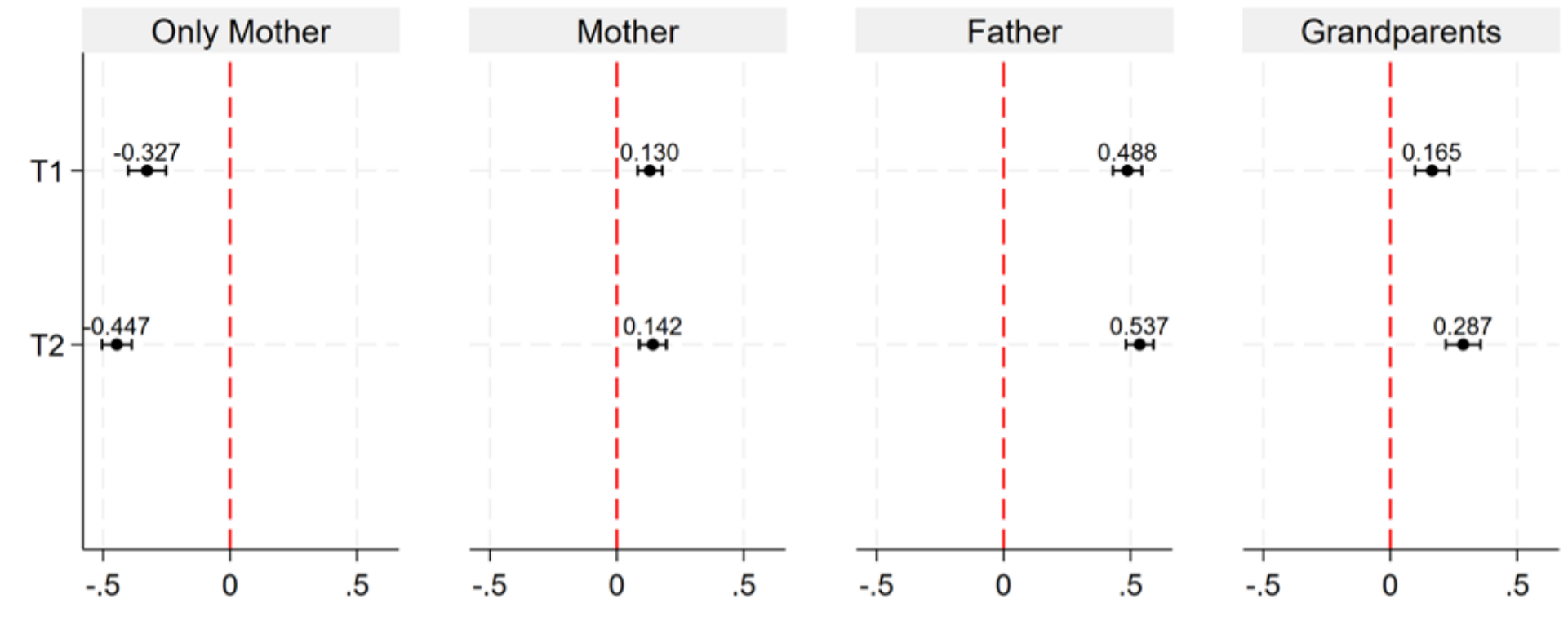
The coefficients for both T1 and T2 **are negative and highly statistically significant**, indicating that exposure to the more detailed survey modules leads to a substantial decrease in the CCI.

Survey Method's Impacts on the CCI (Standardized)



# Main Results

## Survey Method's Impacts on the childcare outcomes

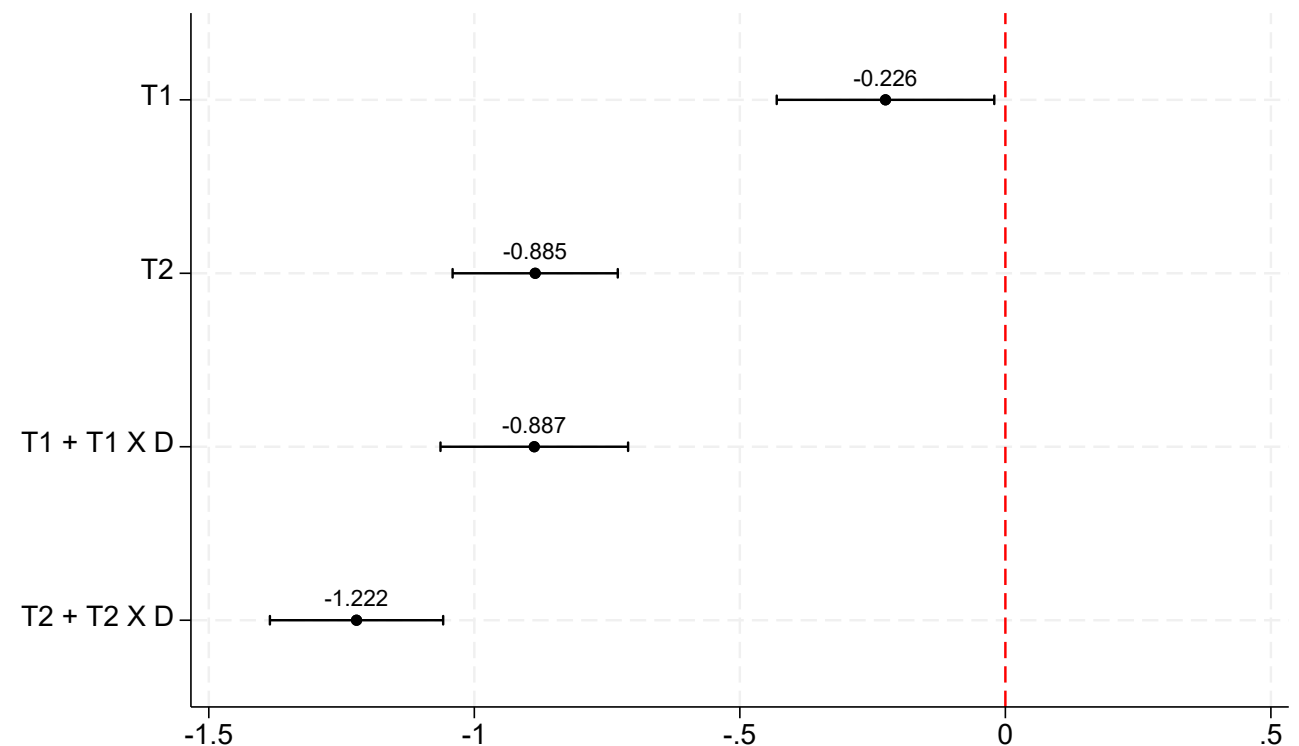


# Main Results

We examine whether the impact of the T1 and T2 survey instruments on caregiving outcomes varies **based on the age of the child (0-3 years vs 4-7 years)**.

**The total effect for children 0-3 years in both treatments are large and negative.** This implies that the detailed survey modules are particularly effective at revealing a more complex and distributed caregiving network for younger children.

## Heterogeneity Analysis by Child's Age (CCI Standardized)



# Key Takeaways

## Short questions on childcare underestimate caregiving diversity:

These questions often identify the mother as the sole caregiver, missing the contributions of fathers, grandparents, and siblings.

## Innovative survey modules reveal broader care networks:

Caregiver listing and child time-use modules uncover significantly more diverse and distributed caregiving arrangements.

## Most pronounced for youngest children:

We found that underreporting is greatest for children aged 0–3, where formal childcare is least available and informal support is most critical.

## Implications for policy:

The intensity of a care network that a mother can have could provide extra information to design effective childcare policies.



# Appendix





# Caregiver Concentration Index

The CCI adapts the well-known Herfindahl-Hirschman Index (HHI), commonly used in economics and antitrust analysis to quantify market concentration (Hirschman 1964).

$$CCI_i = \sum_{j=1}^J \left( \frac{h_{ij}}{H_i} \right)^2$$

Where  $C$  is the number of caregivers,  $h_{ij}$  is the number of hours that caregiver  $j$  provides to child  $i$ , and  $H_i$  is the total number of caregiving hours received by child  $i$ . The index takes a value between 0 (perfect diversification) and 1 (perfect concentration, i.e. all care is provided by one single caregiver).





# Caregiver Concentration Index

Module	Number of caregivers
Short Module	Two caregivers per child (Morning / Afternoon / School or Daycare)
LOC Module (T1)	All individuals who cared for the child in the past four weeks (Household / non-household members)
CTU Module (T2)	<ul style="list-style-type: none"><li>• All individuals who cared for the child for at least one hour on the day preceding the interview.</li><li>• For each hour, each child could have a maximum of 7 caregivers simultaneously.</li></ul>





# Caregiver Concentration Index

Module	Time allocated
Short Module	<ul style="list-style-type: none"><li>• 4 hours for the morning and 4 hours for the afternoon.</li><li>• If the same caregiver is responsible for both periods, they are assigned the full 8 hours of care.</li></ul>
LOC Module (T1)	<ul style="list-style-type: none"><li>• For each listed caregiver, respondents report the number of days per week and the number of hours per day that person spent caring for the child.</li><li>• Total hours per caregiver are computed by multiplying hours per day by days per week.</li><li>• This module allows for overlapping caregiving.</li></ul>
CTU Module (T2)	<ul style="list-style-type: none"><li>• If only one person was present, that individual receives 100% of the hour.</li><li>• If multiple people were present: the main caregiver is assigned 60% of the hour, and the remaining 40% is distributed equally among the other individuals presents.</li><li>• This proportional distribution of time is performed for each of the 20 hours. Then, each caregiver's proportion across hours are summed up to compute their total number of hours (maximum 20 hours).</li></ul>