

Working for Yourself or for Your Kids?

Childcare Expansion Policy in Uzbekistan

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Abstract

In developed countries, public childcare programs have increased maternal employment by easing time constraints. However, their impact in lower-middle-income settings with multigenerational households is less understood. In Uzbekistan, for instance, many households include multiple adult women, such as grandmothers and aunts, who traditionally do not work and can provide informal childcare, potentially lowering the demand for public services. This paper examines the effects of a recent preschool expansion policy (2018–22) on women’s labor market participation in this context. To assess the policy’s causal impact, the

paper utilizes variations in childcare coverage across districts over time. The results show that the childcare expansion policy led to a 12 percent average increase in female labor supply, with the strongest effects observed for families that value education but face financial constraints. In contrast, the availability of informal caregivers does not decrease the policy’s effect. These findings challenge the idea that time constraints are the primary mechanism linking childcare expansion to women’s employment. Instead, in this context, economic factors—especially the need to afford childcare costs—emerge as the main drivers.

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1. Introduction

Many developed and industrialized countries have expanded childcare programs to free up mothers' time to encourage their participation in the workforce. And indeed, in these countries, the expansion of public childcare programs has often led to increases in maternal labor supply (Baker, Gruber, and Milligan 2012; Bauernschuster and Schlotter 2015; Berlinski and Galiani 2007; Clark et al. 2019; Müller and Wrohlich 2020). These effects have been strongest among mothers without access to informal caregivers, suggesting that time constraints have kept mothers from joining the workforce. Also lower-income countries have recently begun to expand preschool facilities. This expansion may be even more beneficial given the even larger gender gap in labor participation. At the same time, however, it does not seem to be time constraints that keep mothers from working in these countries. A typical household in this context includes multiple adult women, such as grandmothers, sisters, or aunts, who usually do not work. These women can serve as informal caregivers, and the need for public childcare services is not as pressing. This raises the question whether expanding public childcare in such contexts still has an impact on women's employment and if so, why. In this paper, we attempt to answer to this question by studying the effect of a preschool childcare expansion policy, implemented in Uzbekistan from 2018 to 2022, on the labor market participation of all working-age women living with young children. The country's typical household structure allows us to observe not only mothers, but also other potential caregivers within each household, like grandmothers, who may be affected by this policy reform. To get at the causal effect of the policy, we utilize variation in childcare coverage across different districts and over time. Our results show that the childcare expansion policy led to a 12 percent average increase in female labor supply, with the strongest effects observed for families that value education but face financial constraints. In contrast, controlling for educational preferences and income, the availability of informal caregivers does not influence the effect of the policy. These findings challenge the idea that time constraints are the primary mechanism linking childcare expansion to women's employment. Instead, in this context economic factors—especially the need to afford childcare costs—emerge as the main drivers.

We start in Sections 2 and 3 by describing the context and the childcare policy reform as well as the data and sample used in our analysis. In Uzbek society, most mothers live with their in-laws, resulting in over 75% of households including at least two working-age women. Despite an abundance of informal caregivers, women employment

is low, with over 70% of households having no women in the workforce. Before 2017, only around 25% of children aged 3-6 were enrolled in preschool, well below averages in other Central Asian countries. Following the childcare expansion reform, the number of preschools has increased by over 3.5 times, and by 2022, preschool capacity reached 63% (Sankar, 2021). Despite this growth, preschool remains costly, with fees ranging from 25% to 200% of an average woman's monthly earnings.¹ We use the Listening to Citizens of Uzbekistan (L2CU) survey conducted by the World Bank and Development Strategy Center, which includes a 2018 nationally representative baseline of 4,000 households and a monthly panel of 1,500 households through 2023. This data captures quarterly female labor supply and household outcomes. We measure preschool availability annually by district using data from the Uzbekistan Statistics Agency. We focus on households with children aged 1-6 who are most likely affected by the policy expansion.

In Section 4, we outline our empirical methodology. We adopt a quasi-experimental approach similar to Müller and Wrohlich (2020) and Nollenberger and Rodríguez-Planas (2015) to assess the impact of childcare availability on female labor supply. The gradual expansion of childcare facilities varied significantly across districts, providing both temporal and spatial variation that allows us to estimate the policy's causal effect. Households in districts with above-median growth in childcare coverage since 2019 serve as our treatment group, while households in districts with later or minimal expansion form the control group. The key underlying assumption of our approach is that, in the absence of the policy, female labor supply would have followed a similar trend in both treated and control districts. To address potential confounding factors arising from unobserved regional differences, we include time and district-fixed effects in our analysis.

We present our findings in Section 5. Our primary empirical analysis shows that the childcare expansion policy increased women's labor supply by 2.4 percentage points on average. This effect is particularly significant given the low baseline labor force participation rate for women, which averages just 20 percent. In relative terms, the policy led to a 12 percent increase in female labor force participation. Moreover, our heterogeneity analysis reveals that the impact was stronger for low- and middle-income households, as well as for those households prioritizing their children's education. Notably, households with multiple adult women co-residing showed a stronger response to the policy compared to households where women live alone. Unlike previous studies where time availability was seen as the primary mechanism, our findings indicate that

¹Source: <https://cabar.asia/ru/uzbekistan-gosudarstvennyh-detskih-sadov-ne-hvataet-chastnye-dorogi>

financial pressures and aspirations for children’s education can drive women’s decisions to enter the labor market in this context.

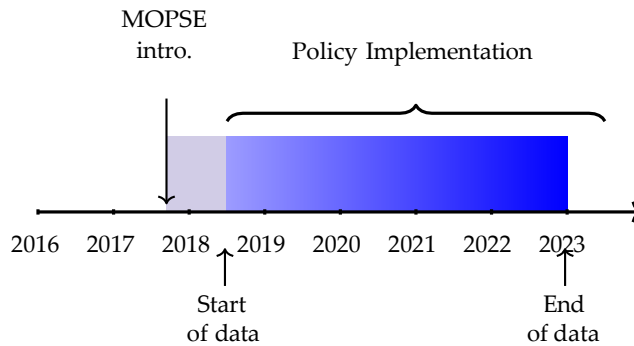
Related literature and contribution. The contribution of this paper is threefold. First, because of data availability issues, causal evidence on the effects of childcare expansion programs in developing countries is rare (Clark et al. 2019; Vuri 2016). The empirical literature mostly focuses on developed industrial countries with predetermined high female labor supply (Nollenberger and Rodríguez-Planas 2015; Havnes and Mogstad 2011; Kleven 2021). This is problematic because it is unclear whether findings from developed countries (with weaker gender norms on household responsibilities) generalize to this context where household structure is quite different.² Our findings indeed suggest that, in such contexts, childcare services can motivate mothers to work not primarily due to time availability, as emphasized in prior literature, but to afford the relatively costly preschool services and provide educational opportunities for their children.

Second, most previously studied childcare expansions have either been smaller in scale or spread over extended periods, leading to gradual increases in childcare access. In contrast, Uzbekistan’s reform was implemented over a relatively short three-year period, during which the number of kindergartens tripled and overall childcare coverage doubled. This rapid and substantial increase in childcare facilities presents a unique case of a strong exogenous supply shock that allows us to examine the effect on female labor supply more clearly (Morrissey 2017; Baker, Gruber, and Milligan 2012).

Third, the existing work primarily emphasizes the labor supply responses of mothers and often overlooks the actual responses of informal care providers to policy expansions. However, it is important to note that childcare can be easily substituted by other adult female members including grandmothers (Vuri 2016). And, thus, the existing studies could underestimate the aggregate response of the female population to childcare expansion policy reform. To illustrate, in Canada, the expansion of childcare facilities not only increased maternal employment, but also grandmothers’ labor supply (Karademir, P. Laliberté, and Staubli 2023). Utilizing household survey data from Uzbekistan allows us to observe not only mothers, but also informal care providers including grandmothers within the household, and observe their responses to this policy expansion reform.

²Average household size is 7 where usually 2 working age women co-reside. According to a 2018 survey in Uzbekistan, 43% of unemployed women are not seeking a job because they must take care of their household responsibilities, while only 7% of unemployed men reported the same reason (Strategy.uz, 2022).

FIGURE 1. Preschool Expansion Policy Reform in Uzbekistan



Note: This figure illustrates the preschool childcare expansion reform for the years 2018 and 2022 in Uzbekistan.

2. Context and policy reform

Context. Uzbekistan is associated with high fertility rates and low female employment rates. Several reports by international organizations indicate that the strengthening patriarchal norms during the post-Soviet transition period and the decreasing government support for preschool childcare facilities contributed to this situation significantly in these countries (International Labour Organization, 2017). To illustrate, in a 2020 survey, 43% of unemployed women reported that they were not seeking a job because they have to take care of their household, while only 7% of men cited the same reason in Uzbekistan (Strategy.uz, 2022). UNICEF (2021) also shows that the share of women participating in the labor force is maximum among 40-44-year-old women which can be related with having relatively older children in the household.

Preschool expansion policy reform. Prior to 2017, state (public) preschools accounted for almost all preschool services in the country, with only around 25% of children aged 3-6 enrolled in preschool education—well below the average for lower-middle-income countries and neighboring nations. At that time, there were just 250 private kindergartens in the country. In September 2017, the Ministry of Preschool Education (MOPSE) was established, and a strategy to expand preschool facilities was introduced. This strategy included constructing new public preschools, renovating old state facilities, and introducing Public-Private Partnership (PPP) preschools, with the goal of achieving full enrollment for children aged 3-6 by 2030. Additionally, the policy allowed preschools to enroll children aged 1-2 years old, which significantly increased preschool participation across all districts of Uzbekistan.

Between 2017 and 2021, the number of preschools in the country rose from 5,186 to

18,345, an increase of more than 3.5 times. By 2022, 63% of children aged 3-6 were enrolled in preschool programs, with about one-third attending PPP preschools. However, the expansion varied significantly across districts, both in timing and scale, creating temporal and spatial variation. This variation allows us to estimate the causal impact of the policy on female labor force participation (Sankar, 2021).

It is important to note that preschool education in Uzbekistan is not compulsory, and while enrollment has increased significantly, preschool services—especially private ones—remain costly.³ On average, public preschool fees already represent around 25% of the average monthly earnings of women in regional areas.⁴ Despite the high costs, many families are motivated to enroll their children because preschools across all regions follow a standard curriculum set by MOPSE, which focuses on teaching basic language, writing, and math skills as the main aim of the reform was to improve educational outcomes for children by better preparing them for primary school.

Meanwhile, primary education in Uzbekistan is free and compulsory, starting at the age of 6-7, with an enrollment rate of 94%.⁵ The overall goal of expanding childcare facilities, particularly through PPP preschools, was to increase access to early childhood education and enhance children’s readiness for primary education, especially in regions where such services were previously limited.

3. Data

Survey data. For our main estimation analyses, we use Listening to Citizens of Uzbekistan survey (L2CU) data conducted by the World Bank and Development Strategy Center (2022). The study comprises a 4,000-household nationally representative baseline survey conducted in June/July 2018, and since then a monthly “panel” survey of a subset of 1,500 households from the baseline survey until 2023. This survey is used to measure quarterly female labor supply, individual and other household-level covariates since June 2018 in each district. Furthermore, Household Budget Survey (HBS) data – yearly pooled cross-sectional data from 2015-2022 – is used to do robustness test estimations. The HBS serves as the fundamental data source for examining people’s standard of living and for devising additional measures to enhance the well-being of the population. Furthermore,

³Source: <https://cabar.asia/ru/uzbekistan-gosudarstvennyh-detskih-sadov-ne-hvataet-chastnye-dorogi>

⁴Source: <https://stat.uz/uz/matbuot-markazi/qo-mita-yangiliklar/34143-yuridik-shaxs-maqomiga-ega-bo-lgan-korxonava-tashkilotlarda-ishlovchi-xodimlarning-o-rtacha-oylik-nominal-hisoblangan-ish-haqi-2022-yil-yanvar-dekabr>

⁵Source: <https://data.worldbank.org/indicator/SE.PRM.ENRR?locations=UZ>

the survey results play a crucial role in computing indicators related to the low-income population, consumer price indices, and household sector accounts. Unfortunately, HBS lacks data on the specific districts where respondents reside or the urbanity status of their settlements. Instead, it only provides information on the regions where they live. As a result, our HBS analyses are limited to only 14 clusters due to this data constraint.

Childcare provision. There are 175 districts in Uzbekistan. We measure yearly available preschool provisions in each district using data collected from Uzbekistan Statistics Agency. Unfortunately, the Statistics Agency does not provide a direct preschool participation rate for each district, but it provides the statistics for the total number of children in different age group categories like the number of children aged 0-2, 3-5 and 6-7 living in each district. It also provides the number of children aged 3-6 who participate in preschool education for each district. We calculate the coverage rate by dividing the number of children at preschool by the total number of children aged 3-5 living in that district. Therefore, we may overestimate the participation rate as our denominator is missing the number of children aged 6 years old. Furthermore, we are also assuming that if preschool participation of children aged 3-6 increased in that district, the number of children aged 1-2 participating in preschool education also increased in a similar manner as we do not have official statistics on this age group of children. The calculated coverage rate for each district can be seen in the maps in appendix figures 1 and 2. In the HBS analyses, since the policy variable is measurable only at the region level, we obtained the direct preschool enrollment rate of the children aged 1-6 for each region over time from the Uzbekistan Statistical Agency. This data is used to assess the policy variable coverage rate for young children across different regions and time periods.

Sample. In our main estimation, we restrict our sample to the households in which the youngest children are aged 1-6 years old as these households are the ones potentially, affected by the policy expansion. In individual unit analyses, our sample is all working-age women aged above 15 and below 64 living in these households. In our sample, we have around 1,200 respondents in each period of time from 109 districts.

Dependent variables. We use several measures for our outcome variables. In the individual-level analyses, the outcome variables are dummy variables, defined as follows:

- **Employment:** This is measured as a dummy variable, taking the value 1 if the respondent has been engaged in paid work, for profit or gain, within the past 7 days,

and 0 otherwise.⁶

- **Labor force participation:** This is also a binary variable, taking the value 1 if either the respondent is working (as described above) or actively searching for a job; otherwise, it takes the value 0.

In household-level analyses, the outcome variables are count variables, specifically:

- The total number of working women in the household.
- The total number of women in the household who are part of the labor force (either employed or actively searching for a job).

Explanatory variables. Our main variable of interest $Policy_{dt}$ is measured in two different ways in our main specification: 1) Coverage rate equals children's preschool participation rate relative to 2018 in each district, and 2) Treated is a dummy variable that equals 1 when the district coverage rate increases above the median (17%) and 0 otherwise. Figure 2 shows how the coverage rates for control and treated districts change over time. The general set of individual control variables for the women includes her age (included in linear and quadratic form in all specifications), the level of education, and marital status. Further household variables include the number of working-age women, school-aged children, and young children in the household, number of working men in the household, along with household income status. We also add whether the household is extended, indicating that married women live with their in-laws.

Table 1 presents descriptive statistics of the sample women over time. In both samples (also presented in Appendix figures 3 and 4), around three-quarters of the households consist of at least two working-age female members. However, despite this, female employment is remarkably low, as in more than 70% of the households, none of the women are engaged in the labor market. The childcare coverage rate increased noticeably over time, from 40 percent in 2018 to 63 percent in 2022 on average. On average, the family size is quite large, with around 7 people per household. The majority of household types are extended, as approximately 80 percent of the respondents live in households where married women reside together with their in-laws. Thus, informal childcare arrangements can be quite often easily arrangeable within the household. Household and individual characteristics of women remain fairly consistent over time. The

⁶In the HBS survey, the question is slightly differently asked: In the last 7 days, have you *worked for someone* who is not your household member as a worker? Hence we solely focus on employees and not self-employed individuals in the HBS analyses.

TABLE 1. Descriptive statistics, overall provision of childcare, 2018–2022

	2018	2019	2020	2021	2022
N of LF women	0.58	0.57	0.43	0.36	0.32
N. of employed women	0.45	0.46	0.38	0.29	0.27
Labor Force Participation	0.25	0.23	0.18	0.16	0.15
Employed	0.19	0.19	0.16	0.13	0.13
Coverage rate	0.41	0.46	0.56	0.60	0.64
Age	36.47	36.96	37.24	37.20	37.27
Married	0.78	0.77	0.77	0.74	0.71
Higher education	0.09	0.09	0.09	0.08	0.07
Extended household	0.81	0.82	0.84	0.84	0.85
Mother	0.53	0.50	0.50	0.50	0.50
Grandmother	0.26	0.27	0.27	0.27	0.26
Other	0.21	0.22	0.23	0.24	0.23
Household size	7.40	7.46	7.42	7.47	7.45
N. of women	2.50	2.50	2.47	2.47	2.43
N. of children 7-15	0.82	0.88	0.85	0.88	0.91
N of children 1-6	1.62	1.63	1.61	1.61	1.61
N of employed men in the household	0.98	1.05	0.96	0.87	0.80
Households with children aged 1-2	0.26	0.27	0.23	0.21	0.20
Households with children aged 3-6	0.43	0.42	0.47	0.52	0.53
Households with children aged 1-2 and 3-6	0.31	0.31	0.30	0.26	0.27
HH income:					
Lowest income	0.39	0.38	0.37	0.37	0.36
Middle income	0.34	0.35	0.34	0.35	0.35
Highest income	0.27	0.27	0.29	0.28	0.29

Note: The sample consists of working-age women aged 15 to 64 living in households with at least one child aged 1 to 6, excluding households with infants under the age of 1;

Source: World Bank: Listening to Citizens of Uzbekistan; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

summary statistics of respondents in the HBS datasets, which cover a longer period and are presented in Appendix table 1, demonstrate a considerable resemblance to the respondents in the L2CU dataset. It is evident that the household structure in Uzbekistan did not undergo significant changes over time.

4. Methodology

Empirical model. Our analyses are among a sample of female respondents aged between 16-64, who are living with at least 1 youngest child aged between 1-6 years old in the household. We estimate the effect of this policy reform on these women's labor supply since 2018. The applied generalized staggered difference-in-differences regression

estimation is formulated in a similar way to the approach used in Nolenberger and Rodriguez-Planas (2011) and Muller and Wrohlich (2020):

$$(1) \quad Y_{idt} = \alpha^{DD} Policy_{dt} + District_d + Time_t + X'_{idt} \beta_k + u_{idt}$$

where outcome Y_{idt} can be employment status of the respondent i , or the number of women who are working in household i in district d , at time t . α^{DD} is the treatment effect of the Policy variable on the outcome. $Policy_{dt}$ is the treatment variable indicating the presence or intensity of the childcare expansion policy for district d , at time t . X'_{idt} is a set of all personal and household-level covariates. β_k is a vector of coefficients associated with the control variables. u_{idt} is the error term, representing unobserved factors that affect the outcome variable. Standard errors are clustered at the district level to account for potential correlations or heterogeneity among observations within districts. In our HBS analyses, we adopted a similar methodology, but we utilized regions instead of districts. Since we had only 14 regions, we opted not to cluster standard errors and used robust standard errors.

Identification assumption. The primary assumption underlying staggered difference in differences is that female labor supply would have followed a similar trajectory in both treated and control districts had the policy not been implemented. The presence of parallel trends in the pre-period provides suggestive evidence supporting this assumption.

In Figure 2, the labor force participation rates of women in treated districts are compared to those in control districts. Before the policy implementation, female labor supply was slightly higher in the control districts. However, by 2021, women in treated districts had reached the employment levels of those in non-treated districts. It is important to highlight that the Covid-19 pandemic affected employment rates for both women and men across all regions of Uzbekistan, and these rates have not fully recovered (see Appendix, Figures 5 and 6). Additionally, we excluded 7 districts and the capital city from the sample (approximately 10% of the total) and reanalyzed the data, presented in Appendix Figure 5. These 7 districts showed irregular coverage rates, with notable fluctuations after the Covid-19 shock. The capital city was excluded due to its significantly higher coverage rates, which had increased well before the policy's implementation and differed substantially from other districts. When these districts are removed, the trend in female labor force participation remains consistent. Appendix Figure 6 also shows labor force participation rates for men with young children and women without young

children, and their trends closely align in both treated and control districts, both before and after the policy implementation. Lastly, it is important to note that the short period between policy implementation and the start of data collection limits the analysis of the pre-treatment period.

To address this limitation, we use HBS data to extend the pre-treatment period, even though we only have data for 14 regions in total. In Appendix Figure 7, the employment and coverage rates are shown separately for fast-implementing and slow-implementing regions. Before the policy implementation, the employment rate of women with young children and the coverage rate were both higher in the control regions compared to the treated regions. This discrepancy is largely due to the inclusion of Tashkent, the capital city, in the control group. Therefore, in Appendix Figure 8, we exclude Tashkent and re-analyze the data, showing that both the control and treated regions followed a relatively similar trend before the policy implementation. Over time, the employment rate of women in treated regions gradually caught up with that of women in control regions. It is also important to note that during the Covid-19 pandemic in 2020, when kindergartens were frequently closed, the employment rate of women with young children declined in control regions where coverage rates were higher.

Measuring the treatment at the regional level proved to be suboptimal, as district-level measurements revealed that all regions, except for Tashkent city, included both treated and untreated districts. As an alternative, we compared the employment rates of respondents living in households with young children to those living in households without young children (Appendix Figure 9). This comparison was particularly relevant as households with young children were the ones most likely to be impacted by the policy. From the graph, it can be observed that the employment rate of male respondents living with young children was slightly higher than those living without young children during all study periods. Although both groups of women had lower labor supply compared to men before the policy implementation, women living in households without young children had noticeably higher employment rates than women living with young children. After the policy implementation, this discrepancy decreased over time.

Further, we provide descriptive characteristics of our sample women for treated and not treated regions before and after the implementation of the policy in Appendix Table 2. As we can see from the table, on average women living in districts where preschool coverage increase is below the median are relatively similar to women who are living in districts with above median coverage increase in terms of individual and household characteristics. Before the implementation of the policy in nontreated

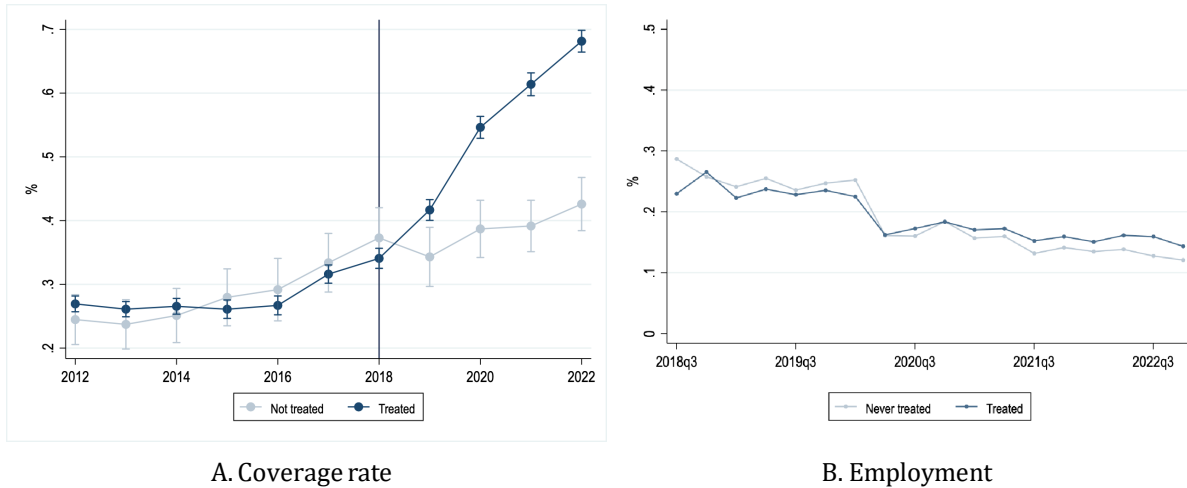


FIGURE 2. Control Districts versus Treated Districts

Notes: Pre- and post-treatment trends, childcare coverage rate (in %) at the district level, 2012-2022 and Labor Force Participation rate of women living with young children (1-6), excluding households with infants under the age of 1, quarterly, 2018-2022. Treatment group: districts with an above-median increase in the childcare coverage between 2019 and 2022. Control group: districts with increase in the childcare coverage below or equal to the median between 2019 and 2022.

Source: World Bank: Listening to Citizens of Uzbekistan; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

Districts, the coverage rate was quite high, at 59 percent, which stayed stable over the 4-year time period. While in treated districts, the coverage rate was 35 percent in 2018 and almost doubled in 2022.

Lastly, we conduct robustness tests by estimating the model for two additional groups: women without young children and male respondents living with young children, and by measuring the policy variable in different formats. This is because the policy is expected to primarily impact women with young children, assuming they are the primary caregivers. Consequently, we should not observe any significant effects of the policy implementation on these groups of respondents, unless there are spillover effects affecting other individuals within the district or if there are concurrent policies during the study period that could influence whole populations' labor supply. The previous literature has employed various methods to measure the effect of childcare expansion policy, and in our analyses, we adopt their approach to measurement.

5. Results

5.1. Main estimation

The estimates are based on our main sample which includes households with children aged 1–6 in Uzbekistan from 2018 to 2022. Our main specification includes individual and household covariates as well as time and district-fixed effects. The first two columns of Table 2 present an estimation of household-level analyses where the dependent variable is the number of women in the labor force and working women in the household. The rest of the columns show individual-level analyses among all working-age women living in those households. In the last four columns, we further separated mothers from the rest of the working-age women and estimated the effect of the policy reform separately. As we mentioned in Section 3, the policy is measured in 2 different ways: the annual coverage rate in each district relative to 2018 and further by comparing employment outcomes of women living in fast-implementing districts after the reform to the same group of women living in slow implementing districts.

We find a positive and statistically significant effect of the public childcare expansion on women’s labor force participation and employment rates. Specifically, our estimates suggest that a 10 percent increase in childcare coverage leads to a 1.38 percentage point increase in the probability of labor force participation and a 0.63 percentage point increase in the probability of employment for women. In districts where the coverage rate rose above the median (more than 17 percent), the policy increased female labor force participation by 2.4 percentage points and the employment rate by 1.7 percentage points. Additionally, after excluding 7 districts and the capital city (approximately 10% of the total sample) and reanalyzing the data (as explained in the section 4), we obtained similar results, which are presented in Appendix Table 3.

Although a 2.4 percentage point increase may seem modest, it is quite substantial when considered in the context of the low baseline labor force participation rate for women, which averages just 20 percent. This means the policy effect translates to a 12 percent increase in female labor force participation, a noticeable improvement given the entrenched social barriers that limit women’s access to the workforce. The magnitude of this increase indicates that public childcare expansion has a meaningful impact in encouraging more women to participate in the labor market.

Additionally, the findings show that this employment effect is shared almost equally between mothers and other women, as the estimated coefficients for both groups are relatively similar. However, while the policy successfully increased labor force

TABLE 2. Regression estimates, effects of childcare coverage on women employment

	Household		Individual		Mothers		Other women in HH	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Labor Force participation</i>								
Coverage rate	0.230***		0.138***		0.144***		0.136***	
	(0.06)		(0.03)		(0.05)		(0.05)	
Treated		0.049***		0.024***		0.026**		0.024**
		(0.02)		(0.01)		(0.01)		(0.01)
Mean	0.372	0.372	0.191	0.191	0.226	0.226	0.155	0.155
<i>Employment</i>								
Coverage rate	0.103		0.063*		0.074*		0.053	
	(0.08)		(0.04)		(0.04)		(0.05)	
Treated		0.036*		0.017*		0.017		0.017
		(0.02)		(0.01)		(0.01)		(0.01)
Mean	0.301	0.301	0.157	0.157	0.184	0.184	0.130	0.130
Individual controls			Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12454	12454	24517	24517	12417	12417	12100	12100

Note: The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. For household-level analyses, the outcome variable is the number of women in the labor force and the number of women employed. Standard errors in parentheses, clustered at district level; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

participation, the smaller effect on actual employment suggests that not all women entering the labor market are able to secure jobs. This discrepancy could be due to tight labor market conditions in Uzbekistan, where finding employment remains difficult despite an increase in job search activity among women.

5.2. Heterogeneity analyses

To better understand how different types of households contributed to the overall employment effect and which groups benefited most from the policy reform, we conducted additional analyses focusing on different subgroups of women in the sample. These subgroups are based on income status, the availability of potential informal care

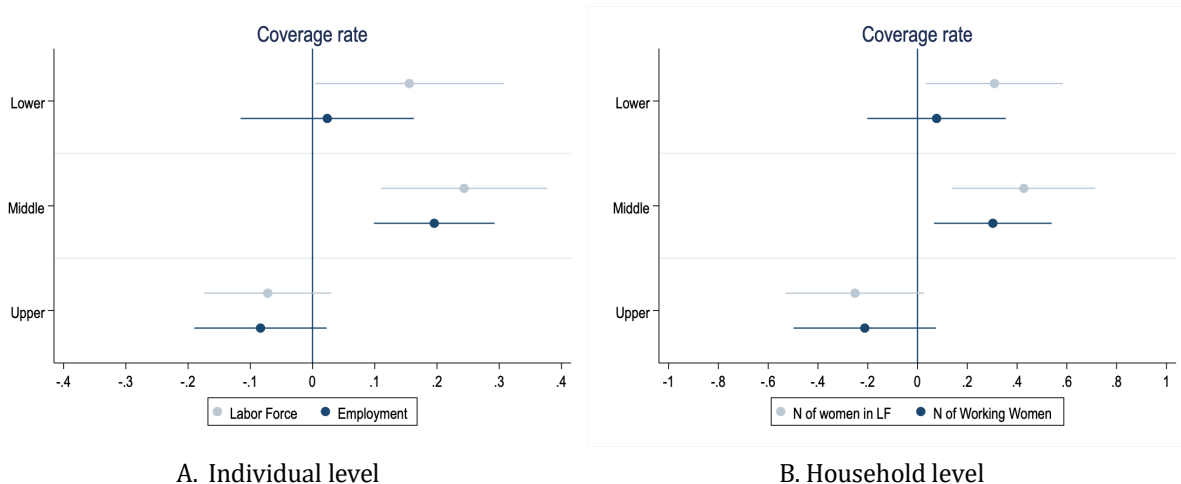


FIGURE 3. By household income status

Note: For more information, please refer to appendix tables 4 and 5.

Source: World Bank: Uzbekistan Household Budget Survey survey data; own calculations.

within the household (measured by the presence of additional working-age women in the household), and household perceptions of education as measured in the baseline survey of 2018—specifically, whether families were concerned about providing a good education for their children. The results are presented in Figures 3 to 5 and further detailed in Appendix Tables 4 to 9.

First, when we examine the effect of the policy across different income groups, we find that the impact on labor force participation is strongest for women from low- and middle-income households, with an increase of 2.5 percentage points for low-income households and 4.5 percentage points for middle-income households. However, in terms of actual employment, only women from middle-income households were able to convert this increase into actual employment activities, showing a 4.1 percentage point rise in employment. This suggests that while the policy encouraged more women from low-income households to enter the labor force, market barriers—such as limited job opportunities—prevented them from securing employment.

Second, heterogeneity analyses by the availability of informal care within the household show some interesting results. Households with multiple working-age women living together experience a stronger increase in labor force participation, rising by 1.6 percentage points, and a 0.9 percentage point increase in employment. This suggests that having extra caregivers in the household may help women enter the labor market by reducing some of the barriers they face. Interestingly, this challenges the

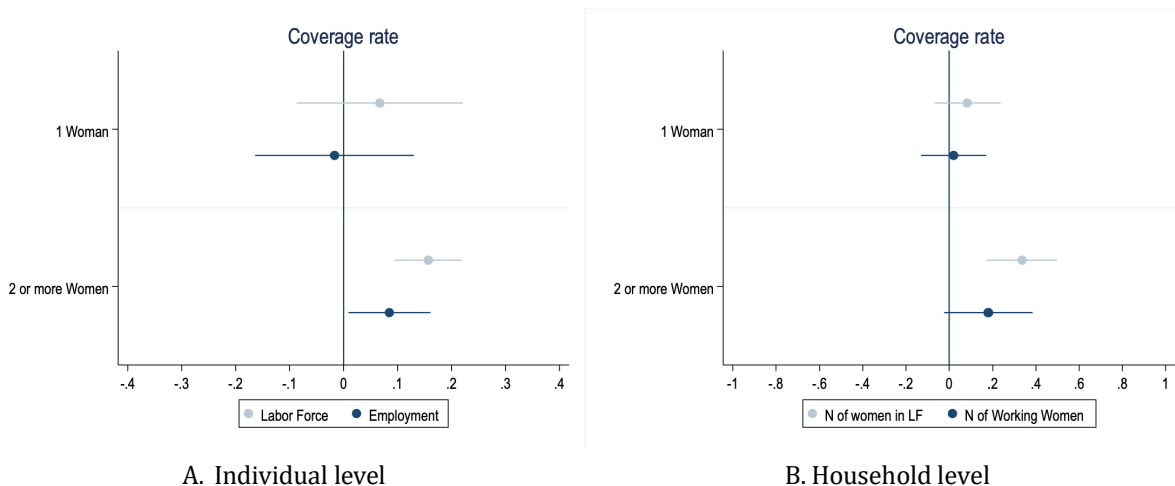


FIGURE 4. By the number of working age women per household

Note: For more information, please refer to appendix tables 6 and 7.

Source: World Bank: Uzbekistan Household Budget Survey survey data; own calculations.

idea that the reform mainly benefits women who are most constrained by time, such as those without other adult females in the household. If time constraints were the biggest barrier, we would have expected a stronger response from these women.

Lastly, we observe that households concerned about providing a good education for their children are more responsive to the childcare expansion, showing an increase of 1.8 percentage points in labor force participation and 1.04 percentage points in employment when coverage rate increased by 10 percent, compared to households that are less concerned about education. Despite the fact that mean employment rates are relatively similar between the two groups of women (see Appendix Tables 6 and 7), this difference in response highlights the role that long-term aspirations for their children may play in motivating mothers to engage in the labor market. It suggests that for these households, the benefits of childcare services—such as preparing children for primary education—might outweigh the costs, driving also their labor market participation.

Overall, these findings indicate that the main factors driving women's labor force participation and employment in this context are likely related more to economic constraints than time availability. Low- and middle-income households, as well as those prioritizing their children's education, are most responsive to the policy. In contrast, households with only one adult woman do not show as strong a response, suggesting that the cost of childcare remains a significant factor for average women in these regions, particularly those with limited economic means.

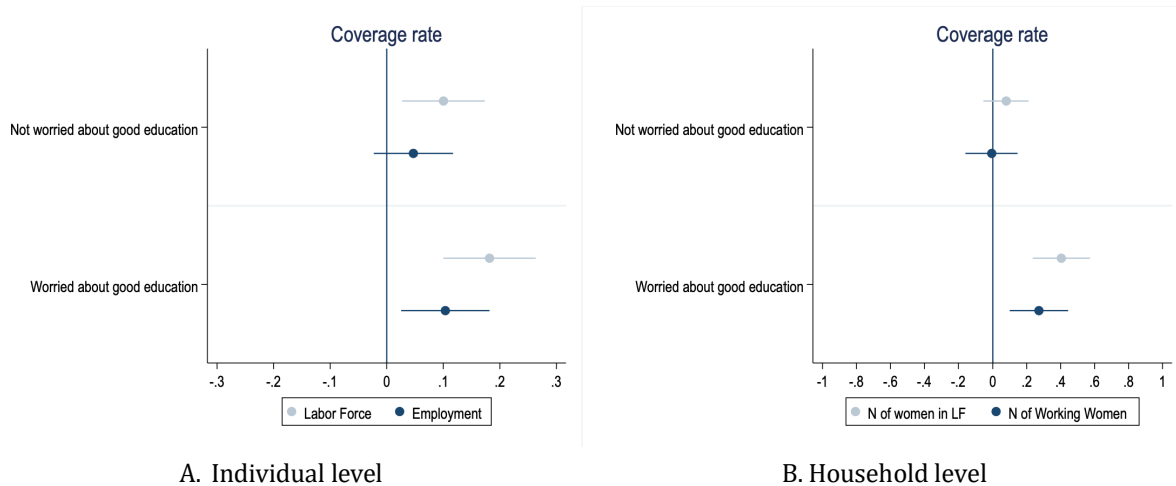


FIGURE 5. By household perception

Note: For more information, please refer to appendix tables 8 and 9.

Source: World Bank: Uzbekistan Household Budget Survey survey data; own calculations.

5.3. Robustness tests

Lastly, we do robustness test estimation using HBS dataset and by applying different measures of policy variables and by estimating the model for placebo groups of respondents using the L2CU dataset.

HBS analyses. Table 3 presents staggered difference in differences estimation for the HBS dataset. The estimates are derived from a sample of women residing in households with children aged 1-6 in Uzbekistan, covering the period from 2015 to 2022. The sample construction in each column follows a similar structure as described above. As mentioned in Section 3, we measure the policy in two different ways: first, the annual preschool participation rate of children aged 1-6, directly obtained from the website, and second, by comparing the employment outcomes of women living in regions with fast policy implementation after the reform to those of women residing in regions with slow policy implementation.

Our findings show a positive impact of the public childcare expansion on women's employment rates. In regions where the coverage rate increased above the median, the policy led to a 3.3 percentage point rise in female employment. However, due to the small number of clusters in our sample, the standard errors are large, making the statistical significance of this result weaker.

TABLE 3. Regression estimates, effects of childcare coverage on women' employment.

	Household		Individual		Mothers		Other women	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Employed</i>								
Coverage rate	0.419 (0.246)		0.174 (0.11)		0.264* (0.14)		0.034 (0.09)	
Treated		0.0811** (0.0336)		0.033 (0.02)		0.038 (0.03)		0.025** (0.01)
Mean	0.376	0.376		0.186		0.206		0.160
Individual controls			Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3305 2	33052	61423	61423	35079	35079	26344	26344

*Note:*The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. For household-level analyses, the outcome variable is the number of women in the labor force and the number of women employed. Standard errors in parentheses, clustered at regional level;* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank:Household Budget Survey data 2015–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

Different measurements of treatment. In Appendix Table 3, we present regression estimations using various measurements of treatment variables. For the second treatment variable, we defined a dummy variable equal to 1 if the district coverage rate increased by more than 25% during the study period and 0 otherwise, following the approach used by (Kleven 2021). Our third policy variable takes the value of 1 if the district's relative coverage rate is higher than the median coverage rate of 2021, considering data from 2018 onwards. Additionally, we included the baseline coverage rate as a control to account for regional differences before the policy implementation. Remarkably, all the measurements of policy variables yielded statistically significant estimates in our analysis.

Placebo test. Finally, in Appendix Table 4, we provide the estimation of the model for women without young children and for male respondents living with young children. These analyses are made because the policy is anticipated to have a more pronounced impact on women with young children, as they are commonly considered the primary caregivers. In line with our expectations, we did not find any consistent significant

effects of the policy implementation on the labor supply of these two groups of respondents.

6. Conclusion

To conclude, in this paper, we study the effect of a childcare expansion policy reform implemented in Uzbekistan in 2018-2022 on the labor market participation of *all working-age women* living with young children. Exploiting the unique household structure of the country allows us to observe not only mothers, but also other informal care providers within each household, including grandmothers and other working-age women who can potentially be affected by this policy reform. To get at the causal effect of the policy, we utilize variation in childcare coverage across different districts and over time. Treated households are the ones living in districts that had above-median growth in the childcare coverage rate since 2019. The control group faced such an expansion of growth only later in time or not at all (during the study period).

Our findings reveal that the childcare expansion policy increased female labor force participation by 12 percent on average. The impact was most strong among low- and middle-income households, as well as those prioritizing their children's education, while high-income households and those with only one adult woman showed little change. These results suggest that many women entered the workforce to afford the relatively expensive preschool childcare and provide better educational opportunities for their children. This challenges the common notion that time constraints are the primary barrier to women's employment in this context. Instead, economic factors—particularly the need to cover childcare costs—are the key drivers. Unlike previous studies, where time availability was seen as the main factor, our findings show that financial pressures and educational aspirations are critical motivators for women joining the labor market. With this project, we provide causal evidence of childcare expansion policy implementation for low-income developing countries where it can bring more crucial benefits to the economy. Secondly, the policy expansion we study is ongoing, which makes it more relevant to the current labor market situation.

Furthermore, although the policy successfully increased labor force participation, the smaller effect on actual employment is estimated. It suggests that not all women who entered the labor market were able to secure jobs. This discrepancy likely came from tight labor market conditions in Uzbekistan, where job availability remains limited despite a rise in job-seeking activity among women. This highlights a significant gap

between the desire to work and the availability of jobs, suggesting that childcare expansion alone may not be enough to improve women's employment outcomes without simultaneous efforts to increase job opportunities.

Limitations. There are several limitations of this research project. First, in terms of outcome variables, labor force participation is measured as a dummy variable but not actually working hours, which could be an even more informative variable. Thus, the estimation mostly focusses on the external margin of employment. Furthermore, the wages of the respondents are not available in the survey. If such data were available, we could have calculated economic return from this implemented childcare program extension. Additionally, we do not actually observe whether the children in those households are actually going to preschool programs after the policy implementation, but only can estimate "intention to treat" as we measure if women living with young children change their labor market participation.

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Appendix A. Tables

TABLE A1. Descriptive statistics, overall provision of childcare, 2015–2022

	2015	2016	2017	2018	2019	2020	2021	2022
<i>Dependant variables</i>								
Employed	0.16	0.17	0.18	0.18	0.18	0.18	0.21	0.22
N of working women	0.37	0.40	0.41	0.41	0.40	0.44	0.55	0.52
<i>Main Explanatory Variable</i>								
Coverage rate	15.21	15.43	17.25	16.83	21.23	27.66	27.86	30.29
<i>Individual covariates</i>								
Age	35.09	35.52	35.66	36.18	36.38	36.73	37.05	37.22
Married	0.79	0.80	0.80	0.81	0.81	0.83	0.82	0.83
<i>Household covariates</i>								
Household size	7.34	7.08	7.17	7.09	6.97	6.40	6.60	6.61
N of women	2.42	2.36	2.35	2.34	2.26	2.06	2.10	2.06
N of children 7-15	0.83	0.75	0.81	0.82	0.84	0.80	0.83	0.89
N of children 1-6	1.68	1.62	1.67	1.63	1.63	1.52	1.54	1.56
Extended Household	0.72	0.73	0.73	0.75	0.73	0.67	0.73	0.72
N of respondents	8578	8398	8515	8390	8063	3333	6901	9245

Note: The sample consists of working-age women aged 15 to 64 living in households with at least one child aged 1 to 6, excluding households with infants under the age of 1;
Source: World Bank: Household Budget Survey; own calculations; Uzbekistan Statistical Agency: data on children preschool participation rate

TABLE A2. Descriptive statistics of females in treated districts versus not treated, in 2018 and 2022

	2018		2022	
	Not treated	Treated	Not treated	Treated
<i>Dependant variables</i>				
N of women in LF in the household	0.72	0.55	0.29	0.32
N. of employed women in the household	0.62	0.44	0.26	0.26
Labor Force Participation	0.27	0.25	0.13	0.15
Employed	0.22	0.19	0.12	0.13
<i>Main explanatory variable</i>				
Coverage rate	0.59	0.36	0.56	0.66
<i>Individual level explanatory variables</i>				
Age	35.43	36.20	36.63	37.12
Married	0.73	0.79	0.68	0.71
College degree	0.09	0.08	0.07	0.07
<i>Household level explanatory variables</i>				
Extended household	0.71	0.77	0.80	0.85
Relationship to the child:				
Mother	0.52	0.53	0.51	0.50
Grandmother	0.22	0.27	0.22	0.27
Other	0.26	0.20	0.27	0.23
Household size	7.30	6.73	7.66	7.07
N of women	2.52	2.33	2.48	2.40
N of employed men in the household	1.10	0.96	0.84	0.79
N of children 7-14	0.96	0.77	1.10	0.88
N of children 1-6	1.62	1.62	1.62	1.61
Households with children aged 3-6	0.45	0.43	0.53	0.53
Households with children aged 1-2	0.27	0.25	0.19	0.20
Households with children aged 1-2 and 3-6	0.28	0.32	0.28	0.27
HH income:				
Lowest income	0.22	0.43	0.22	0.39
Middle income	0.41	0.33	0.43	0.33
Highest income	0.37	0.24	0.35	0.28

Note: Treated group: women in districts with an above-median increase in the childcare coverage between 2019 and 2022. Control group: women in district with increase in the childcare coverage below or equal to the median between 2019 and 2022.

Source: World Bank: Listening to Citizens of Uzbekistan survey data; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A3. Regression estimates, effects of childcare coverage on women employment

	Household		Individual		Mothers		Other women in HH	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Labor Force participation</i>								
Coverage rate	0.251**		0.142***		0.150**		0.145**	
	(0.10)		(0.05)		(0.07)		(0.07)	
Treated		0.044*		0.021*		0.022		0.021
		(0.02)		(0.01)		(0.01)		(0.02)
Mean	0.371	0.371	0.187	0.187	0.230	0.230	0.155	0.155
<i>Employment</i>								
Coverage rate	0.044		0.033		0.049		0.022	
	(0.11)		(0.05)		(0.06)		(0.07)	
Treated		0.023		0.010		0.011		0.011
		(0.02)		(0.01)		(0.01)		(0.02)
Mean	0.301	0.301	0.151	0.151	0.184	0.184	0.130	0.130
Individual controls			Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10856	10856	21569	21569	10981	10981	10588	10588

*Note:*The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. For household-level analyses, the outcome variable is the number of women in the labor force and the number of women employed. Standard errors in parentheses, clustered at district level; 7 districts are excluded. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

*Source:*World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A4. Regression estimates at individual level by household income

	Lowest		Middle		Highest	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Labor Force participation</i>						
Coverage rate	0.156*		0.244***		-0.072	
	(0.09)		(0.08)		(0.06)	
Treated		0.025		0.045***		-0.013
		(0.02)		(0.02)		(0.02)
Mean		0.198		0.175		0.201
<i>Employment</i>						
Coverage rate	0.024		0.196***		-0.084	
	(0.08)		(0.06)		(0.06)	
Treated		0.006		0.041***		-0.009
		(0.02)		(0.01)		(0.02)
Mean		0.157		0.140		0.180
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9140	9140	8464	8464	6913	6913

Note: The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. Standard errors in parentheses, clustered at district level; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A5. Regression estimates at household level by household income

	Lowest		Middle		Highest	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Labor Force participation</i>						
Coverage rate	0.309*		0.427**		-0.251	
	(0.17)		(0.17)		(0.17)	
Treated		0.052		0.113***		-0.065
		(0.04)		(0.04)		(0.04)
Mean		0.387		0.388		0.340
<i>Employment</i>						
Coverage rate	0.077		0.303**		-0.212	
	(0.17)		(0.14)		(0.17)	
Treated		0.014		0.109***		-0.046
		(0.04)		(0.04)		(0.04)
Mean		0.308		0.315		0.306
Household controls	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5029	5029	4167	4167	3258	3258

*Note:*The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. For household-level analyses, the outcome variable is the number of women in the labor force and the number of women employed. Standard errors in parentheses, clustered at district level; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A6. Regression estimates at individual level by informal care availability

	1 women in the HH		2 or more women in HH	
	(1)	(2)	(3)	(4)
<i>Labor Force participation</i>				
Coverage rate	0.067 (0.09)		0.158*** (0.04)	
Treated		-0.009 (0.03)		0.032*** (0.01)
Mean		0.267		0.175
<i>Employment</i>				
Coverage rate	-0.017 (0.09)		0.086* (0.05)	
Treated		-0.019 (0.03)		0.025** (0.01)
Mean		0.226		0.143
Individual controls	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Observations	4280	4280	20216	20216

Note: The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Clean districts World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A7. Regression estimates at household level by informal care availability

	1 women in the HH		2 or more women in HH	
	(1)	(2)	(3)	(4)
<i>Labor Force participation</i>				
Coverage rate	0.08 4 (0.09)		0.336*** (0.10)	
Treated		-0.008 (0.03)		0.075*** (0.03)
[1em] Mean		0.267		0.431
<i>Employment</i>				
Coverage rate	0.02 1 (0.09)		0.180 (0.12)	
Treated		-0.014 (0.03)		0.063** (0.03)
Mean		0.228		0.353
Household controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Observations	4280	4280	8174	8174

*Note:*The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. For household-level analyses, the outcome variable is the number of women in the labor force and the number of women employed. Standard errors in parentheses, clustered at district level; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A8. Regression estimates at individual level by household perception

	Worry about good educ.		Not worry about good educ.	
	(1)	(2)	(3)	(4)
<i>Labor Force participation</i>				
Coverage rate	0.182*** (0.05)		0.100** (0.04)	
Treated		0.033** (0.01)		0.013 (0.01)
Mean		0.200		0.183
<i>Employment</i>				
Coverage rate	0.104** (0.05)		0.047 (0.04)	
Treated		0.023* (0.01)		0.015 (0.01)
Mean		0.163		0.152
Individual controls	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Observations	11592	11592	12925	12925

*Note:*The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A9. Regression estimates at household level by household perception

	Worry about good educ.		Not worry about good educ.	
	(1)	(2)	(3)	(4)
<i>Labor Force participation</i>				
Coverage rate	0.404***		0.079	
	(0.10)		(0.08)	
Treated		0.075**		0.023
		(0.03)		(0.03)
Mean		0.387		0.364
<i>Employment</i>				
Coverage rate	0.272**		-0.006	
	(0.10)		(0.09)	
Treated		0.054**		0.028
		(0.03)		(0.03)
Mean		0.317		0.303
Household controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Observations	5975	5975	6479	6479

*Note:*The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. For household-level analyses, the outcome variable is the number of women in the labor force and the number of women employed. Standard errors in parentheses, clustered at district level; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A10. Balance test at household level by household perception

	Not worry about providing good education	Worry about providing good education	T-test
N of women in LF in HH	0.406 (0.540)	0.406 (0.561)	-0.001 (0.03)
N of employed women in HH	0.331 (0.514)	0.304 (0.492)	0.027 (0.02)
N of women in HH	1.914 (0.930)	1.796 (0.912)	0.117** (0.04)
Women average education level in HH	7.528 (1.673)	7.404 (1.781)	0.123 (0.08)
Women with higher education in HH	0.0914 (0.252)	0.0655 (0.220)	0.026* (0.01)
N of children 1-6	1.518 (0.761)	1.517 (0.735)	0.001 (0.04)
Household size	6.299 (2.227)	5.986 (2.178)	0.313** (0.11)
Extended hh	0.626 (0.483)	0.510 (0.498)	0.116*** (0.02)
Coverage rate in dist.	0.415 (0.247)	0.396 (0.237)	0.020 (0.01)
Lowest income	0.416 (0.493)	0.446 (0.497)	-0.030 (0.02)
Middle income	0.310 (0.463)	0.318 (0.466)	-0.008 (0.02)
Highest income	0.274 (0.446)	0.236 (0.425)	0.037 (0.02)
Urban region	0.205 (0.404)	0.201 (0.401)	0.004 (0.02)
Observations			1727

*Note:*The balance test is estimated among households living young children aged 1 to 6, excluding households with infants under the age of 1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A11. Regression estimates, different specification of treatment

	(1)	(2)	(3)	(4)
<i>Labor Force participation</i>				
Above 25 %	0.029** (0.01)			
Above median-2021		0.032*** (0.01)		
Coverage rate			0.138*** (0.03)	
Treated				0.024*** (0.01)
Coverage rate in 2018			1.640*** (0.07)	1.582*** (0.07)
<i>Employment</i>				
Above 25 %	0.017 (0.01)			
Above median-2021		0.019* (0.01)		
Coverage rate			0.063* (0.04)	
Treated				0.017* (0.01)
Coverage rate in 2018			1.330*** (0.07)	1.309*** (0.07)
Individual controls	Yes	Yes	Yes	Yes
Household controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Observations	24517	24517	24517	24517

Note: The analysis is estimated among working age women living with young children aged 1 to 6, excluding households with infants under the age of 1. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

TABLE A12. Regression estimates, effects of childcare coverage on other people

	Men living with children aged 1-6				Women living with children 7-14			
	Household		Individual		Household		Individual	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Labor Force participation</i>								
Coverage rate	0.283*		0.103		0.178		0.082	
	(0.17)		(0.07)		(0.17)		(0.08)	
Treated		0.022		0.002		0.022		0.010
		(0.04)		(0.02)		(0.04)		(0.02)
Mean	0.886	0.886	0.492	0.492	0.415	0.415	0.260	0.260
<i>Employment</i>								
Coverage rate	0.142		0.037		0.044		0.005	
	(0.15)		(0.07)		(0.16)		(0.08)	
Treated		0.014		-0.001		-0.019		-0.013
		(0.04)		(0.02)		(0.03)		(0.02)
Mean	0.822	0.822	0.453	0.453	0.357	0.357	0.225	0.225
Individual controls			Yes	Yes			Yes	Yes
Household controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10856	10856	19678	19678	7477	7477	10907	10907

Note: The analysis is estimated among working age men living with young children aged 1 to 6, excluding households with infants under the age of 1 and among women living with young school aged children, aged 7 to 14, excluding households with infants under the age of 1. Standard errors in parentheses, clustered at district level; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: World Bank: Listening to Citizens of Uzbekistan survey data 2018–2022; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

Appendix B. Figures

KGC, 2011

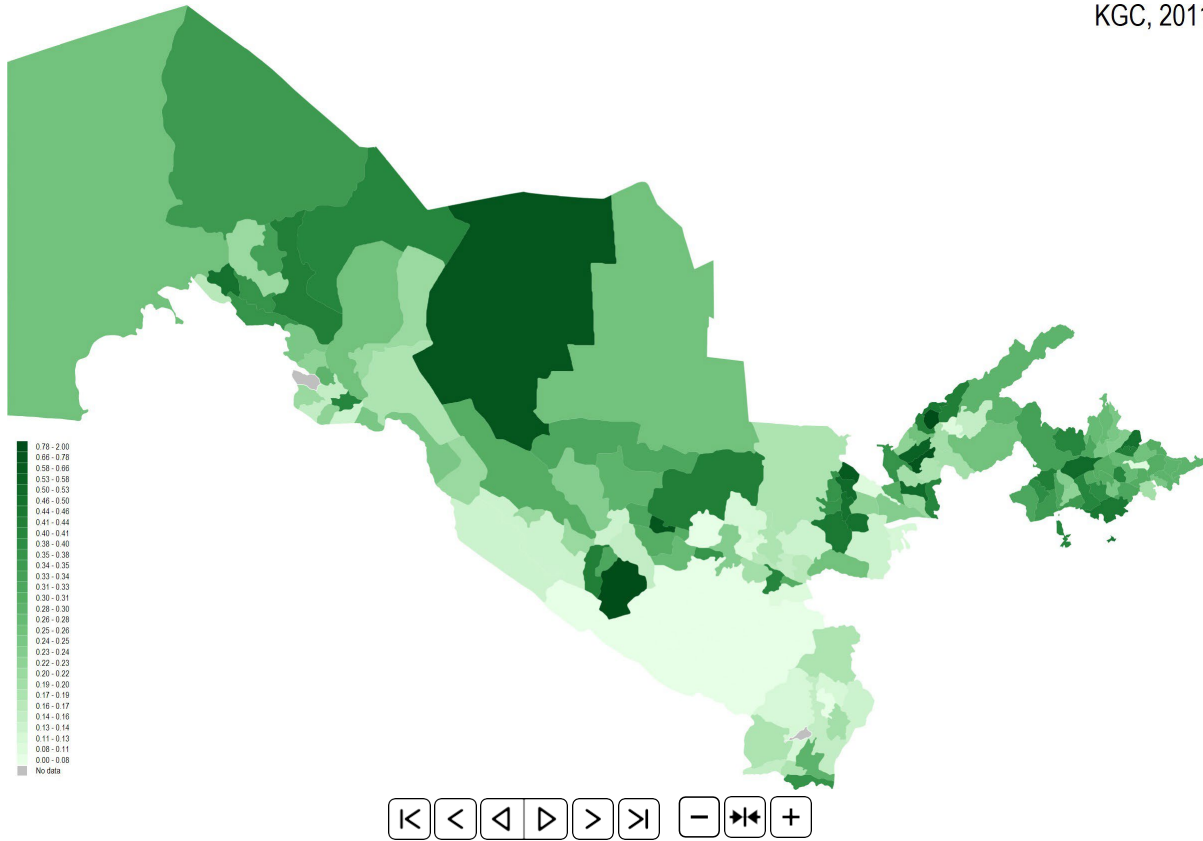


FIGURE A1. Spatial animation of KGC, 2011-2022.

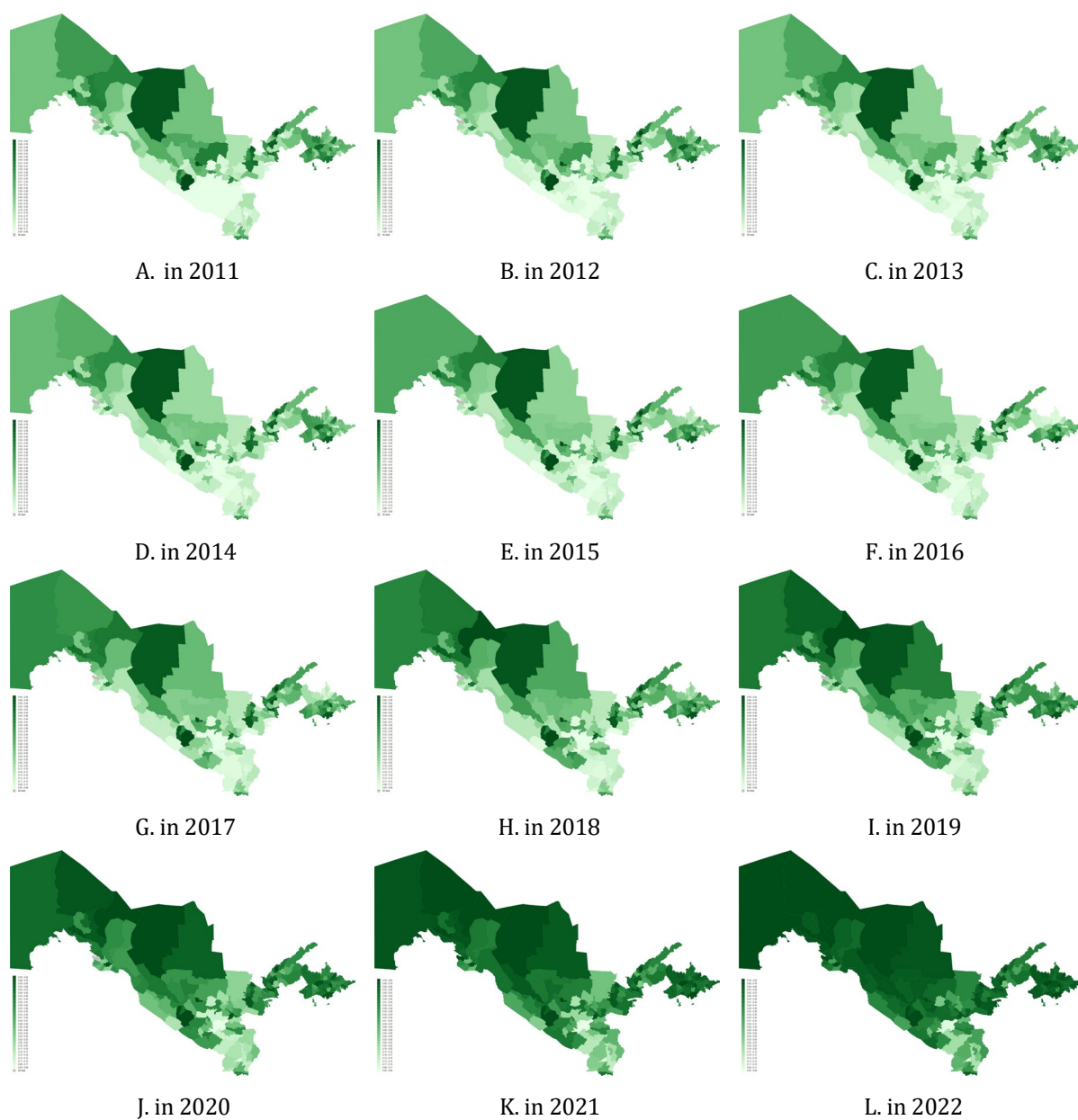
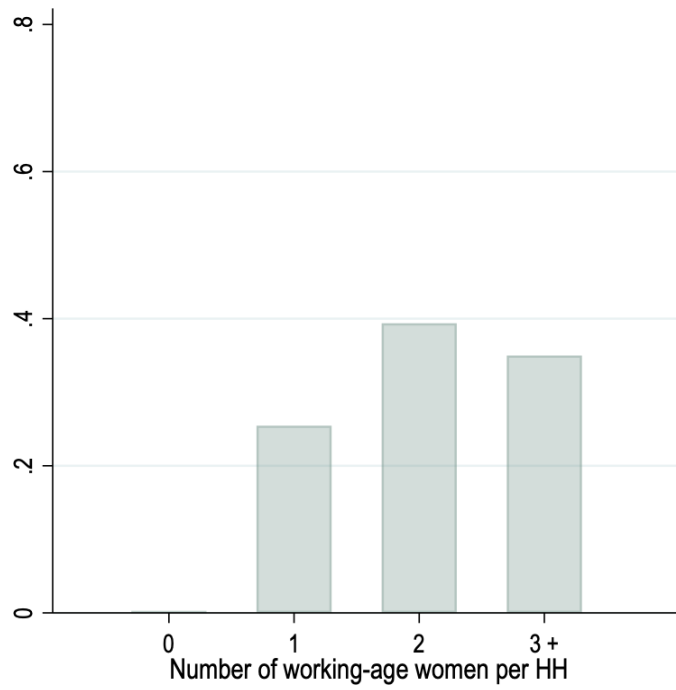


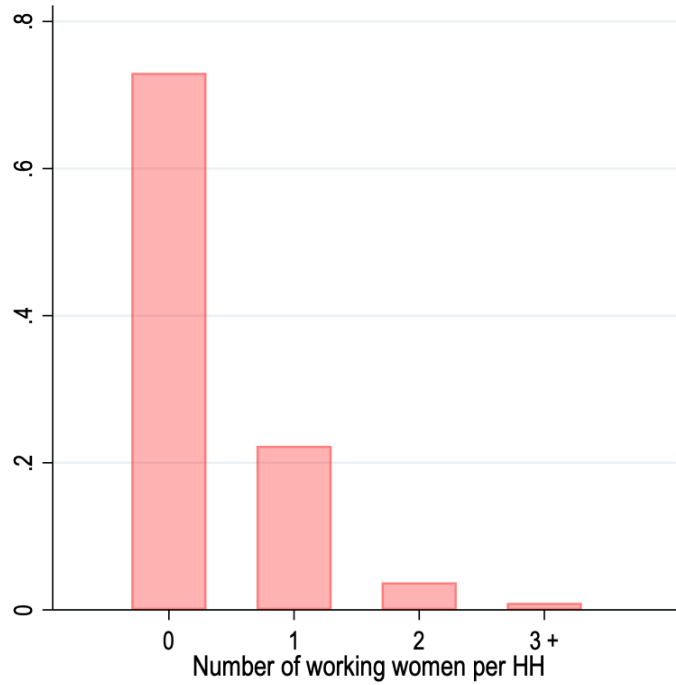
FIGURE A2. Children preschool participation rate in each district

Childcare coverage (in %) at the district level, 2011–2022, Uzbekistan *Notes:* Childcare coverage measured at the district level; own calculations

Source: Uzbekistan Statistical Agency: data on children preschool participation rate.



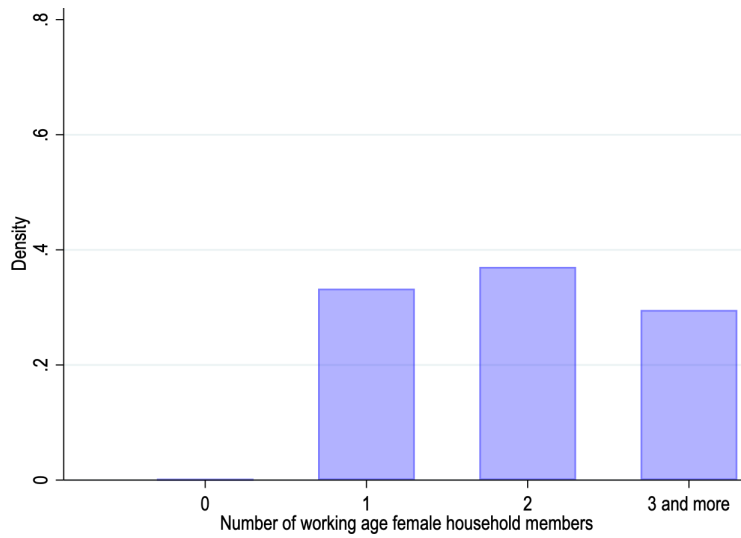
A. Number of *all* working age women



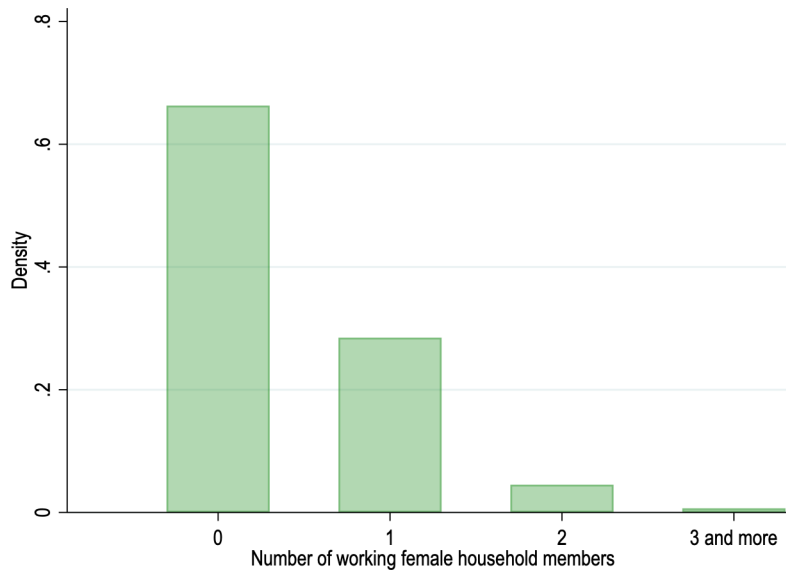
B. Number of working women

FIGURE A3. Distribution of households

Source: World Bank: Listening to Citizens of Uzbekistan survey data; own calculations.



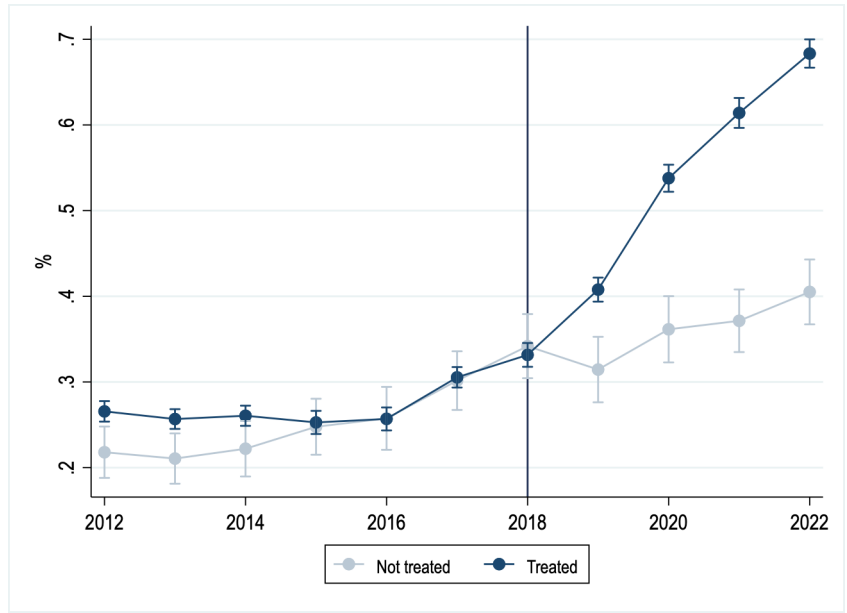
A. Number of *all* working age women



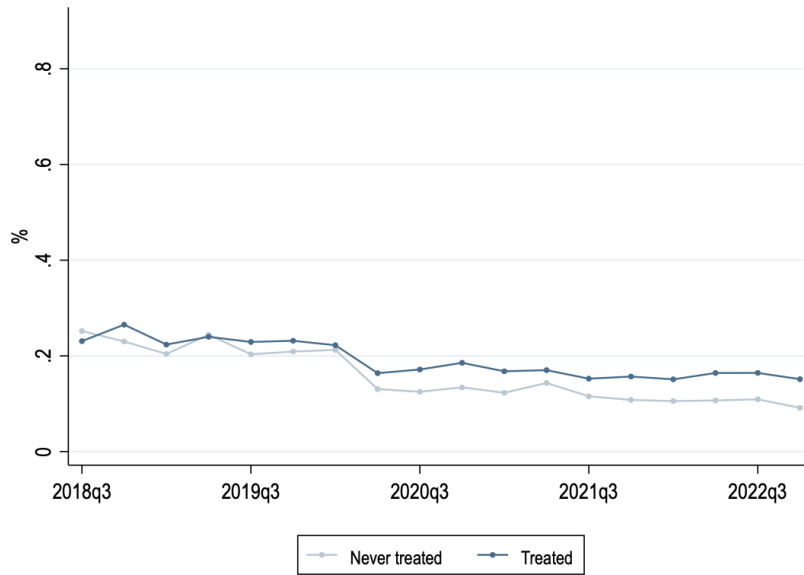
B. Number of working women

FIGURE A4. Distribution of households

Source: World Bank: Uzbekistan Household Budget Survey survey data; own calculations.



A. Coverage rate

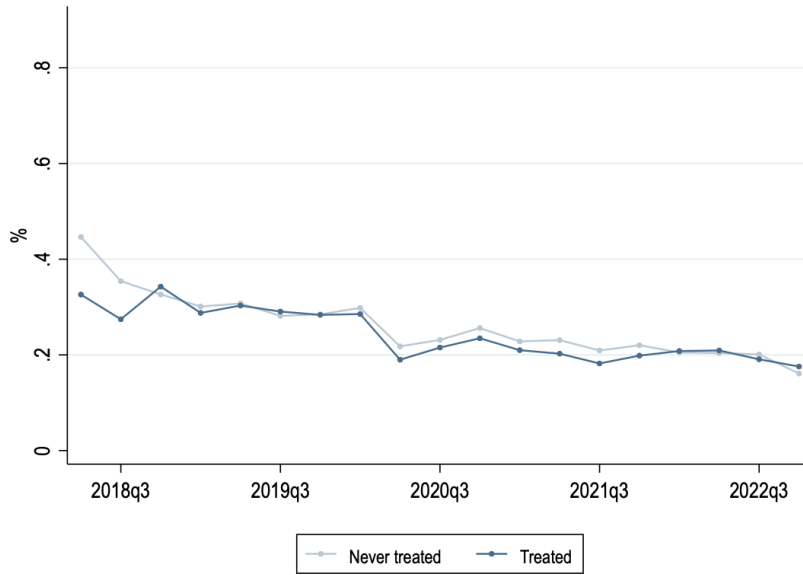


B. Labor Force Participation

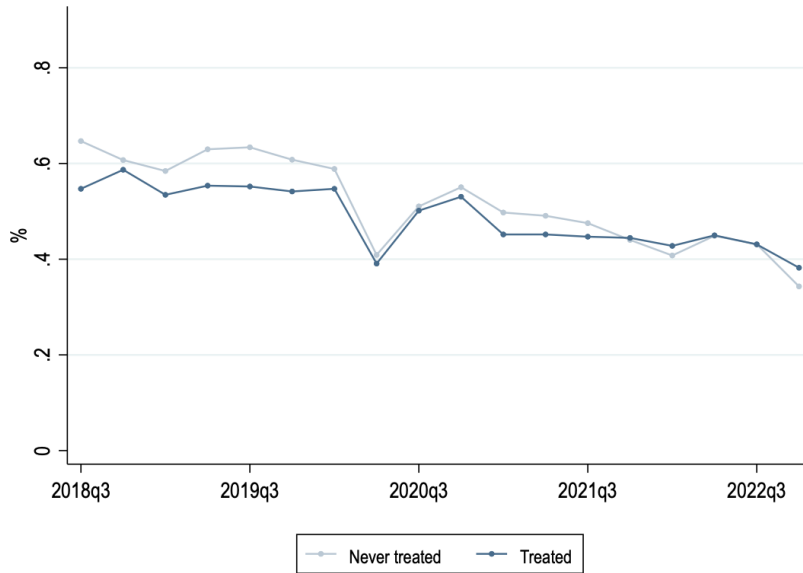
FIGURE A5. Control Districts versus Treated Districts

Notes: Pre- and post-treatment trends, childcare coverage rate (in %) at the district level, 2012-2022 and Labor Force Participation rate of women living with young children (1-6), excluding households with infants under the age of 1, quarterly, 2018-2022. Treatment group: districts with an above-median increase in the childcare coverage between 2019 and 2022. Control group: districts with increase in the childcare coverage below or equal to the median between 2019 and 2022; 7 districts where coverage rate fluctuated significantly and capital city is excluded from the illustration

Source: World Bank: Listening to Citizens of Uzbekistan; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.



A. Women living without young children

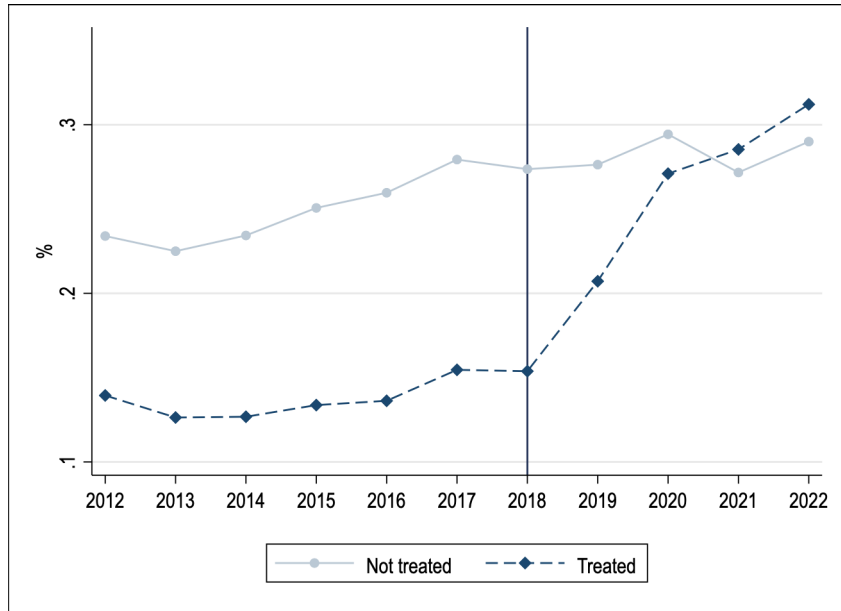


B. Men living with young children

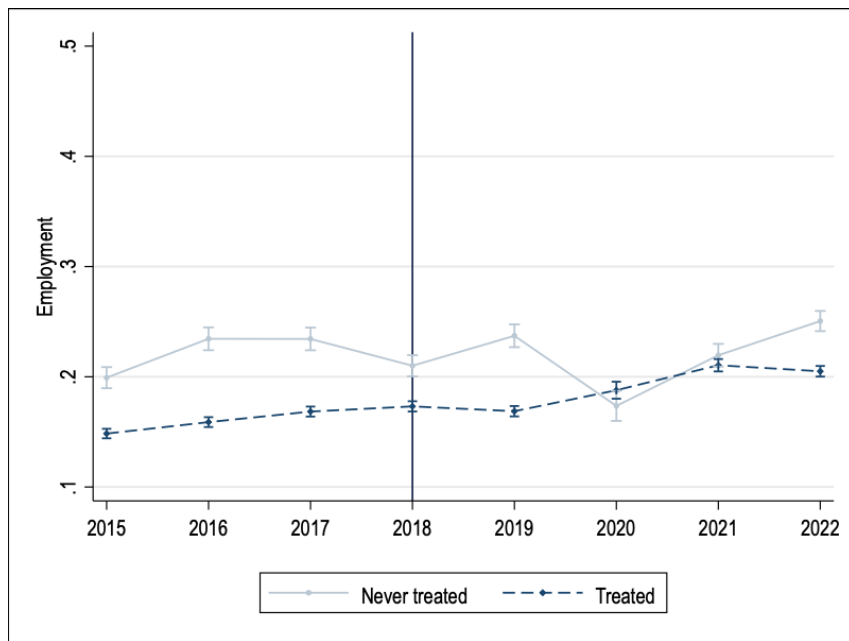
FIGURE A6. Control Districts versus Treated Districts

Notes: Pre- and post-treatment trends, Labor Force Participation rate of men living with young children (1-6), excluding households with infants under the age of 1, and women living without young children (1-6), quarterly, 2018-2022. Treatment group: districts with an above-median increase in the childcare coverage between 2019 and 2022. Control group: districts with increase in the childcare coverage below or equal to the median between 2019 and 2022;

Source: World Bank: Listening to Citizens of Uzbekistan; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.



A. Coverage rate

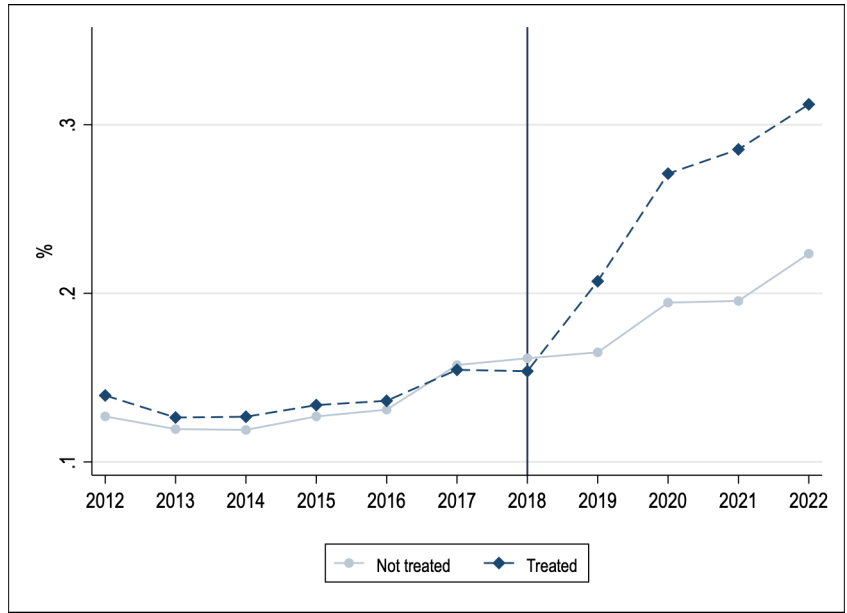


B. Employment

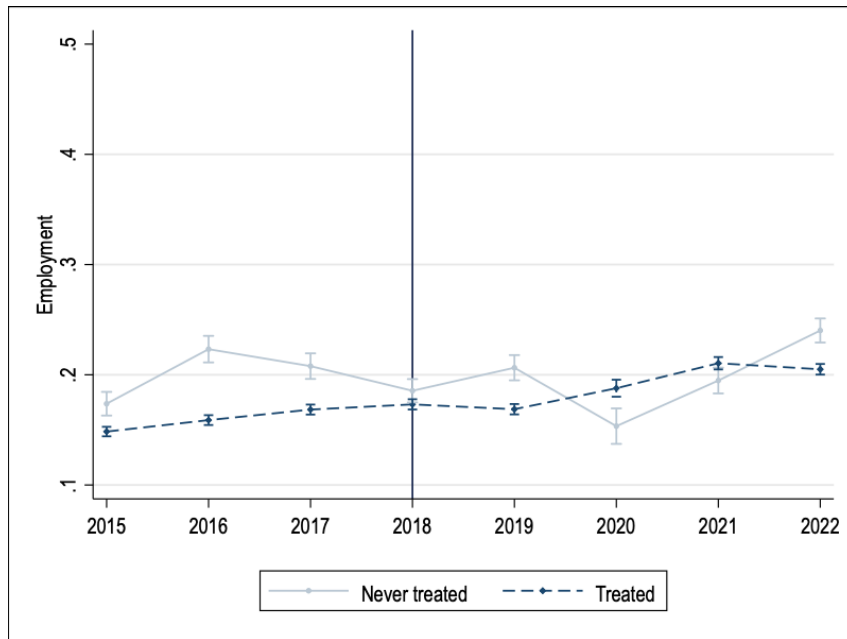
FIGURE A7. Control regions versus Treated regions

Notes: Pre- and post-treatment trends, childcare coverage rate (in %) at the regional level, 2012-2022 and Employment rate of women living with young children (1-6), excluding households with infants under the age of 1, annually, 2015-2022. Treatment group: regions with an above-median increase in the childcare coverage between 2019 and 2022. Control group: regions with increase in the childcare coverage below or equal to the median between 2019 and 2022;

Source: World Bank: Household Budget Survey; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.



A. Coverage rate



B. Employment

FIGURE A8. Control Districts versus Treated Districts

Notes: Pre- and post-treatment trends, childcare coverage rate (in %) at the regional level, 2012-2022 and Employment rate of women living with young children (1-6), excluding households with infants under the age of 1, annually, 2015-2022. Treatment group: regions with an above-median increase in the childcare coverage between 2019 and 2022. Control group: regions with increase in the childcare coverage below or equal to the median between 2019 and 2022; capital city is excluded from the illustration

Source: World Bank: Household Budget Survey; Uzbekistan Statistical Agency: data on children preschool participation rate; own calculations.

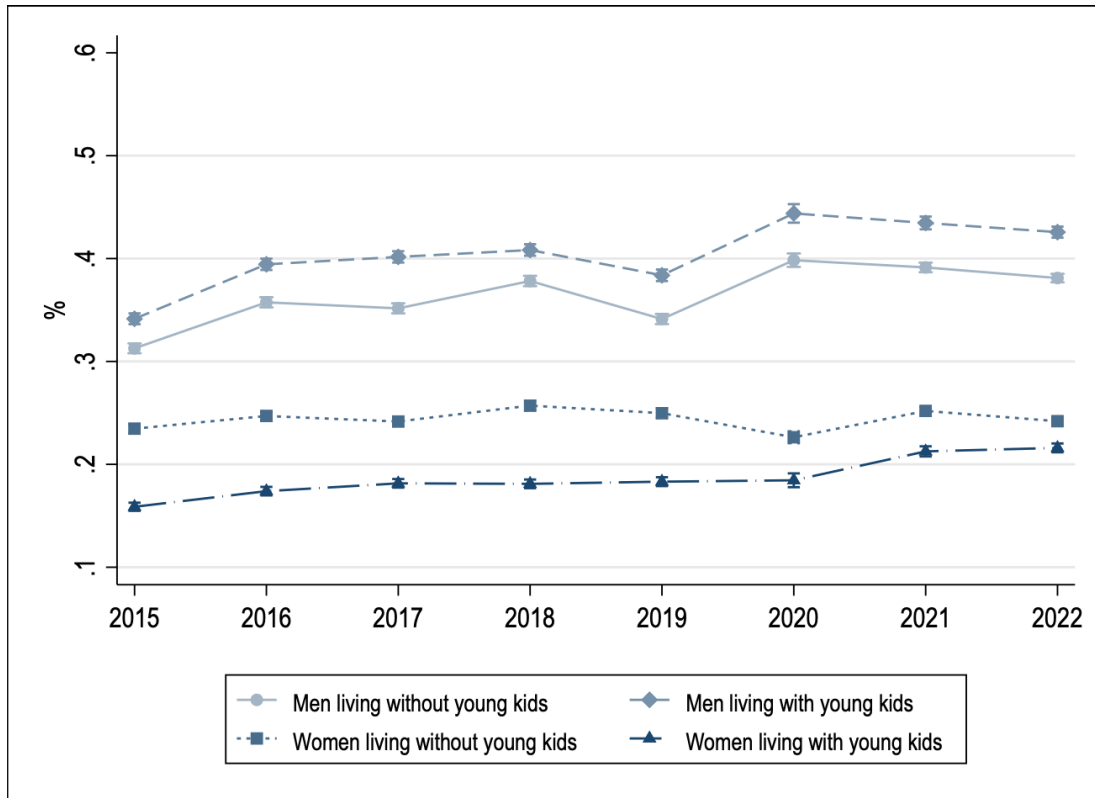


FIGURE A9. Employment rate of female and male respondents

The employment rate of female and male respondents who reside with children aged 1-6 compared to those without young children in their households. This comparison helps to understand how the presence of young children in the household may impact the employment status of both genders.

Source: World Bank: Household Budget Survey; own calculations.