Childcare Availability and Woman Labor Market Outcomes Among Low Income Earners in Dhaka

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Abstract

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This thesis explores the impact of childcare availability on women's labor market outcomes in low-income areas of Dhaka, using data from the Dhaka Low-Income Area Gender, Inclusion, and Poverty Survey 2018. A multinomial logistic regression model is used to study how socio-economic and demographic factors affect labor market outcomes. Findings show that higher education and childcare access increase the likelihood of full-time employment, while cultural conservativeness and lack of childcare access heighten the probability of being out of the labor force. Residing in slum areas negatively affects full-time employment prospects. Part-time employment is identified as a viable option for young mothers. The study highlights the importance of accessible childcare and education in enhancing women's workforce participation in Dhaka's low-income areas.

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1 Introduction

In recent decades, women's participation in the labor force has become a crucial element of economic development, particularly in developing countries such as Bangladesh. This emphasis is especially pertinent given the considerable population of working-age women in Bangladesh, presenting a substantial opportunity for economic progress. However, the dual responsibilities of employment and childcare significantly impact women's employment decisions. This effect is especially pronounced in countries like Bangladesh, where prevailing gender norms and the availability of childcare services pose distinctive challenges. Hence, this study aims to explore the relationship between childcare availability and labor market outcomes among women from low-income area in Dhaka, providing insights into how childcare facilities could potentially enhance women's economic participation.

Bangladesh is one of the most densely populated countries in the world. According to Mavis (2024), the country has a total population of 171.59 million, with 87.39 million males and 84.2 million females, based on data from the Bangladesh Bureau of Statistics. The fact that nearly half of the population is female underscores the importance of women's participation in the workforce for socio-economic development. However, as in many other countries, the percentage of women in the workforce is much lower than that of men. Wambile et al. (2024) reports that, based on HIES 2022 data, the labor force participation rate for Bangladeshi women is 42.5%, compared to 81.3% for men.

Historically, the role of women in Bangladesh was predominantly confined to domestic responsibilities, with limited access to formal employment opportunities. However, economic needs, social reforms, and improved education for women have gradually increased their involvement in various sectors. As a result, Bangladesh is witnessing significant transformations in its socio-economic landscape, particularly in gender dynamics and labor participation. According to the Bangladesh Bureau of Statistics, the percentage of women in the workforce rose from 29.85% in 2010 to 36.37% in 2019.[1] Despite this progress, women's labor force participation is still much lower than men's.

Despite advancements in educational attainment among women in Bangladesh, with more girls attending school and completing higher levels of education, this progress has not translated proportionally into higher workforce participation. According to Rupa (2023), the enrollment of girls in secondary school increased by 7.7% by 2021, while dropout rates significantly declined from 14.7% to 3.5%. Additionally, in 2021, 51% of females had access to secondary education. However, Bangladesh is ranked 139th globally in terms of women's

1. Bangladesh Bureau of Statistics. (2021). Gender Based Employment and Wage. Policy Brief, Issue 02. Available at: https://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/4c7eb0f0_e780_4686_b546_b4fa0a8889a5/2021-05-16-09-14-4b18b6a036c8d9ad87930d0705deb7bd.pdf

economic participation and employment opportunities. Therefore, it is evident that despite advancements in women's education, the employment rate for women remains low.

Even though Bangladesh is witnessing economic growth, poverty remains a significant issue. According to Asian Development Bank, in 2022, 18.7% of Bangladesh's population was living below the national poverty line. Additionally, in 2023, 5.8% of employed individuals in Bangladesh earned less than $2.15 per day, based on purchasing power parity.[2] Despite this high percentage of poor and middle-income people, inflation is rising every year, decreasing their purchasing power since their incomes are not increasing at the same rate. According to Tranding Economics, in March 2024, Bangladesh's annual inflation rate rose to 9.81%, up from 9.67% in February.[3] This increase was mainly due to significant price hikes in food and non-alcoholic beverages, clothing and footwear, and housing and utilities. As a result, both parents often need to work outside the home to support their daily expenses.

However, despite the economic necessity for both parents to work outside the home, women encounter numerous obstacles when it comes to participating in the workforce. One of the most significant challenges for women working outside the home in Bangladesh is the issue of childcare, particularly for those with young children. Traditionally, the responsibility of caring for children falls predominantly on the mother. This cultural expectation persists despite the increasing number of women seeking employment. In Bangladesh, a substantial portion of the population falls into the poor and middle-class categories, making commercial childcare services financially inaccessible for many families. Consequently, women often depend on grandparents or other relatives to provide childcare while they are at work. However, this arrangement is not always feasible for every mother due to various factors such as the absence of extended family members living nearby or the inability of older relatives to provide adequate care. As a result, the lack of affordable and reliable childcare options stands as a significant barrier for many Bangladeshi women who wish to participate in the workforce. This obstacle not only affects the individual women but also has broader implications for the country's economic development and gender equality in the labor market.

In addition to home and childcare responsibilities, the huge wage gap between men and women fosters a sense of undervaluation among women, leading to disinterest in joining the workforce. As a result, despite advancements in education and increasing female participation in the workforce, women in Bangladesh continue to earn substantially less than their male counterparts. According to Wambile et al. (2024), there is a significant wage disparity between men and women in Bangladesh. On average, men earn 35.8% more per hour than women. This wage gap is even more pronounced in the agricultural sector, where men earn

2. Asian Development Bank. (2024). *Poverty Data: Bangladesh.* Asian Development Bank.
3. Trading Economics, "Bangladesh Inflation Rate," *Trading Economics*, April 2024.

57.2% more than women.

Also in Bangladesh, there is often a lack of supportive workplace policies, such as flexible working hours, maternity leave, and family-friendly work environments. The absence of these policies poses a significant barrier for women who strive to balance work and family responsibilities effectively. Without flexible working hours, women find it challenging to manage both professional and domestic duties, leading to increased stress and reduced job satisfaction. The lack of adequate maternity leave further exacerbates the issue, as women are forced to choose between their careers and their roles as mothers. Additionally, the absence of family-friendly work environments means that women receive little to no support in managing childcare and household tasks alongside their professional obligations.

All of these factors make a woman's life more challenging when she must choose between a job and household responsilities. However, the primary obstacle arises for women with young children, as these children require constant attention and care. As the capital city of Bangladesh, Dhaka offers more job opportunities for women compared to other cities in the country, resulting in a higher working female population. Therefore, to determine whether childcare availability enhances women's economic participation, this paper examines the relationship between childcare availability and labor market outcomes among women from slum and low-income areas in Dhaka.

In the context of Dhaka, the term "slum" refers to densely populated urban areas characterized by inadequate housing and poor living conditions. These areas are often distinguished by a lack of basic infrastructure, including access to clean water, sanitation, and proper waste management. Slums typically house the city's most vulnerable populations, many of whom rely on informal labor markets and are trapped in a cycle of poverty due to limited opportunities for upward mobility. However, not all low-income areas in Dhaka can be classified as slums. Some low-income neighborhoods may have better access to services and slightly improved living conditions compared to slums, yet they still struggle with significant economic constraints and limited access to formal employment opportunities.

This paper is closely related to the study by Taş and Ahmed (2021), which also uses data from the 2018 World Bank survey in Dhaka's low-income neighborhoods.[4] They utilized a probit model to examine the relationship between childcare availability and women's labor market outcomes, focusing on the probability of being an income earner, participating in the labor market, and working in the last 30 days. However, the probit model's limitation to binary outcomes oversimplifies the analysis by not differentiating among various alternative

4. The World Bank Group, "Dhaka Low Income Area Gender, Inclusion, and Poverty Survey 2018,*The World Bank*, 2018. Available at: https://microdata.worldbank.org/index.php/catalog/3635/study-description

employment statuses.

This paper extends the analysis by incorporating part-time employment, recognizing its importance for mothers with young children. Using a multinomial logit model, which can handle multiple categories of employment status (full-time employment, part-time employment, unemployment, and being out of the labor force), this research provides a detailed and accurate understanding of the nuances in women's labor market outcomes. The multinomial logit model captures distinctions among different types of employment and analyzes the impact of childcare availability on each status, offering a comprehensive understanding of the determinants of women's labor market outcomes in Dhaka's low-income areas and highlighting the critical role of childcare services in enhancing women's workforce participation. However, the comparison between two models might not be entirely accurate due to the different handling of outcomes.

The results find that access to childcare significantly increases the likelihood of full-time employment for women in Dhaka's low-income areas, while lack of childcare or having young children under six years old reduces this likelihood. Higher education levels positively correlate with full-time employment. These findings highlight the importance of accessible childcare and education in enhancing women's workforce participation in Dhaka's low-income areas.

This paper is structured as follows: Section 2 provides a comprehensive literature review. Section 3 focuses on on the data analysis describing the dataset and the model specification. Section 4 presents the empirical findings and the conclusions are presented in Section 5.

2 Literature Review

Bangladesh is among the most densely populated countries globally. Islam, Islam, and Chakroborty (2004) indicate that a significant decline in fertility rates began in the early 1990s, eventually stabilizing around 3.3 children per woman. Despite this decline, the number of children per woman remains high, posing challenges for working mothers who often lack adequate childcare options both at home and outside. According to Muzzini and Aparicio (2013), Dhaka is one of the most densely populated urban areas worldwide, with a population density of 1,015 people per square kilometer. This makes Dhaka a crucial location for studying women's workforce participation, especially given the numerous obstacles they face due to childcare responsibilities. This literature review examines previous studies to understand the correlation between women's workforce outcomes and childcare availability.

Education is a key factor that enables women to participate in the workforce. Naz and Ashraf (2020) conducted a study in Central Punjab, Pakistan, explores the relationship

between women's attainment of higher education and women's empowerment within a patriarchal context. The findings indicate a strong and significant correlation between higher education and women's empowerment, suggesting that higher education plays a crucial role in empowering women by enhancing their decision-making abilities, political engagement, economic independence, and overall self-esteem. Similarly, a study by Faridi, Chaudhry, and Anwar (2009) examined the factors affecting female labor force participation using cross-sectional data from a field survey in Pakistan. Their study employed logistic regression to identify the determinants and found that educational attainment greatly enhances women's labor force participation. However, the presence of young children was found to decrease female labor force participation.

Although increasing educational availability and a progressively evolving society are contributing to the rise in women's participation in the labor market, the labor market outcomes for women remain significantly lower than those for men. A study conducted by Ntuli (2007) investigates the determinants of African women's labor force participation in South Africa from 1995 to 2004, utilizing survey data and the decomposition technique developed by Even and Macpherson (1990) to analyze these trends over a decade. The findings reveal that women's labor force participation increased from 38% to 46% during this period, although it remained lower than that of men, which rose from 58% to 62%. Similarly, a study by Sanghi, Srija, and Vijay (2015) investigates the trends in female labor force participation (FLFP) in India, focusing particularly on rural women. The study observes a decline in FLFP as economies shift from agricultural to industrial sectors. This transition involves a move from family-based to large-scale production, where less educated women encounter reduced employment opportunities. Specifically, in India, the female labor force participation rate (LFPR) is approximately 22.5%, with pronounced disparities in rural areas where women's participation is only 35.8% compared to 81.3% for men.

While women's participation in the workforce has increased, maintaining employment remains challenging for women with newborns or young children who require continuous care. A study conducted by Felmlee (1984) in the USA employs a stochastic, continuous-time model to investigate the reasons behind women's transitions from employment to unemployment, utilizing employment data from the National Longitudinal Survey of Young Women (1968-1973). This research underscores the intricate interplay between fertility and employment, demonstrating that the presence of young children elevates the probability of women leaving their jobs, whereas increased wages tend to mitigate job exits related to pregnancy. Similarly, another study by Budig (2003) examines the intricate relationship between women's employment and fertility by analyzing data from the 1979-1994 National Longitudinal Survey of Youth in the USA through event history analysis. The findings reveal that

pregnancy and having preschool-aged children discourage non-employed women from entering the workforce, while preschool children also heighten the likelihood of full-time employed women exiting the labor force.

One of the reasons women with young children leave the workforce is the significant challenge of managing their time, which affects their ability to balance work and family responsibilities, particularly childcare. Rose (2017) investigated the challenges faced by employed mothers in balancing work and family commitments through in-depth interviews with 18 women from various occupations and employment statuses. The findings reveal that these mothers experience significant time pressures characterized by time poverty (insufficient time for necessary activities), time intensity (multitasking), and time density (familial work). Strategies to enhance time efficiency do not alleviate their perceived time pressures, exacerbated by multitasking and blurred boundaries between work and home. Another study by Wardiyah, Rilyani, and Nirwanto (2023) conducted among 231 mothers in a Puskesmas area aimed to assess how maternal employment influences quality time spent with children. Findings indicate a significant effect of maternal work on the availability of quality time with children, revealing that mothers working outside the home generally have fewer opportunities for such interactions compared to those working inside the home.

Hence, childcare accessibility becomes a crucial determinant of women's labor force participation, especially for those with young children. The availability and quality of childcare services significantly impact women's decisions to seek and maintain employment. Clark et al. (2019) conducted a randomized control trial in Nairobi, Kenya, demonstrating that limited access to affordable early childcare inhibits poor urban women's participation in paid work. Women who received vouchers for subsidized early childcare were 8.5 percentage points more likely to be employed compared to those without vouchers. This finding underscores the importance of affordable childcare in enabling women's economic empowerment. Kawabata (2014) further emphasizes the geographic disparities in childcare accessibility in Tokyo, revealing a considerable mismatch between supply and demand, particularly for children aged up to two years. Adequate childcare provision for very young children is strongly associated with higher employment probabilities among mothers. These studies suggest that enhancing childcare accessibility can significantly boost women's labor participation, particularly in urban settings.

Despite having access to childcare, women with part-time jobs still experience better work-life balance. These women are able to spend more time with their children, enhancing their overall well-being and family satisfaction. A study by Barker (1993) surveyed 315 predominantly white women across different professions and found that part-time workers, particularly in male-dominated fields, frequently face exclusion from opportunities and a

higher risk of layoffs. Nonetheless, these part-time working women reported increased happiness at home and work, greater job and child satisfaction, and similar levels of marital and personal satisfaction compared to full-time workers. They did not experience a reduction in role conflict or overload. Similarly, another study by Hill et al. (2004) examines the impact of new-concept part-time work on the work-family balance and career opportunities of mothers with preschool children in professional occupations, using data from the 1996 IBM Work and Life Issues Survey. The results suggest that mothers in part-time positions reported significantly better work-family balance and did not perceive a significant reduction in career opportunities compared to full-time working mothers.

Previous research consistently underscores that challenges in time management and limited access to affordable childcare are significant barriers to women's participation in the workforce. However, in Bangladesh, commercial childcare services are predominantly accessible to affluent families, leaving middle-class and low-income families with few viable options. The study by Taş and Ahmed (2021), which is closely related to the study of this paper, investigates labor market outcomes and time-use patterns of women in urban Bangladesh, using the same 2018 survey data from low-income neighborhoods of Dhaka as this research. It finds that women with children aged 0-5 years have lower labor market participation, employment, and earnings compared to those with older children or no children. This is especially severe for women without access to childcare services. This also shows that current literature lacks in-depth discussion on the topic of part-time employment opportunities for young mothers. This paper intends to address these gaps by examining whether part-time employment is a more attractive option for young mothers in low-income areas of Dhaka compared to full-time workforce participation. By incorporating part-time employment into the analysis, this study aims to provide a more nuanced understanding of the employment preferences of young mothers, offering insights that could inform policy and support initiatives aimed at enhancing women's economic participation in similar socioeconomic contexts.

3 Methodology

3.1 Data

This paper utilizes data from the Dhaka Low-Income Area Gender, Inclusion, and Poverty Survey, conducted by the World Bank in 2018 in low-income neighborhoods of Dhaka Group (2018). This survey was designed to represent the low-income areas and slums within Dhaka City Corporations (North and South) and an additional low-income site from the Greater

Dhaka Statistical Metropolitan Area.

3.2 Model Specification

Studies conducted in developing or underdeveloped countries have often used probit models to analyze the relationship between childcare and women's employment outcomes. The probit model is suitable when the dependent variable is binary, meaning it has two possible outcomes, such as employed or not employed. However, in this paper, a multinomial logit model will be used, as it can handle multiple categories for the dependent variable, not just binary outcomes. This is particularly useful for studying employment status in this context, which includes categories like full-time employment, part-time employment, unemployment, and being out of the labor force. The multinomial model is specified as follows: The probability of each labor market outcome j for individual i is given by:

$$P(Y_i = j) = \frac{\exp(\beta_{0j} + C_i\beta_{1j} + X_i\beta_{Xj})}{\sum_{k=0}^{2} \exp(\beta_{0k} + C_i\beta_{1k} + X_i\beta_{Xk})}, \tag{1}$$

where j represents one of the four possible labor market outcomes:

- $Y_i = 0$: Not in the labor force (no job, not seeking one).
- $Y_i = 1$: Employed full-time (working 160 hours or more per month).
- $Y_i = 2$: Employed part-time (working less than 160 hours per month).
- $Y_i = 3$: Unemployed (no job, actively seeking one).

The variable C_i in the equation (1) is a measure of access to childcare.

- $C_i = 1$: Individuals whose youngest child is older than five years or those without any children. This group likely has fewer childcare responsibilities, allowing them greater flexibility and availability to participate in the labor force.
- $C_i = 2$: Individuals whose youngest child is younger than five years and who have access to childcare services. Access to childcare services can significantly reduce the burden on parents, especially mothers, allowing them to work either part-time or full-time. This category is critical to understanding how childcare impact women's ability to engage in the labor market.
- $C_i = 3$: Individuals whose youngest child is younger than five years and who do not have access to childcare services. This group faces the most significant challenges

in balancing work and childcare responsibilities, often leading to lower labor force participation or a preference for part-time work. This category helps to highlight the barriers faced by women without adequate childcare support.

Vector X_i includes various socioeconomic and demographic factors impacting women's workforce decisions:

- **Lifecycle Stage**: Age and age squared to capture nonlinear effects of age.
- **Education**: A categorical variable representing education level:
  - 0: No education.
  - 1: Primary education, which includes up to class 5, also includes general preschool, mosque-based preschool, diploma in Religious Study, and those who have never attended school.
  - 2: Secondary education, which covers classes 6-10.
  - 3: Higher secondary education, which includes classes 11-12.
  - 4: Higher education, which is any education beyond class 12.

  Education is crucial as it categorizes individuals based on their educational attainment, elucidating how varying levels of education influence women's employment outcomes in Dhaka's low-income areas. This analysis helps to determine whether higher education increases opportunities for full-time or part-time employment.
- **Illiteracy**: A binary variable indicating whether the individual is illiterate. It provides insight into how the inability to read and write impacts women's labor market outcomes in Dhaka's low-income areas. By identifying individuals who are illiterate, this variable helps to understand the barriers that illiteracy poses to employment opportunities.
- **Conservativeness**: A binary variable indicating whether the individual's conservativeness. It is measured by whether they wear a burkha outside. It helps to understand whether conservativeness affects their ability to leave the house, which in turn impacts their employment opportunities.
- **Household Head**: A binary variable indicating if the head of the household is female. It helps to understand how this role impacts women's employment opportunities and labor market outcomes.

- **Received Remittances**: A binary variable indicating if the household receives remittances. Remittances can provide economic stability, influencing women's need to seek employment or enabling them to pursue better job opportunities. It helps to understand whether this income has any effect on women's labor market outcome.

- **Log of Per Capita Food Consumption**: The logarithm of per capita food consumption, used as a proxy for household economic status, helps to understand how economic well-being influences women's employment outcomes in Dhaka's low-income areas. This variable provides insights into the relationship between economic stability and labor market participation.

- **Household Composition**:

  - The number of children aged 5 or below,
  - The number of children aged 6 to 14,
  - The number of women aged 15 to 64,
  - The number of men aged 15 to 64,
  - The number of household members aged 65 or older.

  Household composition is crucial as it offers insights into family dynamics and support systems that can influence women's employment. The presence of young children, school-aged children, adults, and elderly members affects childcare responsibilities, impacting women's ability to engage in the labor market. For instance, in a household with children under five and no elderly members, women might struggle to work outside due to childcare and household duties.

- **Location of Residence**:

  - Living in a Slum: A binary variable indicating whether the household resides in a slum. This will explain whether women living in slums are more employed than those living in non-slum areas.
  - Living within Dhaka: A binary variable indicating whether the household is within Dhaka. This will help determine whether women living in Dhaka metropolitan are more employed than those living in Greater Dhaka.

The number of children has been categorized into two groups: those below 5 years and those below 14 years. This study focuses on calculating childcare availability specifically for children under 5 years old, as they require more intensive care. Male respondents have been

excluded from the analysis. The study retains only working-age females aged 15 to 64 and excludes students and non-participants.

Understanding these variables is essential, particularly considering the data is collected from low-income and slum areas in Dhaka, where educational opportunities and other resources are likely limited. Most of these variables are chosen in line with the paper by Taş and Ahmed (2021). This analysis aims to explore how these various factors influence women's participation in the workforce, with a particular focus on the impact of childcare availability. The multinomial logit model employed in this study enables an understanding of how various factors, including childcare availability, affect whether an individual is not employed, employed part-time, or employed full-time.

3.3 Estimation

In multinomial logistic regression, choosing a base outcome is essential for model identification and interpretation. The base outcome serves as a reference, allowing the estimation of coefficients for the other categories relative to it. This comparison ensures the model is not over-parameterized and provides a clear framework for interpreting the effects of predictor variables on the odds of being in different outcome categories. For this paper's analysis, setting "employed full-time" ($Y_i = 1$) is chosen as the base outcome. This requires setting β_{01}, β_{11}, and β_{X1} to zero in equation (1).

This paper uses maximum likelihood estimation (MLE) to ensure the estimated coefficients for the predictors in the multinomial logistic regression model are the most likely given the observed data. MLE provides accurate and reliable parameter estimates, crucial for interpreting the relationships between childcare access and women's employment outcomes. The parameters in equation (1) are obtained by maximizing the log-likelihood function:

$$\ln L = \sum_{i=1}^{N} w_i \sum_{j=1}^{J} I_{ij} \ln(\Pr(Y_i = j)), \tag{2}$$

where $\Pr(Y_i = j)$ is given by (1) and $I_{ij} = 1$ if $Y_i = j$ and zero otherwise. The term w_i represents the survey weights.

4 Empirical Findings

4.1 Regression Results

Not in the Labor Force

This section presents the results of the analysis. Table 1 represents the multinomial logistic regression output, where "Employed full-time" is the base outcome, the analysis identifies significant factors influencing the likelihood of being "Not in the labor force". The coefficient for age is -0.176, indicating that with each additional year, the log-odds of being "Not in the labor force" decrease by 0.176. Conversely, the coefficient for age squared is 0.003, suggesting a non-linear relationship wherein the likelihood of being "Not in the labor force" increases at an accelerating rate with age.

The results reveal an interesting issue: education levels do not significantly impact the probability of being "Not in the labor force". However, illiteracy significantly decreases the likelihood of being "Not in the labor force". This finding indicates that Dhaka has a higher availability of jobs for low-skilled women. However, conservativeness is associated with a coefficient of 0.926, reflecting an increased likelihood of being "Not in the labor force". Additionally, being the head of the household significantly decreases the likelihood by 1.959. Receiving remittances is associated with higher odds of being "Not in the labor force", as indicated by a coefficient of 0.884.

The results also suggest that Women with children under five years old have a significantly increased likelihood of not participating in the workforce. Similarly, Among women with childcare responsibilities, those whose youngest child is younger than five years and who lack access to childcare services exhibit significantly higher log-odds of being "Not in the labor force", with a coefficient of 1.365.

Part-Time Employment

Table 2 represents a comparison between part-time and full-time employment, where the coefficients for Age and Age squared indicate a non-linear relationship with the likelihood of part-time employment, although this relationship is not statistically significant. The analysis reveals an intriguing outcome regarding educational levels, indicating that individuals with higher education are significantly less likely to be employed part-time compared to being employed full-time. The result shows that conservativeness significantly increases the likelihood of part-time employment with coefficient 0.670. Similarly, living in a slum also significantly raises the odds. Women with young children and no access to childcare services

have higher odds of part-time employment, whereas access to childcare services decreases the likelihood, though not significantly. This analysis underscores the importance of

Unemployed

Table 3 compares unemployed to full-time employment, the level of education is showing some interesting factors. As the level of education increases, the probability of being unemployed decreases. The coefficients of -19.652 and -21.214 suggest that higher education significantly reduces the likelihood of unemployment compared to full-time employment. However, for illiterate women, the probability of being unemployed decreases, as indicated by the coefficient of -1.712. This result also suggests that Dhaka provides more employment opportunities for low-skilled workers. Another important point is that women with children under five years old have a significantly higher likelihood of being unemployed, with a coefficient of 2.134, compared to women with older children. Similarly, women living in slums also have an increased likelihood of being unemployed. Women with children less than five years old with or without childcare services are less likely to be unemployed. However, this decrease in unemployment is not statistically significant.

4.2 Marginal effect of childcare status

Figure 1 presents the adjusted predictions of the probability of not being in the labor force among women, categorized by their childcare status, with 95% confidence intervals. The x-axis categorizes women into three groups: those with youngest child older than five years or without children $C_i = 1$, those with youngest child less than five years and access to childcare $C_i = 2$, and those with youngest child less than five years without access to childcare $C_i = 3$. The y-axis represents the predicted probability of not being in the labor force. The results indicate that women in the first category have a moderate probability of not being in the labor force. Women with children under five who have access to childcare have the lowest probability of not being in the workforce, suggesting a small positive impact of childcare on workforce participation. Additionally, the results show that women with children under five who do not have access to childcare have the highest probability of not being in the workforce. However, the observed difference is not statistically significant due to overlapping confidence intervals. Increasing the sample size could potentially resolve this issue by reducing standard errors, thereby narrowing the confidence intervals and increasing the likelihood of detecting significant differences. As previously mentioned, the Bangladesh

Bureau of Statistics reported that 36.37% of women were in the workforce in 2019.[5] However, the result of this paper suggests that the non-participant rate might be below than that.

Figure 2 displays the adjusted predictions of the probability of being employed full-time among women, categorized by their childcare status, with 95% confidence intervals. The results show that women with children older than five years or without children have a relatively low probability of being employed full-time. This probability increases for women with children younger than five years who have access to childcare, indicating that access to childcare services positively influences their likelihood of full-time employment. However, the confidence intervals are wide, suggesting some variability and uncertainty in this prediction. In contrast, the probability of being employed full-time significantly drops for women with children younger than five years who do not have access to childcare services. This sharp decline underscores the critical impact of childcare availability on women's full-time employment status. Overall, the figure suggests that access to childcare services is associated with an increase in women's participation in full-time employment, although this effect is not statistically significant.

Figure 3 illustrates the adjusted predictions for the probability of being employed part-time among three groups of women, categorized based on their childcare responsibilities and access. The results indicate that the predicted probability of part-time employment is relatively consistent across the first two groups, with a minor, non-significant increase moving from women whose youngest child is older than five years or who have no children, to those with children under five years who have access to childcare. Additionally, there is a slight, non-significant rise in the probability for women with children under five years who lack access to childcare compared to those who have access. This suggests that women with children younger than five years who lack access to childcare services are more likely to be employed part-time compared to women whose children are older or who have access to childcare.

Figure 4 illustrates the adjusted predictions for the probability of being unemployed among three groups of women, categorized based on their childcare responsibilities and access. The results indicate that the predicted probability of being unemployed is highest for women with children older than five years or without children. There is a drop in the probability of being unemployed for women with children younger than five years who have access to childcare. This trend remains stable with a very minor increase in the probability for women with children younger than five years who do not have access to childcare compared

5. Bangladesh Bureau of Statistics. (2021). Gender Based Employment and Wage. Policy Brief, Issue 02. Available at: https://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/4c7eb0f0_e780_4686_b546_b4fa0a8889a5/2021-05-16-09-14-4b18b6a036c8d9ad87930d0705deb7bd.pdf

to the second group. However, none of these differences are statistically significant. Overall, the results suggest that the probability of unemployment may be higher among women with children older than five years or without children, although this finding is not statistically significant.

The findings of the study by Taş and Ahmed (2021) demonstrate significant disparities in labor market outcomes among the three examined groups of women. Women categorized under $C_i = 1$—those without children or whose children are older than six years—exhibit markedly higher levels of labor market participation, income generation, and recent employment compared to their counterparts in Groups $C_i = 2$ and $C_i = 3$, who have younger children with or without access to childcare. These variations are statistically significant and underscore a pronounced labor market handicap for mothers with young children in the latter groups. However, the findings of this paper present a different outcome. The analysis indicates that women with children under five experience better labor market outcomes. Additionally, this study demonstrates that access to childcare modestly improves prospects for full-time employment and to a lesser extent for part-time roles, compared to women lacking childcare support. However, these results are not statistically significant, as indicated by overlapping confidence intervals. Increasing the sample size could enhance the reliability of the data and potentially uncover significant differences.

The dataset used in this study focuses on low-income and slum areas in Dhaka. As previously mentioned, commercial childcare in Bangladesh is prohibitively expensive, making it unattainable for these impoverished communities. In the sample, 17.2% reported having access to childcare, although this is mostly informal. According to the Statistics (2021) dataset, 39.3% of the time, childcare is provided by the other spouse, 9.8% of the time by other household members such as older siblings, and 5.9% by grandparents. The results clearly indicate that access to childcare, even if only informal and available to a small percentage of women, plays a crucial role in enabling them to participate in the workforce.

However, 15.9% of the sample are women with children under five who lack childcare support. It's evident that the non-participation rate in the labor force is higher among these women, as they likely have no one to care for their young children. Not only that, lack of childcare access is decreasing their chance of working full-time.

In contrast, 66.9% of the women in the sample either have children older than five or no children at all. Since their children are older and more self-sufficient, their non-participation rate is lower, and their full-time and part-time employment rates are higher.

4.3 Marginal Effect of Literacy

Figure 5 demonstrates the marginal effect of literacy on the likelihood of various employment statuses among women. Literacy status ranges from literate, meaning the individual can read or write, to illiterate, meaning the individual cannot read and write. The results show that the probability of being not in the labor force decreases significantly as literacy decreases, indicating that literate women are more likely to participate in the labor force. Conversely, the probability of being employed full-time increases with illiteracy, highlighting that illiterate women have a much higher likelihood of securing full-time employment compared to literate women. The probability of being employed part-time remains relatively stable regardless of literacy status, with only a slight increase for illiterate women. The probability of being unemployed slightly decreases as illiteracy increases, remaining low for both literate and illiterate women. Overall, the figure underscores the significant positive impact of illiteracy on women's likelihood of being employed full-time and participating in the labor force, while showing minimal effect on part-time employment and unemployment probabilities. The dataset used in this analysis was collected from low-income areas and slums in Dhaka, where the majority of women have lower levels of education or are illiterate, primarily due to the lack of opportunities for higher education caused by poverty. Consequently, women living in these areas tend to prefer low-skilled jobs, which are more readily available. Conversely, women who are more educated may be less inclined to seek employment in these types of jobs.

4.4 Marginal effect of Conservativeness

Figure 6 portrays the predictive marginal effect of conservativeness, defined as wearing a burkha outside, on the probability of different employment statuses among women. As conservativeness increases from not conservative to conservative, the probability of not being in the labor force significantly rises, indicating that more conservative women don't prefer to work outside. Conversely, the probability of being employed full-time decreases with higher conservativeness, showing that less conservative women have a higher likelihood of full-time employment. The probability of being employed part-time remains relatively stable, with only a slight decline as conservativeness increases. The likelihood of being unemployed is consistently low and decreases slightly with increasing conservativeness.

Overall, the graph suggests that higher levels of conservativeness are associated with lower participation in full-time employment and greater likelihood of not being in the labor force. The result goes with the Bangladeshi context. As, Bangladesh is a Muslim-majority country where a significant portion of households, particularly those with lower education

levels, hold conservative views. Such households often discourage their female members from working outside the home. Therefore, it is consistent with these findings that conservativeness is associated with a higher likelihood of not participating in the labor force or a lower probability of working full-time.

4.5 Marginal effect of kid under 5

Figure 7 illustrates the marginal effect of having children under the age of 5 on the probability of different employment statuses among women, with the number of children ranging from 0 to 3. The results show that the probability of being not in the labor force increases significantly with more young children, rising sharply from about 40% with no children to nearly 80% with three children under 5. Conversely, the probability of being employed full-time decreases as the number of young children increases, dropping steadily to around 2% for women with three children under 5. The probability of being employed part-time remains relatively stable regardless of the number of young children, indicating that part-time employment is less affected by having young children compared to full-time employment or labor force participation. The likelihood of being unemployed is consistently low across all categories, with a slight increase for women with three young children. Overall, the graph highlights that having more children under 5 significantly increases the probability of women being out of the labor force and decreases the likelihood of full-time employment. The results are statistically significant, indicating that having more children under the age of five adversely affects women's participation in the labor force.

As observed in Figure 7, having more than one child under the age of five appears to be a significant predictor of non-participation in the labor force. To explore this further, the analysis was refined to focus on women with only one child under five, considering both those with and without access to childcare. Figure 8 illustrates the effect of childcare availability on the employment status of these women. The findings indicate that women with access to childcare are more likely to be employed full-time and less likely to exit the labor force. Conversely, as access to childcare decreases, the probability of full-time employment slightly declines, while the likelihood of non-participation in the labor force increases substantially. These results underscore the vital role that childcare plays in supporting women's full-time employment.

As previously discussed, most childcare access in these areas is informal, primarily provided by grandparents or older siblings. Consequently, it is expected that women with more than one child under the age of five will have reduced opportunities to participate in the labor force, whether in full-time or part-time employment. Figure 5 clearly illustrates an

upward trend in non-participation in the labor force as the number of children under five increases. Additionally, only 17.2% of the sample have access to informal childcare, indicating that women with very young children at home may have limited opportunities to work outside the home.

4.6 Marginal effect of kid under 15

Figure 9 portrays the marginal effect of having children under the age of 15 on the probability of different employment statuses among women. The x-axis represents the number of children under 15, ranging from 0 to 4, while the y-axis shows the predicted probability for each employment status: not in the labor force, employed full-time, employed part-time, and unemployed. The results indicate that the probability of being not in the labor force decreases as the number of children under 15 increases, while the probability of being employed full-time initially remains stable but then decreases. Conversely, the probability of being employed part-time increases with the number of children, suggesting that women with more children under 15 are more likely to work part-time. The probability of being unemployed remains consistently low across all categories. Overall, the graph highlights that having more children under 15 is associated with a higher likelihood of part-time employment and a lower likelihood of being not in the labor force or employed full-time, with minimal impact on unemployment probabilities. Here, more women tend to work full-time or part-time when they have children aged between 5 and 15 years. This may suggest that older children assist with household chores and caring for younger siblings, enabling mothers to participate more in full-time and part-time employment.

4.7 Marginal Effects of Remittance Recieved

Figure 10 illustrates the predictive marginal effects of receiving remittances on the probability of different employment statuses among women. The x-axis indicates whether remittances are received, ranging from "no remittance received" to "remittance received," while the y-axis shows the predicted probability for each employment status: not in the labor force, employed full-time, employed part-time, and unemployed. The results indicate that the probability of being not in the labor force increases when remittances are received, suggesting that women who receive remittances are more likely to be out of the labor force. Conversely, the probability of being employed full-time slightly decreases with remittance receipt, indicating that women who receive remittances are less likely to be employed full-time. The likelihood of being employed part-time follows a similar pattern to full-time employment, with a slight decline when remittances are received. The probability of being unemployed is consistently

low across both categories, with a slight increase for those receiving remittances. Overall, the graph highlights that receiving remittances is associated with a higher likelihood of being out of the labor force and a slightly lower likelihood of full-time employment, with minimal impact on part-time employment and unemployment probabilities. The impact of remittances on employment status, particularly in full-time and part-time roles, is modest. However, the findings indicate that as income rises, work effort tends to decline, reflected by an increase in the number of women not participating in the labor force.

4.8 Marginal Effects of Household Head

Figure 11 portrays the adjusted predictions for employment statuses based on whether a woman is the household head. The x-axis indicates household head status, where 0 represents non-household heads and 1 represents household heads. The y-axis shows the predicted probability for each employment status: not in the labor force, employed full-time, employed part-time, and unemployed.

The results indicate that women who are household heads have a significantly lower probability of being not in the labor force compared to non-household heads, with the probability decreasing sharply. Conversely, the probability of being employed full-time increases sharply for household heads, showing a notable rise. The probability of being employed part-time also increases for household heads, though to a lesser extent, indicating a gradual rise. The probability of being unemployed remains low and relatively stable across both groups.

Overall, the graph highlights that women who are household heads are more likely to be employed full-time or part-time and less likely to be out of the labor force compared to those who are not household heads, with minimal differences in unemployment probabilities. In Bangladesh, men typically serve as the household head unless the woman is divorced, widowed, or the husband is living abroad. Consequently, it is reasonable to expect that women who are household heads will participate in the labor force to support their families unless they are receiving enough remittances from their husbands. The unconditional probabilities of employment statuses are analyzed in this study. Figure 12 in Appendix C provides a detailed graph of these distributions.

5 Conclusion

This paper investigated the relationship between childcare availability and workforce outcomes among women in slum and low-income areas of Dhaka by estimating a multinominal logit model using data from the Dhaka Low-Income Area Gender, Inclusion, and Poverty

Survey conducted by the World Bank.

The study provides role that childcare availability plays in shaping the labor market outcomes of women in Dhaka's low-income areas. The analysis reveals that women with young children, particularly those under the age of five, face significant challenges in participating in the labor force, especially when they lack access to childcare services. The results show that the probability of being out of the labor force is highest among women without childcare support, underscoring the critical role that childcare availability plays in facilitating women's economic participation. For these women, the demands of childcare are a substantial barrier to seeking full-time employment, with many opting for part-time work if they choose to participate in the labor force at all. Conversely, women who do have access to childcare services are more likely to engage in full-time employment, highlighting how even informal childcare arrangements can substantially reduce the burden of childcare responsibilities and enable greater workforce participation. These findings suggest that improving access to affordable and reliable childcare services is essential for increasing labor force participation among women in Dhaka's low-income areas.

Furthermore, the findings of this study align closely with the results presented by Taş and Ahmed (2021). Both studies underscore the critical role of childcare availability in influencing women's labor market outcomes in Dhaka's low-income areas. They consistently suggest that women without young children or those with access to childcare services are more likely to participate in the labor market and secure full-time employment, whereas the absence of childcare significantly hinders these opportunities. Additionally, both studies emphasize that women with children under the age of five encounter the greatest challenges in labor force participation when lacking childcare support. However, this study uniquely highlights the burden of childcare as a substantial barrier that often compels women to opt for part-time work, a nuance that was not explored in Taş and Ahmed (2021).

The analysis further reveals that educational attainment has a nuanced impact on employment outcomes. While higher levels of education generally reduce the likelihood of unemployment and increase the probability of full-time employment, illiteracy surprisingly correlates with higher full-time employment in low-skilled jobs. This suggests that in the context of Dhaka's low-income areas, where educational opportunities are limited, women with lower educational attainment or illiteracy are often engaged in full-time work out of necessity.

Moreover, conservativeness, as indicated by traditional gender norms such as wearing a burkha, significantly increases the probability of not participating in the labor force. This finding underscores the persistent cultural barriers that limit women's economic opportunities in Bangladesh. Women who are more conservative are less likely to seek employment

outside the home, reflecting the deep-rooted gender norms that still dominate in many parts of the country.

In addition, the study also highlights the impact of family structure on employment decisions. Women who are household heads are significantly more likely to be employed full-time, likely due to the economic pressures of leading a household. Conversely, women who receive remittances are more likely to be out of the labor force, suggesting that additional income from remittances reduces the necessity for them to seek employment.

Furthermore, the study demonstrates that the number of young children in a household has a substantial impact on women's employment status. As the number of children under five increases, the probability of a woman being out of the labor force rises sharply, while the likelihood of full-time employment drops. This finding emphasizes the critical need for accessible childcare services, particularly for women with multiple young children, to support their participation in the workforce.

Lastly, the unconditional overall probability analysis shows that while a significant portion of women in the sample are not in the labor force, those who are employed full-time constitute a considerable share, followed by part-time workers. This suggests that despite the challenges, a substantial number of women in Dhaka's low-income areas are engaging in the labor market, albeit with varying levels of participation and employment status.

Also, the findings suggest that future policy and programmatic initiatives aimed at boosting women's participation in the labor market should prioritize childcare as a key area of intervention. This focus is especially crucial in urban areas like Dhaka city, where the absence of extended family or community support means that few people are available to look after children. In contrast, in the broader Dhaka region, including surrounding villages, the situation differs, as neighbors and community members are more likely to assist with childcare.

However, it is undeniable that the lack of childcare availability is a significant barrier to women's participation in the labor force. Since commercial childcare services are prohibitively expensive for low-income earners in Bangladesh, NGOs could play a crucial role in addressing this issue. By establishing affordable childcare centers, NGOs could support women in their efforts to work outside the home. NGOs can also create job opportunities for women, further enhancing their economic empowerment.

In conclusion, this thesis provides a comprehensive understanding of the multifaceted factors influencing women's workforce participation in slum and low-income areas of Dhaka. Addressing the challenges of childcare availability, enhancing educational opportunities, considering cultural practices, and improving household economic conditions are essential for empowering women and improving their employment outcomes.

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Appendix A: Tables

Table 1: Multinomial Logistic Regression Results: Not in Labor Force

Variable	Coefficient	Robust std. err.	z
Age	-0.176*	0.081	-2.170
Age square	0.003*	0.001	2.720
Primary education	-0.076	0.379	-0.200
Secondary	0.038	0.501	0.080
Higher Secondary	0.330	0.906	0.360
Higher education	-1.087	0.807	-1.350
Illiterate	-0.871*	0.389	-2.240
Conservativeness	0.926*	0.293	3.160
Household head	-1.960*	0.444	-4.410
Remittance received	0.884*	0.444	1.990
Food expenditure	0.083	0.059	1.410
Kids aged less than 5	1.329*	0.579	2.300
Kids aged less than 14	-0.001	0.159	-0.000
Women aged 14-64	-0.002	0.215	-0.010
Men aged 14-64	0.346	0.200	1.730
Senior citizens aged 65+	0.064	0.434	0.150
Living in slum	0.378	0.264	1.430
Living within Dhaka	-0.402	0.249	-1.620
Woman with childcare	-0.531	0.676	-0.790
Woman without childcare	1.365*	0.697	1.960
Constant	1.861	1.529	1.220

Note: The multinomial logistic regression used 1,006 observations. The Wald chi-square statistic is 4826.76 with 60 degrees of freedom, and a p-value of 0.0000, indicating statistical significance. The log pseudolikelihood is -621194.62, and the model's Pseudo R^2 is 0.1518.

Table 2: Multinomial Logistic Regression Results: Employed Part-Time

Variable	Coefficient	Robust std. err.	z
Age	0.109	0.096	1.140
Age square	-0.001	0.001	-1.010
Primary education	0.068	0.409	0.170
Secondary	0.076	0.579	0.130
Higher Secondary	1.306	1.093	1.200
Higher education	-20.510*	0.800	-25.630
Illiterate	-0.315	0.427	-0.740
Conservativeness	0.671*	0.305	2.200
Household head	-0.161	0.396	-0.410
Remittance received	0.124	0.466	0.270
Food Expenditure	0.092	0.054	1.700
Kids aged less than 5	0.920	0.562	1.640
Kids aged less than 14	0.166	0.149	1.110
Women aged 14-64	-0.001	0.227	-0.000
Men aged 14-64	-0.173	0.190	-0.910
Senior citizens aged 65+	0.065	0.466	0.140
Living in slum	0.570*	0.275	2.070
Living within Dhaka	-0.213	0.266	-0.800
Woman with childcare	-0.301	0.677	-0.440
Woman without childcare	1.215	0.727	1.670
Constant	-3.072	1.823	-1.680

Note: The multinomial logistic regression used 1,006 observations. The Wald chi-square statistic is 4826.76 with 60 degrees of freedom, and a p-value of 0.0000, indicating statistical significance. The log pseudolikelihood is -621194.62, and the model's Pseudo R^2 is 0.1518.

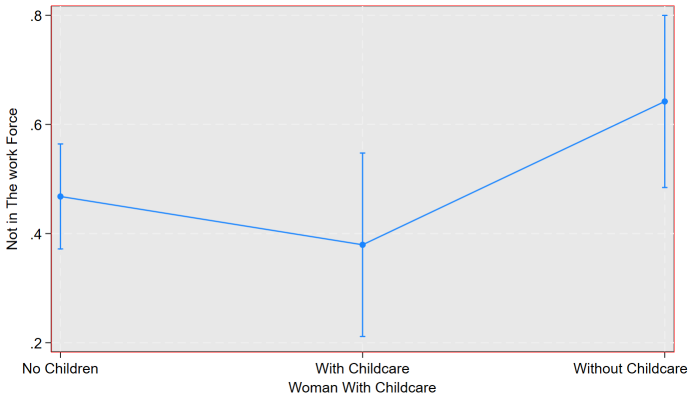
Table 3: Multinomial Logistic Regression Results: Unemployed

Variable	Coefficient	Robust std. err.	z
Age	0.017	0.153	0.110
Age square	0.000	0.002	0.040
Primary education	-0.305	0.783	-0.390
Secondary	-0.906	1.003	-0.900
Higher Secondary	-19.652*	1.093	-17.980
Higher education	-21.215*	1.192	-17.800
Illiterate	-1.712*	0.780	-2.200
Conservativeness	0.087	0.584	0.150
Household head	0.248	0.709	0.350
Remittance received	1.045	0.644	1.620
Food expenditure	0.646	0.451	1.430
Kids aged less than 5	2.134*	0.760	2.810
Kids aged less than 14	0.054	0.330	0.160
Women aged 14-64	0.147	0.329	0.450
Men aged 14-64	0.220	0.297	0.740
Senior citizens aged 65+	-0.436	0.672	-0.650
Living in slum	1.134*	0.503	2.260
Living within Dhaka	-0.823	0.519	-1.590
Woman with childcare	-1.961	1.153	-1.700
Woman without childcare	-0.303	1.122	-0.270
Constant	-5.276	3.620	-1.460

Note: The multinomial logistic regression used 1,006 observations. The Wald chi-square statistic is 4826.76 with 60 degrees of freedom, and a p-value of 0.0000, indicating statistical significance. The log pseudolikelihood is -621194.62, and the model's Pseudo R^2 is 0.1518.

Appendix B: Graphs

Figure 1: Adjusted Predictions for Probabilities of Not Being in Labor Force



Note: "No children" refers to having no child under five, "with childcare" refers to having the youngest child under five with access to childcare, and "without childcare" refers to having the youngest child under five without access to childcare.

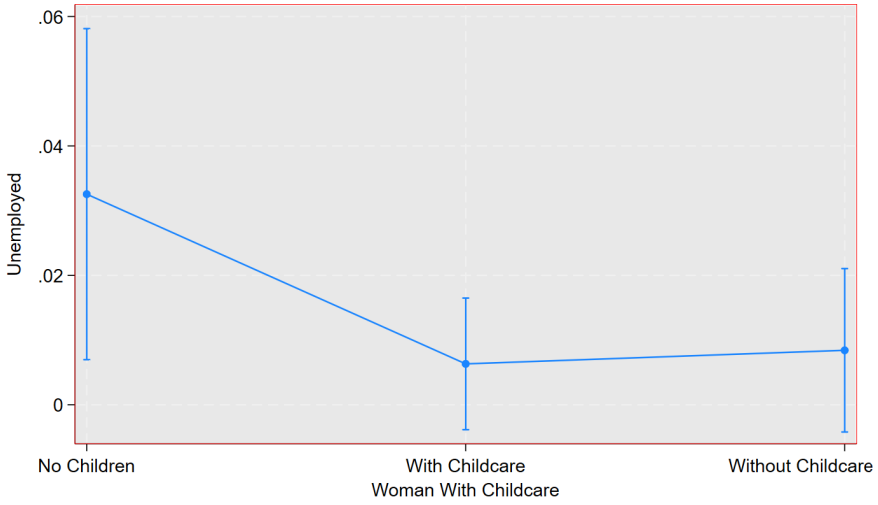
Figure 2: Adjusted Predictions for Probabilities of Being Employed Full-Time

Note: "No children" refers to having no child under five, "with childcare" refers to having the youngest child under five with access to childcare, and "without childcare" refers to having the youngest child under five without access to childcare.

Figure 3: Adjusted Predictions for Probabilities of Being Employed Part-Time

Note: "No children" refers to having no child under five, "with childcare" refers to having the youngest child under five with access to childcare, and "without childcare" refers to having the youngest child under five without access to childcare.

Figure 4: Adjusted Predictions for Probabilities of Being Unemployed



Note: "No children" refers to having no child under five, "with childcare" refers to having the youngest child under five with access to childcare, and "without childcare" refers to having the youngest child under five without access to childcare.

Figure 5: Marginal Effect of Literacy

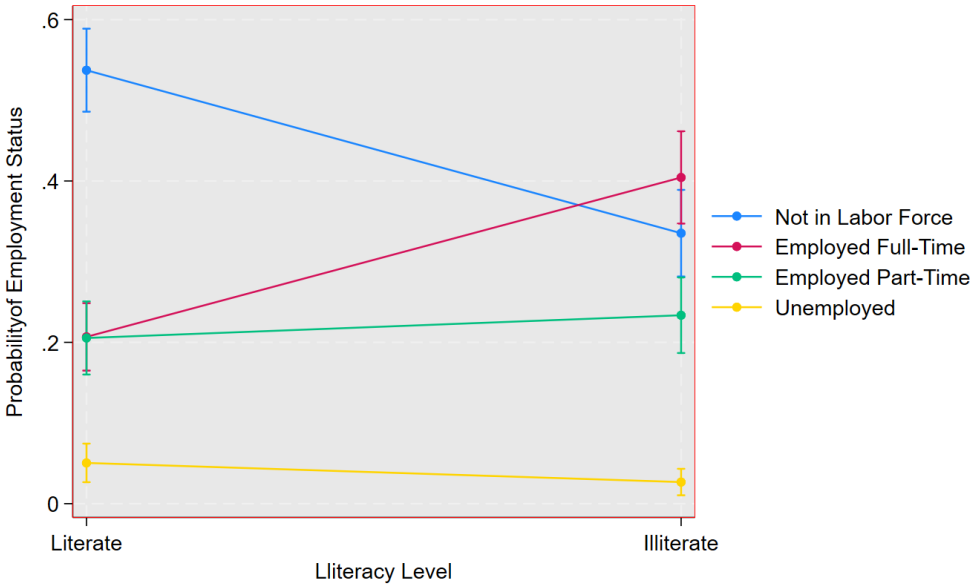


Figure 6: Marginal Effect of Conservativeness

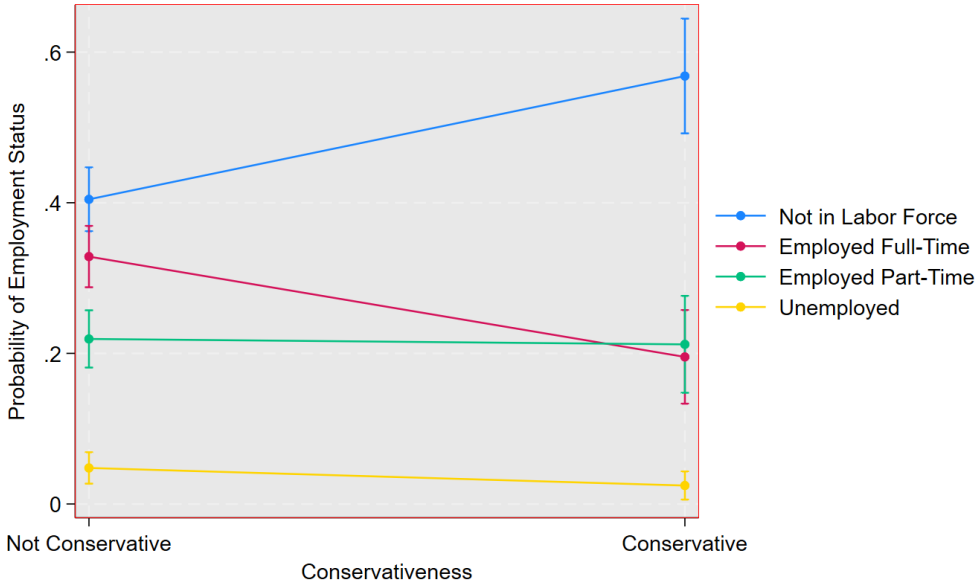
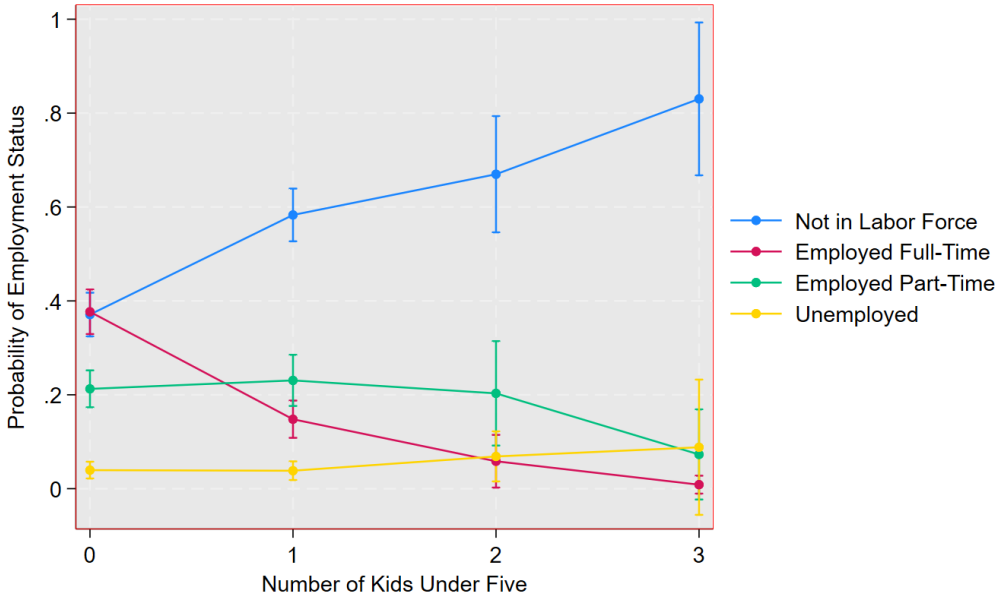
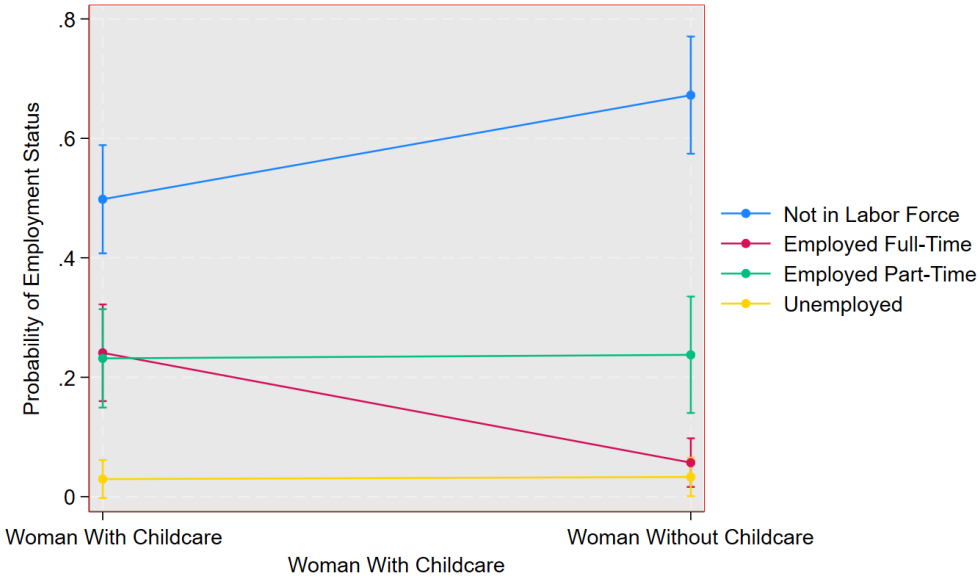


Figure 7: Marginal Effect of Kids Under Five



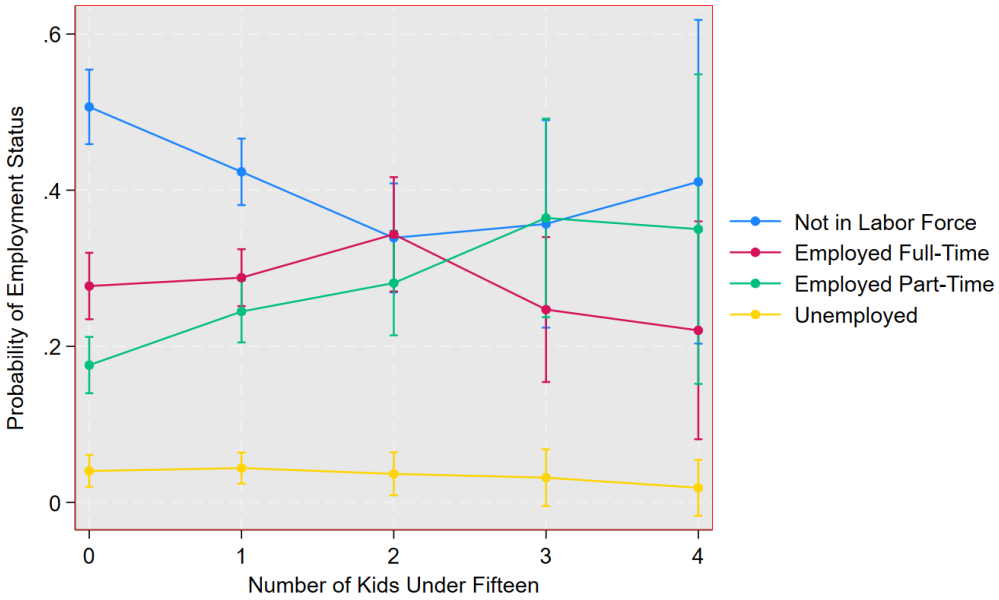
Note: The number of children ranges from 0 to 3

Figure 8: Marginal Effect of Women With Child Less Than Five



Note: The margins represent predicted probabilities of employment outcomes for women with one child younger than five years, based on childcare access.

Figure 9: Marginal Effect of Kids Under Fiifteen



Note: The number of children ranges from 0 to 4

Figure 10: Marginal Effect of Remittance Received

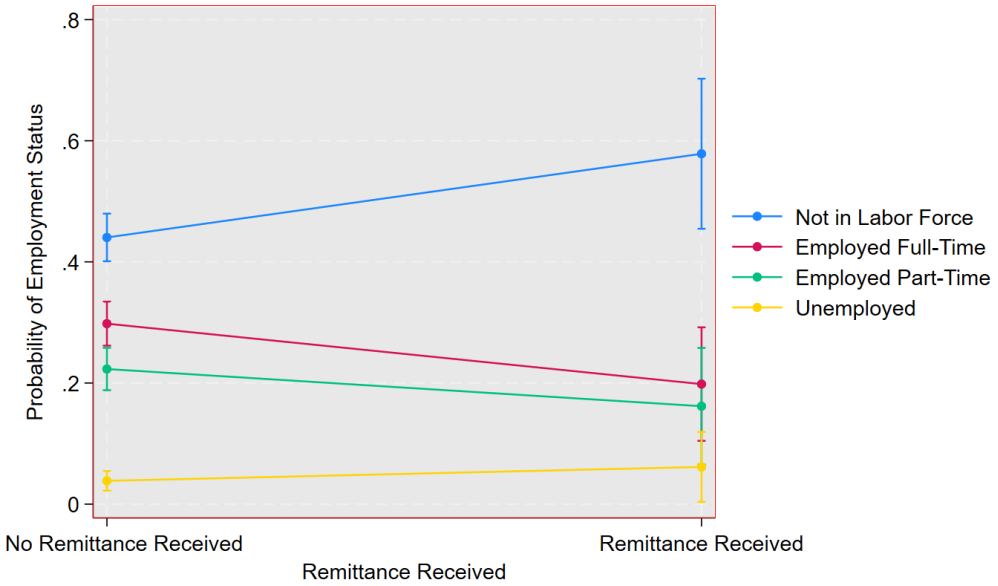
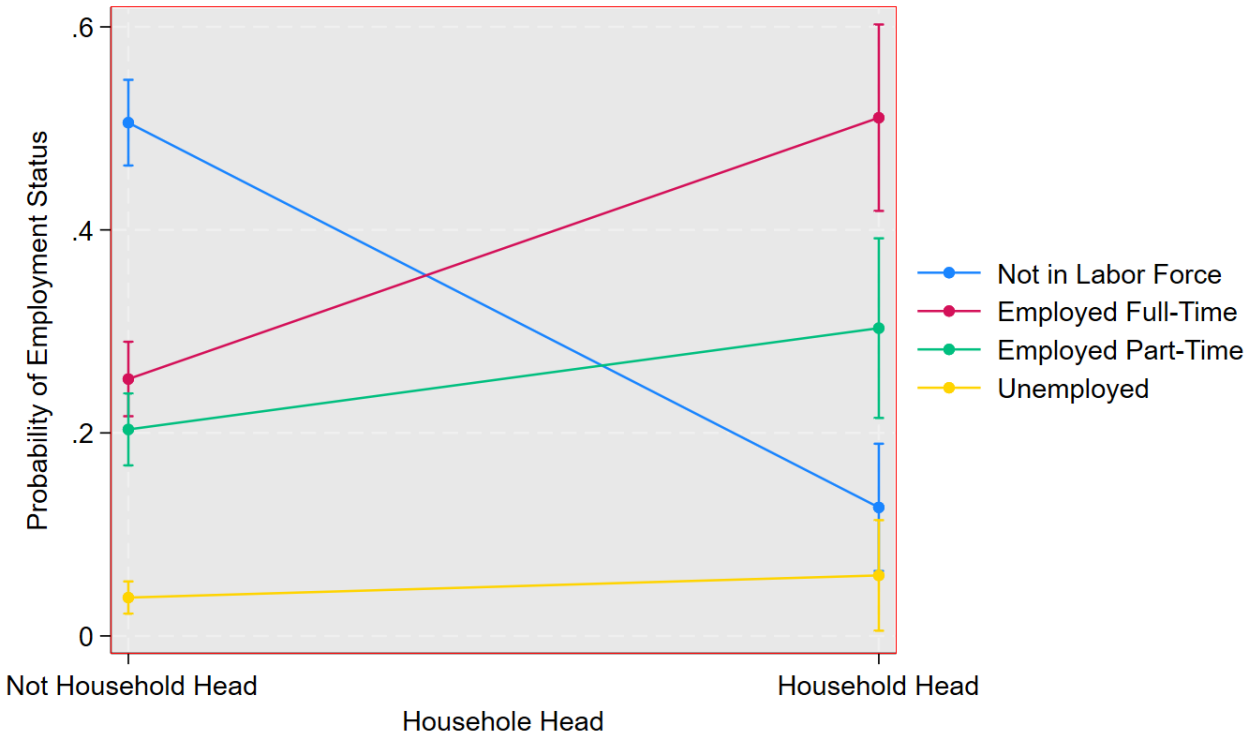
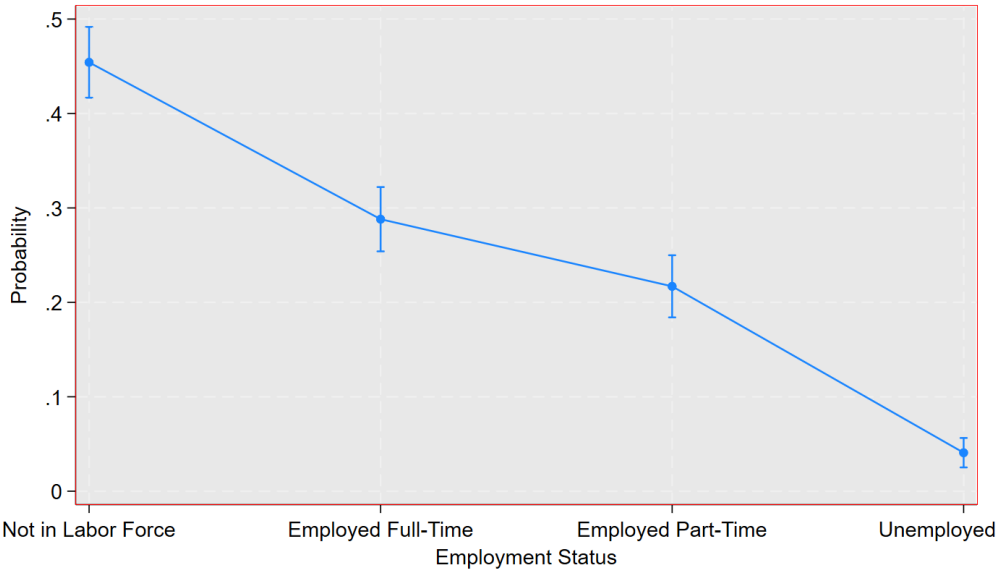


Figure 11: Marginal Effect of Household Head



Appendix C: Supplementary Graph

Figure 12: Unconditional Overall Probability of Employment Status



This section provides a supplementary analysis of the unconditional overall probability of women's employment status. The additional data give a broader context to the main findings.

Figure 12 illustrates the overall probability distribution across different employment statuses for women in the sample. The y-axis denotes the probability, ranging from 0 to 0.5, while the x-axis categorizes employment status into four discrete categories: not in labor force $Y_i = 0$, employed full-time $Y_i = 1$, employed part-time $Y_i = 2$, and unemployed $Y_i = 3$. From the graph, it is evident that the probability of not being in the labor force is highest at approximately 45%, indicating that a significant proportion of women are not part of the labor force. The probability decreases progressively for those employed full-time, just below 30%, and further for those employed part-time, which is just above 20%. The probability that a woman is unemployed is the lowest, at slightly below 10%.

As previously mentioned, Wambile et al. (2024) states that the labor force participation rate for Bangladeshi women in 2022 stood at 42.5%. Although this study focuses exclusively on data from Dhaka, the findings suggest a higher participation rate in the labor force. However, Dhaka, being the capital city, hosts more job opportunities than any other regions in Bangladesh. Therefore, data from Dhaka alone may not accurately represent the entire country.