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## Labor Market Shocks, Social Protection and Women's Work

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**Labor Market Shocks, Social Protection and Women's Work**

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# Labor Market Shocks, Social Protection and Women's Work\*

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April 29, 2024

## Abstract

The COVID-19 pandemic highlighted the vulnerabilities women encounter in labor markets worldwide. We investigate the potential of social protection measures in mitigating declines in women's labor market participation. Specifically, we look at the Indian context, where lockdowns spurred a reverse migration of male workers from urban to rural areas, exerting pressure on rural labor markets. Despite a 6% rise in reliance on India's largest demand driven employment guarantee scheme, our analysis reveals a 0.4% decrease in women's participation during the pandemic, equivalent to a loss of 11,500 person-days of work. However, a gender quota provision helped sustain women's employment status. In districts where the reservation quotas had not been exhausted pre pandemic, women's share in public works increased by 2.7%. Our findings underscore the need for mandated provisions and targeted programs for women to counteract labor market withdrawals and bolster overall labor market participation in times of crisis.

**JEL classification: J08, J16, O15**

**Keywords: Covid-19, Rural labor market, Gender, Reverse migration, MGN-REGA, GKRA**

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# 1. Introduction

The COVID-19 pandemic had profound repercussions on economies worldwide. With no precedent for such a sudden shock, most nations implemented mobility restrictions, including complete lockdowns, to contain the virus’s spread. Consequently, economic activities were severely disrupted, leading to a sharp decline in employment. Furthermore, certain demographic groups, particularly women, bore the brunt of these adverse effects. For instance, studies across 40 countries found that women were 8 percentage points more likely to stop working between April and June 2020 compared to men (de Paz Nieves et al., 2021). Additionally, research conducted in June and July 2020 across 46 countries revealed that girls were 20 percentage points more likely to report increases in household chores than boys in 2020 (de Paz Nieves et al., 2021). Moreover, the impact of the pandemic may not be limited to job losses but may result in depletion of women’s savings and assets, social isolation, and mobility loss (Agarwal, 2021). Despite the adverse impact experienced by women on multiple dimensions only 15% of government programs in Central and South Asia target women’s economic security (Gavrilovic et al., 2022).

We utilise this unforeseen labor market shock in one of the hardest-hit economies - India, to examine the repercussions of negative labor market shocks on women’s employment opportunities.<sup>1</sup> Specifically, we investigate the impact of the pandemic-induced “reverse migration” on women’s labor market engagement in rural areas.<sup>2</sup> Utilizing data from the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA), we assess women’s engagement and explore the role of mandated provisions, such as guaranteed fallback options, for women under this scheme. MGNREGA is one of the world’s largest employment guarantee schemes, providing a right to work social security program in rural India that guarantees 100 days of employment per household and reserves one-third of the total person-days generated under the program for women. The diminished employment opportunities during the pandemic, coupled with male migration from urban to rural areas, is expected to strain the rural labor market and potentially displace women’s labor supply.

Studies conducted in developed countries have highlighted the gendered economic impact of

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<sup>1</sup>India experienced one of the strictest nationwide lockdowns in March 2020, with almost all economic activities grinding to a halt, except for essential services like the sale and purchase of household non-durable goods, medical services, and defense.

<sup>2</sup>Reverse migration refers to the mass return of migrant workers to their native places. This phenomenon was observed on a massive scale in India immediately following the announcement of the nationwide lockdown in March 2020, with over 11 million migrant workers returning from urban areas to their rural roots (Source).

COVID-19, driven by women’s concentration in industries that suffered greater losses due to the pandemic (e.g., [Alon et al. \(2020\)](#) - U.S., [Dang and Nguyen \(2020\)](#) - Italy, Japan, South Korea, U.K., and U.S., [Andrew et al. \(2020\)](#) - UK, [Farre et al. \(2020\)](#) - Spain). Similarly, in the context of developing countries, studies ([Deshpande \(2020\)](#), [Abraham et al. \(2021\)](#)) have found that conditional on being employed before the pandemic, women were more likely to lose work during the pandemic relative to men. Furthermore, nationwide CMIE-CPHS data highlights disproportionate job losses for women, at 14% compared to 1% for men between December 2019 and 2020. This worsening gender gap is attributed to the lack of fallback options and may exacerbate existing gender inequities (ibid). The gendered effect on labor market outcomes may also stem from the reinforcement of the male breadwinner norm at the household level, particularly in the presence of limited earning opportunities and a higher burden of household responsibilities. Thus, our investigation focuses on fallback options and their implications for women’s employment during the pandemic, which posed significant challenges to both labor demand and supply.

We first demonstrate the increased dependence on government employment schemes during the pandemic. MGNREGA person-days increased by 6% post the lockdown period in 2020 (April 2020 - March 2021) compared to 2019 (April 2019 - March 2020). Our analysis reveals that the share of rural women in the public works program decreased by 0.4% during the pandemic. A back-of-the-envelope calculation suggests that women lost approximately 11,500 person-days of work.<sup>3</sup> Interestingly, districts historically below the mandated reservation of one-third of public works for women experienced an increase in the share of women by 2.7%, while districts above this threshold witnessed a decline in the share of women. This indicates a convergence towards the reserved threshold in response to the pandemic.

Given the anticipation of heightened labor competition in districts with a greater influx of migrants, we also consider new employment generation programs introduced to mitigate the impact of the exodus. The central government introduced GKRA (Garib Kalyan Rojgar Abhiyan) for 125 days in districts with 25,000 or more returning migrants, without any special provisions for women. We examine the interaction between the mandated bound under MGNREGA and the availability of additional employment generation schemes. We find that the women’s share in overall person-days

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<sup>3</sup>We conduct a back-of-the-envelope calculation using the pre-pandemic share of women in total person-days and extrapolate it to the person-days during the pandemic period to calculate the number of person-days lost by women.

generated declined by 2.4% in GKRA districts above the reserved threshold for women due to the pandemic. Conversely, non-GKRA districts showed no significant impact on the share of women during the pandemic.

We also observe a seasonality in the reliance on the MGNREGA scheme, with greater utilization during off-peak agricultural seasons compared to peak seasons like Kharif (May-June). To account for this seasonality and better quantify the impact of different pandemic phases, the second part of our analysis employs monthly district-level data combined with individual-level employment data from Consumer Pyramids Household Survey (CPHS) collected by CMIE. Our findings align when disaggregating the timeline into different lockdown phases, corresponding to variations in mobility restrictions and employment opportunities.

To the best of our knowledge, our study is the first to examine the role of mandated provisions in public works programs during COVID-19 on women’s labor force participation. It extends on [Afridi et al. \(2022\)](#), which highlights the cushioning effect of MGNREGA generation capacity on rural women’s labor force participation, while also considering specific provisions for women and GKRA. We extend the studies by [Deshpande \(2020\)](#) and [Abraham et al. \(2021\)](#) by investigating the existence of “fallback options”, as these studies attribute the decline in conditional employment of women to the absence of such fallback options.

The COVID-19 shock underscores that any crisis with adverse labor market implications is likely to exacerbate the existing problem of low and stagnant labor force participation rates among women in developing countries.<sup>4</sup> Our study confirms this within the context of the rural labor market, further demonstrating its potential impact on historically feminized sectors like MGNREGA. We advocate for the implementation of targeted policies to mitigate women’s vulnerabilities and, consequently, overall household welfare losses. Moreover, the return of male migrants not only intensifies competition for existing jobs but may also increase rural women’s caregiving responsibilities and unpaid domestic duties. Such crises may reinforce gender norms around breadwinners, particularly when unemployed men reside in the same household as women. Our study contributes to the broader discourse on women’s participation in paid economic activities and measures to retain and enhance their labor force participation.

The remainder of the paper is organized as follows. Section 2 provides an overview of em-

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<sup>4</sup><https://www.newsclick.in/female-labour-force-in-India-declining>

ployment generation schemes in rural India and recent trends. Section 3 discusses our estimation approach and presents the results. We discuss the results in Section 4. Finally, Section 5 concludes.

## 2. Background

During the pandemic period, two government employment generation schemes were operational - (1) The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and (2) Garib Kalyan Rojgar Abhiyaan (GKRA). We provide a brief description of these schemes and their significance for female employment during this period.

The *Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)* was launched in 2005 initially in select states of India and expanded to pan-rural India by 2008. The act guarantees 100 days of employment to each rural household without requiring any prior skills or qualifications. Consequently, the scheme specifically targets unskilled working-age individuals, particularly women. Administered by the Union Rural Development Ministry, MGNREGA is implemented by local governing bodies known as *Gram Panchayats*. It primarily offers unskilled manual work on publicly funded projects that improve rural infrastructure such as constructing government schools, wells, irrigation canals, and roads. The Act mandates minimum wages with gender equality, aligning with the statutory minimum wages specified for agricultural laborers in the state under the Minimum Wages Act, 1948.

MGNREGA is recognized as one of the largest anti-poverty programs. Its features such as guaranteed work near home, equal pay for men and women, and special provisions for women (one-third reservation) make it particularly appealing to rural women. Existing research provides empirical evidence that women prefer guaranteed work (Dhingra and Machin, 2020) and highlights how mobility restrictions hinder their engagement in the labor market (Afridi et al., 2020). The scheme's favorable features help women overcome barriers to participation in paid economic activities, thereby enhancing female labor force participation.<sup>5</sup> Economic independence for women has been positively associated with women's empowerment and their involvement in household decision-making (Zimmermann, 2012). This has direct implications for various dimensions of household welfare such as improved nutrition, increased expenditure on childcare, and health services (Sangwan and

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<sup>5</sup><https://www.downtoearth.org.in/blog/how-women-seized-nrega-2282>

Kumar, 2021; Maity, 2019). Additionally, a recent study by Rodriguez (2022) indicates that increased women’s participation in MGNREGA leads to increased demand for credit and savings and a decrease in violence against women.

Apart from direct employment generation, MGNREGA has other positive spillover effects. Acting as an outside option, it sets a minimum wage for other sectors as well. Studies have shown that it substantially increases private-sector casual wages for women and reduces gender disparity (Zimmermann, 2012).

Next, we discuss women’s overall engagement in the labor market and their involvement in MGNREGA. Despite improvements in socio-economic indicators such as education, fertility rates, and economic growth, female labor force participation (LFP) remains low and stagnant in India. In 2017, India had one of the lowest female labor force participation rates globally, the lowest since independence in 1947.<sup>6</sup> Female LFP has not only remained low and stagnant but has also declined in recent years (Deshpande, 2020). Notably, while overall female LFP in India is approximately 25%, women’s share in MGNREGA person-days exceeds 50%. This underscores the significant role of the scheme for women. The participation of women in the scheme exceeds the mandated one-third reservation for person-days. Figure A.1 in Appendix A displays the distribution of districts by the mandated 33% bound in 2019 (pre-pandemic). There is geographical heterogeneity, with a majority of districts having women’s shares above this bound. It has been documented that as men migrate to urban areas in search of better opportunities, the women left behind turn to MGNREGA work.<sup>7</sup>

However, reverse migration of men to rural areas may increase stress on the rural labor market. Since the scheme offers 100 days of work per household, men may demand this work, impacting women’s participation. Our paper examines this disequilibrium resulting from the pandemic. The sudden cessation of employment opportunities in urban areas due to the halting of economic activities to contain the pandemic led to a mass reverse migration to rural India. This increased demand for MGNREGA work, with nearly 133 million people seeking work in 2020-21, a 43% increase compared to the previous year. The program supported approximately 110 million people in 2020-21, compared to 78 million in the previous four years. Keeping in view the growing demand,

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<sup>6</sup><https://www.newsclick.in/female-labour-force-in-India-declining>

<sup>7</sup><https://www.downtoearth.org.in/blog/how-women-seized-nrega-2282>



the government increased the MGNREGA budget by INR 400,000 million for 2020-21 but it fell short of the required allocation.<sup>8</sup>

In response to this exodus of migrants to rural India, the Government of India launched the *Garib Kalyan Rojgar Abhiyaan (GKRA)* in June 2020. This employment scheme targeted “returning migrants and similarly affected rural population.” The GKRA was introduced in 116 selected districts across six states: Bihar, Jharkhand, Odisha, Rajasthan, Madhya Pradesh, and Uttar Pradesh. The objective was to focus on districts with a larger mass of returning migrant workers.<sup>9</sup> [Figure A.2](#) in Appendix A displays the distribution of GKRA districts.<sup>10</sup> By design, GKRA catered to about two-thirds of returning migrants.<sup>11</sup> Overall, 507.8 million person-days under GKRA and 2950 million person-days under MGNREGA were generated by January 2021, lower than the demanded person-days ([CPR, 2022](#)).

We outline the timeline of the operation of the two schemes during the COVID-19 pandemic and various lockdown phases in [Figure 1](#). We divide our study period into the following phases: April (strictest lockdown, no MGNREGA activity), May (strictest lockdown continues but MGNREGA activities allowed), June - August (unlocking of economic activities in a phased manner, strict restriction in contaminated zones, MGNREGA activities allowed and GKRA introduced), September-December (further easing of restrictions resulting in full unlocking, GKRA ends, urban economies reopen fully). We consider this timeline for disaggregation of annual data by month for a detailed monthly analysis that addresses any concerns of seasonality.

GKRA districts are expected to face higher competition for available jobs, but access to the employment generation scheme would ease this stress. Therefore, reliance on the MGNREGA scheme can be higher or lower in GKRA districts, depending on whether the negative effect of reverse migration outweighs the positive effect of this supplementary scheme. Similarly, the share of women in MGNREGA may rise or fall in GKRA districts depending on the level of competition.

Next, we offer a graphical analysis of the dependence on MGNREGA and women’s share.

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<sup>8</sup><https://www.indiaspend.com/governance/migrant-workers-no-reliable-data-or-policy-737499>

<sup>9</sup>For official information on GKRA districts and activities refer to [GoI \(2020\)](#). [Varshney and Meenakshi \(2023\)](#) describe that on the instruction of the central government, various state departments provided registry of returning migrants. Districts reporting more than 25,000 returning migrants were awarded GKRA.

<sup>10</sup>Reverse migration started as soon as the nationwide lockdown was announced in March 2020 and therefore announcement of GKRA in June is unlikely to affect this phenomenon ([Source](#)).

<sup>11</sup><https://www.insightsonindia.com/social-justice/welfare-schemes/schemes-under-ministry-of-rural-development/garib-kalyan-rojgar-abhiyaan-launched/>

**Figure 2** plots the district-level average person-days generated per rural inhabitant during 2017-2020.<sup>12</sup> We find a consistent increase in the national average since 2017 and a slightly higher slope in the pandemic year (2020). The generation of MGNREGA person-days is lower in the GKRA districts throughout compared to the national average and follows the same trend as the national average. Interestingly, we find that the pandemic narrows down this gap as the generation of employment surges at a faster rate in the GKRA districts relative to the national average in the year 2020 (April 2020-March 2021).

Furthermore, **Figure 3** plots the share of women in MGNREGA person-days. Throughout the analysis period, the share of women is larger in the GKRA districts compared to the national average, highlighting a higher uptake of public work. This aligns with the increased feminization of agriculture resulting from greater out-migration from GKRA districts.<sup>13</sup> However, during the pandemic year, we find a greater reduction in the share of women in the GKRA districts compared to the national average. This indicates that despite a faster increase in MGNREGA person-days in GKRA districts, stricter competition resulted in a larger reduction in the share of women. These trends are further summarized in **Table 1**. Due to data limitations, our dataset comprises 569 rural districts of India, among which 110 were covered under GKRA.

### 3. Methodology and results

To quantify the effect of the pandemic, we consider a district-level panel of MGNREGA workdays for the 2019-2021 period. The 2020 (April 2020-March 2021) data represents the pandemic year that perfectly overlaps with the start of the pandemic and the subsequent lockdown from 24<sup>th</sup> March in India while 2019 (April 2019-March 2020) is the base year. For our data analysis, we exploit the unanticipated lockdown as an exogenous shock to examine how it affects the dependence on MGNREGA and the share of women in the scheme. As the GKRA was announced to supplement the MGNREGA (although much after the reverse migration incidents), we also examine the heterogeneity in the MGNREGA results by the GKRA status of a district. Below we discuss the

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<sup>12</sup>The district-level rural population is taken from Census (2011). And throughout the analysis, we use the MGNREGA person-days normalised by the rural population of that district. The data for each year runs from the month of April of that year to March of the following year.

<sup>13</sup><http://www.indiaenvironmentportal.org.in/files/file/economic%20survey%202-17-18%20-%20vol.%202.pdf>

regression specifications used for the estimation.

### 3.1. Estimating equations

Our baseline estimation equation is a standard first difference equation:

$$Y_{dt} = \alpha_0 + \alpha_1 Post_t + D_d + \epsilon_{dt} \quad (1)$$

where  $Y_{dt}$  is person-days per rural inhabitant in district  $d$  in time period  $t$ ,  $Post$  takes value 1 for year 2020-2021, 0 otherwise. We include district fixed effects ( $D_d$ ) to account for any district-specific unobserved heterogeneities.<sup>14</sup>

We replace the outcome variable in equation (1) with the share of women in district  $d$  in time period  $t$  to measure changes in employment shares of women due to reverse migration. We check for the role of mandated one-third reservation for women in employment generation under MGNREGA by dividing our sample into two groups depending on whether the mandated bound of one-third reservation had been exhausted or not in the pre-pandemic period. Thus, we get two subgroups – 1) below mandated bound (i.e., those districts where the share of women was below 33% in 2019 and is binding), 2) above mandated bound (i.e., those districts where the share of women exceeded the quota of 33% in 2019 and thereby was not binding (See [Figure A.2](#)).

The GKRA scheme targeted districts that were expected to face a higher influx of returnee migrants. While the assignment of these additional GKRA funds can relax the stress on the rural labor market, it is an indicator for districts facing a higher competition. To study the differential impact on MGNREGA performance in the districts that were awarded GKRA we extend the mandated bound analysis by augmenting equation (1) to a differences-in-differences (DID) equation as follows:

$$Y_{dt} = \beta_0 + \beta_1 Post_t + \beta_2 Post_t \times GKRA_d + D_d + \epsilon_{dt} \quad (2)$$

,  $GKRA_d$  takes value 1 if GKRA was introduced in district  $d$  and is zero otherwise.  $\beta_2$  is the

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<sup>14</sup>We acknowledge that districts fixed effects may not fully take care of state-specific policies (e.g. income transfers) that came up as a response to Covid-19 shocks which may have bearing on MGNREGA since it is a demand-driven program.

coefficient of interest. All specifications are with district-fixed effects and use robust standard errors clustered at the district level.

Moreover, there exists seasonality in dependence on the MGNREGA scheme, as captured in [Figure 4](#), for both GKRA and non-GKRA districts. There is a greater burden during off-peak agricultural seasons compared to the peak *Kharif* season in May-June. And the GKRA functioned from 20<sup>th</sup> June 2020 to the end of October 2020. Therefore, we refine our analysis using the GKRA and lockdown timeline as mentioned in [Figure 1](#). We first examine the impact of the pandemic months of April-Dec 2020 on the monthly MGNREGA persondays and then split it using the timeline for MGNREGA and GKRA. For this, we modify our baseline equation to a triple difference equation as follows.

$$Y_{mdt} = \alpha + \beta_0 2020_t + \beta_1 2020_t \times Pandemic_m + \beta_2 Pandemic_m \times binding_d + \beta_3 2020_t \times binding_d + \beta_4 2020_t \times Pandemic_m \times binding_d + D_d + D_m + \epsilon_{mdt}$$

(3)

2020 takes the value 1 for the year 2020, 0 otherwise and  $Pandemic_m$  takes the value 1 for COVID-19 months, i.e., from April - December 2020, and, 0 otherwise. The indicator variable  $binding$  takes a value of one if the pre-pandemic (2019) share of women in MGNREGA persondays was under the 33.33% mandated reservation and is zero otherwise.  $\beta_4$  is our coefficient of interest. For the analysis by the month-wise GKRA and lockdown phases, we split the *pandemic* period into – Apr (indicates the month of April with no MGNREGA and strict lockdown), May (indicates the month with lockdown restrictions but active MGNREGA), Jun-Oct (months of June to October when the GKRA scheme was active) and Nov-Dec (no GKRA scheme and return of migrants).<sup>15</sup>

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<sup>15</sup>See [Figure 1](#) for details. The month of January to March is in the base category (months with no pandemic) relative to which the estimates are generated. Since monthly level MGNREGA data doesn't give person-days by gender, we are unable to do similar checks for women reservation bound using the MGNREGA data. Therefore, we use the CMIE data to further substantiate these results. We construct a measure of conditional employment using the CMIE data for men and women (15 and above years of age) that takes a value of one if an individual is employed and is zero otherwise, conditional on these individuals being employed in the pre-pandemic quarter (i.e., December 2019 - March 2020) as Agricultural laborers/Plantation/Mazdoor/Helpers. These occupations are closely related to employment opportunities provided under the MGNREGA Scheme and thereby are a good proxy for employment

All specifications hold with districts ( $D_d$ ) and month-fixed effects ( $D_m$ ) with robust standard error clustered at the district level. We show only relevant coefficients due to a lack of space.

## 3.2. Results

### 3.2.1. Annual Analysis

**Table 2** shows results from our baseline specifications. The regression coefficients compare changes in the dependent variables *pre* (2019) and *post* (2020) pandemic.<sup>16</sup> In Panel A of **Table 2**, we see a significant increase in the number of person-days per rural inhabitant in the post-lockdown period (column 1). We find that the generation of MGNREGA person-days (per rural inhabitant) increased by 0.26 percentage points (pp) or 6% in 2020 relative to 2019. This increase is similar across districts above and below the mandated bound as per the per-pandemic share of women in 2019. Notably, the increase (albeit insignificant) is greater in magnitude in districts where mandated bound had not been exhausted pre-lockdown.

Next, we examine the change in the share of women as shown in Panel B of **Table 2**. We find a reduction in the share of women by 0.002 pp (or 0.4%) during the pandemic compared to 2019 (column 1). Interestingly, there is a significant heterogeneity in the results around the bound. The districts that were below the mandated bound (where the special provisions for women are binding) observed an increase in the share of women by 0.007 pp or 2.7%. On the other hand, districts below the bound experienced a decline of 0.004 pp or 0.7% (column (3)). This indicates a convergence towards the mandated bound.

Now we study how the mandated provision for women and the GKRA Scheme (without any provisions for women) interact and impact women’s share in public works programs in **Table 3**. Columns (1) and (2) indicate that the dependence on MGNREGA was higher in the GKRA districts, irrespective of the district being below or above the mandated reservation bound. This aligns with the increased dependence on the employment guarantee scheme due to the reversal of migrants.

The next two columns, report the impact on the share of women in MGNREGA persondays by GKRA status. We observe a convergence towards the mandated bound in the GKRA districts

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under the scheme.

<sup>16</sup>Notably, the ‘pre’ period runs from April 2019-March 2020 and the ‘post’ period from April 2020 - March 2021. The post period perfectly coincides with the introduction of the lockdown period in April 2020.

similar to the findings in [Table 2](#). The share of women was higher (albeit insignificant) in GKRA districts relative to non-GKRA districts that were below the mandated bound (column (3)). For those above the bound, the GKRA districts experienced a significant fall of 1 pp compared to non-GKRA districts (column(4)). In the GKRA districts that were above the reserved threshold for women, women’s share in person-days generated declined by 2.4% during the pandemic. The difference ( $p < 0.05$ ) between the interaction coefficients (POST#GKRA) for columns (3) and (4) is significant. It indicates the greater competition faced by women in these districts. GKRA districts were the districts that experienced a relatively higher influx of returnee migrants and were offered this special program to help cushion job losses. Despite these complementary measures, women were adversely impacted when not protected by the mandated provision.

### 3.2.2. Monthly Analysis

[Table 4](#) shows results for the month-wise results. We observe a significant increase in monthly MGNREGA persondays in post-pandemic months in GKRA districts relative to districts without GKRA provision irrespective of bound status in columns (1) and (2). However, the magnitude is almost double in districts that were below the mandated bound in the pre-pandemic period suggesting a higher generation of MGNREGA person-days in GKRA districts as compared to pre-pandemic months. Columns (3) and (4) report the coefficients for the month-specific indicators in accordance with lockdown restrictions and GKRA stages as shown in [Figure 1](#). Moreover, month based categories help us in controlling seasonality and ally concerns related to agricultural cycles. The coefficient on *Apr* is negative (irrespective of bound), which is not surprising as the MGNREGA scheme was halted during this period. And there is no heterogeneity by GKRA which is consistent with the fact that the scheme was not announced yet. We see a significant rise in the number of person-days in subsequent months coinciding with the easing of restrictions on MGNREGA works and the introduction of GKRA in June-October.

However, a limitation of looking at MGNREGA monthly data is that we cannot observe women’s share. Therefore, we further substantiate our results using the CMIE individual-level employment data for individuals aged 15 years and above in rural areas for the years 2019-2020. The estimates in [Table 5](#) show a significant fall in employment for both women and men (columns (1) and (3)) during the pandemic by 64% and 21%, respectively. However, women in below-bound districts

(column (1)) were differentially more likely to be employed. We do not observe a similar result for men, indicating the positive cushioning role of the mandated provisions for women in preserving their employment.

On disaggregating the pandemic indicator into month-wise categories, we observe a pattern similar to the overall pooled effect. Women experienced a greater shock to their employment relative to men (columns (2) and (4)). The binding provision of the MGNREGA scheme had a positive effect throughout the pandemic period, although it was significant only in the month of May. This aligns with the imprecise proxy associated with using the CMIE data due to the data constraint of not having the gender dia-aggregated monthly MGNREGA data.

## 4. Discussion

Our analysis reveals an increase in employment generation under MGNREGA during the Covid-19 pandemic. Despite the scheme’s increased popularity, particularly among rural women, there was a decline in women’s share of participation. This decrease is notably pronounced in districts where the one-third reservation quota had been exhausted prior to the pandemic. Consequently, mandated provisions played a significant role in shaping employment dynamics, especially as competition from men intensified in rural economies.

While data limitations prevent us from fully elucidating the causal mechanisms behind these results, we posit that heightened competition resulting from reverse migration and high rationing rates favoring men contributed to the decline in women’s share of person-days in MGNREGA. Although MGNREGA’s capacity to generate person-days may have cushioned job losses for rural women, as argued by [Afridi et al. \(2022\)](#), there was an overall decline in conditional employment opportunities for women in the Indian economy ([Deshpande, 2020](#)).

An alternative explanation for the observed results could be the rollout of other schemes aimed at supporting women, which may have displaced their participation in MGNREGA relative to men. For instance, women holding accounts under the PMJDY (Pradhan Mantri Jan Dhan Yojana) received INR 500 per month (approximately USD 6) from April to June 2020 ([Chatterjee et al., 2022](#)). However, this amount, which is considerably lower than the expected earnings under MGNREGA wage rates, cannot solely explain the observed heterogeneity in our results across districts with

mandated provisions.

Similarly, various central and state-specific schemes providing in-kind or cash transfers at the household level overlapped with our study period. However, we argue that these schemes cannot fully account for the decline in women’s share of MGNREGA participation, particularly the heterogeneity with the mandated bound, as these schemes were universally implemented within each state.

Notably, the timing of the first wave coincided with the lean agricultural season right before the start of *kharif* cycle in India. This is also the time of a peak of seasonal demand for MGNREGA work as shown by [Figure 4](#). Our results at the extensive margin for persondays are robust to seasonality controls with month-fixed effects. However, we are unable to do similar checks for women’s shares due to the unavailability of women’s monthly persondays data. It is possible that even during normal years, competition for jobs in the lean agricultural period may lead to greater rationing of jobs in favor of men and a fall in women’s share for these months. Alternatively, we substantiate our results with the CMIE-CPHS data as a proxy for MGNREGA work.

In summary, our analysis underscores a heightened dependence on public works programs as a fallback option in the rural economy during the pandemic year. Notably, while additional assistance under GKRA, which lacked mandated provisions for women, did not effectively preserve women’s employment status. Our findings underscore the importance of gender-responsive social protections during crises, especially as only 15% of government programs in Central and South Asia target women’s economic security ([Gavrilovic et al., 2022](#)).

Our results are particularly concerning as they represent conditional estimates, capturing the impact on women who have overcome various barriers to enter the labor force. The increased strain on the labor market could have adverse implications for household welfare if it displaces women’s participation in paid economic activity. Consequently, our findings underscore the need for targeted special programs to help women cope with heightened competition, particularly as they are prone to losing employment opportunities to men amid competition for limited jobs. Multiple mechanisms become crucial in this regard, including challenging social norms around home production responsibilities, such as domestic chores and caregiving duties, which often lead to women’s withdrawal from the labor force. Our results suggest that special provisions, such as those seen in MGNREGA districts where one-third reservations are binding, can help counteract



these norms to some extent.

## 5. Concluding Remarks: Policy Lessons

The primary finding of our study is that while there has been an overall increase in employment generation under MGNREGA due to demand shocks, there has been a concerning decline in women's participation. This decline in women's share of employment is particularly pronounced in districts where the one-third reservation quota had already been exhausted before the pandemic. This trend persists even in districts covered by GKRA, indicating that the exhaustion of the one-third reservation bound significantly impacts women's participation, regardless of the presence of complementary programs like GKRA. Conversely, districts where the one-third reservation bound remained unexhausted, irrespective of GKRA coverage, witnessed an increase in women's share of employment. Therefore, mandated provisions play a crucial role in mitigating the adverse effects of increased competition from men in rural economies, while the existence of complementary programs can inadvertently lead to the crowding out of women from MGNREGA.

An important observation that comes out from is the unavailability of monthly women's person-days data reporting on the MGNREGA portal. If one-third mandate is required to be maintained only at the annual level, we posit that women's share would fall more steeply in months of higher competition from men. The inter-temporal adjustments to meet the annual mandate would make women more vulnerable in the presence of short-term/seasonal shocks – the first wave of COVID 19 being one such example. Future policy research on MGNREGA should focus on the inter-temporal dynamics of the mandated provision.

Our findings underscore the necessity of targeted special programs aimed at helping women navigate increased competition, particularly as they are disproportionately affected by higher competition for limited job opportunities posed by men. The phenomenon of reverse migration observed during the pandemic was largely driven by the economic distress caused by shutdowns of economic activities and the lack of safety nets, such as MGNREGA, in urban India. Consequently, our analysis emphasizes the urgent need for fallback options in urban India to alleviate the burden on rural safety nets and thereby enhance women's welfare. This highlights the importance of developing comprehensive policies that address the unique challenges faced by women in accessing and

retaining employment opportunities, especially during periods of economic crisis.

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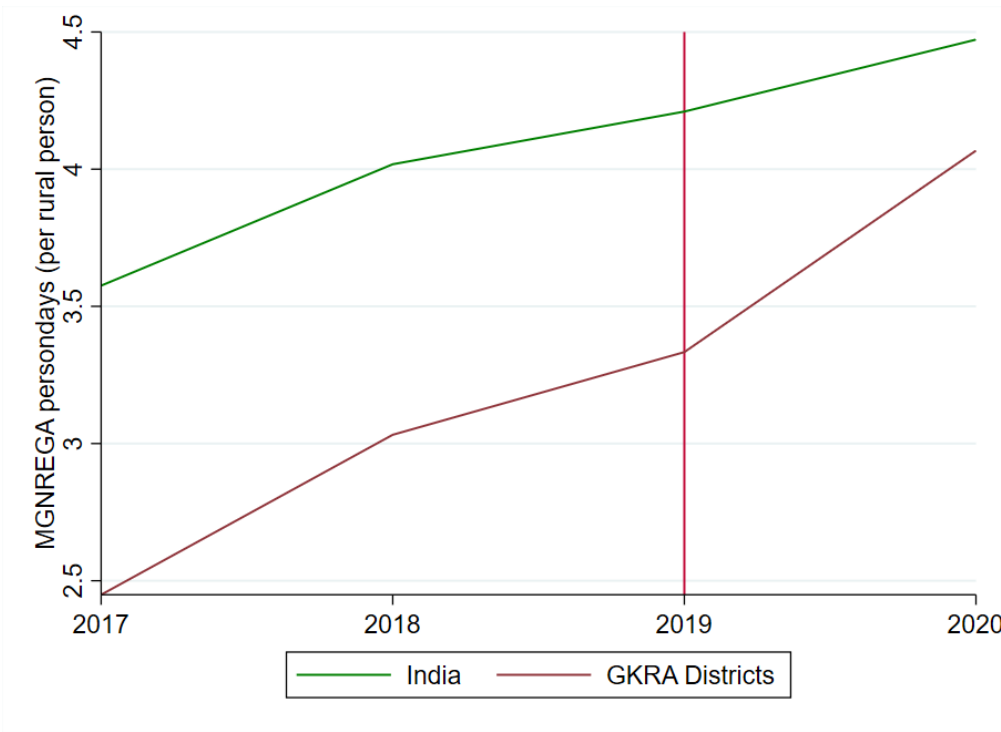
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Figure 1: COVID 19 (first wave) and lockdown timelines in India

	<b>January 2020</b>	Pre-Pandemic Months
	<b>24 March 2020</b>	<b>Nationwide Lockdown; reverse migration</b>
	<b>April 2020</b>	Strict Lockdown; MGNREGA halted
	<b>May 2020</b>	Strict Lockdown; MGNREGA resumed
<b>GKRA Started</b>	<b>June 2020</b>	Restriction eased
	<b>July 2020</b>	Zone based restrictions continued
	<b>August 2020</b>	
	<b>September 2020</b>	Lockdown uplifted
<b>GKRA ended</b>	<b>October 2020</b>	
	<b>November 2020</b>	Post Pandemic Months
	<b>December 2020</b>	

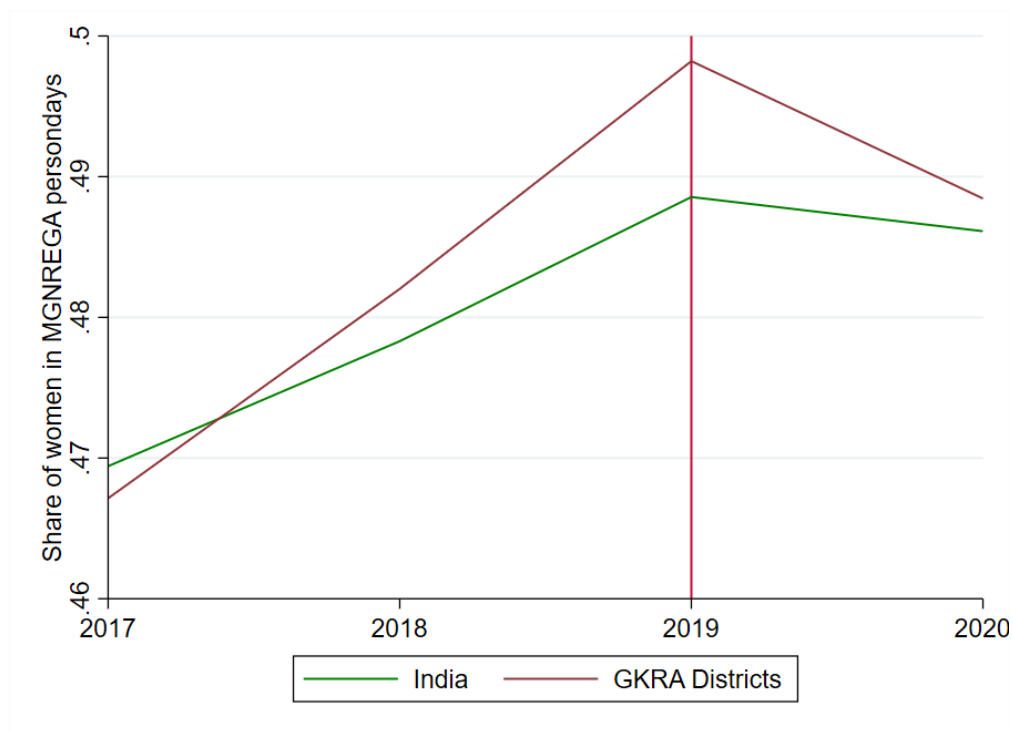
Source: Various newspaper articles and public announcements

Figure 2: Employment generation in rural India under MGNREGA (per rural inhabitant)



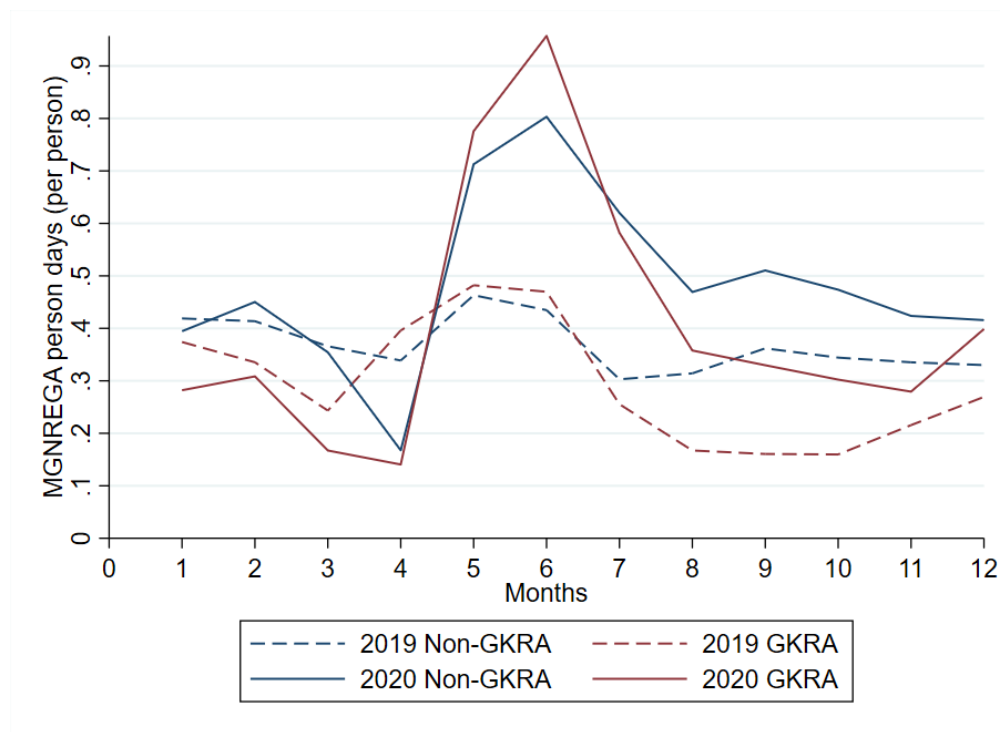
Source: [MGNREGA](#) Public Data Portal (2011-2020) and [GKRA](#) Portal.

Figure 3: Women's share in employment generation in rural India under MGNREGA (per rural inhabitant)



Source: [MGNREGA](#) Public Data Portal (2011-2020) and [GKRA](#) Portal.

Figure 4: Seasonality in Monthly MGNREGA person-days (per rural inhabitant) by GKRA



Source: [MGNREGA](#) Public Data Portal (2011-2020) and [GKRA](#) Portal.



Table 1: MGNREGA trends (district-annual level, per rural inhabitant)

	Pan India		GKRA districts	
	Pre (2019-2020) (1)	Post (2020-2021) (2)	Pre (2019-2020) (3)	Post (2020-2021) (4)
Average no. of persondays	4.21 (5.43)	4.47 (5.15)	3.33 (2.79)	4.07* (3.31)
Women share	0.49 (0.17)	0.49 (0.17)	0.50 (0.14)	0.49 (0.13)
No. of persons demanded work	0.13 (0.10)	0.16*** (0.11)	0.11 (0.09)	0.16*** (0.11)
<b>N</b>	569	569	110	110

*Source:* [MGNREGA](#) Public Data Portal (2019-2020) and [GKRA](#) Portal.

*Note:* The NREGA data on the annual persondays are constructed by aggregating persondays from April (2019) - March (2020) and April (2020) - March (2021) for the 'Pre' and 'Post' years, respectively. Therefore, 'Post' period overlaps perfectly with the nationwide lockdown period in India from April 2020. Standard deviations are reported in parentheses. The significant differences in the mean values are reported as: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table 2: MGNREGA during the pandemic

Category	Overall (1)	Below mandated bound (2)	Above mandated bound (3)
<b>Panel A: Persondays</b>			
POST	0.262*** (0.058)	0.427*** (0.122)	0.234*** (0.065)
Difference			0.193 (0.138)
Observations	1,138	166	972
R-squared	0.983	0.980	0.983
Mean Y	4.21	2.93	4.43
District FE	✓	✓	✓
<b>Panel B: Share of women</b>			
POST	-0.002** (0.001)	0.007** (0.003)	-0.004*** (0.001)
Difference			0.011*** (0.004)
Observations	1,136	166	970
R-squared	0.993	0.939	0.992
Mean Y	0.49	0.26	0.53
District FE	✓	✓	✓

*Source:* [MGNREGA Public Data Portal](#) (2019-2020).

*Note:* Panel A reports the estimates for NREGA persondays (per rural inhabitant) and Panel B reports the share of women persondays. Column (1) has the 'Overall' estimates for the full sample and its bifurcation into 'Below' and 'Above' the 33.33% reservation cut-off for women are in Columns (2) and (3), respectively. This classification is based on the pre-pandemic (2019) share of women in a district. 'Mean Y' denotes the mean value of the dependent variable in the PRE pandemic period (i.e., the year before the pandemic (2019-20)). All specifications have district fixed effects. Standard errors clustered at District level are reported in parentheses (\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ ).

Table 3: MGNREGA persondays and Share of women by GKRA and mandated bound

NREGA reservation	Persondays		Share of women	
	Below mandated bound (1)	Above mandated bound (2)	Below mandated bound (3)	Above mandated bound (4)
POST	0.359*** (0.136)	0.110 (0.075)	0.006 (0.004)	-0.002 (0.001)
POST#GKRA	0.563*** (0.191)	0.606*** (0.140)	0.010 (0.009)	-0.010*** (0.003)
Difference		-0.04 (0.235)		0.02** (0.009)
Observations	166	972	166	970
R-squared	0.980	0.983	0.939	0.992
Mean GKRA	2.61	3.41	0.29	0.52
Mean Non-GKRA	2.98	4.69	0.26	0.53
District FE	✓	✓	✓	✓

Source: [MGNREGA](#) Public Data Portal (2019-2020) and [GKRA](#) Portal.

Note: The dependent variable in Columns (1)-(2) is the MGNREGA persondays while Columns (3)-(4) report the share of women in the MGNREGA persondays. The districts are split by the pre-pandemic (2019) share of women in NREGA persondays into - 'Below' and 'Above' the 33.33% mandated reservation. Columns (1) and (3) have the estimates for the districts that were below this threshold while Columns (2) and (4) report estimates for districts above this cut-off. 'Difference' reports the difference between the coefficients for the interaction term. 'Mean GKRA' and 'Mean Non-GKRA' denote the mean value of the dependent variable in the PRE pandemic period (i.e., the year before the pandemic (2019-20)) for GKRA and Non-GKRA districts, respectively. All specifications have district-fixed effects. Standard errors clustered at the District level are reported in parentheses (\*\*\*)  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ).

Table 4: MGNREGA Monthly persondays by GKRA and mandated bound

MGNREGA reservation	Below mandated bound (1)	Above mandated bound (2)	Below mandated bound (3)	Above mandated bound (4)
2020	0.095** (0.037)	-0.015 (0.020)	0.095** (0.037)	-0.015 (0.020)
2020× <i>pandemic</i>	0.043 (0.032)	0.172*** (0.019)		
2020× <i>pandemic</i> × <i>GKRA</i>	0.139*** (0.045)	0.071* (0.037)		
2020× <i>Apr</i>			-0.160*** (0.043)	-0.183*** (0.021)
2020× <i>Apr</i> × <i>GKRA</i>			-0.007 (0.056)	-0.010 (0.033)
2020× <i>May</i>			0.264*** (0.076)	0.242*** (0.028)
2020× <i>May</i> × <i>GKRA</i>			-0.019 (0.085)	0.128*** (0.046)
2020× <i>Jun-Oct</i>			0.089** (0.044)	0.250*** (0.024)
2020× <i>Jun-Oct</i> × <i>GKRA</i>			0.168*** (0.063)	0.085* (0.051)
2020× <i>Nov-Dec</i>			-0.080 (0.059)	0.116*** (0.027)
2020× <i>Nov-Dec</i> × <i>GKRA</i>			0.220*** (0.079)	0.047 (0.041)
Observations	1,992	11,660	1,992	11,660
R-squared	0.476	0.592	0.487	0.600
Mean GKRA	0.22	0.3	0.22	0.3
Mean NON-GKRA	0.22	0.4	0.22	0.4
District FE	✓	✓	✓	✓
Month FE	✓	✓	✓	✓

Source: [MGNREGA Public Data Portal](#) (2019-2020) and [GKRA Portal](#).

Note: The dependent variable is the monthly MGNREGA persondays. The districts are split by the pre-pandemic (2019) share of women in MGNREGA persondays into - 'Below' and 'Above' the 33.33% mandated reservation. Columns (1) and (3) have the estimates for the districts that were below this threshold while Columns (2) and (4) report estimates for districts above this cut-off. The columns report the estimates by GKRA corresponding to the monthly specification. 'Mean GKRA' and 'Mean Non-GKRA' denote the mean value of the dependent variable in the PRE pandemic period (i.e., the year before the pandemic (2019-20)) for GKRA and Non-GKRA districts, respectively. All specifications have district-fixed effects. Standard errors clustered at the District level are reported in parentheses (\*\*\*)  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ).

Table 5: Role of special provisions for women on Employment (Conditional)

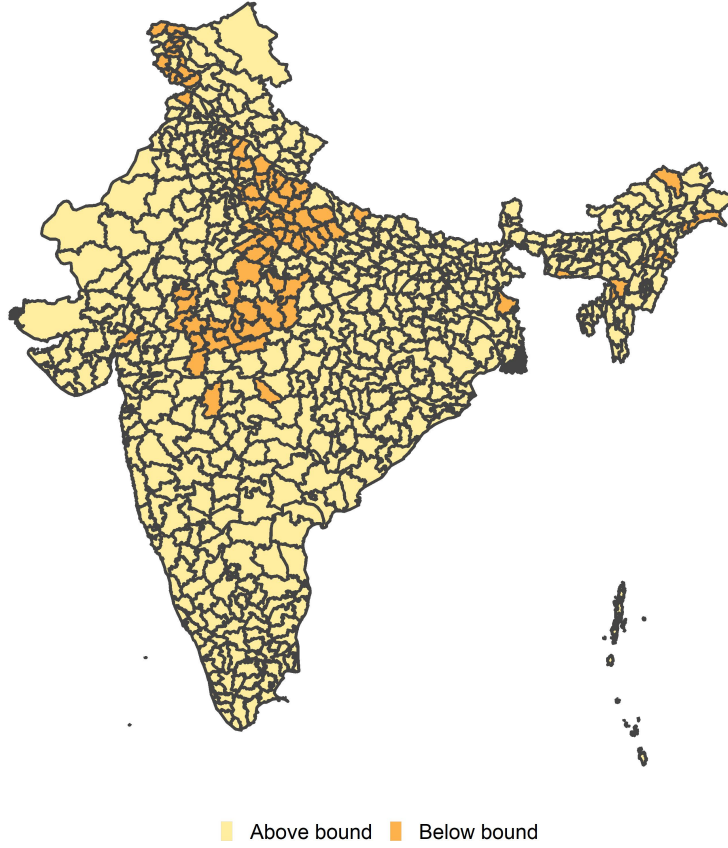
Category	Female		Male	
	(1)	(2)	(3)	(4)
POST	0.301*** (0.037)	0.301*** (0.037)	0.081*** (0.010)	0.081*** (0.010)
2020× <i>pandemic</i>	-0.643*** (0.043)		-0.213*** (0.011)	
2020× <i>binding</i>	-0.073 (0.150)		-0.015 (0.015)	
<i>pandemic</i> × <i>binding</i>	-0.009 (0.097)		-0.013 (0.009)	
2020× <i>pandemic</i> × <i>binding</i>	0.217* (0.118)		0.010 (0.018)	
2020× <i>Apr</i>		-0.785*** (0.124)		-0.503*** (0.044)
2020× <i>Apr</i> × <i>binding</i>		-0.081 (0.260)		0.112 (0.096)
2020× <i>May</i>		-0.735*** (0.068)		-0.416*** (0.041)
2020× <i>May</i> × <i>binding</i>		0.519*** (0.181)		0.033 (0.082)
2020× <i>Jun_Oct</i>		-0.566*** (0.047)		-0.152*** (0.012)
2020× <i>Jun_Oct</i> × <i>binding</i>		0.174 (0.158)		0.008 (0.016)
2020× <i>Nov_Dec</i>		-0.714*** (0.056)		-0.173*** (0.013)
2020× <i>Nov_Dec</i> × <i>binding</i>		0.281 (0.254)		-0.040 (0.038)
Observations	12,575	12,575	53,429	53,429
R-squared	0.483	0.490	0.335	0.359
Mean Y	0.68	0.04	0.93	0.93
Household FE	✓	✓	✓	✓
Month FE	✓	✓	✓	✓

Source: CMIE CPHS (2019-2020), [MGNREGA](#) Public Data Portal (2019-2020).

Note: The dependent variable in all columns is an indicator for conditional employment that takes a value of one if an individual is employed and is zero otherwise, conditional on these individuals being employed in the pre-pandemic quarter (i.e., December 2019 - March 2020) as Agricultural laborers/Plantation/Mazdoor/Helpers. Columns (1)-(2) report employment for women and Columns (3)-(4) report it for men. The indicator variable *binding* takes a value of one if the pre-pandemic (2019) share of women in MGNREGA persondays was under the 33.33% mandated reservation and is zero otherwise. ‘Mean Y’ denotes the mean value of the dependent variable. All specifications have household and month fixed effects. Standard errors clustered at District level are reported in parentheses (\*\*\*)  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

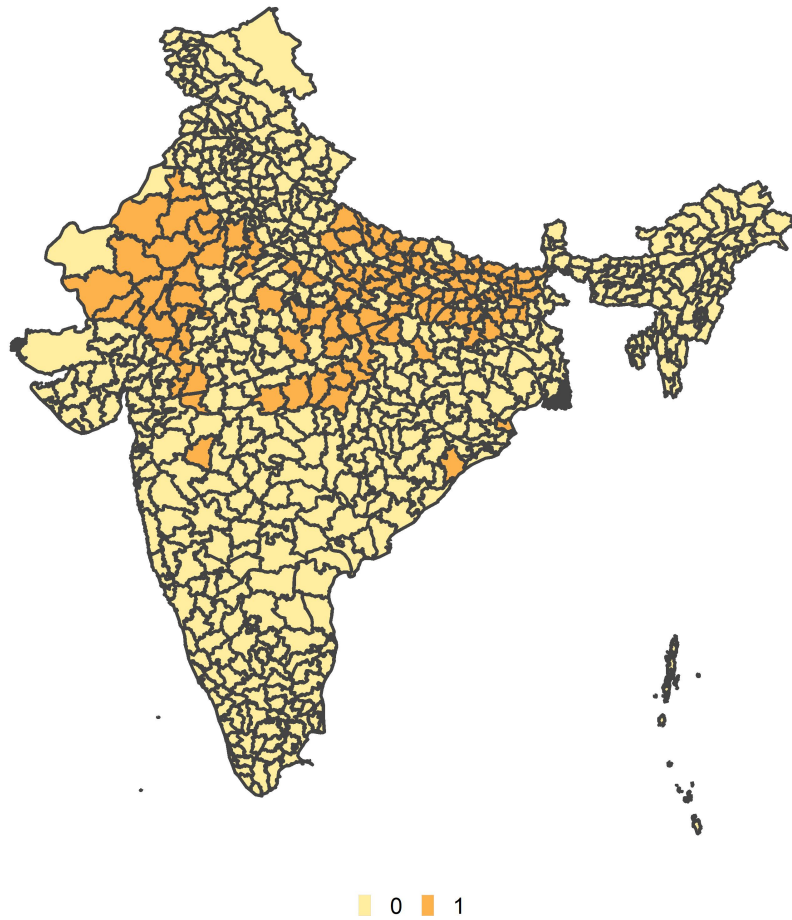
## Appendix A

Figure A.1: Distribution of districts by mandated share of women in MGNREGA in 2019



Source: [MGNREGA](#)

Figure A.2: Distribution of GKRA districts



Source: [GKRA Portal](#).

Table A.1: Works under GKRA

S.No	Work/Activity	Scheme	Ministry
1	Community Sanitary Complexes	Swachh Bharat Mission-G (ODF+)	Drinking water & Sanitation
2	Gram Panchayat Bhawans	Finance commission Funds/MGNREGA	Panchayati Raj/ Rural Development
3	Works under Finance Commission funds	Finance commission Funds	Panchayati Raj/ Rural Development
4	National Highway works	Bharatmala & others	Road transport & Highways (NHAI)
5	Water conservation & Harvesting works	MGNREGA	Rural Development
6	Wells	MGNREGA	Rural Development
7	Plantation works (including CAMPA Funds)	MGNREGA/CAMPA	Rural Development
8	Horticulture	MGNREGA	Rural Development
9	Anganwadi Centers	MGNREGA/ WCD	Rural Development/ DoWCD
10	Rural housing works (PMAY-G)	PMAY-Gramin	Rural Development
11	Rural connectivity works (PMGSY)	PMGSY	Rural Development
12	Railway works	–	Railways
13	Shyama Prasad Mukherjee RURBAN Mission	Shyama Prasad Mukherjee RURBAN Mission	Rural Development
14	PM KUSUM works	PM KUSUM	New & Renewal Energy
15	Laying of Optic Fiber under Bharat Net	Bharat Net	Telecommunication
16	Works under Jal Jeevan Mission	Jal Jeevan Mission - MGNREGA & Har Ghar Nal se Jal	Rural Development/ Drinking water & Sanitation
17	PM Urja Ganga Project	PM Urja Ganga Project	Petroleum & Natural Gas
18	Training through KVK for Livelihoods	–	Agriculture Research & Education
19	Works through District Mineral Fund	DMFT	Mines
20	Solid and liquid waste management works	MGNREGA	Rural Development
21	Farm ponds	MGNREGA	Rural Development
22	Cattle sheds	MGNREGA	Rural Development
23	Goat Sheds	MGNREGA	Rural Development
24	Poultry sheds	MGNREGA	Rural Development
25	Vermi-composting	MGNREGA	Rural Development

Source: [GoI \(2020\)](#)