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# The Impact of Temporary Work Guarantee Programs on Children's Education: Evidence from the Mahatma Gandhi National Rural Guarantee Act from India

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## Abstract

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) of 2005 guarantees adult members of rural households to a minimum of 100 days of employment with certain provisions geared specifically towards women. The phase wise rollout of the program allows us to employ a difference-in-differences strategy to examine the effects on children's education. Using two phases of the District Level of Household and Facility Survey, we find no significant impact of the program on children's education. Although our results are not significant, we find consistent negative coefficients on girls' schooling. These results suggest the interplay of two opposing channels. On the one hand, the increase in income due the program could increase children's schooling. On the other hand, the rise in mothers' work and hence, absence from home may have adversely affected children's education, especially for the older children.

*JEL Codes:* O12, I21, I38

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# 1 Introduction

Public works programs are established for the primary reason of alleviating poverty. Subsequently, they have also been known to improve wages, reduce unemployment in rural areas and also decrease the gap in gender inequality. India's National Rural Employment Guarantee Act (NREGA) of 2005, one of the biggest and most ambitious public works programs in the world, was launched with the same intention as above and to also bring economic growth to rural areas. Rolled out at a national level, NREGA is a job guarantee program that provides employment for 100 days to any adult members of any rural household. While the primary objective of the program is to augment wage employment, it also has potential to strengthen natural resource management, empower rural women, and reduce rural-urban migration. One of the key features of NREGA that makes it different from previous public works programs is that it allows for women-specific provisions. NREGA mandates 33 percent participation of women, and that men and women are paid equally.

Research on women's labor force participation has established that improving women's labor market access improves their decision-making power and subsequently, improves their control over household resources as well (Gleason, 2003; Quisimbing and Mallucio, 2003; Anderson and Eswaran, 2009). Increased power in the household can further lead to improvements in children's health and education outcomes (Duflo and Udry, 2004; Marchand et al., 2012). An augmented labor market opportunity for women could lead to two opposing effects in terms of children's education. Since women now partake in employment and have a sense of independence through contribution to household income, they are more adept to the need for their children's education. However, there is also an opposing effect; older children, especially girls, in the household might need to take care of the household chores and their younger siblings, leading to a reduction in education of this older cohort. This is especially of concern in the case of NREGA since the program has come under criticism for a lack of childcare facilities, even though funds have been allocated to that cause (Holmes et al., 2010; Dreze and Oldgies, 2007; Kumar, 2012). In this paper, we study the impact of

NREGA on children's education via the channel of women securing better access to labor market opportunities.

In February of 2006, NREGA was initially launched in what was identified as the 200 poorest districts of India (Phase I). It was then extended to 130 districts by May of 2007 in Phase II. The remaining districts came under NREGA by April of 2008 in the Phase III.<sup>1</sup> Thus, NREGA covers the entire country with the exception of districts that have a hundred percent urban population. By the year 2010-11, the program provided employment opportunities to 54.9 million households. Given the massive scale of the program, it is natural to question whether such income support programs like NREGA improve child development. The phase-wise implementation of NREGA ensured that some of the districts were the control group while the others were treatment group, allowing us to exploit a difference-in-differences strategy to examine the effect of the program on children's education.

We apply our difference-in-differences to two phases of the cross-sectional dataset of District Level and Household Survey (DLHS). The extensive coverage of the DLHS allows us to look at the 552 districts in our analysis and spans from 2002-2004, and 2007-2008. The dataset includes a rich set of individual and household characteristics. Our sample consists of approximately 890,000 children aged between 7-15 years. We find weak evidence that the program did not improve children's education. We also find suggestive evidence that older cohorts, especially girls, substitute education for work and that younger boys seem to be favored more to complete education.

The rest of the paper is organized in the following manner. Section 2 provides the background information about NREGA and also a literature review of what has been done so far. Section 3 elaborates the empirical strategy we employ, Section 4 talks about the data. We elaborate on the results in Section 5 and finally conclude in Section 6.

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<sup>1</sup>Phase wise district list and map are given in the Appendix.

## 2 Background

### 2.1 National Rural Employment Guarantee Act

Enacted in August 2005, NREGA aims at enhancing the livelihood security of people in rural areas by guaranteeing a minimum of 100 days of public sector work in a financial year at a pre-determined wage rate.<sup>2</sup> To be a beneficiary of NREGA, interested adult members must first apply for a job card at the local Gram Panchayat where they reside.<sup>3</sup> The Job Card should be issued within 15 days of application after verification. Any adult who applies for work under NREGA is entitled to employment in public works within 15 days; otherwise it is the responsibility of the state to provide them with unemployment benefit. However, applicants have no influence over the choice of project. NREGA has specific provisions for women: they are to be paid equally as men and it mandates a 33 percent women's participation.<sup>4</sup>

Projects under NREGA focus mainly on the improvement of local infrastructure such as road construction, earthworks related to irrigation and water conservation. A 60:40 wage and material ratio has to be maintained. No contractors or machinery is allowed in NREGA works. While The Central Government meets the cost towards the payment of wage, 75 percent of material cost and some percentage of administrative cost, the state governments meet the cost of unemployment allowance, 25 percent of material cost and administrative cost of State council.

With a budget of 4 billion USD or 2.3% of total central government spending, the program is a promising policy for poverty alleviation (Ministry of Rural Development, 2008b). During its first year (2006-07) of implementation in 200 districts, 21 million households were pro-

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<sup>2</sup>The program was renamed as Mahatma Gandhi National Rural Employment Guarantee Scheme in 2009.

<sup>3</sup>Gram Panchayat is the lowest level of administration in the Indian government, comprising of a group of villages.

<sup>4</sup>Our dataset does not identify the actual take up of NREGA within the households. Hence, we use all the households, and subsequently, individuals, within the districts and conduct our analysis. This gives us the overall impact of the policy.

vided employment and 905 million person-days of work were generated.<sup>5</sup> Over the years, employment opportunities under NREGA have increased and during 2010-11, 54.9 million households were provided employment and 2571.5 million person-days were generated (Ministry of Rural Development, 2012).

NREGA was initially launched in what was identified as the 200 poorest districts of India in February 2006 (Phase I). The Planning Commission of India explicitly calculated and ranked the backward status of Indian districts (Planning Commission, 2003).<sup>6</sup> It was then extended to 130 districts by 2007-08 in Phase II. The remaining districts came under NREGA by 2008-09 in Phase III. Thus, NREGA covers the entire country with the exception of districts that have a hundred percent urban population. Figure 1 shows a map of the districts coverage by phases.

## 2.2 Literature Review

Given its large scale of operation and its implications for rural India, NREGA has attracted considerable amount of interest among researchers, NGOs and the media. A large amount of literature has focused on the effect the program has had on the labor market in India. Imbert and Papp (2012) and Azam (2012) use the nationally representative data of India's National Sample Surveys and a difference-in-differences framework to estimate the causal effects of NREGA on labor market. The former find an increase of 0.3 days per prime-aged adult per month in employment with a 4.5% increase in private sector casual wages. They however find that private sector work for low-skilled workers dropped by 1.6%. Azam (2012) finds that labor force participation has increased by 2.5%, with the result being driven by a significant increase in female labor force participation. Additionally, he finds a significant increase of 8% in real wages of female casual workers in NREGA districts when compared to the non-NREGA districts. However, the impact of NREGA on wages of casual

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<sup>5</sup>Person-Day is defined as one day of work in the MRNEGA. One person-day of work entitles the worker to the notified wage in the MRNEGA as per the Schedule of the Rates (SoRs).

<sup>6</sup>The official ranking of backwardness of the districts in each state was based on the Scheduled Caste and Tribe population in 1991, agricultural wages in 1996-97 and output per agricultural worker in 1990-93.

male workers was only been marginal (about 1%). On the other hand, Zimmermann (2012) using a regression discontinuity design finds no impact on public or private sector casual employment. She does find significant increases in the private sector casual wage for women, which is not the case for men. While the labor market results vary, the program seems to have significant impacts for the female labor force, with little impact on the male labor force.

While the previous papers have focused on India as a whole, literature has also focused on micro level units to examine the effect of the program on women's empowerment and labor force participation. Khera and Nayak (2009) use qualitative data collected on 1060 NREGA workers from 98 NREGA worksites across 10 sample districts from North India to study the impact the program has had on women. They report increased women's access to jobs with reasonable wages and working conditions. Pankaj and Tankha (2010) based on their field survey of 428 female NREGA workers from four northern states in India, report that women as individuals have gained because of their ability to earn independently. Similarly, Narayan (2008), based on fieldwork from selected areas in Tamil Nadu, reports that women who took advantage of NREGA gained a certain independence. They seemed to have invested more in their children's welfare, paid off outstanding debts, and garnered a sense of empowerment since they could self-sustain themselves. However, he also finds that quite often women have to suffer income losses due to the lack of child-care facilities at NREGA worksites. Similarly, Sudarshan's (2011) study finds that quite often women have to juggle work and care through the help of family members, quite often the older daughters. In spite of the provisions in the Guidelines of the Act for promoting womens participation in the NREGA, local dynamics, gender relations and implementation challenges create several constraints for womens meaningful participation.

NREGA has also had significant impacts on household allocation and migration of rural households. Based on an initial baseline survey data of 1066 households and subsequent panel data of 320 households from Andhra Pradesh, Ravi and Englar (2009) find an increase in expenditure by 40% and non-food consumables by 69% as a result of NREGA. Liu and

Deininger (2010) conduct a survey in five districts in Andhra Pradesh and find an increase in calorie consumption and consumption expenditure in the surveyed households in these districts. Ravi et al. (2012) find that NREGA has significantly reduced rural to urban migration in India (by 27.9 percent), mainly driven by a much sharper impact on illiterate households. They also find that NREGA has reduced urban unemployment by 38.7 percent. This is in line with one of the rationales behind NREGA; to reduce rural to urban migration.

Given that the program is seen to have increased women's labor force participation, bargaining power and household allocation, especially food consumption, NREGA could have significant impacts on children's well being. Afridi et al. (2012) study the impact of NREGA in Andhra Pradesh on children's time spent in school via its potential to empower rural women through greater access to labor market opportunities. They find that greater participation of mothers in the program is associated with higher-grade attainment of their children in the poorer households. Similarly, Uppal's (2009) study on Andhra Pradesh finds evidence that program registration reduces the probability of a boy entering child labor by 13.4 per cent and for girls by 8.19 per cent. On the other hand, using DISE dataset, Li and Sekhri (2013) find that introduction of NREGA led to lower relative enrollment in treated districts. They also find that enrollment in private school increased but grade repetition and pass rates worsened, and enrollment in free public schools fell.

NREGA may affect children in three different ways. First, an increase in mothers' labor force participation can improve children's outcomes as more income allows families to increase investments in education, health for their children. This is a pure income channel playing a role which is well documented in the literature. Using instrumental variable strategy, Dahl and Lochner (2012), and Milligan and Stabile (2011) find significant positive effects of increase in family income (due to changes in income guarantee programs) on children's test scores.

Second, higher earned income may raise a mother's say in household resource allocation decisions. Using data from rural Bangladesh, Anderson and Eswaran (2010) show that the



effect of earned income on female autonomy within households is far greater than that of unearned income. Also, it is not employment per se but employment outside their husbands' farms that is more important in empowering women. Research has shown that providing women with extra income or empowering them has a positive effect on children's education. Using exogenous increases in sex-specific agricultural income caused by post-Mao reforms in China, Qian (2008) finds that increasing the income of the mother increases educational attainment for all children, while increasing the father's income decreases educational attainment for girls and has no effect on boys' educational attainment.

Third, mother's employment imposes a burden on a mother's time and may result in poor supervision or care of her children. Quite often, the older generation or older siblings take over the household responsibilities, especially taking care of the younger siblings. A consequence of this might be that the children abandon school all together. This is a mother's time at home or substitution channel (assuming that the mother's time and the children's time are perfect substitutes). Bianchi (2000) shows that working mothers spend less time doing household work, and Crepinsek et al. (2004) document that children of working mothers have lower overall "Healthy Eating Index" scores. The net impact of increase in mother's labor force participation on children's education would depend on which of the effects dominates: the pure income effect, the bargaining effect or the substitution effect.

Several studies have evaluated the economic impacts of safety net programs, in particular, NREGA. Our paper adds to this increasing literature by evaluating the effects of NREGA on children's education. While, Afridi et al. (2012) investigate a similar question, they limit their study to only 5 districts in one particular state in India. Li and Sekhri (2013) use the DISE and evaluate the impact of the program on school enrollment (both in private schools and public schools). We complement this literature by examining the effect of the program on children's education, specifically completed years of schooling, using the richer dataset of the DLHS.

## 3 Empirical Strategy

### 3.1 Difference-in-Differences

The phase-wise implementation of NREGA provides a quasi-natural experiment, allowing us to use a difference-in-differences empirical strategy. There are two sources of variation in exposure to the implementation of the program. On the one hand, there is time variation: the program was introduced in 2006. On the other hand, there is district variation, with the most backward districts receiving the program first. Districts under Phase I and II received the program by 2007, while districts under Phase III received treatment in 2008-09. We define districts in Phase I and II as our treatment districts, and districts in Phase III as the control districts.<sup>7</sup> The period of pre-treatment (in this case the implementation of NREGA) is pre 2006 (we have data from 2002-2004), while the period of post-treatment is post 2006 (our data allows us to look at 2007 and 2008).

Specifically, we estimate the effect of an employment guarantee program, namely NREGA, on children's education. We restrict the analysis to children aged between 7-15. The strategy is summarized by the following equation:

$$y_{idt} = \alpha + \beta_1(nrega_d * post_t) + \delta_d + \gamma_t + \Pi X_{idt} + \epsilon_{idt} \quad (1)$$

where  $y_{idt}$  is the outcome variable for an individual,  $i$ , in a district  $d$  in year  $t$ .  $nrega_d$  is a dummy variable that takes on the value 1 for districts that received NREGA in Phase I and Phase II, and takes on 0 for all districts in Phase III.  $post_t$  is the dummy variable that takes the value 1 for after 2006, and 0 for before 2006.  $\delta_d$  is the district fixed effect and  $\gamma_t$  is the year fixed effect. The matrix  $X_{idt}$  is the set of individual control variables that include, gender, caste, religion, rural or urban area, household size, and assets of the household. We cluster standard errors at the district level to account for any serial correlation. The coefficient of

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<sup>7</sup>We currently restrict our analyses to districts that have ever received NREGA. We drop the urban districts for the moment to just focus on NREGA districts. As a robustness check, we include the urban districts later on in our estimation results.

interest is  $\beta_1$ , which gives us the difference in outcome between NREGA districts and the non-NREGA districts. We conduct the analyses separately for girls and boys to further tease out any gender bias within the households.

Since NREGA was rolled out in three different phases, with the most backward districts first, it is important to control for differential trends. This is also important since the roll-out was not in a random fashion; and instead was based on an index of backwardness. To correct for differential trends, we include district specific linear trends

$$y_{idt} = \alpha + \beta_1(nrega_d * post_t) + \delta_d + \gamma_t + \theta_d * (year_t) + \Pi X_{idt} + \epsilon_{idt} \quad (2)$$

where  $\theta_d * (year_t)$  is the district specific linear trends. One of the key assumptions of the difference-in-differences estimation is that of parallel trends. In our case, the parallel trend assumption is that, in the absence of NREGA, the trends in our outcome of interest would have been the same in the treatment and the control districts. As a falsification test, we repeat the above analyses for the age group between 19-21. Since NREGA is eligible to anyone aged 18 and above, this group should take up more work opportunities. They should not be affected by the policy in terms of going back to primary or secondary school. If this is indeed the case, the coefficients on the 19-21 age group in our falsification test should be negligible and insignificant. In our data set, average years of education increases with age. However, we find that the average reaches a plateau at 9 years of education for people above 18 years of age. Therefore, individuals between 19-21 would have completed their education prior to the policy, and hence are a suitable group to check for pre-trends.

We further decompose the treatment variable by three different age groups and estimate Equations (1) and (2) based on these different groups. The double difference from above could suffer from trends amongst different cohorts in our sample. Additionally, this will allow us to examine differential effects of the program on various ages in our sample, and provide a better insight of the income and and mother's time effect mentioned in our motivation. Our age groups are defined as the following: the youngest group is the group between 7-9;

this is the age group we expect to see the most impact of the policy since they will be going to primary school. We define our second group between 10-12 and the third group between 13-15.

## **3.2 Estimates by Various Groups**

### **3.2.1 Gender of Head of the Household**

An important factor to consider in our analyses is the gender of the head of the household. It is of interest to examine the differences, if any, in the effect of the program on children's education based on whether the household has a female head or a male head. If gender progressive parents were already sending their daughters and sons to school, then we should see no significant increase in the impact of the policy on children's education. Additionally, if gender bias (favoring the boys more than daughters) does exist, then we should see no effect for female head of households since we could assume that they would put more weight on the boys' education than that of the girls. However, since mothers are part of the labor force and are experiencing an increase in wages, they could now invest more in their daughters' education. If this is the case, we should find a positive impact of the program on girls' education.

### **3.2.2 Scheduled Caste/Scheduled Tribes**

Historically, the Scheduled Castes, Scheduled Tribe and Other Backwards Caste groups have been the disadvantaged groups in India. Several policies in India are geared specifically to improve the conditions of these groups. An example of such a policy is in higher education (colleges), where they collectively hold a 50% reservation of the available seats. Similarly, NREGA has some targeting towards these caste groups.<sup>8</sup> One of the key features of NREGA is that there is significant targeting to improve land, irrigation and horticulture among

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<sup>8</sup>The pre-treatment summary statistics presented in Table 1 highlight the targeting of NREGA towards these caste groups.

specific groups such as SC/ST, below poverty level families and so on.<sup>9</sup> Azam (2012) finds that the SC/ST group experiences a significant increase in both real wages and labor force participation after the implementation of NREGA. It is interesting to see if these caste groups improve household allocation towards education of the children due to increased income.

## 4 Data

The main sources of data for our analysis are the second and third waves of the District Level Household and Facility Survey (DLHS) in India. The DLHS uses a nationally representative sample of households and is one of the largest demographic and health surveys ever carried out in India. In the second wave of DLHS, the survey was completed during 2002-04 in 593 districts, covering a representative sample of about 1,000 households in each district. The total sample size is around 620,107 households in India. The third wave of DLHS survey was conducted in 2007-09. The total sample size is around 720,320 households across 601 districts from 34 states and union territories in India (excluding Nagaland).<sup>10</sup> The extensive coverage of the DLHS allows us to look at the 552 districts in our analysis. Our analyses covers children aged between 7 years of age to 15 years of age.<sup>11</sup> Our sample size is roughly 890,000 children, of which 46% are female.

The household questionnaire in the DLHS includes a roster of all members residing in the household, their educational attainment, and health of the women and children in the household. It also includes detailed questions on the demographic information, assets possessed, and socio-economic characteristics of the household. We restrict our analysis to the usual residents of the household.<sup>12</sup> Our main variable of interest is completed years of schooling.

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<sup>9</sup>Shah et al., 2012 provides an in-depth analysis of further provisions of NREGA towards the backward and SC/ST groups.

<sup>10</sup>We drop districts which had 100% urban population and not covered by NREGA. We also drop district which were bifurcated after DLHS-2 survey as bifurcated districts were covered in different phases of NREGA. Furthermore, we drop any urban areas in the sample since the policy is specifically designed for rural households.

<sup>11</sup>The DLHS dataset includes females who are married as early as 16, which could confound our results with respect to children going to school. Hence, we restrict our dataset to children less than 16 years of age.

<sup>12</sup>We restrict our analysis to only the “regular” members of the household, and drop any visitors in our

The timing of the DLHS survey is appropriate for our analysis. Since NREGA was implemented in three different phases starting from February 2006, the 2002-04 DLHS data serve as our baseline. The 2007-08 DLHS data allows us to examine the impacts of NREGA using this as a post treatment data in combination with the 2004-05 data, which serve as the period before the policy was in place. We group districts under Phase I and Phase II together and call them as “treatment” districts, while Phase III districts are our “control” districts. The information about phase wise expansion of NREGA in different districts comes from NREGA program webpage.<sup>13</sup>

Table 1 presents the descriptive statistics of treatment and control districts in year 2002-04 when NREGA was not implemented. The Phase I and Phase II districts (*treatment districts*) are indeed backward compared to the Phase III districts (*control districts*). The population in the treatment districts appear to have lower completed years of schooling compared to the control districts. Households in treatment districts have larger families, lesser owned assets compared to controls districts. Similarly, the treatment districts have a larger share of the marginalized caste population (SC/ST/OBC) who are the historically disadvantaged group in India. Thus the descriptive analysis suggests that there was effective targeting of NREGA towards backward districts, in the initial phases of NREGA.

## 5 Results

### 5.1 Difference-in-Differences Estimates of Effects of NREGA on Children’s Education

In Table 2, we estimate Equations 1 and 2 and present the difference-in-differences estimates of the impact of NREGA on children’s education, measured by completed years of schooling. The odd columns present estimates from Equation (1) while the even columns

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sample. We are able to do this because the number of visitors in our sample is very low, and dropping them does not change any of our results.

<sup>13</sup>The official NREGA website: <http://nrega.nic.in>

present results that include district specific linear trends. Columns 1 and 2 present results for the entire sample, while Columns 3-6 present the results for girls and boys separately.

For the full sample, we find that the coefficient on the treatment variable is 0.005. This translates to a negligible increase of 0.005 years of education. Controlling for district specific trends to account for the specific targeting of the backward districts, we find that the coefficient is now -0.109. While the results are not significant, we find suggestive evidence towards an overall decrease in the years of education. To examine if the results differ by gender, we divide our sample between daughters and sons. For girls, we see an increase of 0.015 years of schooling, but controlling for district specific trends we find that the coefficient is now -0.270 (both these results are not significant). For boys, we find a negligible decrease in completed years of education. An interesting result is when we control for district specific trends, we find that boys experience an increase of 0.025 years of education (however, the results are not significant).<sup>14</sup> While not significant due to the large standard errors, the negative coefficient for girls may be due to the fact that children quite often have to walk long distances to attend school in rural areas and lack of a supervising parent while traveling might be a deterrent, especially for girls. Additionally, the results suggest a presence of gender bias; boys seem to be attending school more than girls. Research and case studies have further reported the lack of child care facilities at NREGA worksites; this makes the older children good candidates to take over household chores and take care of the younger children. Thus, the results might not suggest a clear substitution or income channel playing a role due to the increase in women's participation in the labor force due to the NREGA.

Next, we perform a falsification test to examine if our difference-in-differences estimates are confounded by any differential pre-program trends between NREGA and non-NREGA districts. Table 3 presents the results of the falsification exercise using individuals who are between 19-21 years old, to test our assumption of parallel trend. The coefficients are not significant i.e. we do not find any evidence of differential pre-program trend. The results of

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<sup>14</sup>We include years of education of the head of the household in our estimation and find that our results are largely similar to the ones presented in Table 2.

the falsification exercise increase our confidence in the difference-in-differences estimates and we conclude that NREGA did not lead to any significant impact on educational attainment in NREGA districts.

Did the program have differential effects amongst different age groups? We answer this question, by running our estimations on different age groups as defined in the empirical section and present the results in Table 4. We focus on the results that control for district specific linear trends since that is our preferred estimation regression. For girls, we see a consistent negative effect of the program on their education (however the results are not significant). The magnitude of decline is highest for the age group 10-12 which experiences a decrease of 0.451 years of education. The results for girls, although insignificant, allude towards the substitution channel mentioned earlier. Since mothers now are outside the house, the older girls (aged 10-15) might be forced to take over the household activities. The lack of childcare facilities in NREGA worksites makes it harder for mothers to take the younger children to work. Moreover, as mentioned earlier, the younger age group (7-9) might be taken out of school due to schools being far away from the villages. Furthermore, girls aged 7-9 might be taking care of the children aged below 7. They might be the oldest children in the household which is why we pick up the negative effect in their completed years of schooling as well. Thus, for girls, we consistently find negative coefficients for all age groups, although none are significant at conventional levels. These negative coefficients are consistent with the importance of mother's work channel playing a negative role in the children's education mentioned earlier.

On the other hand, the results for the boys are slightly different. While the results for the older male cohorts in our sample are similar to the older female cohorts, we see that the younger cohort actually experiences an increase of 0.258 years of education (not significant). To the extent that the income channel matters, this appears to be the age and gender group where it may have positive impact. The results for the younger male group also further our theory of an underlying gender bias; while the younger girls experience a decline in



education, the younger boys experience the opposite impact. Overall, for boys, we find some evidence of both channels playing a role in opposing directions. The income channel is more pronounced for the youngest age group than the older groups, who might be suffering due to the rise in mothers' labor force participation.

## 5.2 Heterogeneity by Different Groups

Our analyses thus far has shown no significant effect of NREGA on children's education. We find that girls seem to be substituting taking care of the household and younger siblings and hence might be dropping out of school. For the boys, we see mixed results with the younger cohort experiencing an increase in education and the older cohorts experiencing a decline in education. However, our results are not significant at any of the conventional levels.

Additionally, we divide our sample between households that have a female head and those that have a male head. The gender of the household is important to our analysis since it allows us to investigate income distribution and household spending. Panel A of Table 5 present results from estimating the effects of the program on children's education in households with a female head.<sup>15</sup> We find that the full sample of girls experience a decline of 0.966 (significant at the 10% level of significance). Disaggregating by age group, our results are similar to the results presented in Table 4. The coefficient on the oldest cohort (13-15) is -1.957 which is highest in magnitude relative to the other age groups. These results further our theory that there might be a certain substitution of education for more household work by this group since the primary caretaker is absent from the house. The results for boys are similar to the results presented in Tables 2 and 4; none of the results are significant at conventional levels. However, it is interesting to see that the youngest age group experiences a decline in the years of education while the age group between 10-12 see a positive impact.

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<sup>15</sup>We acknowledge that the sample of households with a female head used in this estimation is significantly lower than that with a male head. Nevertheless, it is interesting to see how the gender of the head of the household affects children's education.

Panel B of Table 5 present results from estimating the sample of male headed households. These results are very much similar to the results in Table 2 and 4 for both girls and boys.

As noted earlier, NREGA has specific provisions that target the marginalized caste groups and below poverty line groups to improve their land and irrigation facilities. Table 6 present results from estimating Equations 1 and 2 on the sample of marginalized castes (SC, ST and OBC). The results for both girls and boys largely mimic the results from our previous estimations presented in Tables 2 and 4; these results are not significant at the conventional levels. Even though, recent literature reports that this group have taken advantage of the program and improved household allocation towards consumption, it is interesting to see that this is not the case when it comes to education. It is however interesting to see that the oldest age group for both females and males appear to experience an increase in years of education. This could be primarily because of the reservation of seats for these groups, that they are taking advantage of this and going back to school to finish a certain level of education. Nevertheless, our results are not significant, and so we rule out any significant impact of the program on education for the marginalized caste.

## 5.3 Robustness Checks

### 5.3.1 Dropping the Best Performing States

Research and government documents have indicated that the best performing states with respect to an increase in women’s labor force participation due to NREGA are the states of Rajasthan, Andhra Pradesh, Tamil Nadu and Kerala.<sup>16</sup> Since these states have experienced increases in labor force participation amongst females, the substitution channel of older siblings taking care of the younger children at home might be high as well. We drop these states from our analyses to see if these states are the ones that drive our results from above and present the estimation results in Table 7. Our results are robust to this

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<sup>16</sup>Dreze and Oldiges, 2007; Shah et al., 2012 detail the trends of women’s participation in these four states.

specification (although the results are not significant). We find an overall decrease in the years of education for both girls and boys. The coefficient on the oldest female cohort is however, positive. This suggests that maybe the substitution channel isn't as prominent once we drop these states from our estimation. However, the decline in years of education for the cohort between 10-12 is much higher than the increase for the oldest cohort, indicating an overall decline in educational attainment. The results for boys are robust and similar to the results we present in Tables 2 and 4.

### **5.3.2 Urban Districts in Control Group**

As another robustness check, we alter our control group by including the urban districts with the Phase 3 districts. We re-estimate our difference-in-differences estimation and present the results in Table 8. Our results are quite robust to this specification for both boys and girls. We see that the older cohorts experience a decline in the years of schooling. The gender bias we mentioned earlier still seem to exist in this specification. Furthermore, Ravi et al. (2012) find that due to NREGA there is a reverse migration in India, i.e., families moved from urban to rural areas to avail the policy. This could very well be an explanation to our results being robust when we include the 100% urban districts, since children might already be enrolled in schools in urban areas but now have to drop out of them since the family is moving to rural areas.

## **6 Conclusion**

This paper estimates the effects of an employment guarantee scheme on children's education. The National Rural Employment Guarantee Scheme in India in 2006 was rolled out in three different phases, starting from the most backward districts in the country. This allows us to exploit a difference-in-differences strategy to identify the effect of NREGA on children's education. On net, we find no evidence that the employment guarantee program improved children's education. While our standard errors are large and we find few signif-

icant coefficients, we consistently find negative coefficients on girls' schooling attainment, particularly among female-headed households. Furthermore, dividing the sample between different age groups, we find that the older age groups might be taking up household work once the policy is in place. Additionally, we also find suggestive evidence of gender bias amongst the younger age groups. We find that boys aged between 7-9 experience an increase in years of education while girls of the same age experience a decline in schooling.

The lack of significant impact on children's education may be due to the interaction of two opposing channels. Theoretically, one would expect that extra income in the household would increase investment in children's education, thus increasing overall education. However, increased employment could lead to negative impacts on children's education through channel of mothers' time. This is when the older children stay back at home to take care of their younger siblings and hence could result in a decrease in children attending school. Although our results are not significant, we find some evidence that the income channel and mothers' time channel work in opposite direction to the extent that the effect of the latter channel is greater than that of the income channel. This could explain the overall decline in children's education as indicated by our estimation. Additionally, we argue that this may also be because children quite often have to walk long distances to school and lack of a supervising guardian can prove to be a deterrent. Moreover, research and reports have documented that there is a lack of childcare facilities at the worksites in spite of a specific provision in NREGA for them. This might force parents to leave their children at home which could explain the decrease in the years of schooling we find from our estimations.

Our work adds to the growing literature on NREGA by estimating the effects of the employment guarantee act on children's education. Afridi et al. (2012) find a positive impact of NREGA on children's education in the state of Andhra Pradesh. Li and Sekhri (2013) find that the overall enrollment in schools decreases due to NREGA. However, they find that private school enrollment increases while public school enrollment decreases. Our results are in line with the enrollment results they find. Private schools quite often are significantly

more expensive than public schools and are established primarily in urban areas. Since the program is geared towards rural households, access to good quality public schools might be restricted. Teacher absenteeism is also a concern in these schools, and so might be an additional deterrent for parents to send their children to school. The implementation of NREGA needs to increase its focus on childcare facilities which will allow for parents to take their younger children to work and free up the older children to attend school. As a policy, the program could also try to provide work near schools to mitigate the school distance factor for parents and children.

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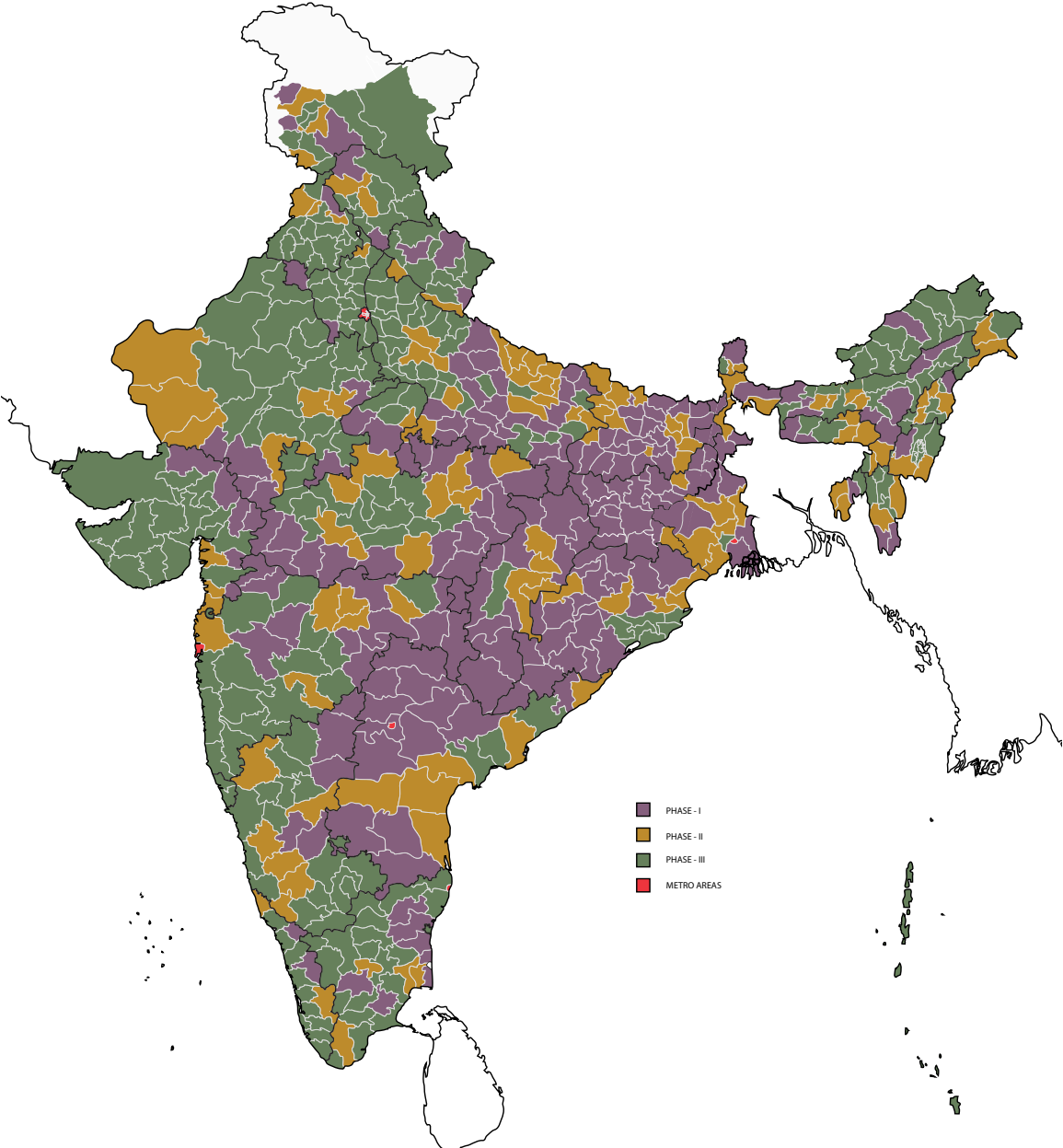
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Figure 1: Phasewise Implementation of NREGA across Indian Districts



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Source: NREGA program webpage (<http://nrega.nic.in>).

**Table 1: Pre-NREGA Descriptive Statistics (2002-2004)**

	Phase I districts	Phase II districts	Treatment Group Phase I and II districts	Control Group Phase III districts	Difference (T-C)
<u>PANEL A: Dependent Variable</u>					
Years of Schooling	4.169 (0.052)	4.190 (0.073)	4.177 (0.042)	4.595 (0.043)	-0.418*** (0.060)
<i>Observations</i>	125306	77923	203229	165976	
<u>PANEL B: Key Independent Variables</u>					
Age of the Child	10.976 (0.016)	10.987 (0.020)	10.980 (0.013)	11.054 (0.014)	-0.074*** (0.019)
Female	0.455 (0.003)	0.451 (0.004)	0.454 (0.002)	0.460 (0.003)	-0.006* (0.004)
<i>Observations</i>	125306	77923	203229	165976	
<u>PANEL C: Demographic Controls</u>					
Religion: Hindu	0.840 (0.018)	0.776 (0.030)	0.816 (0.016)	0.745 (0.023)	0.071** (0.028)
Religion: Muslim	0.089 (0.011)	0.110 (0.016)	0.097 (0.009)	0.105 (0.015)	-0.009 (0.017)
Caste: Schedule Caste	0.186 (0.008)	0.197 (0.012)	0.190 (0.007)	0.184 (0.008)	0.006 (0.010)
Caste: Schedule Tribe	0.225 (0.020)	0.161 (0.028)	0.200 (0.017)	0.147 (0.020)	0.054 (0.026)
Caste: OBC	0.393 (0.016)	0.393 (0.020)	0.393 (0.012)	0.374 (0.016)	0.018 (0.020)
<i>Observations</i>	125306	77923	203229	165976	

Notes: The sources for this data is District Level Household and Facility Survey (DLHS-2) in India which was conducted in year 2002-04. The sample is restricted to children aged 7-15 years.

**Table 1: Pre-NREGA Descriptive Statistics (2002-2004) Continued**

	Phase I districts	Phase II districts	Treatment Group Phase I and II districts	Control Group Phase III districts	Difference (T-C)
<u>PANEL D: Household Level Controls</u>					
Female Head	0.062 (0.003)	0.081 (0.008)	0.069 (0.004)	0.064 (0.004)	0.005 (0.006)
Household Size	7.241 (0.089)	7.319 (0.125)	7.271 (0.073)	7.109 (0.065)	0.161* (0.092)
Share of Female members	0.492 (0.001)	0.492 (0.002)	0.493 (0.001)	0.490 (0.001)	0.002 (0.002)
House Type: Pucca	0.129 (0.008)	0.158 (0.013)	0.140 (0.006)	0.245 (0.014)	-0.104*** (0.015)
House Type: Semi-pucca	0.337 (0.015)	0.403 (0.022)	0.362 (0.013)	0.448 (0.016)	-0.086*** (0.020)
House Type: Kaccha	0.534 (0.018)	0.439 (0.022)	0.498 (0.014)	0.307 (0.017)	0.191*** (0.022)
Own a Bike	0.518 (0.019)	0.532 (0.027)	0.523 (0.016)	0.463 (0.018)	0.061** (0.024)
Own a Car	0.009 (0.001)	0.015 (0.001)	0.012 (0.001)	0.020 (0.001)	-0.008*** (0.001)
Own a Tractor	0.022 (0.002)	0.034 (0.004)	0.027 (0.002)	0.045 (0.003)	-0.019*** (0.004)
Own a Phone	0.052 (0.003)	0.074 (0.006)	0.060 (0.003)	0.120 (0.007)	-0.060*** (0.008)
Own a Sewing machine	0.111 (0.008)	0.147 (0.013)	0.124 (0.007)	0.248 (0.014)	-0.122*** (0.015)
Own a TV	0.210 (0.009)	0.271 (0.015)	0.233 (0.009)	0.393 (0.012)	-0.160*** (0.015)
Own a radio	0.280 (0.010)	0.325 (0.014)	0.298 (0.008)	0.366 (0.013)	-0.068*** (0.016)
Own a Electric fan	0.273 (0.014)	0.334 (0.021)	0.297 (0.012)	0.492 (0.018)	-0.196*** (0.022)
Own a scooter	0.077 (0.003)	0.092 (0.006)	0.083 (0.003)	0.125 (0.005)	-0.042*** (0.006)
<i>Observations</i>	125306	77923	203229	165976	

Notes: The sources for this data is District Level Household and Facility Survey (DLHS-2) in India which was conducted in year 2002-04. The sample is restricted to children aged 7-15 years.

Table 2:  
Difference-in-Differences Estimates of the Effect of NREGA on Educational Attainment

	All			Female		Male	
	(1)	(2)	(3)	(4)	(5)	(6)	
NREGA*Post	0.0057 (0.0362)	-0.1097 (0.1982)	0.0154 (0.0391)	-0.2709 (0.2141)	-0.0004 (0.0357)	0.0254 (0.2537)	
Female	-0.0727*** (0.0079)	-0.0724*** (0.0079)					
Female Head	-0.0313*** (0.0093)	-0.0280 (0.0087)	-0.0062 (0.0117)	-0.002 (0.0111)	-0.0484*** (0.0112)	-0.0465*** (0.0111)	
Hindu	0.0596*** (0.0223)	0.0690*** (0.0216)	0.0549** (0.0237)	0.0636*** (0.0235)	0.0632** (0.0245)	0.0720*** (0.0231)	
Muslim	-0.3839*** (0.0319)	-0.3734*** (0.0309)	-0.3795*** (0.0341)	-0.3703*** (0.0335)	-0.3887*** (0.0339)	-0.3780*** (0.0325)	
Schedule Caste	-0.2216*** (0.0147)	-0.2284*** (0.0138)	-0.2473*** (0.0167)	-0.2555*** (0.0159)	-0.2041*** (0.0153)	-0.2103*** (0.0143)	
Schedule Tribe	-0.3096*** (0.0216)	-0.3226*** (0.0200)	-0.3334*** (0.0229)	-0.3480*** (0.0212)	-0.2925*** (0.0233)	-0.3042*** (0.0220)	
OBC	-0.1635*** (0.0128)	-0.1654*** (0.0119)	-0.1863*** (0.0141)	-0.1906*** (0.0132)	-0.1465*** (0.0138)	-0.1470*** (0.0128)	
Household Size	-0.0229*** (0.0013)	-0.0221*** (0.0012)	-0.0225*** (0.0015)	-0.0214*** (0.0013)	-0.0248*** (0.0015)	-0.0242*** (0.0014)	
Female Share	0.1637*** (0.0168)	0.1657*** (0.0163)	-0.0349 (0.0244)	-0.0286 (0.0240)	0.3174*** (0.0225)	0.3169*** (0.0222)	
District Specific trends	No	Yes	No	Yes	No	Yes	
Observations	893525	893525	415771	415771	477754	477754	
R-squared	0.6652	0.6707	0.6661	0.6723	0.6671	0.6726	

Notes: The sample is restricted to children of 7-15 years of age. Standard errors are clustered at the district level and reported in parentheses below the estimated coefficient. \*\*\*, \*\*, \* denote significance at 1%, 5% and 10% respectively. All regressions include year, age and district fixed effects, and a full set of demographic and household controls listed in Table 1 (Panel C and D). The first row of coefficients gives the difference-in-differences estimate of the effect of NREGA on completed years of schooling.

**Table 3: Falsification Test  
Effect of NREGA on Educational Attainment for 19-21 age group**

	Female		Male	
	(1)	(2)	(3)	(4)
NREGA *Post	0.0150 (0.0621)	-0.0546 (0.9965)	-0.0173 (0.0558)	1.2920 (0.8752)
District Specific trends	No	Yes	No	Yes
Observations	87049	87049	109923	109923
R-squared	0.2946	0.3052	0.2355	0.2449

Notes: The sample is restricted to children between 19-21 years of age. Standard errors are clustered at the district level and reported in parentheses below the estimated coefficient. \*\*\*, \*\* , \* denote significance at 1%, 5% and 10% respectively. All regressions include year, age and district fixed effects, and a full set of demographic and household controls listed in Table 1 (Panel C and D). The first row of coefficients gives the difference-in-differences estimate of the effect of NREGA on completed years of schooling.

Table 4:  
Effect of NREGA on Educational Attainment by Age Groups

	Female		No. of Obs.	Male		
	(1)	(2)		(3)	(4)	
Age group 7-9	0.0195 (0.0353)	-0.1686 (0.2196)	135939	0.0159 (0.0341)	0.2588 (0.2496)	151875
Age group 10-12	-0.0021 (0.0448)	-0.4515 (0.3602)	153055	0.0080 (0.0408)	-0.1642 (0.3257)	177872
Age group 13-15	0.0204 (0.0475)	-0.0273 (0.3683)	126777	-0.0355 (0.0424)	-0.1542 (0.4377)	148007
District Specific trends	No	Yes		No	Yes	

Notes: The sample is restricted to children of 7-15 years of age. Standard errors are clustered at the district level and reported in parentheses below the estimated coefficient. \*\*\*, \*\*, \* denote significance at 1%, 5% and 10% respectively. All regressions include year, age and district fixed effects, and a full set of demographic and household controls listed in Table 1 (Panel C and D). The coefficients on the cohorts give the difference-in-differences estimate of effect of NREGA on each age group.

Table 5:  
Effect of NREGA on Educational Attainment by Head of Household Gender

	Female		Male	
	(1)	(2)	(3)	(4)
		<b>Obs.</b>	<b>(3)</b>	<b>(4)</b>
		<b>Obs.</b>	<b>(3)</b>	<b>Obs.</b>
	Panel A: Female Head			
Full Sample	0.006 (0.0708)	-0.9668* (0.5438)	34005 -0.0202 (0.0573)	0.3921 (0.7330)
Age group 7-9	0.0125 (0.0755)	-0.2664 (0.7737)	10553 -0.0196 (0.0732)	-0.1207 (0.8577)
Age group 10-12	-0.0258 (0.0926)	-0.9909 (1.0258)	12381 -0.0094 (0.0792)	1.3405 (1.0162)
Age group 13-15	0.0255 (0.0961)	-1.9574 (1.2358)	11071 -0.0439 (0.0871)	-0.1025 (1.4472)
	Panel B: Male Head			
Full Sample	0.0168 (0.0396)	-0.2245 (0.2291)	381766 0.0021 -0.0365	0.0128 (0.2764)
Age group 7-9	0.0219 (0.0357)	-0.1417 (0.2332)	125386 0.0184 (0.0346)	0.3411 (0.2529)
Age group 10-12	-0.0014 (0.0456)	-0.4019 (0.3776)	140674 0.0129 (0.0416)	-0.2677 (0.3479)
Age group 13-15	0.0228 (0.0487)	0.0870 (0.4003)	115706 -0.0343 (0.0435)	-0.1538 (0.4524)
District Specific trends	No	Yes	No	Yes

Notes: The table uses sample of children between 7-15 years of age. Standard errors are clustered at the district level and reported in parentheses below the estimated coefficient. \*\*\*, \*\*, \* denote significance at 1%, 5% and 10% respectively. All regressions include year, age and district fixed effects, and a full set of demographic and household controls listed in Table 1 (Panel C and D).

Table 6:  
Effect of NREGA on Educational Attainment for Marginalized Caste

	Female		Male		Obs..
	(1)	(2)	(3)	(4)	
Full Sample	0.0244 (0.0421)	-0.1036 (0.2486)	0.0098 (0.0366)	0.1236 (0.2849)	370669
Age group 7-9	0.0147 (0.0367)	-0.1992 (0.2290)	0.0253 (0.0354)	0.2528 (0.2692)	118822
Age group 10-12	0.0008 (0.0489)	-0.3127 (0.4224)	0.0157 (0.0438)	-0.1306 (0.3624)	138486
Age group 13-15	0.0449 (0.0535)	0.2638 (0.4216)	-0.0299 (0.0435)	0.0613 (0.4699)	113361
District Specific trends	No	Yes	No	Yes	

Notes: The sample is restricted to children of 7-15 years of age. Standard errors are clustered at the district level and reported in parentheses below the estimated coefficient. \*\*\*, \*\*, \* denote significance at 1%, 5% and 10% respectively. All regressions include year, age and district fixed effects, and a full set of demographic and household controls listed in Table 1 (Panel C and D).



Table 7:  
Robustness Check: Dropping the Best NREGA Performing States

	Female		Male		Obs.	
	(1)	(2)	(3)	(4)		
Full Sample	0.0137 (0.0445)	-0.1776 (0.2345)	357917	-0.0127 (0.0407)	-0.067 (0.2787)	408387
Age group 7-9	0.0249 (0.0399)	-0.1298 (0.2346)	116706	0.0130 (0.0381)	0.1858 (0.2755)	129608
Age group 10-12	0.0002 (0.0514)	-0.5135 (0.4097)	131870	0.0082 (0.0467)	-0.1496 (0.3635)	152652
Age group 13-15	0.0110 (0.0535)	0.2624 (0.4217)	109341	-0.0699 (0.0482)	-0.3253 (0.4878)	126127
District Specific trends	No	Yes	No	No	Yes	

Notes: The sample is restricted to children of 7-15 years of age. Standard errors are clustered at the district level and reported in parentheses below the estimated coefficient. \*\*\*, \*\*, \* denote significance at 1%, 5% and 10% respectively. All regressions include year, age and district fixed effects, and a full set of demographic and household controls listed in Table 1 (Panel C and D). Best states are Andhra Pradesh, Rajasthan, Kerla, and Tamil Nadu

Table 8:  
Robustness Check: Including Urban Districts in the Control Group

	Female		Male		Obs.
	(1)	(2)	(3)	(4)	
Full Sample	0.0283 (0.0380)	-0.2703 (0.2142)	0.0087 (0.0332)	0.0250 (0.2531)	408387
Age group 7-9	0.0279 (0.0343)	-0.1691 (0.2195)	0.0208 (0.0332)	0.2594 (0.2491)	129608
Age group 10-12	0.0135 (0.0437)	-0.4517 (0.3604)	0.0156 (0.0395)	-0.1639 (0.3258)	152652
Age group 13-15	0.0356 (0.0463)	-0.0228 (0.3685)	-0.0245 (0.0414)	-0.1521 (0.4375)	126127
District Specific trends	No	Yes	No	Yes	

Notes: The sample is restricted to children of 7-15 years of age. Standard errors are clustered at the district level and reported in parentheses below the estimated coefficient. \*\*\*, \*\*, \* denote significance at 1%, 5% and 10% respectively. All regressions include year, age and district fixed effects, and a full set of demographic and household controls listed in Table 1 (Panel C and D).

**Phasewise Implementation of NREGA across Indian districts**

State Name	District Name	NREGA
Andaman and Nicobar Islands	South Andaman, Nicobars, North And Middle Andaman	Phase III
Andhra Pradesh	Adilabad, Anantapur, Chittoor, Cuddapah, Karimnagar, Khammam, Mahbubnagar, Medak, Nalgonda, Nizamabad, Rangareddi, Vizianagaram, Warangal	Phase I
	East Godavari, Guntur, Kurnool, Nellore, Prakasam, Srikakulam	Phase II
	Krishna, Visakhapatnam, West Godavari	Phase III
Arunachal Pradesh	Upper Subansiri	Phase I
	Changlang, Lohit	Phase II
	Anjaw, Dibang Valley, East Kameng, East Siang, Kurung Kumey, Tawang, Lower Dibang Valley, Lower Subansiri, Papum Pare, Tirap, Upper Siang, West Kameng, West Siang	Phase III
Assam	Bongaigaon, Dhemaji, Goalpara, Karbi Anglong, Kokrajhar, Lakhimpur, North Cachar Hills	Phase I
	Barpeta, Cachar, Darrang, Hailakandi, Marigaon, Nalbari	Phase II
	Baska, Chirang, Dhubri, Dibrugarh, Golaghat, Jorhat, Kamrup, Karimganj, Kamrup Metro, Karimganj, Nagaon, Sibsagar, Sonitpur, Tinsukia, Udalguri	Phase III
Bihar	Araria, Aurangabad, Bhojpur, Darbhanga, Gaya, Jamui, Jehanabad, Kaimur, Katihar, Kishanganj, Lakhisarai, Madhubani, Munger, Muzaffarpur, Nalanda, Nawada, Patna, Purnia, Rohtas, Samastipur, Sheohar, Supaul, Vaishali	Phase I
	Banka, Begusarai, Bhagalpur, Buxar, Gopalganj, Khagaria, Madhepura, Pashchim Champaran, Purba Champaran, Saharsa, Saran, Sheikhpura, Sitamarhi, Siwan	Phase II
Chandigarh	Chandigarh	Phase III
Chhatisgarh	Koriya, Surguja, Jashpur, Raigarh, Bilaspur, Kawardha, Rajnandgaon, Dhamtari, Kanker, Bastar, Dantewada	Phase I
	Korba, Janjgir-Champa, Raipur, Mahasamund	Phase II
	Durg	Phase III
Dadra and Nagar Haveli	Dadra and Nagar Haveli	Phase III
Daman and Diu	Daman, Diu	Phase III
Goa	North Goa, South Goa	Phase III
Gujarat	Banas Kantha, Sabar Kantha, Panch Mahals, Dohad, Narmada, The Dangs	Phase I
	Bharuch, Navsari, Valsad	Phase II
	Kachchh, Patan, Mahesana, Gandhinagar, Ahmadabad, Surendranagar, Rajkot, Jamnagar, Porbandar, Junagarh, Amreli, Bhavnagar Anand, Kheda, Vadodara, Surat	Phase III
Haryana	Sirsa, Mahendragarh	Phase I
	Ambala, Mewat	Phase II
	Panchkula, Yamunanagar, Kurukshetra, Kaithal, Karnal, Panipat, Sonapat, Jind, Fatehabad, Hisar, Bhiwani, Rohtak, Jhajjar, Rewari, Gurgaon, Faridabad	Phase III
Himachal Pradesh	Chamba, Sirmaur	Phase I
	Kangra, Mandi	Phase II
	Lahul and Spiti, Kullu, Hamirpur, Una, Bilaspur, Solan, Shimla, Kinnaur, Gurgaon, Faridabad	Phase III

**Phasewise Implementation of NREGA across Indian districts**

State Name	District Name	NREGA
Jammu and Kashmir	Kupwara, Doda, Punch	Phase I
	Anantanag, Jammu	Phase II
	Baramula, Srinagar, Badgam, Pulwama, Leh, Kargil , Udhampur, Rajauri, Kathua	Phase III
Jharkhand	Garhwa, Palamu, Chatra, Hazaribagh, Kodarma, Giridih, Godda Sahibganj , Pakaur, Dumka, Dhanbad, Bokaro, Ranchi, Lohardaga Gumla, Pashchimi Singhbhum, Simdega, Seraikela, Latehar, Jamtara	Phase I
	Deoghar, Purbi Singhbhum	Phase II
Karnataka	Gulbarga, Bidar, Raichur, Chitradurga, Davanagere	Phase I
	Belgaum, Bellary, Shimoga, Chikmagalur , Hassan, Kodagu	Phase II
	Bagalkot, Bijapur, Koppal, Gadag, Dharwad, Uttara Kannada, Haveri, Udupi, Tumkur, Kolar, Bangalore, Bangalore Rural, Mandya, Dakshina Kannada, Mysore, Chamaraajanagar	Phase III
Kerala	Wayanad, Palakkad	Phase I
	Kasaragod, Idukki	Phase II
	Kannur, Kozhikode, Malappuram, Thrissur, Ernakulam, Kottayam, Alappuzha, Pathanamthitta, Kollam, Thiruvananthapuram	Phase III
Lakshadweep	Lakshadweep	Phase III
Madhya Pradesh	Shivpuri, Tikamgarh, Chhattarpur, Satna, Shahdol, Sidhi, Jhabua, Dhar, Khargone, Betul, Mandla, Seoni, Balaghat, Sheopur, Umaria, Barwani, Dindori, Khandwa	Phase I
	Datia, Guna, Panna, Damoh, Rewa, Dewas, Rajgarh, Chhindwara, Harda, Katni, Anuppur, Burhanpur, Ashoknagar	Phase II
	Morena, Bhind, Gwalior, Sagar, Mandsaur, Ratlam, Ujjain, Shajapur, Indore, Vidisha, Bhopal, Sehore, Raisen, Hoshangabad, Jabalpur, Narsimhapur, Neemuch, Alirajpur, Singrauli	Phase III
Maharashtra	Dhule, Ahmednagar, Aurangabad, Nanded, Amravati, Yavatmal, Bhandara, Chandrapur, Gadchiroli, Nandurbar, Gondiya, Hingoli	Phase I
	Thane, Osmanabad, Buldana, Akola, Wardha, Washim	Phase II
	Raigarh, Ratnagiri, Sindhudurg, Nashik, Jalgaon, Pune, Satara, Sangli, Solapur, Kolhapur, Jalna, Parbhani, Bid, Latur, Nagpur	Phase III
Manipur	Tamenglong	Phase I
	Churachandpur, Chandel	Phase II
	Senapati(excluding 3 sub divisions), Thoubal, Bishnupur, Imphal West, Ukhrul, Imphal EastBishnupur	Phase III
Meghalaya	West Garo Hills, South Garo Hills	Phase I
	Jaintia Hills, East Khasi Hills, Ri Bhoi	Phase II
	West Khasi Hills, East Garo Hills	Phase III
Mizoram	Saiha, Lawngtlai	Phase I
	Lunglei, Champhai	Phase II
	Aizawl, Mamit, Kolasib, Serchhip	Phase III
Nagaland	Mon	Phase I
	Kohima, Wokha, Mokokchung, Tuensang	Phase II
	Phek, Zunheboto, Dimapur, Kiphire, Longleng, Peren	Phase III
Orissa	Sambalpur, Sundargarh, Kendujhar, Mayurbhanj, Dhenkanal, Kandhamal, Bolangir, Kalahandi, Koraput, .Ganjam, Jharsuguda, Debagarh, Gajapati, Boudh, Sonapur, Nuapada, Rayagada, Nabarangapur, Malkangiri	Phase I
	Balasure, Bargarh, Bhadrak, Jajapur, Anugul	Phase II
	Cuttack, Puri, Kendrapara, Jagatsinghapur, Nayagarh, Khordha	Phase III

**Phasewise Implementation of NREGA across Indian districts**

State Name	District Name	NREGA
Pondicherry	Puducherry, Karaikal	Phase III
Punjab	Hoshiarpur	Phase I
	Amritsar, Jalandhar, Nawanshahr (Shahid Bhagat Singh Nagar)	Phase II
	Gurdaspur, Firozpur, Ludhiana, Kapurthala, Rupnagar, Patiala, Sangrur, Bathinda, Faridkot, Barnala, Moga, Muktsar, Mansa, Fatehgarh Sahib, Sahibzada Ajit Singh (Sas) Nagar, Tarn Taran	Phase III
Rajasthan	Karauli, Sirohi, Udaipur, Dungarpur, Banswara, Jhalawar	Phase I
	Sawai Madhopur, Jaisalmer, Barmer, Jalor, Tonk, Chittaurgarh	Phase II
	Ganganagar, Hanumangarh, Bikaner, Churu, Jhunjhunun, Alwar, Bharatpur, Dhaulpur, Dausa, Jaipur, Sikar, Nagaur, Jodhpur, Pali, Ajmer, Bundi, Bhilwara, Rajsamand, Kota, Baran, Pratapgarh	Phase III
Sikkim	North Sikkim	Phase I
	East Sikkim, South Sikkim	Phase II
	West Sikkim	Phase III
Tamil Nadu	Cuddalore, Viluppuram, Tiruvannamalai, Nagapattinam, Dindigul, Sivaganga	Phase I
	Thanjavur, Thiruvarur, Karur, Tirunelveli	Phase II
	Kancheepuram, Thiruvallur, Vellore, Salem, Namakkal, Dharmapuri, Erode, Coimbatore, The Nilgiris, Tiruchirappalli, Perambalur, Pudukkottai, Madurai, Theni, Ramanathapuram, Virudhunagar, Thoothukkudi, Kanniyakumari, Krishnagiri, Ariyalur, Tiruppur	Phase III
Tripura	Dhalai	Phase I
	West Tripura, South Tripura	Phase II
	North Tripura	Phase III
Uttar Pradesh	Lakimpur Kheri, Sitapur, Hardoi, Unnao, Rae Bareli, Jalaun, Lalitpur, Hamirpur, Banda, Fatehpur, Pratapgarh, Barabanki, Gorakhpur, Azamgarh, Jaunpur, Mirzapur, Sonbhadra, Kaushambi, Chandauli, Kushinagar, Chitrakoot, Mahoba	Phase I
	Etah, Budaun, Farrukhabad, Ramabai Nagar (Kanpur Dehat), Jhansi, Bahraich, Gonda, Sultanpur, Siddharth Nagar, Maharajganj, Basti, Mau, Ballia, Sant Kabir Nagar, Balrampur, Shrawasti, Ambedkar Nagar	Phase II
	Bijnor, Moradabad, Rampur, Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Bulandshahar, Aligarh, Mathura, Agra, Firozabad, Mainpuri, Bareilly, Pilibhit, Shahjahanpur, Lucknow, Kanpur Nagar, Allahabad, Faizabad, Deoria, Etawah, Ghazipur, Varanasi, Gautam Buddha Nagar, Baghpat, Hathras, Kannauj, Jyotiba Phule Nagar, Auraiya, Sant Ravidas Nagar, Kanshiram Nagar	Phase III
Uttaranchal	Chamoli, Champawat, Tehri Garhwal	Phase I
	Haridwar, Udham Singh Nagar	Phase II
	Uttarkashi, Dehradun, Pauri Garhwal, Rudraprayag, Almora, Nainital, Pithoragarh, Bageshwar	Phase III
West Bengal	Birbhum, Jalpaiguri, Maldah, Medinipur West, Murshidabad, Bankura, Purulia, 24 South Parganas, Dinajpur Dakshin, Dinajpur Uttar	Phase I
	Nadia, Bardhaman, Hooghly, Cooch Behar, Medinipur East, 24 North Parganas, Darjeeling Gorkha Hill Council	Phase II
	Siliguri (DGHC), Howrah	Phase III

Notes: NREGA was never implemented in the following districts: North West Delhi, North Delhi, North East Delhi, East Delhi, New Delhi, Central Delhi, West Delhi, South West Delhi, South Delhi, Kolkata, Mumbai (Sub-urban), Mumbai, Hyderabad, Chennai, Mahe, Karaikal. Source: NREGA program webpage (<http://nrega.nic.in>)