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NREGA in Andhra Pradesh - Seven Lessons from the Data¹

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INTRODUCTION

In 2006, the government of India passed a law guaranteeing each and every rural household in the country one hundred days of work at a basic minimum wage. The law, known as the National Rural Employment Guarantee Act (NREGA), in effect created India's (and probably the world's) largest anti-poverty program in terms of number of beneficiaries. According to official statistics, 45 million households participated in NREGA in fiscal year 2008-09.²

An innovative feature of the NREG Act is its provisions for transparency: the act itself stipulates that work records, or "muster rolls", be made available to the public, and that local "social audits" be conducted on a regular basis (Right to Food, 2007). The state of Andhra Pradesh has taken this call for transparency one step further by making detailed micro-level data on NREGA participation in the state available to the public over the internet. To the author's knowledge, there are few precedents among major poverty relief programs for this kind of public data dissemination.

In this focus note, we highlight some specific lessons that may be learned by looking closely at this data. The lessons presented here are not intended to provide a comprehensive overview of the functioning of NREGA in Andhra Pradesh. For such an overview, readers are recommended to consult Anil Sharma's excellent review of the program or the articles in the mainstream press by Jean Dreze and his coauthors. Rather, the lessons presented here are meant to complement such overviews by presenting key insights derived from quantitative analysis of the data.

BACKGROUND - NREGA PROGRAM & IMPLEMENTATION IN ANDHRA PRADESH

Andhra Pradesh has been a leader in ensuring transparency in the implementation of NREGA. In addition to publicly sharing data on participation, the state has also created an independent agency to promote and oversee social audits of NREGA. Reports have attested to the efficacy of these state-supported social audits in reducing corruption in the program. (Aakela and Kidambi, 2007, Johnson, 2008)

While the state may be a leader in ensuring transparency of NREGA, in terms of the actual provision of work, the state ranks in the middle of the pack. Table 4 provides official state level statistics on overall provision of work under NREGA for fiscal year 2008-09. In terms of total days of NREGA work per rural household provided, Andhra Pradesh ranks 11th.³

1. The authors would like to thank Deepak Saraswat and Sankar Narayan for excellent research assistance. They are indebted to Paul Niehaus and Sandeep Sukhtankar for sharing their scripts to automatically download muster roll data. Most of all, they are grateful to the state of Andhra Pradesh for sharing this data. Data used in this report can be found on the CMF website located at <http://ifmr.ac.in/cmf>.

2. See <http://www.igovernment.in/site/India-redesigns-rural-self-employment-scheme/>

3. Readers are cautioned that overall, NREGA work days per rural household is only a crude measure of a state's performance in fulfilling NREGA's promise of a 100 day employment guarantee as many households may not want to work a full 100 days. Without large scale surveys to gauge work demand by state, this figure represents the best available measure of states' commitment to NREGA.



A second way in which we may assess the relative performance of states in implementing NREGA is by looking at how NREGA wages were delivered. In 2008, amid concerns that delivering NREGA wages via Gram Panchayat offices was leading to siphoning of wages and corruption, the Ministry of Rural Development mandated that all NREGA wages be paid via bank or post office accounts in the names of individual workers. Progress toward this mandate has been spotty at best: in fiscal year 2008-09, 45% of wages were delivered via methods other than individual post offices or bank accounts. Andhra Pradesh performed relatively well in channeling NREGA wages via bank and post office accounts: over three fourths of wages were delivered via one of these two methods (the eighth highest ratio among all states). In addition, Andhra Pradesh has implemented an innovative smartcard based payment system for NREGA beneficiaries in many areas. Early reports indicate that the smartcard system has been successful in reducing corruption and increasing convenience for the end beneficiary. (Johnson, 2008)

Lesson 1: Despite the appearance of stagnant growth, participation in NREGA in AP is growing rapidly

Judging by the most common statistic provided to track states' performance on NREGA – the number of days of NREGA work provided per rural household each year in – it appears as if participation in NREGA in AP hasn't increased over the last three fiscal years. In FY0607, 10 days of work were provided per rural household in the districts in which NREGA had been implemented. In FY0708, the number of days increased to 19 but in FY0809 the figure remained stagnant at 19. In fact, participation increased considerably over the last three years. Total amount spent on NREGA wages in phase one districts increased over 2.5 times from FY0607 to FY0708 and, based on the most up to date data, that figure looks set to increase by a further 40% in FY0809. Similarly, total wages disbursed in phase two districts looks set to increase by nearly 10 times from FY0708 to FY0809.⁴ (See Table 5 for exact figures) This growth was partially due a small increase in the average wage of participants, but was driven primarily by expansion in both the number of households participating in the program and the average number of days worked per household.

If growth for phase one districts has been so large, why does overall participation at the state level appear so flat? The key to unraveling this puzzle is that there is much higher participation in phase 1 districts than either phase 2 or phase 3 districts and participation in phase 2 districts is also higher than in phase 3 districts. Thus, the addition of the phase 2 districts in the second year of implementation made it seem like participation wasn't growing as fast as it really was in phase 1 districts and similarly for phase 3 districts in the third year of implementation. This becomes clearer in Figure 1, when total days worked in all three phase districts are viewed side by side.

Lesson 2: The 100 days rule isn't interpreted all that literally

The NREG Act promises 100 days of work for each and every rural household in the country. A natural question to ask is, "how literally are program administrators taking this promise?" Do program administrators perceive the 100 days guarantee as set in stone or more as a general guideline? Are households held to the 100 days limit?

Based on the data, it seems that administrators are not taking the 100 days guarantee literally. If the 100 days promise were held as inviolate by administrators, even just a small share, we would expect to see a lot more people who had worked 100 days in a fiscal year than 101 days.⁵ In fact, the number of households who worked 101 days in fiscal year 2007-08 (the last year we have complete data) is just about the same as the number of households who worked 100 days. Figure 2 displays the distribution of total days worked per household in fiscal year 2007-08 in phase one districts. Contrary to what we would expect if the 100 days guarantee were being interpreted literally, there is no "bump" at the 100 days point in the graph in Figure 2.

4. Figure based on a comparison of total wages spent during the first six months of FY0708 and the first six months of FY0809.

5. Technically, the 100 days of work mentioned in the act is not a maximum and there is nothing to prevent states from providing more than 100 days of work to a household. Still, according to numerous observers, demand for work still far outstrips supply so if the 100 days guarantee were being taken literally we would expect administrators to prevent households from working more than 100 days until demand for work from other households was met.

Figure 1. Total NREGA Wages per Month, Rollout Phase

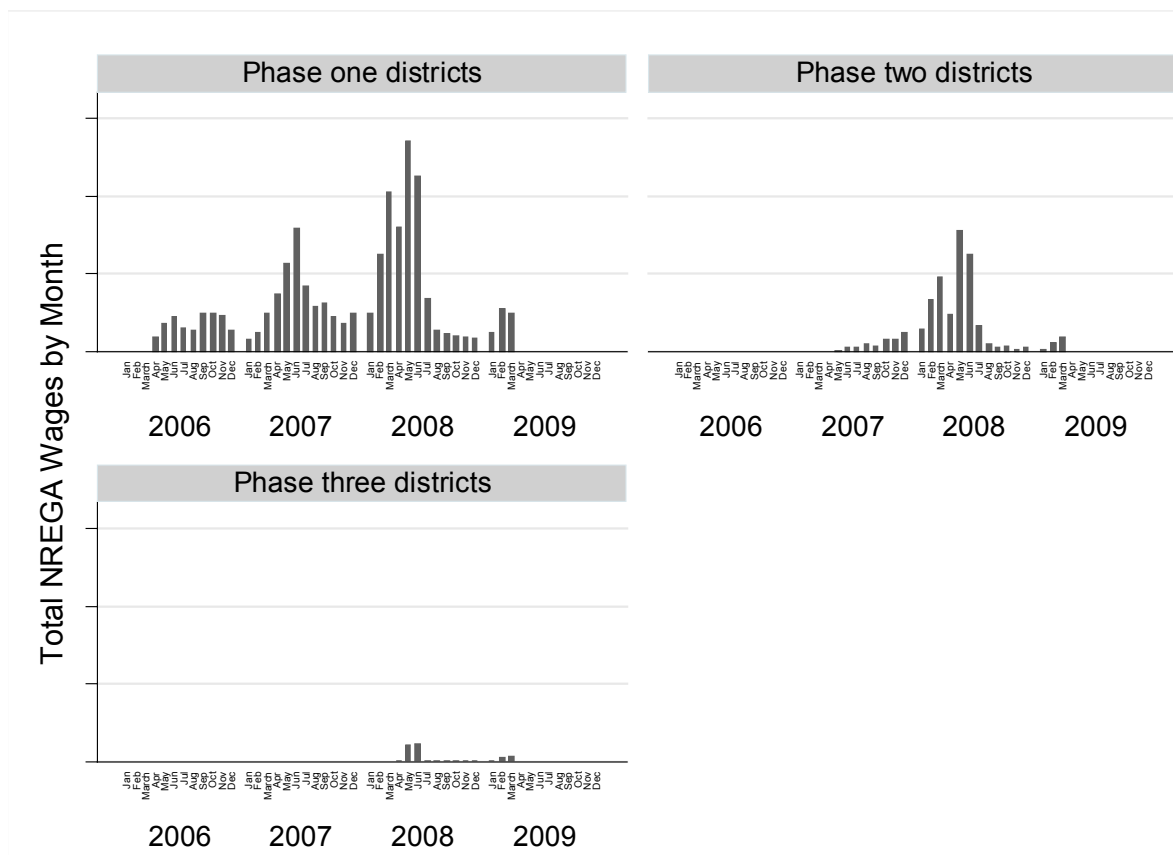
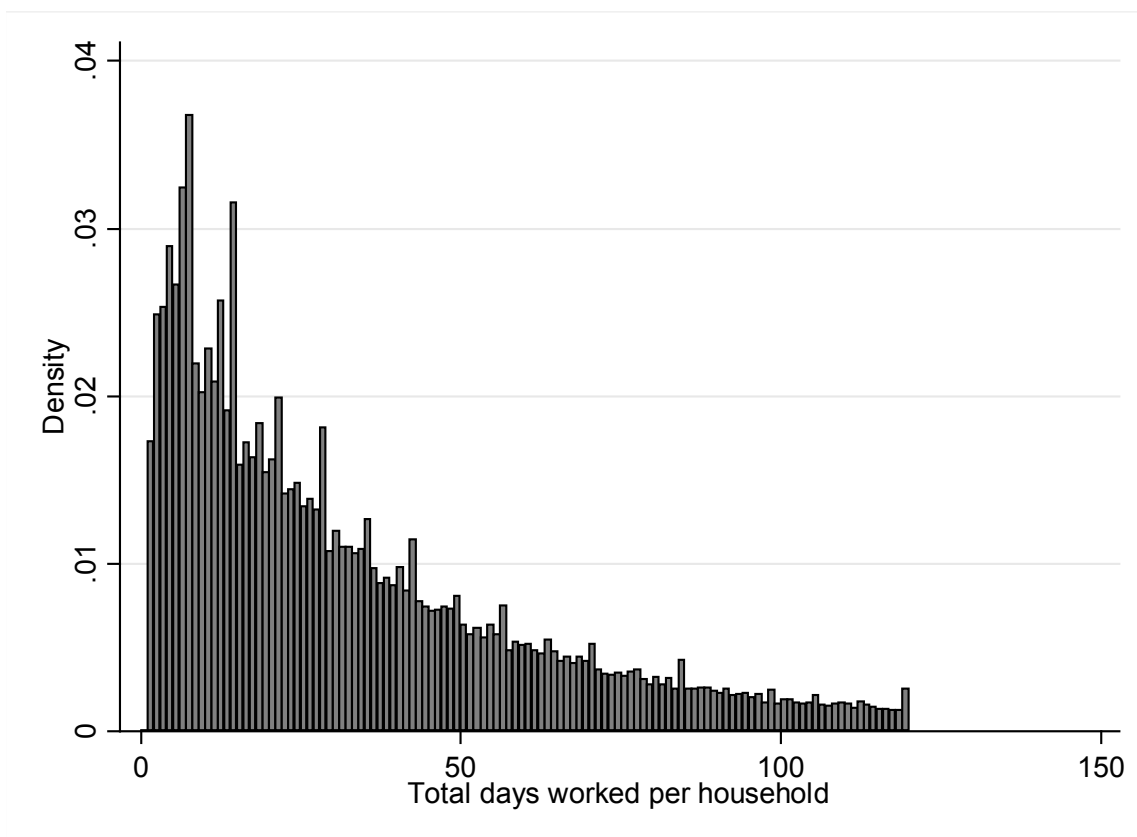


Figure 2. Distribution of Total NREGA Days Worked per Household, Phase 1 Districts FY0708



Analysis of the total number of days worked per worker in each fiscal year further suggests that whatever method administrators are using to allocate work, they are probably not taking into consideration the number of days worked by other members of the household. Figure 3 shows the distribution of total days worked per worker with separate plots depending on the total number of workers in the household. It is hard to infer too much from this graph and Table 1 – workers who come from households in which other family members also participate in NREGA may differ greatly (or not differ at all) from workers who come from households in which no other household members participate in NREGA. Nevertheless the similarity of the distributions is striking. If program administrators considered the amount of NREGA performed by other household members when allocating work to a worker one would expect these graphs to differ somewhat. While the similarity of the distributions does not decisively prove that administrators do not consider how much other household members have worked when allocated work to individual workers, it strongly suggests that they do.

Figure 3: Distribution of Total NREGA Days Worked per Worker by Number of NREGA Workers in Household, Phase 1 Districts FY0708

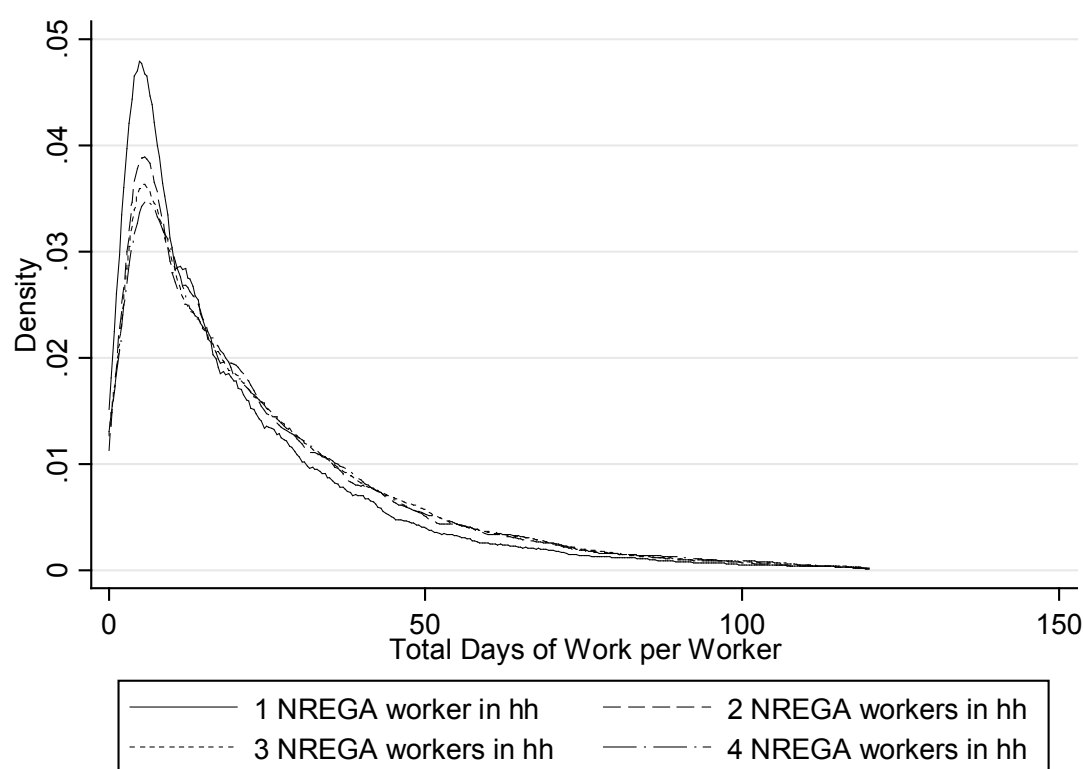
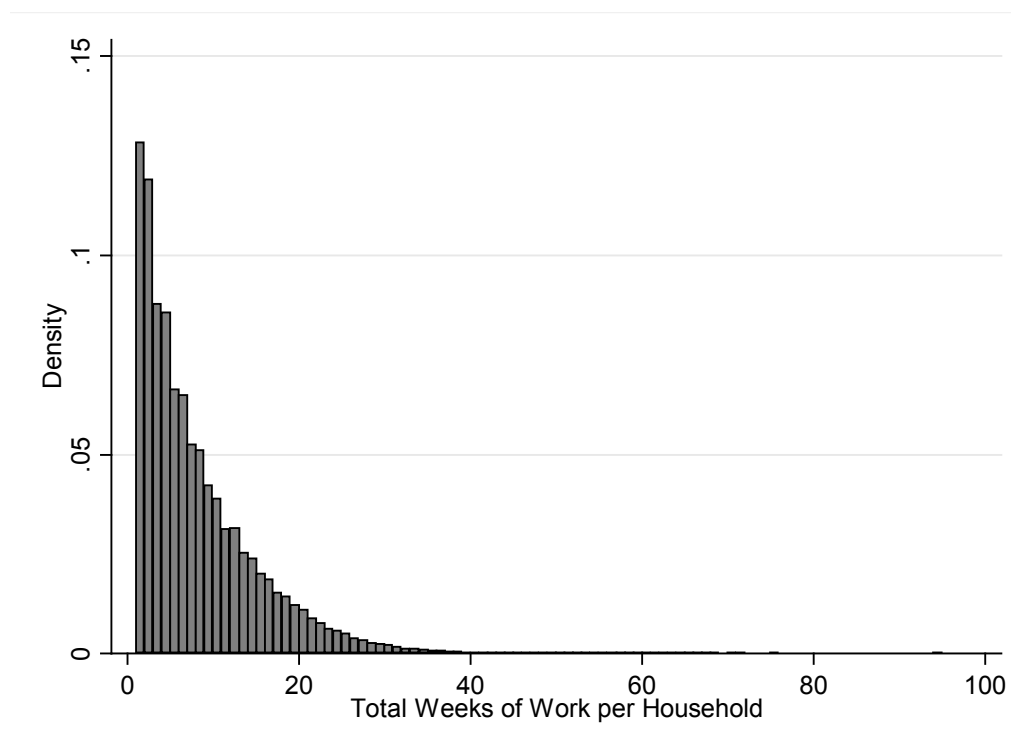


Table 1: Average days worked per worker by # of NREGA workers in household, FY0708, phase 1 districts*						
Number of NREGA Workers in the Household						
	1	2	3	4	5	6
mean	20.9405	23.8937	24.4653	24.5947	24.7083	26.4041
std dev.	20.77071	21.86628	22.32807	22.525	23.18745	23.38548

Lesson 3: Getting a job card isn't a major obstacle

According to the mainstream press, obtaining a NREGA job card is a large hassle and often requires extortionate bribes or long delays.⁶ In AP, the data suggests that this is probably not the case. If getting a job card were a major obstacle, we would expect very few households to work only a few days: unless a household is planning on working at least several days obtaining a job card wouldn't be worth the hassle.⁷ In fact, there are many households who work only a single week in NREGA. Figure 4 graph the distribution of total weeks worked by households shows no "dip" at the beginning as we would expect if there are fixed costs associated with participating in the program.^{8 9}

Figure 4: Distribution of Total NREGA Weeks Worked, Phase 1 Districts FY0708



Lesson 4: Wages are pretty similar across caste and gender, but not across locations

In AP, average wages for NREGA work are pretty similar across sex and caste, but vary widely from district to district. Table 2 presents average daily wages for different castes and sexes for each fiscal year. Table 6 presents results from a regression of daily wage on various factors. Being male is associated with an increase in the daily wage of about 1.2 rs. Controlling for other factors, ST and forward caste workers earn slightly more than BC or SC workers but not by much. (The total difference between the lowest earning group, SCs, and the highest earning group, STs, is less than 1.5 rupees.) These differences are nominal compared to the differences associated with living in different districts. To take the two

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7. Note that this result holds even if there is rationing in allocation of work as long as potential workers can predict the rationing.

8. "Weeks" here refers to person weeks of work. If two members of a household participate in NREGA in the same week this would be counted twice in our calculations.

9. Astute readers may observe that the distribution of total days worked, as opposed to total weeks worked, displayed in figure 2, does indeed exhibit a "dip" at the beginning of the plot. This is likely due to work being allocated on a weekly basis or some fixed cost associated with participating in NREGA each (such as the cost of traveling to a bank or post office to receive NREGA wages for the week).

most extreme examples which can be found in Table 3, in fiscal year 2007-08, wages in the district with the lowest daily wage, Vizianagaram, were almost 11 rs. lower than in the district with the high daily wage, Ranga Reddy. These differences hold even after controlling for other factors such as caste demographics of workers in the district.

Table 2: Average Wage by Caste, Sex, and Fiscal Year

		Women				Men			
Year	Statistic	BC	OTH	SC	ST	BC	OTH	SC	ST
FY0607	Avg Wage	77.77	77.11	77.62	80.74	79.32	78.25	78.69	80.28
	Avt. Amt per worker	546.98	668.74	551.73	630.15	615.71	736.27	627.35	684.54
FY0708	Avg Wage	81.94	80.43	80.98	81.28	83.00	81.29	81.87	81.99
	Avt. Amt per worker	665.94	710.29	656.50	720.89	670.74	698.85	654.52	711.11
FY0809	Avg Wage	81.74	81.45	81.82	83.29	83.08	82.82	83.14	84.11
	Avt. Amt per worker	698.38	714.89	679.28	721.60	690.80	705.00	670.42	700.17

Table 3: Average Wage by District

District	Rollout phase	FYO607	FY0708	FY0809
Vizianagaram	1	58.95	73.61	74.83
Chittoor	1	75.71	77.72	77.70
Kadapa	1	72.75	76.94	77.44
Anantapur	1	86.12	85.61	86.94
Mahabubnagar	1	75.06	81.06	81.39
Ranga Reddy	1	95.97	93.97	95.62
Medak	1	81.09	86.23	87.50
Nizamabad	1	83.80	85.53	87.65
Adilabad	1	86.14	84.12	81.78
Karimnagar	1	81.37	85.62	83.59
Warangal	1	71.40	80.59	79.86
Khammam	1	77.69	79.22	82.90
Nalgonda	1	82.98	83.17	79.39
Srikakulam	2	NA	79.64	77.96
East Godavari	2	NA	81.63	82.53
Guntur	2	NA	87.20	90.34
Prakasam	2	NA	87.60	82.17
S.P.S Nellore	2	NA	NA	77.13
Kurnool	2	NA	90.57	87.95
Visakhapatnam	3	NA	NA	81.02
West Godavari	3	NA	NA	77.63
Krishna	3	NA	NA	80.53

Lesson 5: NREGA reaches different people than other (at least one) government programs

Over the past few years, Andhra Pradesh has routed payments for a separate state run program to provide subsidized housing to the poor, Indiramma, through NREGA. As a result, our dataset on NREGA payments also includes information on payments to Indiramma beneficiaries.

The Indiramma program provides beneficiaries with materials and a cash subsidy (3200 rs.) for home improvement. According to the official Indiramma website, program administrators take great care to ensure proper targeting. Beneficiary households must be classified as BPL and program administrators seek to ensure that among BPL households, those selected beneficiaries are the most needy. While not as large as payments under NREGA, Indiramma payments are still enormous. Overall, cash subsidies under Indiramma for the entire time period for which data is available are equal to about one fifth of total payments under NREGA, or 574 crore rs.

Given that both NREGA and Indiramma target the poorest of the poor, one might expect considerable overlap among beneficiaries of the two programs. Instead, we find the opposite. Of those households which received a housing subsidy under Indiramma, only 56% also participated in NREGA. Alternatively, only 16% of households which participated in NREGA also received a housing subsidy under Indiramma.

Obviously, one of these programs – either Indiramma or NREGA – is not reaching the poorest of the poor. Based on the author's own experience and newspaper accounts, it seems likely that NREGA is the better targeted of the two. In interviews in the field, CMF researchers found that a startling number of those listed as Indiramma beneficiaries, according to official records, reported never having received any payment under the program. Newspaper reports have also called attention to numerous cases of corruption in the implementation of Indiramma.¹⁰ This suggests that the “self targeting” approach of NREGA is working and could lead to large dividends in terms of more accurate targeting mechanisms.

Lesson 6: Caste and gender of locally elected leaders have at best a modest affect on the program

One might expect that a public program with the scope and disbursements of NREGA would be easily manipulated by local leaders to favor a specific caste or affiliation. Some potential manipulations include leaders favoring participants from their own caste or gender, participants self selecting into NREGA based on the affiliation of the leader, or the leader's caste or gender influencing which type of public works they support (Duflo and Chattopadhyay 2004). Contrary to these expectations, data from Andhra Pradesh suggests that NREGA participants who share the same caste affiliation as their program leader participate at only a slightly higher level than others. As shown in Table 7, there is no impact of the sarpanche caste affiliation on other program outcomes such as average number of NREGA days worked or average NREGA wages for members of the reserved group. Table 8 similarly demonstrates that female reservation for sarpanches does not increase women's participation significantly.

Lesson 7: The caste composition of a region might influence work distribution

It appears that in most villages, inhabitants of the majority caste get more days of work per person as part of the NREGA program, regardless of which caste is dominant (Table 9). This difference between the majority caste and the

10. See, for example, “TDP Demands List of BPL Families in Indiramma Scheme”, The Hindu, 20th August, 2007, “Move to Check Graft in Indiramma Scheme”, The Times of India, 3rd August, 2009, or “Jury’ Picks Holes in Indiramma Implementation”, The Hindu, 16th, July, 2007.

rest shows up very clearly at the district level as well. Indeed for all districts (Figure 1) with the exception of Srikakulam, Vizianagaram and Visakhapatnam (labeled 1, 2 and 3 in the figure), those from the dominant caste in the village receive more days of work.

Members of the dominant caste may be favoring participation from their caste or participants could be self selecting into the program based on their caste identity. A caveat in interpreting these results is that caste composition was computed based on NREGA data which relates to only those segments of the general population that have enrolled in the program.

Conclusion

The government of Andhra Pradesh has set the transparency bar high with the public dissemination of information on state-level NREGA participation. Sifting through the data, an entrepreneurial analyst can uncover a wealth of information on the implementation and contours of the scheme. Future analysis will yield only more insights.

Appendix A : Supplementary Tables

Table 4: Selected State specific NREGA indicators for fiscal year 2008-09						
State	NREGA Employment (Person-days per rural household)	Share of women in NREGA employment (%)	Share of SC/ST in NREGA employment (%)	Share of unskilled labour in NREGA expenditures (%)	Avg. wage (Rs./day)	Share wages delivered via bank or post (%)
Mizoram	160.45	36.59	99.95	79.39	108.98	NA
Manipur	97.36	45.92	74.56	62.16	72.62	36.04%
Nagaland	77.5	36.71	100	54.37	80.77	79.10%
Tripura	66.39	51.01	68.64	59.12	85.61	16.20%
Rajasthan	63.37	67.11	52.03	67.4	88.31	74.07%
Chattisgarh	38	47.43	57.73	61.78	73.2	13.83%
Madhya Pradesh	36.69	43.28	64.63	57.55	73.17	38.66%
Sikkim	29.05	37.66	49.85	58.25	92.88	23.89%
Meghalaya	26.58	41.35	95.17	64.81	70.13	30.21%
Andhra Pradesh	22.15	58.15	39.09	74.38	82.55	75.63%
Jharkhand	20.03	28.51	58.01	48.46	90.45	77.51%
Himachal Pradesh	18.86	39.02	41.3	57.2	99.07	82.59%
Assam	18.06	27.16	44.86	57.67	77.13	26.54%
Arunachal Pradesh	16.28	26.7	76.6	63.3	58.06	NA
Tamil Nadu	14.7	79.67	62.01	95.55	79.68	0.01%
Uttar Pradesh	11.25	18.04	55.5	60.13	99.62	67.15%
Uttarakhand	8.83	36.86	32.3	63.19	84.64	94.64%
Bihar	8.21	30.02	52.72	59	85.08	32.11%
Jammu & Kashmir	7.29	5.76	35.89	44.04	67.54	51.60%
West Bengal	7.13	26.53	52.26	62.76	78.21	33.06%
Orissa	6.22	37.02	56.32	60	89.15	63.02%
Karnataka	4.38	50.42	41.64	69.58	80.99	99.20%
Gujarat	3.98	42.82	63.23	72.7	67.8	76.86%
Maharashtra	3.87	46.22	60.68	83.41	74.01	20.48%
Kerala	3.13	85.01	28.73	80.14	120.06	97.61%
Haryana	2.84	30.64	53.03	76.52	122.3	74.60%
Punjab	1.46	24.63	74.28	57.65	111.32	63.15%

Table 5: Selected Summary Statistics of NREGA Implementation in Andhra Pradesh									
	Total Disbursed			Total Days Worked			Number Workers		
	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3	Phase 1	Phase 2	Phase 3
FY 0607	3,986,274,561	NA	NA	49,356,477	NA	NA	6,393,254	NA	NA
FY0708 First Half	5,386,561,955	351,384,917	NA	65,297,009	4,413,177	NA	7,783,759	684,298	NA
FY0708 Second Half	4,825,408,141	2,467,205,326	NA	59,011,302	30,462,320	NA	7,227,833	3,629,034	NA
FY0809 First Half	7,705,868,718	3,746,385,411	588,241,376	93,473,211	44,672,871	7,355,604	10,689,588	4,928,997	1,094,897

Table 6: Regression of Wage on Various Factors	
	Wage
Dummy for male	1.159
Dummy for Other caste	0.296
Dummy for SC	-0.381
Dummy for ST	1.063
Dummy for FY0708	2.881
Dummy for FY0809	3.718
Dummy for Vizianagaram district	-5.993
Dummy for Visakhapatnam district	1.862
Dummy for East Godavari district	3.370
Dummy for West Godavari district	-1.216
Dummy for Krishna district	1.843
Dummy for Guntur district	11.205
Dummy for Prakasam district	4.730
Dummy for S.P.S Nellore district	-15.222
Dummy for Chittoor district	-0.359
Dummy for Kadapa district	-1.359
Dummy for Anantapur district	8.578
Dummy for Kurnool district	10.695
Dummy for Mahabubnagar district	2.359
Dummy for Ranga Reddy district	16.920
Dummy for Medak district	8.314
Dummy for Nizamabad district	8.341
Dummy for Adilabad district	5.715
Dummy for Karimnagar district	6.557
Dummy for Warangal district	1.130
Dummy for Khammam district	2.293
Dummy for Nalgonda district	4.054
Constant	74.505

Notes: All coefficients statistically significant at the .001% level. Coefficients for several variables including number of NREGA workers at the worksite, number of NREGA workers in the village, and payment method, have been excluded as they were not practically significant. Base case is that of women BC workers in Sri-kakulam district in FY0607.

Table 7: Individual Regressions of NREGA Outcomes on Reservation Status

	BC			ST			SC		
	Share of NREGA workers from caste	Average days work per caste member	Average wage for caste	Share of NREGA workers from caste	Average days work per caste member	Average wage for caste	Share of NREGA workers from caste	Average days work per caste member	Average wage for caste
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sarpanch reserved for caste dummy	0.019*** (0.0000)	0.235 (0.5044)	-0.011 (0.9533)	0.024*** (0.0000)	-0.423 (0.3251)	0.099 (0.6596)	-0.009 (0.1493)	0.199 (0.7883)	0.578 (0.2361)
% panchayat ward seats reserved for caste	0.996*** -	1.405 (0.6515)	2.868 (0.1990)	1.013*** -	0.321 (0.8801)	-2.763* (0.0289)	0.942*** -	-3.592 (0.0521)	-0.445 (0.7034)
% sarpanch seats reserved for caste in mandal	-0.144** (0.0055)	5.512 (0.2833)	-2.24 (0.5408)	0.403*** -	-7.991 (0.3990)	-10.017 (0.0931)	0.027 (0.1843)	-1.339 (0.6996)	4.797* (0.0101)
% ward seats reserved for caste in district	0.403*** -	14.667 (0.0503)	-3.405 (0.5213)	0.466*** -	-25.97 (0.1080)	28.960** (0.0081)	0.012 (0.6073)	27.279*** (0.0004)	-16.140*** (0.0006)
Constant	0.029* (0.0290)	23.859*** -	83.256*** -	-0.047*** -	40.078*** -	78.927*** -	0.011*** -	26.884*** -	82.753*** -

Notes: Errors clustered at the mandal level. P-values in parentheses.

Table 8: Individual Regressions of Women's Reservation Status				
	Gender Segregation	Share of NREGA workers women	Average days work women	Average wage for women
	(1)	(2)	(3)	(4)
Sarpanch reserved for woman dummy	-0.001 (0.6874)	0 (0.9493)	0.527 (0.0965)	-0.131 (0.4685)
Constant	0.103*** -	0.514*** -	32.380*** -	82.206*** -

Notes: Errors clustered at mandal level. P-values in parentheses.

Table 9: Caste dominance and days worked each year		
Dominant Caste	Days of Work when not dominant	Days of Work when Dominant
ANY	34.81151	36.88625
SC	30.94092	35.52389
ST	36.74725	37.92081
BC	35.43785	36.93773
Others	37.81303	38.39333

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