How well targeted are social assistance programs in India- a case study of Indira Gandhi Old Age National Pension Scheme

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Abstract

Targeting is a key hurdle faced in the implementation of social assistance programs. The inclusion of non-eligible beneficiaries leads to type-2 errors. In this context the following study aims to study about targeting errors in the Indira Gandhi National Old Age Pension Scheme (IGNOAPS) - an unconditional cash transfer program focussed on the elderly in India. Using the Panel data released by the IHDS we investigate the role of political connections and other social networks as determinants of IGNOAPS. The preliminary results suggest strength of political network increases the odds of individual to receive the scheme. This has policy implications as the role local political factors are considered to be exogenous in designing social policies.

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1. Introduction

Vulnerabilities are present in all stages of human life but they are most sharply felt during the old age (Gupta, 2013). Debilitated health and the incapability of being economically productive augment the dependency of older people. The problem is more persistent among poor as constant deprivation prevents them from making any safety arrangements for their old age. Drifting away from traditional joint families and rise in migration further increases the dependence of poor on government. It is in this context, a government sponsored pension scheme like Indira Gandhi Old Age National Pension Scheme (IGNOAPS) play a vital role in providing safety net for the vulnerable section of the society.

Targeting is a key hurdle faced in implementing social assistance programs. It is often seen that social assistance programs that are implemented in large scale usually fails to reach the intended beneficiaries. Although IGNOAPS is designed to reach the poor the question remains if it's actually reaching the intended beneficiaries. IGNOAPS had been in place from 1995, but there is very little information available on the public domain about the program. In order to be eligible for receiving IGNOAPS the individual should belong to a below poverty household and should be greater or equal to 60 years of age. This eligibility criterion is prescribed by the central government and is used for providing assistance to state government. The eligibility criterion specifies conditions for individuals to apply for the scheme. In spite of the eligibility criterion specified, it may be that not all the eligibles actually receive the benefit. From the 2005 IHDS data it can be seen that 45% of the beneficiaries belonged to above poverty line (APL) households. And a cursory glance at the 2011 data released by IHDS shows that nearly 32% of APL cardholding families have recipients of IGNOAPS. This clearly indicates "type -2 error" in the scheme where there are many ineligibles who receive the benefit. And the potential reason for the "type-2 error" is that besides the eligibility rule prescribed the government there could be other potential factors like the proximity of the household with an elected member or other types of networks act as key determinants enabling individuals to obtain the benefits. Political capture of public good is widely seen in developing countries.

Given this background the following paper aims to unpack if strong political connections or other networks act as determinants for individuals receiving IGNOAPS. The question on targeting is very important for two reasons. First, the purpose of any targeting scheme is the scarcity of economic resources. Therefore, given that we have limited economic resources it is important to identify the deserving recipients. Second, it further deepens the understanding on the scheme given the limited secondary information available on this scheme. The existing literature on the scheme has studies about the evaluation of the program the scheme with respect: consumption, poverty, targeting, compliance, wellbeing of the elderly, living arrangements, employment and expenditure and the role of networks is yet to be explored.

Using the panel data collected by IHDs in 2005-06 and 2011-12, after controlling for the time invariant characteristics with the help of fixed effects and other time varying factors by using household level and individual level controls, we find that stronger political network plays a significant role in determining the individual receiving IGNOAPS. We measured the strength of

political network in terms of the member or any other household member closeness with the local panchayat and the participation of household members in general meeting.

The term social capital as defined by Putnam refers to “features of social organization, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions”. Therefore we can classify networks as part of social capital and I may have used networks and social capital interchangeably.

Networks play an important role in providing information to people. And given the important role played by information people often tend to believe information from their own personal sources (Granovetter, 2005). Information asymmetry and higher level of illiteracy in the developing countries further perpetuates the significance of information from their reliable counterparts. Apart from providing information networks are also as a source of dependence in times of crisis. Banerjee & Duflo (2007) found that in country poorer households tend to depend on villagers, friends and other relatives for financial help.

The role of networks in the lives of poor is well documented by Williams, Glynn et.al (2003). Based on their study in the states of West Bengal and Bihar in India the authors found that the in rural areas networks with panchayat members are important for them to access loans. Panchayat member also emerged as a key focal point of contact, helping the villagers to gain admission to hospitals or school. Thus, networks with panchayat members helps villagers to gain economic support (loans) and also provide them solidarity (hospitals). Similarly, Panda (2015) found that household proximity with panchayat/nagarpalika/ward committee brightens their chances of getting a BPL card. Using the IHDS-phase 1 data the authors found that political connections of the household play an important role enabling households to get the BPL card at the national, rural and the urban level. The concept of political capture of public goods is widely seen in India and this plays an important role in determining an individual’s access to the scheme. Hiraway (2003) has highlighted the same issue by pointing out that in the presence unequal power structure which is more prevalent in the Indian context, the problem with targeted schemes are to identify poor persons with specific characteristics. Galasso and Ravallion (2001) studied about the Bangladesh’s Food-for-Education Program and their results confirmed that villages with high levels land unequal distribution are not efficient at targeting the poor through the program.

Putnam (1993) in his famous work on “Making Democracy work” has distinguished between two types of social capitals, horizontal and vertical networks. A horizontal network refers to relationship with agents of equal status. While vertical network refers to relating agents of unequal status or rather the relationship is hierarchical. Putnam has cited networks of civic engagement an example of horizontal networks. Parton-client relationship is an example of vertical network because the relationship is hierarchical and is characterised by dependence rather than solidarity.

Using this framework Caeyers and Dercon (2012) found that a household that has close relations with persons holding official positions has higher probability of receiving food aid in Ethiopia. These households have 12% percentage higher probability of receiving the food aid compared with households with no official tie ups. The authors divided the household networks into horizontal,

vertical and informal networks. Horizontal refers to networks with equal powers, vertical refers to network with a local political power and informal networks are those whom poor can depend in times of crisis. Horizontal network aids information flow to households. And vertical network help individuals to gain favouritism or it can signal the need for support.

The authors found that vertical networks play an important role in helping people to access food in the aftermath of a drought situation. And even at the later period vertical networks play an important role in deciding upon the amount of transfers received. Households with higher level of informal social network have a lower probability of receiving food aid. Newman and Zhang (2015) found that in Vietnam that households which have proximity with local government are more likely to be classified as poor, a key determinant factor for whether the households receive public benefits program. Although there has been previous work on IGNOAPS the question on proximity with networks is yet to be explored

The literature on IGNOAPS focusses on evaluating the scheme with respect to Gupta (2013), Duta (et al) (2010) and Chopra and Puddussery (2014) have focussed on evaluation from the perspective of leakage of the scheme, compliance, delivery mechanism and targeting. Garroway (2013) has evaluated the impact of the scheme on the aspects of consumption, household income, and Kaushal (2014) evaluated the scheme on the aspects of elderly labour supply, monthly expenditure and living arrangements. He used the first wave (2005) of the Indian Human Development Survey (IHDS) to evaluate the NSAP. The author has evaluated the old age pension scheme and widow pension scheme of the program. Since the program has selection bias as the eligibility is based on the BPL status and Antodya ration card, the author has used the propensity score estimator to evaluate the impact of the program on the household's incomes, consumption and poverty status of the beneficiaries. The results suggest that the recipients of old age pension scheme have lower consumption and incomes and higher poverty rates than their counterfactual control group.

Kaushal (2014) investigated the impact of the Indira Gandhi National Old Age Pension Scheme on the wellbeing of the elderly, living arrangements, employment and expenditure pattern in India. The author has combined the data on employment and unemployment schedule from the 61st (2004-05) and the 64th (2007-08) round of National Sample Survey. The study found that any increase in pension also lead to higher family expenditure, it was also found that in 2007-08 after the increase in pension amount there has been a higher allocation of expenditure towards medicare and education. On studying the impact of the pension on living arrangements it was again found pension increased the probability of elderly living in the household, but the results were statistically insignificant.

Gupta (2013) has reported the findings of a survey conducted in March 2011 in a district each in Jharkhand and Chhattisgarh. The study aimed to evaluate the impact of the National Old Age Pension Scheme; the evaluation was done on the aspects of delivery mechanism, corruption and the impact on reducing the vulnerabilities of the beneficiaries. This paper reported the findings of a survey conducted in March 2011 in a single district in Jharkhand and Chhattisgarh to evaluate the functioning of the IGNOAPS. The result was based on the findings of the field work conducted in Latehar district of Jharkhand and Sarguja district of Chhattisgarh on 2011. Both these districts have a large tribal population and are considered backward regions. Based on the responses collected from

60 persons at the block level it was found that respondents found it difficult in accessing banks and they were delay in delivery mechanisms. The delay in cash delivery is due to administrative mechanisms that delay the flow of funds at various levels of administration. The finding also includes the need to index amount transferred with the inflation level. It was also found that the scheme works with very less corruption levels.

Dutta (et al) (2010) evaluated the impact of the National Old age Pensions to the elderly and the widows based on IDHS data and the special purpose household survey data conducted in Karnataka and Rajasthan. The study found that these pensions work well with low level of leakages and targeting the elderly in the poor households. The study has used two datasets, to analyse the targeting and coverage aspects of the scheme they have used the IHDS conducted in 2004-05, and to gauge about leakages they have used a special-purpose household surveys that was conducted in Karnataka (in 2005) and Rajasthan (in 2006). The study has primarily evaluated the social pension scheme from the aspects of coverage, compliance and targeting. The authors found that pension schemes perform better than public distribution system; despite its low coverage pension schemes have relatively low level of leakage.

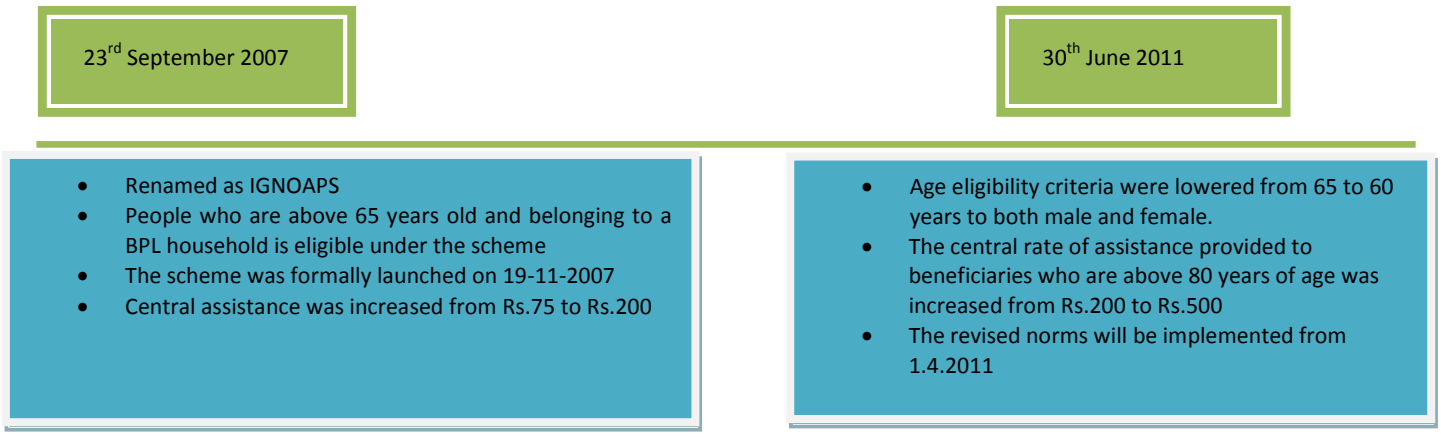
There has been evaluation of the scheme with respect to consumption, poverty, targeting, compliance, wellbeing of the elderly, living arrangements, employment and expenditure. However, the role of networks is yet to be explored, which will be the contribution of this study. Although Dutta et al has looked at the issue of targeting the study was done at a micro scale, the study will use an all India survey and will explore other determinants of the scheme.

The research question is answered under various sub-sections. In section 2 background of the scheme is provided on how transfers are done in this scheme with a subsection on the potential targeting errors. Section 3 has information on data description and the variables used; section 4 is on the empirical specification, section 5 discusses about results and in section 6 is on the conclusions that can be drawn from it.

2. Background of the scheme

National Social Assistance Program (NSAP) was introduced by the central government of India in 1995 with the aim to provide safety net to the vulnerable population of the society. The three major components of the scheme include: National Old Age Pension Scheme (NOAPS), National Family Benefit Scheme (NFBS) and National Maternity Benefit Scheme (NMBS). NOAPS was provided to a destitute applicant with no means to live but who are above 65 years of age. Central government provided an assistance of Rs.75 to eligible beneficiary. In 2002-03 this central government initiative was converted into a state plan; from when on all the financial assistance provided by the central government were in the form of 'Additional Central Assistance'. And over the years there have been iterations in the scheme. In 2007 the scheme was renamed as Indira Gandhi National Old Age Pension Scheme and the eligibility criteria for the scheme changed from being a destitute to any person who have attained 65 years or higher but must belong to a below poverty household. And the scheme was formally launched in 2007. The central assistance to the beneficiaries was also increased from Rs. 75 to Rs.200 was provided to the beneficiaries in the same time. In an memorandum released by the Ministry of Rural Development in 2011, the age eligibility criteria for the program was lowered from 65 to 60 years and the cash entitlements for recipients who are above 80 years of age increased from Rs.200 to Rs.500. In a recent initiative the central government of India has released revised guidelines for NSAP where they have proposed to re-convert NSAP back to a central government plan.

Figure 2: Time scale



Source: NSAP website

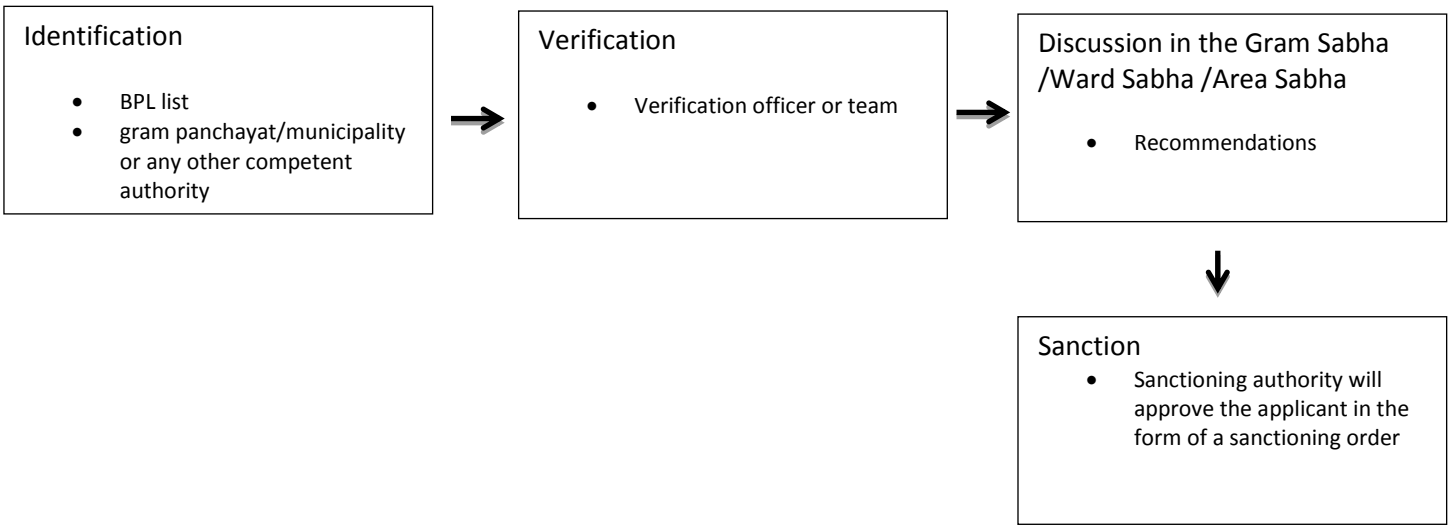
The central government had requested the state governments to make an equal or greater contribution under the scheme. But there are states that haven't made any contributions besides the central government assistance and there are states that have made lesser contribution to the scheme. The central government provides the state government independence to modify the implementation of the scheme. The table 1a in the appendix section enumerates the amount of

pension, state contribution and eligibility criteria used for IGNOAPS beneficiaries. The secondary information has been collected from various state government portals on eligibility criteria, but there isn't any secondary information available for a few states (table 1a, Appendix). Based on the information available it can be observed that apart from Delhi and Haryana that uses income criteria, other states still use BPL as the eligibility criteria for the scheme. The total number of beneficiaries under this scheme in 2011 is 17505053. In 2012-13 the number of beneficiaries rose to 2,27,12,043 [2] (in lakhs) . The steady increase in the number of beneficiaries indicates the scale of operation in the program.

2.1 Implementation of the scheme

National Social Assistance Program (NSAP) was introduced by the central government of India in 1995 with the aim to provide safety net to the vulnerable population of the society. The three major components of the scheme include: National Old Age Pension Scheme (NOAPS), National Family Benefit Scheme (NFBS) and National Maternity Benefit Scheme (NMBS). There are various stages involved in working of the NSAP schemes which includes identification of the beneficiaries, verification, getting inputs at the local level from the Gram Sabha / Ward Sabha /Area Sabha (see figure 2 below). The program implementation at the district level is done by the Zila Parishad or its equivalent. At the local level, the Gram Panchayat /Municipality implement the program. The mechanism in which the program works may vary across each state. But as per the NSAP guidelines issued the following steps are to be followed in the program implementation process

Figure 2: Implementation process



[2] http://164.100.47.134/lsscommittee/Estimates/15_Estimates_34.pdf (page number 13)

Identification

The first step is to identify the beneficiaries. Identification of beneficiaries is based on the BPL census conducted in 2002. At the local level Gram Panchayats / Municipalities play a pivotal role in identifying beneficiaries. Beneficiaries are primarily identified based on the BPL census. Identification of new beneficiaries is done based on: application filed by the citizens, the beneficiaries can also be identified by the gram panchayat/municipality or any other competent authority. In all the cases completion of application is mandatory.

Verification of applications

The state appoints a verification officer or a team who under the supervision of an authorized officer verifies all the applications and provides reasons for sanction or rejection.

Discussion - Gram Sabha /Ward Sabha /Area Sabha.

The verification authority needs to discuss about the list of recommended applications with the Gram Sabha in rural areas or Ward Sabha / Area Sabha in urban areas. The suggestions of these bodies need to be reported by the verification officer to the sanctioning authority.

Sanction

The sanctioning authority at the Municipality / Block level will approve applications that are verified and recommended by the Gram Sabha / Ward Committee / Area Sabha. The sanctioning authority will issue orders of the approved application to the Gram Panchayat /Municipality.

In an ideal situation the sanctioning process should increase the chances of deserving recipients to receive the benefits. But given there are many non-deserving recipients receiving the benefits, the role of political networks can't be undermined.

3. Data

We have used the nationally representative panel data survey released by IHDS to answer my research question. The survey has information on social capital at the household level and other individual specific characteristics. The survey was conducted in 1995, 2004-05 and 2011-12. But the 1995 survey was conducted not keeping in mind there would be further round of surveys, hence there is incomplete documentation of the 1995 survey. The 2005 data is a nationally representative data collected across 41,554 households, 1503 villages and 971 urban neighbourhoods. The total sample of the 2005 survey comprises of 41,554 household units and it can be divided into two major categories: re-interview household (N=13,900) of the 1993-94 data and a set of new household (N=27,654).

IHDS-2 has re-interviewed 83% of original households of IHDS-1 and an additional sample of 2134 households. The sample size of this survey is 42,152 households, which is spread across 33 states

and union territories, 384 districts, 1420 villages and 1042 urban blocks located in 276 towns and cities.

There has been an attrition of about 17% of the households who were interviewed in the 2005 survey and attrition is random. At the individual level in the 2004-05 survey 2, 15,754 individuals were interviewed, of whom 1, 87,381 survey was re-interviewed in the subsequent round and 28, 373 individuals couldn't be re-contacted. Attrition occurred due to death or lost due to re-contact, 8,532 individuals from the 2004-05 were dead by the second round and 19,841 individuals contacts were after the first round. Table 2 has enumerated the characteristics of individuals who were lost in the second round. Attrition due to death of the person was higher among individuals who belong to higher age groups and had life style diseases. Also, attrition was higher among individuals living in urban areas and those belonging to richer class, primarily due to the removal of temporary settlements and job related migrations which are now common in urban India (Barik, Desai and Vanneman, 2015).

Table 1: Characteristics of individual sample followed in 2011-12 from the 2004-05 waves.

	Still alive	**Dead**	**Lost to re-interview**	**Total**
Age				
Less than 15	91.2	0.8	8.0	68,462
15-29 years	89.8	1.2	8.9	59,795
30-44 year	88.6	2.2	9.2	42,423
45-59 year	84.7	6.4	8.9	27,170
60 years or more	64.3	26.4	9.3	17,904
Sex				
Male	86.8	4.4	8.7	1,09,805
Female	87.8	3.6	8.7	1,05,949
Place of Residence				
Rural	88.8	4.3	6.9	1,43,374
Urban	83.0	3.3	13.6	72,380
Asset Groups				
Poorest	87.8	4.9	7.3	39,472
2nd Quintile	88.7	4.1	7.1	38,792
Middle	87.6	3.9	8.5	36,475
4th Quintile	87.3	3.7	9.1	54,226
Richest	84.5	3.4	12.1	46,789
Life-style Diseases				
No	87.9	3.4	8.7	2,03,879
Yes	76.9	13.9	9.2	11,875
Any Difficulty in ADL				
No	86.8	4.3	8.9	1,78,186
Yes	64.9	26.6	8.5	2,533
Total	**87.29**	**4.01**	**8.7**	**100.0**
	1,87,381	**8,532**	**19,841**	**2,15,754**

Source: Adult Mortality in India: The Health-wealth Nexus : Debasis Barik, Sonalde Desai, Reeve Vanneman

The question here is to unpack the role of networks in helping individual to receive IGNOAPS. Caeyers and Dercon (2012) in their works on assessing the role of networks in food distribution had divided networks into three different categories: horizontal, vertical and informal. A horizontal network refers to association of persons with similar degrees of power. In order to measure it the authors used the size of the largest iddir (funeral society) to which the household belongs. Vertical network refers to close association of the household with political elites. It is measured as the number of household's close associates who holds any official position in the peasant association. Informal social networks is measured based on the number of households or individuals that the household can depend during times of crisis. As Krishna (2002) discussed in his book on "Active Social Capital: Tracing the Roots of Development and Democracy" there is no one uniform way of measuring networks, since the role of networks changes across boundaries and cultural settings. He has listed several examples of studies conducted across the globe[3]; Tanzania (Naryanan & Pritchett) where networks have been measured based on the number of memberships and satisfaction level, Grootaeret (1998) in Indonesia has measured networks based on the number of memberships and range of activities done. Portney and Berry (1997) for the United States of America has measured networks by participation in different social organisations. The key is that there is no uniformity in measuring networks.

Although in the Caeyers and Dercon (2012) & even Putnam has measured networks by the density of organisations which may not be applicable to all the parts of the world, specifically in countries where formal organisations are scarce. In his work in the Indian state of Rajasthan, Krishna developed a locally relevant measure in-order to understand the role of networks. He had combined several village level measures to develop an aggregate index for social capital index by combining several other sub-indexes for Rajasthan. Although the question addressed by Krishna is different than here, the author measured the strength of agencies (village panchayat) by aggregating the following three questions at the village level:

- How often in last one year have you attended public meetings?
- Are you or is anyone close to you active in his village panchayat?
- How effective do you consider the panchayat in this village compared to others?

In the IHDS questionnaire we don't have information on the third question on the effectiveness; we have combined the first two questions on attending the public meeting and proximity with the village panchayat that helps in developing an index that measures the strength of vertical network. The above questions minus the last one will give the political clout of the household. Similarly, in order to measure the strength of horizontal network I have used number of memberships in formal organisations.

[3] Please note that I haven't included the following references as these are examples used in the book.

The dependent variable of interest here is if the individual has received IGNOAPS or not. Following the framework used by Caeyers and Dercon (2012), social capital has been divided into horizontal and vertical social networks. But in this context the measurement is on the strength of the horizontal and vertical network. As discussed earlier, horizontal network refers to connections with individuals with similar degrees of power and vertical network refers to connections with political elite (unequal degree of power).

In table 3 we have enumerated the questions asked in the both the round of surveys on social capital. Based on its relevance the questions on social capital have been categorized under the horizontal and vertical social networks. The questions on if someone in the household belongs to a Mahila mandal, Youth club, sports group, or reading room, Trade union, business or professional group, Self Help Groups, Credit or savings group, Religious or social group or festival society, Caste association, Development group or NGO and Agricultural, milk, or other co-operative group is classified under horizontal network. In addition to the above mentioned questions on the networks the 2011-12 survey has also asked additional questions on if the household has a member in a political party, or if they belong to a social club (Rotaty or Lion's club). But since it is a panel data I have retained only similar questions in both time periods. Instead of looking at effects of each of these networks in isolation, I have looked at the number of networks that a household belongs to is associated with. Higher the number of networks to which a household belongs stronger the horizontal networks is. The score ranges from zero to nine. A household gets the score zero if they aren't part of any networks and a score of nine if the household member is a part of all the networks.

Household's association with someone belonging to (Mahila mandal, Youth club, sports group, or reading room, Trade union, business or professional group, Self Help Groups, Credit or savings group, Religious or social group or festival society, Caste association, Development group or NGO and Agricultural, milk, or other co-operative group) is grouped under horizontal network because these are civic engagement association.

IHDS has asked two straight forward questions related to vertical networks of In order to measure vertical networks if the household attended a public meeting called by the village panchayat / nagarpalika / ward committee in the last year and Is anyone in the household an official of the village panchayat / nagarpalika / ward committee/ Is there someone close to the household, who is village / neighborhood a member.

Vertical networks ranges from zero to two , with zero being the lowest score if the household hasn't attended any public meeting and none in the household or close to the household has any official in the village panchayat /nagar pallika. And two is highest score received if the household has attended any public meeting and a household member or someone close to household has any official in the village panchayat /nagar pallika, and if any one of the criteria is met than the household gets the value of one. Age variable is a continuous variable. Households with BPL, APL and Antodya card is a dummy variable that ranges from zero to one if the household one of these cards.

Table 2: Questions on social capital in both 2005-06 and 2011-12 survey

Strength of Horizontal Network	**Measurement**
Now, I would like to know about the groups or organizations that you and others in the household belong to.	
Does anybody in the household belong to a …	
Mahila mandal?	
Youth club, sports group, or reading room?	
Trade union, business or professional group?	
Self Help Groups	
Credit or savings group	
Religious or social group or festival society?	
Caste association?	
Development group or NGO?	
Agricultural, milk, or other co-operative?	
Strength of Vertical network	
Have you or anyone in the household attended a public meeting called by the village panchayat / nagarpalika / ward committee in the last year?	
Is anyone in the household an official of the village panchayat / nagarpalika / ward committee ? IF NO: Is there someone close to the household, who is village / neighborhood a member?	*Nobody close to household is a member = 0*
	Somebody close to household is a member = 1
	Someone in household is a member = 2
Local trust	
In some communities, when there is a water supply people bond together to solve the problem. In other communities people take care of their own families individually.What is your community like?	*Bond together to solve problem = 1*
	Each family solves individually = 2

Source: IHDs questionnaire (2005-06 and 2011-12)

A brief look at the descriptive statistics of the panel data gives us the glimpse of the data structure. Table 1a (in the appendix section) shows that on an average in our sample 32% of population live in urban area. Less 10% of the household has membership in Mahila Mandal, only 4% of the household has membership in in youth sports and reading club and union business. 14% of the household has a member in self help group, less than 10% of the household has membership in credit savings group, 30% of the sample has attended a public meeting, the average age in the panel

data is 30 years, 33% of the household has a BPL card, 51% of the household in the panel sample has an APL card and less than 5% has Antodya card. 30% of women in the sample have access to radio, 74% has access to television and 30% has access to newspaper. Access to mass mediums aids information flows to household members. On an average there are about six persons living in the household. Less than 2% of the sample receives IGNOAPS, 21% of the sample is poor and the average number of years of education in the sample is 5 years. The final sample size consists of 150193 individuals for two years. Table 3 shows the overall characteristics of the panel sample. In table 5 we compare the characteristics of IGNOAPS beneficiaries and non-beneficiaries.

The dependent variable that is studied here is if the individual has received IGNOAPS. There are 4768 individuals in the dataset, who has received IGNOAPS at least in any one period. In table 5 we have categorized networks into of horizontal and vertical and have also tested difference in mean between the beneficiaries and the non-beneficiaries.

On average 72% of non-IGNOAPS beneficiaries have some horizontal networks compared with 69% of IGNOAPS beneficiaries. 63% of IGNOAPS beneficiaries have vertical network compared with 50% of non-beneficiaries. The higher percent of households with vertical connections highlights the role of political connectivity in receiving IGNOAPS. 53% of IGNOAPS beneficiaries has BPL card which is a requirement for receiving the scheme. And 35% of IGNOAPS beneficiaries have an APL card compared to that 52% of non-beneficiaries. 90% of the IGNOAPS beneficiaries are sixty years of age. There are only 10% of IGNOAPS beneficiaries with an Antodya card compared with 4% of beneficiaries.

Table 3: Characteristics of IGNOAPS recipients and non-recipients

	Percentage of households with horizontal networks	Percentage of households with vertical networks	Percentage of individuals who are 60 years old	Percentage households with a BPL card	Percentage households with an APL card	Percentage households with an Antodya card
Non-IGNOAPS beneficiaries	0.72	0.50	0.09	0.33	0.52	0.04
IGNOAPS beneficiaries	0.69	0.63	0.90	0.53	0.35	0.10
Test statistic : difference in means between two groups	1.62	12.43***	2.0e+02***	(28.93***)	23.95***	(21.82***)

Note: negative values are indicated in bracket

4. Empirical specification

The basic empirical specification that is tested here is

$$P_{ij} = F\left(Age_{ij}, BPL_{ij}, Antodya_{ij,}, Horizontal\ network_{ij,} vertical\ network_{ij}, X_{ij}, Z_i\right)$$

We have estimated number of version of the above equation with various modifications. Here P is the dummy that takes the value 1 if individual (i) receiving IGNOAPS (j) in anyone period. Age is the dummy variable that takes the value 1 if the person is greater than 60 years, BPL takes the value 1 if individual (i) receiving IGNOAPS (j) belongs to a below poverty line household. The variable on antodya takes the value 1 if person has antodya card. Horizontal network takes a value between zero-nine, with zero being a household member (i) not being a part of any horizontal networks and nine is the highest score if the household member participates in all the networks. The score increases in proportion to the increase in number of networks. Vertical network also takes a value between zero and two, with zero indicating the household doesn't have any vertical networks and two is the highest score if the household member is strongly politically connected. X_{ij} represents all the other time varying control variables that is influencing the dependent variable.

Given that wealth variables are subjected to misreporting, I have used years of education completed as a proxy for household wealth (Cayers and Dercon, 2012). Apart from wealth there could be other household specific variables which are unique to the Indian case that needs to be controlled for. The time varying variables includes, household structure, living in urban areas, state fixed time effects. Larger household also indicates more earning power that can reduce the odds of receiving IGNOAPS. Living in urban areas improves access to information, but given the paltry amount provided under IGNOAPS and when combined with urban inflation can reduce the odds of receiving IGNOAPS.

We have also controlled for variable on access to mass mediums (radio, television and newspaper) by women as they improve the information flow which can increase the odds of receiving IGNOAPS. But variables on mass mediums are correlated with the household wealth and reduce the odds of receiving IGNOAPS. And with the introduction of time dummies, access to TV and radio loses its statistical significance. I haven't reported the results of these regressions.

State fixed effects capture if the person (i) received pension because of living in a particular state. And state fixed time effects captures if the person received the program because of particular state policy taken in one of the time periods. Z_i is a set of time invariant fixed effect characteristics like gender, religion or caste which usually doesn't change in the Indian context, but can influence the dependent variable. I have run the fixed effects based on the Hausman test results. The Hausman test result is reported in the appendix section (table a2).

The dependent variable here is measured in two occasions (2005-06 and 2011-12) for each individual. In order to calculate the effects of the independent variables on someone who receives IGNOAPS, we measure the effect on IGNOAPS recipients in two occasions. In the first occasion the person doesn't receive the program, and compare the effects in the second period on the same individual when the person receives the program. Here, the treatment and the control effect are measured on the same unit. Since the dependent variable is a dummy variable I use conditional logit

fixed effects model to estimate. The use of fixed effects method in panel data helps in controlling for time invariant effects. The elimination of the fixed effects helps in overcoming the omitted variable bias.

The fixed effects sweeps away time invariant characteristics, and the use of appropriate household and vertical controls takes care of the endogeneity issues.

5. Results

As a first step we run a simple specification of the model, the first regression reports only using the age, BPL and Antodya criteria. Antodya cards are provided to households that are poorer than the BPL households, horizontal and vertical social networks variables. In the first regression I have only included the prescribed eligibility rules set by the government, the results are reported in odds ratio. In the conditional logit fixed effects model we interpret the results as odds ratio and not in marginal effects. Estimation of partial effects is not possible with the conditional logistic fixed effects model, as the computation of partial effects requires fixed effects that are eliminated in the model[4] (Stata forum). The odds ratio of receiving the program increases with age greater than or equal to 60 years, household having a BPL and Antodya card. All the variables are statistically significant. In the second regression, in addition to the government criteria's we have included the horizontal and vertical network. There is a slight increase in the pseudo-square, as expected the vertical networks increases the odds of receiving IGNOAPS. On the contrary horizontal network reduces the odds of receiving IGNOAPS, yet remains a statistically significant variable.

The problem in using formalized networks to measure horizontal network is that most of these formalised networks may not be working in ground reality. Krishna (2002) has highlighted that Mahila mandals that are established in Ministry of Women's Development and Sport & Education Ministries establish Sports club; the government agencies have a pre-determined target and they force people to enrol in order to fulfil the targets. People often enrol these groups in anticipation of economic benefits but no real work takes place here. He found that in his work with Indian state of Rajasthan, villagers join the formal organization for economic benefits and the organisations lack any trace of collective action Most of these networks included in this study under horizontal network may not truly represent collective spirit of the people. Because there is some level of economic benefits associated with joining this organisation even the richer tends to be a part of it. The negative coefficient clearly indicates that these networks are correlated with wealth of the family and thereby reduces the probability of receiving IGNOAPS.

[4] http://www.statalist.org/forums/forum/general-stata-discussion/general/1062191-fixed-effects-logit-postestimation, http://www.stata.com/statalist/archive/2012-12/msg00889.html

So in-order to overcome this I have included the variable on how well do the villagers solve the local problems as a proxy of horizontal networks. IHDS has asked the question on local trust: In some communities, when there is a water supply people bond together to solve the problem. In other communities people take care of their own families individually. What is your community like? The two options are if the villagers bond together to solve problem, or if each family solves it individual. In the third regression I have replaced the question horizontal networks with the variable on solving local problems.

Although the replaced variable of solving local problems together is not statistically significant, it still increases the odds of receiving IGNOAPS. Vertical network is both statistically significant and increases the odds of receiving IGNOAPS. In the fourth regression I have included a variable on time dummy for the year 2011, to control for the time/year effect in the panel data. With the introduction of time dummy, the pseudo rsquare of the model has jumped from 0.345 to 0.63. The variable on solving local problem loses its statistical significance but is still positive. The odds ratio of vertical networks reduces from 0.45 in the third regression to 0.14 in the fourth regression, but the variable is still statistically significant.

In the fifth regression I have introduced an interactive dummy of state and time y (year =2011). State governments in India may have changed their polices between the first and the second round of surveys, and the actions taken by a state in a particular year might have increased the odds of being an IGNOAPS recipient of people living in that that state. I have controlled for such within variation in states. After controlling for the state differences, the results in regression 5 shows that the odds of vertical networks is reduced to 0.134 and is statistically significant only at 10%. Some of the state time dummies aren't statistically significant. Barring one state time dummy all the other statistically significant state time dummies have a positive odds ratio.

In all the regression results discussed above we have age, BPL and antodya criteria individually, but we know that in reality only all those who are 60 years of age or above with a BPL card is eligible for receiving the scheme. Therefore in the regression 6 & 7 I have introduced two, interactive variables of age (equal or greater than 60 years) with the BPL card and age (equal or greater than 60 years) with the Antodya card.

In regression number six, we have also controlled for household composition and living in urban areas. The interactive variable on age and household status (BPL and Antodya) are significant variables and increases the odds of being an IGNOAPS recipient. The controlled variable on household composition measured in terms number of household members is a significant variable with negative odds, the variable on living in an urban area is an insignificant variable with negative odds. In Reg 7 results reported in table 6, we have dropped the variable on living in urban area, the overall pseudo R square remains the same. But the statistical significance of the vertical networks improved to 5% level in the same model. In the conditional logit models standard errors are reported under the jacknife option as there is no option for VCE. Standard errors reported under the jacknife option takes a long time to run, so the standard errors reported in table5 and 6 are yet to be checked for their robustness.

Table 5: Conditional logit fixed effects results

Dependent variable: Individual receiving IGNOAPS

VARIABLES	Reg1	Reg2	Reg3	Reg4	Reg5
Solve local problems			0.496***	0.111	0.0288
			(0.0637)	(0.0951)	(0.105)
Age60* BPL					0.891***
					(0.126)
Age60*Antodya					0.717***
					(0.243)
Vertical networks		0.462***	0.454***	0.148**	0.134*
		(0.0472)	(0.0475)	(0.0700)	(0.0777)
Education recompleted years				-0.0401	-0.00747
				(0.0301)	(0.0338)
Horizontal networks		-0.0703**			
		(0.0305)			
age60d	3.729***	3.732***	3.665***	1.893***	
	(0.192)	(0.196)	(0.193)	(0.212)	
BPL20052011	0.899***	0.868***	0.874***	0.550***	
	(0.0773)	(0.0794)	(0.0802)	(0.117)	
Antodya20052011	1.582***	1.527***	1.545***	0.629***	
	(0.141)	(0.145)	(0.147)	(0.209)	
State dummies multiplied with the time dummies (t=2011-12)					
statetimedummy1					17.12
					(1,165)
statetimedummy2					2.462***
					(0.350)
statetimedummy3					2.576***
					(0.255)
o.statetimedummy4					-

statetimedummy5	3.525***
	(1.014)
statetimedummy6	1.271***
	(0.133)
statetimedummy7	2.770***
	(0.730)
statetimedummy8	1.400***
	(0.269)
statetimedummy9	2.998***
	(0.313)
statetimedummy10	3.769***
	(0.585)
statetimedummy11	-0.190
	(0.878)
statetimedummy12	-1.103**
	(0.551)
statetimedummy13	-0.845
	(1.314)
statetimedummy14	17.05
	(1,447)
statetimedummy15	17.27
	(3,211)
statetimedummy16	1.218*
	(0.680)
statetimedummy17	-0.968
	(1.432)
statetimedummy18	3.579***
	(1.015)
statetimedummy19	2.914***
	(0.461)
statetimedummy20	17.07
	(863.4)
statetimedummy21	1.905***
	(0.201)

statetimedummy22					2.425***
					(0.352)
statetimedummy23					2.235***
					(0.252)
statetimedummy24					2.481***
					(0.736)
statetimedummy25					17.07
					(3,858)
statetimedummy26					16.50
					(6,052)
statetimedummy27					2.194***
					(0.354)
statetimedummy28					3.000***
					(0.266)
statetimedummy29					3.263***
					(0.265)
statetimedummy30					-0.536
					(0.471)
statetimedummy31					2.088***
					(0.288)
statetimedummy32					2.285***
					(0.336)
statetimedummy33					3.396***
					(1.022)
timedummy2				2.023***	
				(0.0652)	
Observations	7,676	7,602	7,578	7,450	7,450
Number of uniqueid	3,838	3,801	3,789	3,725	3,725
Psuedo R square	0.316	0.335	0.345	0.628	0.657

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5.1: Conditional logit fixed effects results

VARIABLES	Reg6	Reg7
Solve local problems	0.0488	0.0398
	(0.105)	(0.105)
Age 60*BPL	0.893***	0.891***
	(0.126)	(0.126)
Age 60*Antodya	0.720***	0.724***
	(0.245)	(0.244)
Education completed	-0.0125	-0.0132
	(0.0343)	(0.0343)
Household composition (*Number of persons in the household*)	-0.0696***	-0.0695***
	(0.0240)	(0.0240)
Living in an urban area	-0.535	
	(0.334)	
Vertical networks	0.150*	0.154**
	(0.0781)	(0.0780)
statetimedummy1	17.11	17.10
	(1,163)	(1,162)
statetimedummy2	2.414***	2.406***
	(0.351)	(0.351)
statetimedummy3	2.501***	2.489***
	(0.256)	(0.256)
o.statetimedummy4	-	-
statetimedummy5	3.616***	3.538***
	(1.017)	(1.014)
statetimedummy6	1.235***	1.210***
	(0.135)	(0.134)
statetimedummy7	3.004***	2.804***
	(0.745)	(0.731)
statetimedummy8	1.310***	1.309***
	(0.272)	(0.272)
statetimedummy9	2.914***	2.909***
	(0.315)	(0.315)
statetimedummy10	3.734***	3.722***
	(0.586)	(0.586)
statetimedummy11	0.321	-0.140
	(0.934)	(0.881)
statetimedummy12	-1.211**	-1.210**
	(0.561)	(0.561)
statetimedummy13	-0.896	-0.898
	(1.308)	(1.308)
statetimedummy14	17.03	17.03
	(1,452)	(1,451)
statetimedummy15	17.00	17.00
	(3,200)	(3,195)
statetimedummy16	1.171*	1.175*
	(0.680)	(0.680)
statetimedummy17	-1.039	-1.049
	(1.433)	(1.434)
statetimedummy18	3.602***	3.573***
	(1.015)	(1.015)
statetimedummy19	2.907***	2.879***
	(0.462)	(0.461)
statetimedummy20	17.10	17.10
	(870.7)	(871.8)
statetimedummy21	1.903***	1.897***

	(0.201)	(0.201)
statetimedummy22	2.395***	2.359***
	(0.354)	(0.353)
statetimedummy23	2.174***	2.174***
	(0.253)	(0.253)
statetimedummy24	2.460***	2.462***
	(0.737)	(0.737)
statetimedummy25	16.93	16.93
	(3,875)	(3,877)
statetimedummy26	16.47	16.48
	(6,037)	(6,038)
statetimedummy27	2.156***	2.157***
	(0.355)	(0.355)
statetimedummy28	2.973***	2.970***
	(0.266)	(0.266)
statetimedummy29	3.239***	3.234***
	(0.266)	(0.266)
statetimedummy30	-0.533	-0.531
	(0.471)	(0.471)
statetimedummy31	2.232***	2.070***
	(0.310)	(0.288)
statetimedummy32	2.240***	2.254***
	(0.336)	(0.336)
statetimedummy33	3.279***	3.280***
	(1.023)	(1.023)
Observations	7,450	7,450
Number of uniqueid	3,725	3,725
Pseudo R-square	0.660	0.659

6. Conclusion

The study utilizes a nationally representative data set released by IHDS. The question on who gets the pension is important because policies are designed keeping in view certain eligibility criteria's, but considering the role of local politics as exogenous factors. But in reality local political network play an important in determining the beneficiaries. Political connections help people in gaining favouritism. Given in the present case studied here on IGNOAPS there are high instances of APL card holders receiving the program, one possible explanation could be the political connections of the household.

This is not an isolated case, but it has been found in the studies of Cayers and Darcon in the case of Ethiopia and Panda in the case of BPL cards in India that political connections helps gaining access to social welfare programs. Evaluations of the IGNOAPS program conducted in the Union District of Pondicherry shows that the application forms were distributed collected and submitted with recommendations by the elected MLA (Member of Legislative Assembly). In the Indian state of Jammu & Kashmir the final list of beneficiaries needs to be approved by elected MLA's, which reinforce our finding on political connections.

In this study are only focussed about "type-2 errors "and type 1 errors will be studied in the next stage. After accounting for time fixed invariant characteristics and other household and individual level controls the study finds the odds of receiving IGNOAPS increases with stronger political connections.

Appendix

Table A1: Amount of pension, state contribution and eligibility criteria used

	States/UTs	Amount of pension provided as Central Assistance under IGNOAPS (Rs,2011)	Contribution of State Govt. per beneficiary per month under IGNOAPS (Rs) IGNOAPS (Rs) (Rs,2011)	Eligibility criteria used *	Number of beneficiaries (2011)
1	Andhra Pradesh		200		1011153
2	Bihar	200	Nil	BPL card holders with an annual income of less than Rs. 30,000	2369656
3	Chhattisgarh	200	100		533665
4	Goa	200	800		2734
5	Gujarat	200	200		279834
6	Haryana	200	300 for 70 years and 500 for above 70 years	Age, Income < Rs. 50000 per annum	130306
7	Himachal Pradesh	200	130	Age, BPL	91440
8	J&K	200	125	Age proof (Date of birth / Age certificate).Income certificate / BPL certificate / BPL ration card	129000
9	Jharkhand	200	200	n/a	676003
10	Karnataka	200	200	n/a	797862
11	Kerala	200	50	n/a	176064
12	Madhya Pradesh	200	75	n/a	1061033
13	Maharashtra	200	400	Age, BPL	1057510
14	Orissa	200	Nil	n/a	1193176
15	Punjab	200	250	n/a	159792
16	Rajasthan	200	300 for 70 years or below and 550 for above 70 years	n/a	527636
17	Tamil Nadu	200	800	Age, BPL	995237
18	Uttar Pradesh	200	100	Age, For rural: BPL; For urban: BPL/AAY card holder/name appears on survey list of District Urban Development Authority or on MoUD BPL list	3274780

19	Uttarakhand	200	200	Age	183501
20	West Bengal	200	200	n/a	1679381
	NE				
21	Arunachal Pradesh	200	Nil	Age, BPL	14500
22	Assam	200	50		596965
23	Manipur	200	Nil	Age, BPL	72514
24	Meghalaya	200	50	Age, BPL	48112
25	Mizoram	200	50	Age, BPL	23747
26	Nagaland	200	100	Age, BPL	40462
27	Sikkim	200	200	n/a	18806
28	Tripura	200	200	Age, BPL criteria or the destitute criteria	136592
	Union Territories				
29	NCT Delhi	200	800	Age, Income <Rs. 60000 per annum	196446
30	Puducherry	200	400	n/a	20757
31	A&N Islands	200	800 up to 79 years and 500 above 80 years	n/a	1063
32	Chandigarh		500	n/a	4216
33	D&N Haveli	200	300	n/a	944
34	Daman & Diu	200	300	n/a	130
35	Lakshadweep	200	100	n/a	36
	Total				17505053

Source: http://socialjustice.nic.in/pdf/ar12eng.pdf
*Identity criteria has been taken from numerous sources. Government websites,
https://ifrogs.org/EVENTS/PRESENTATIONS/sl_Rinku20150224_pensionworkshop.pdf,
http://www.helpageindiaprogramme.org/other/Destitute_Resources_10_dec/General%20Reference%20MaterialWrite-ups/5%20Senior_Citizens_Guide_%202009.pdf
http://crmindia.org/files/KaIGNOAPS.pdf
https://www.helpageindia.org/images/pdf/state-elderly-india-2014.pdf

Table 2A: Hausman Test results

VARIABLES	IGNOAPS20052011	lnsig2u
age60d	4.918***	
	(0.0603)	
horizonta20052011	-0.0832***	
	(0.0167)	
vertical120052011	0.226***	
	(0.0262)	
BPL20052011	1.231***	
	(0.0406)	
Antodya20052011	1.581***	
	(0.0708)	
Constant	-7.795***	0.302***
	(0.0920)	(0.0933)
Observations	298,638	298,638
Number of uniqueid	150,187	150,187

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

b = consistent under Ho and Ha; obtained from xtlogit
B = inconsistent under Ha, efficient under Ho; obtained from xtlogit

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 108.76
Prob>chi2 = 0.0000

Table 3a: Data descriptive

Variable		Mean	Std. Dev.	Min	Max	Observations
Urban area	overall	0.312581	0.463546	0	1	N = 300386
	between		0.456992	0	1	n = 150193
	Within		0.0776783	-0.1874189	0.8125811	T = 2
Member in Mahila mandal 20052011	overall	0.084065	0.2774852	0	1	N = 299924
	between		0.2127661	0	1	n = 150193
	Within		0.1781474	-0.4159354	0.5840646	T-bar = 1.99692
Member in youth sports and reading club	overall	0.040265	0.1965806	0	1	N = 299962
	between		0.1464446	0	1	n = 150193
	Within		0.1314429	-0.4597349	0.5402651	T-bar = 1.99718
Member in union business	overall	0.04962	0.2171598	0	1	N = 299937
	between		0.1613828	0	1	n = 150193
	Within		0.145423	-0.4503796	0.5496204	T-bar = 1.99701
Member in self help group	overall	0.145048	0.3521501	0	1	N = 299969
	between		0.2753788	0	1	n = 150193
	Within		0.2195605	-0.3549517	0.6450483	T-bar = 1.99722
Member in credit savings group	overall	0.090948	0.2875359	0	1	N = 299951
	between		0.2162838	0	1	n = 150193
	Within		0.1896163	-0.4090518	0.5909482	T-bar = 1.9971
Members in caste association	overall	0.107279	0.3094684	0	1	N = 299937
	between		0.2284522	0	1	n = 150193

	Within		0.2089521	-0.3927208	0.6072792	T-bar = 1.99701
Members in cooperative	overall	0.037835	0.190798	0	1	N = 299826
	between		0.1426329	0	1	n = 150193
	Within		0.1269162	-0.4621647	0.5378353	T-bar = 1.99627
solve local problems	overall	1.65884	0.4740997	1	2	N = 299540
	between		0.3381161	1	2	n = 150193
	Within		0.3327739	1.15884	2.15884	T-bar = 1.99437
Attend public meeting	overall	0.304649	0.4602596	0	1	N = 299564
	between		0.3534663	0	1	n = 150187
	Within		0.2951331	-0.1953506	0.8046494	T-bar = 1.99461
Age	overall	30.77862	19.39196	0	105	N = 300386
	between		18.99617	2.5	99.5	n = 150193
	Within		3.898047	-13.72138	75.27862	T = 2
BPL card	overall	0.331254	0.470665	0	1	N = 300283
	between		0.3871285	0	1	n = 150193
	Within		0.267733	-0.1687458	0.8312542	T = 1.99931
APL card	overall	0.517176	0.4997057	0	1	N = 300283
	between		0.4159617	0	1	n = 150193
	Within		0.2769619	0.0171755	1.017175	T = 1.99931
Antodya card	overall	0.041914	0.2003925	0	1	N = 300283
	between		0.1523564	0	1	n = 150193

	Within		0.1301438	-0.4580862	0.5419138	T = 1.99931
Women has access to radio	overall	0.309065	0.4621089	0	1	N = 296012
	between		0.3413697	0	1	n = 150075
	Within		0.3130734	-0.1909348	0.8090652	T-bar = 1.97243
Women has access to TV	overall	0.741956	0.4375589	0	1	N = 295915
	between		0.3587316	0	1	n = 150055
	Within		0.2539455	0.2419563	1.241956	T-bar = 1.97204
Women has access to newspaper	overall	0.302486	0.4593351	0	1	N = 295505
	between		0.3911797	0	1	n = 150069
	Within		0.2416999	-0.1975144	0.8024856	T-bar = 1.96913
Number of persons in the household	overall	6.141751	2.987182	1	38	N = 300386
	between		2.569087	1	27	n = 150193
	Within		1.524163	-10.85825	23.14175	T = 2
IGNOAPS recipients	overall	0.015873	0.1249841	0	1	N =300386
	between		0.096069	0	1	n=150193
	Within		0.0799487	-0.4841271	0.5158729	T=2
Gender	overall	1.476224	0.4994352	1	2	N = 300386
	between		0.4975678	1	2	n= 150193
	Within		0.043158	0.9762239	1.976224	T=2
Poor	overall	0.216348	0.411755	0	1	N = 300317
	between		0.3243645	0	1	n = 150193
	Within		0.2536708	-0.2836519	0.7163481	T= 1.99954

Education completed years	overall	5.085256	4.714586	0	16	N = 299379
	between		4.384421	0	16	n = 150189
	Within		1.733327	-2.914744	13.08526	T-bar= 1.99335

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