The Social Orientation of India's Integrated Child Development Services (ICDS) Program

Borooah, Vani

University of Ulster

May 2018

Chapter 3: The Social Orientation of India's Integrated Child Development Services (ICDS) Program

Abstract

Launched in October 1975, India's *Integrated Child Development Services (ICDS)* program is its largest national program for promoting the health and development of mothers and their children. This chapter examines an aspect of the ICDS program that has been neglected, namely who are its beneficiaries? Are they persons from deprived groups who, but for the program, might not have received such services? Or are they persons from more privileged groups who have the resources to acquire them from other sources? In both cases the ICDS program adds value but, in the latter situation, it does so by displacing existing services. This particular evaluation of the ICDS program is particularly important in the light of the Government of India's view, as articulated in its Eleventh Five Year Plan, that growth is not perceived as "sufficiently inclusive for many groups, especially Scheduled Castes, Scheduled Tribes, and Minorities". The chapter presents econometric estimates regarding the relative strength of the personal and household circumstances of persons in determining the likelihood of utilising *anganwadi* services. Lastly, the chapter suggests a trade-off between quality and utilisation by hypothesising that the poor quality of services leads upper caste mothers to exit the ICDS market and seek these services elsewhere.

3.1. Introduction

Launched in October 1975, India's *Integrated Child Development Services (ICDS)* program is its largest national program – and one of the largest such programs in the world - for promoting the health and development of mothers and their children. The scheme is targeted at children below the age of 6 years and their mothers (particularly if they are pregnant and lactating) and the benefits take the form of *inter alia* supplementary nutrition, immunisation, regular health checks, referral services, education on nutrition and health, and pre-school learning. In addition, mothers and children are provided with iron, folic acid, vitamin A tablets to combat, respectively, iron deficiency, anaemia, and xerophthalmia. The scheme – which is based on the principle that the overall impact of these benefits would be greater if they were provided in an integrated manner, rather than on a piecemeal basis - is administered from a centre, called the *Anganwadi* (meaning village courtyard) by workers, and their helpers, trained and paid an honorarium under the scheme (Kapil and Pradhan, 1999). Over 58 million children, aged 0-6 years, were covered by this scheme in 2006-07 and this was expected to rise to over 72 million in 2008-09 (Diwakar, 2010).

Many aspects of the ICDS have been examined by researchers and, in particular, the delivery of specific services (Ghosh, 2006 on feeding practices; Tandon and Gandhi, 1992 on immunisation) and the delivery of ICDS services in specific parts of the country (Sundararaman, 2006 on Chhattisgarh; Nayak and Saxena (2006) on Bihar and Jharkhand; Rajivan, 2006 on Tamil Nadu). However, one aspect of the delivery of *anganwadi* services that has been neglected in the literature is the issue of *who are the beneficiaries*? Are they mothers (and their children) from deprived groups who, but for *anganwadis*, might not have received such services and, indeed, might not have been aware of the importance of such services? Or, are they mothers (and children) from more privileged groups who, even in the absence of *anganwadis*, would recognise the importance of such services and have the resources to acquire them from other sources. In both cases, *anganwadis* would add value to the lives of mothers and children but, in the latter situation, they would do so by displacing existing services.

The evidence on social exclusion in relation to the ICDS program is at best mixed and has been summarised by Gill (2012). Three studies of "exclusionary bias" in the delivery of ICDS

services (FOCUS, 2006; Mander and Kumaram, 2006; and Thorat and Sadana, 2009) conclude that *locational* factors underpinned, and perpetuated, such bias. First, there was a relative lack of *anganwadis* in Scheduled Caste (SC), Scheduled Tribe (ST), and Muslim habitations; second, even in mixed-caste villages, the village *anganwadi* was usually not located in the parts in which the deprived groups lived.[1] Although the location of *anganwadis* is an ostensibly neutral factor, Mander and Kumaram (2006) in a study of 14 villages across four states (Andhra Pradesh, Chhattisgarh, Jharkhand, and Uttar Pradesh) argued that "it is not a mere accident that in none of the surveyed mixed-caste villages was the *anganwadi* located in a SC or ST hamlet. The decision to locate not just the *anganwadi*, but also other valued institutions and services, in the upper caste so-called 'main' village is influenced by the upper caste and class [sic] and politically powerful groups in the village."

However, as FOCUS (2009) showed, ST children in certain sampled districts comprised 27 percent of the total number of children in these districts but as much as 40 percent of the total number of children enrolled in the districts' *anganwadis*. So, even though locational factors might militate against inclusivity, the utilisation of ICDS services, as measured by enrolment in *anganwadis*, would suggest that while better location could improve inclusivity, inclusivity *per se* is not a problem. On the other hand, Mander and Kumaram (2006) claimed that, in addition to the locational factor (discussed earlier), "a large number of eligible children from impoverished and food deprived households did not access ICDS services, including supplementary nutrition for infant and small children….and that the denial of these services is not random or accidental but is frequently the outcome of active social discrimination, based on caste, gender and disability."

Following from this mixed bag of results, some based on data from specific parts of India, the purpose of this chapter is to use all-India data to evaluate the ICDS programme from the perspective of inclusivity firstly through econometric estimates regarding the relative strength of the personal and household circumstances of persons in determining the likelihood of utilising ICDS services; secondly, by estimating the proportion of inter-group differences in utilisation rates that is the result

[1] Articles 341 and 342 of the Indian Constitution include a list of castes and tribes entitled to special benefits (mainly in the form of reserved seats in the national parliament, state legislatures, municipality boards and village councils (*panchayats*); job reservations in the public sector; and reserved places in public higher educational institutions) and all those groups included in this list (and subsequent modifications to this list) are referred to as, respectively, "Scheduled Castes" and "Scheduled Tribes".

of inter-group differences in personal and household characteristics and the residual proportion which is the result of caste/religious identity; and thirdly, by suggesting a trade-off between quality and utilisation by hypothesising that the poor quality of ICDS services leads the Hindu upper castes to exit the ICDS market and seek these services elsewhere.

The evaluation of the ICDS program, as summarised above, is particularly important in the light of the Government of India's view, as articulated in its Eleventh Five Year Plan, that growth is not perceived as "sufficiently inclusive for many groups, especially Scheduled Castes, Scheduled Tribes, and Minorities".[2] In terms of the Government of India's flagship social welfare programs, of which the ICDS is one (the others being the Total Sanitation Program and the National Rural Health Mission), access to services by people from deprived groups is the key to inclusivity. An important purpose of this chapter is to measure the relative access to ICDS services by mothers and children from "deprived" groups, compared to access by those from more "privileged" groups.

The results reported in this paper are based on data provided by the Indian Human Development Survey (IHDS) for 2011, hereafter IHDS-2011, which asked *ever married women between the ages of 15 and 49* (hereafter, "eligible women") about whether they utilised various types of ICDS services (Desai, *et. al.,* 2015).[3] Of these 39,523 women, 2,729 did not have any children and hence were excluded from this chapter's analysis. The 36,794 women who were subject of analysis are hereafter referred to as "mothers". In addition to information about the mothers' households, the IHDS also provided information on their circumstances in terms of *inter alia* their age, education level, household economic status, region of residence, rural/urban location, and their degree of autonomy within their households. It should be emphasised that this chapter is an analysis of access to ICDS services by mothers of differing personal and household circumstances. It is *not* an analysis of their access to health services in general or, about the quality of the health services they accessed or, indeed, about their (and their children's) health outcomes.

3.2 Benefits Under the ICDS

[2] The Planning Commission (2008).
[3] The structure of IHDS-2011 was described in some detail in chapter 2.

The IHDS-2011 distinguished between six different types of services which (eligible) women could have received from *anganwadis*:

1. Benefits while pregnant or lactating. These included supplementary feeding, prophylaxis against vitamin A deficiency and control of nutritional anaemia. Also included were the immunisation of pregnant women against tetanus and nutritional and health education to build the capacity of women to look after themselves and their children.
2. Immunisation of child/children against six major diseases: polio, diphtheria, pertussis, tetanus, tuberculosis, and measles.
3. Health checks for children including: management of malnutrition, treatment of diarrhoea, de-worming, and distribution of medicines. Also included were the antenatal care of expectant, and postnatal care of nursing, mothers.
4. Monitoring children's growth, with sick or malnourished children and children with disabilities being referred to the Primary Health Centre.
5. Providing children with pre-school education. In addition to preparing children for primary school, this service also offers substitute care to young children thus freeing older siblings – particularly girls – to attend school.
6. Supplementary feeding support for children for 300 days in a year with a view to narrowing the gap between the nationally recommended calorific intake and that received by the children.

<Figures 3.1-3.4 >

The mothers were asked whether they had received each of the benefits, enumerated above, for their *last* birth. Figure 3.1 shows that, after applying sample weights, only 28.2 percent of the mothers - who gave valid responses to the question "When you were pregnant and lactating did you receive benefits, such as immunisation, supplementary food etc., from an *anganwadi*?" - answered in the affirmative. Similarly, only 45 percent of the mothers said their (last) child had been immunised at an *anganwadi*; 29.7 percent said their (last) child's health had been checked at an *anganwadi*; 39.1 percent said their (last) child's growth had been monitored at an *anganwadi*; 24.1 percent said their

(last) child had received pre-school education at an *anganwadi*; and 40.1 percent said their (last) child had received food from an *anganwadi*.[4] The low take-up of the educational benefits of the ICDS programme is particularly worrying since the government describes pre-school education as the "backbone of the ICDS program". [5]

Figure 3.1 also shows that the receipt of benefits varied according to social group. Eligible women from the ST had the highest rate of utilisation (for example, 64.8 percent of EW from the Scheduled Tribes (ST) had had their last born immunised at an *anganwadi* followed by eligible women from the Scheduled Castes (SC) and the non-Muslim Other Backward Classes (NMOBC): 45.9 and 49.7 percent, respectively, of these mothers had had their last born immunised at *anganwadis*. At the other extreme, eligible women who were Muslim and from the non-Muslim Upper Classes (NMUC) had the lowest take-up of *anganwadi* benefits: for example, only 31.3 percent of Muslim mothers and 36.9 percent of NMUC mothers had utilised an *anganwadi* for vaccinating their last born child. So, while it was laudable that the highest rates of utilisation of *anganwadi* benefits were by SC and ST women, it was worrying that Muslim women exhibited such a low rate of utilisation compared to, say, non-Muslims from the OBC.[6]

Some of the difficulties that Muslim mothers faced in accessing *anganwadi* services also applied to SC and ST mothers. The Human Development Sector (2004), in a report for the World Bank, reported that the community or caste of the *anganwadi* worker affected access: in one case cited, a worker was averse to having SC children come to the *anganwadi* because her father-in-law objected to the presence of lower caste children.

---

[4] The first feature of note about these figures for take-up of *anganwadi* benefits is that they represent a considerable improvement on such take-up rates based on data from the Indian Human Development Survey for 2005 (hereafter, IHDS-2005) and reported in Borooah *et. al.* (2014): according to IHDS-2005, the take-up rates for benefits 1-6 were, respectively, 20.5, 26.2,19.7, 21.7, 21.6, and 9.2 percent. These figures are consistent with those from other sources. For example, Sinha (2006) estimated that only 22 percent of India's young children were being served by the ICDS program though she did not provide details by type of benefit.

[5] See http://wcd.nic.in/icds.htm (accessed on 6 June 2017).

[6] A study conducted by Indian Institute of Dalit Studies (IIDS) in four states - UP, MP, Bihar and West Bengal - covering 895 respondents, corroborates this finding by showing that, compared to upper caste non-Muslim mothers, ICDS participation was higher for SC and ST mothers but lower for Muslim mothers. According to this study, 69 percent of Muslim mothers, compared to 78 percent of Hindu mothers, utilised *anganwadi* services provided for children up to 3 years of age and 76 percent of Muslim mothers, compared to 83 percent Hindu mothers, utilised services provided for children in the of 3-6 years age group (Borooah *et. al*., 2014).

In addition, because of the location of *anganwadis* in parts of the village where the upper castes lived (see Mander and Kumaram, 2006), mothers from vulnerable groups had to travel through unfriendly areas to reach the school. It was one thing to brave this journey for the occasional visit to the *anganwadis* – to have the child immunised, to have his/her health checked or growth monitored – but it was quite another thing to have to suffer this journey twice daily. Consequently, for this reason also, mothers from vulnerable groups could have opted out of sending their children to *anganwadis* for pre-school education.

However, overlaying these difficulties faced by mothers from all the vulnerable groups in accessing *anganwadi* services, patriarchal restrictions on the mobility of Muslim women outside the family home, unaccompanied by another household member, were a specific reason for the poor utilisation of *anganwadi* services by Muslim mothers. Although SC mothers also had difficulty accessing *anganwadi* services – through, for example, the reluctance of *anganwadi* workers to visit SC hamlets - they did not, experience any familial restraints on their mobility outside the home. Consequently, by going out of the family home (perhaps, for work), SC mothers were able to acquire information themselves about *anganwadi* services without the intermediation of *anganwadi* workers. On the other hand, Muslim mothers, who lacked this mobility, were much more reliant on visits by *anganwadi* workers for such information and this restricted their access to *anganwadi* services.[7]

Figure 3.2 shows that the lowest rate of utilisation of *anganwadi* benefits was by well educated women (graduate or above) with utilisation rates by women with no education, or primary or secondary education being roughly similar. Figure 3.3 shows that poorer women (in the lowest two quintiles of household per-capita consumption expenditure, hereafter HPCE) had markedly higher rates of utilisation than women from more affluent (quintiles 4 and 5) households while Figure 3.4 shows that the women in the Southern, Western, and Eastern regions of India had much higher rates of utilisation than women living in the North or the Centre.

3.3. Estimating the Strength of Factors Influencing the Utilisation of *Anganwadi* Services

[7] The IHDS-2011 showed that 31 percent of Muslim mothers, compared to 27 percent of SC mothers and 23 percent of NMUC mothers could not visit a health centre by themselves.

The previous section established that the utilisation rates of *anganwadi* services differed between mothers from different social groups (Figure 3.1), and also differed between mothers of different educational (Figure 3.2), economic (Figure 3.3), and regional attributes (Figure 3.4). This section estimates the relative strength of the different factors which exercised a significant influence on the utilisation of *anganwadi* services and, in particular, it enquires whether, *after controlling for non-social group factors*, there was still significant correlation between the mothers' social group and their utilisation rates?

The answers to these questions were provided by estimating *logit* equations for each of the six services provided through *anganwadis* – namely, benefits to pregnant and lactating mothers and children's immunisation, health check, growth monitoring, early education, and supplementary food - with the dependent variable for each equation taking the value 1 if the mother utilised that benefit *for her last born child* and 0 if she did not. It should be emphasised that in estimating the logit model, it was not possible, for reasons of multicollinearity, to include all the categories with respect to the variables: the category that was omitted for a variable is referred to as the reference category (for that variable).

If $Pr[y_i=1]$ and $Pr[y_i=0]$ represent, respectively, the probabilities of utilisation and non-utilisation, the logit formulation expresses the log of the odds ratio as a linear function of K variables (indexed $k=1\ldots K$) which take values, $X_{i1,}X_{i2}...X_{iK}$ with respect to mother i, $i=1\ldots N$:

$$\log\left(\frac{\Pr[y_i=1]}{1-\Pr[y_i=1]}\right)=\sum_{k=1}^{K}\beta_k X_{ik}+u_i=Z_i \qquad (3.1)$$

where: β_k is the coefficient associated with variable k, $k=1\ldots K$.

From equation (3.1) it follows that:

$$\Pr[y_i=1]=\frac{e^{z_i}}{1+e^{z_i}}=\frac{e^{X_i\hat{\beta}}}{1+e^{X_i\hat{\beta}}} \qquad (3.2)$$

where, the term 'e', in the above equation represents the exponential term.

The explanatory variables for the equations were:

1. The sex of the last born child.
2. The social group of the mother's household: Scheduled Tribe (ST), Scheduled Caste (SC), non-Muslim Other Backward Classes (NMOBC), Muslims, non-Muslim Upper Classes (NMUC).
3. The region in which the mother's household resided: the *North* (comprising the states of Jammu & Kashmir, Delhi, Haryana, Himachal Pradesh, Punjab (including Chandigarh), and Uttarakhand); the *Centre* (Bihar, Chhattisgarh, Madhya Pradesh, Jharkhand, Rajasthan, and Uttar Pradesh); the *East* (Assam, Orissa, West Bengal); the *West* (Gujarat and Maharashtra); and the *South* (Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu).
4. The location of the mother's household: rural or urban.
5. The highest level of education of the mother: none, primary, secondary, higher secondary, graduate and above. In terms of its effect on children's well-being, most studies focus on the education of the mother and hypothesise that the higher the mother's education, the better her feeding and care practices towards her children (Caldwell, 1979 and 1986; Hobcraft, 1993).
6. The household's per capita consumption expenditure (HPCE) by quintile: lowest, 2nd quintile, 3rd quintile, 4th quintile, highest quintile.
7. The age of the mother set out in five-year bands: 15-20; 21-25; 26-30; 31-35; 36-40.
8. The degree of a mother's autonomy in respect of whether she could travel alone or had to be accompanied by another person.

However, the logit estimates, that is the β_k of equation (3.1), themselves do not have a natural interpretation – they exist mainly as a basis for computing more meaningful statistics and the most useful of these are the predicted probabilities defined by equation (3.2). Consequently, as Long and Freese (2014) suggested, results from the estimated equation were computed, from the estimated logit coefficients of the utilisation equations, as the predicted probability of using - or, equivalently, the *predicted utilisation rate* (PUR) of - an ICDS benefit; these are shown in Table 3.1 for each of the six benefits enumerated.

<Table 3.1>

The PUR associated with mothers in the different variable groups shown in Table 3.1 were computed through a series of simulations. The PUR of ST mothers, with respect to their last born, was computed by assuming that *all* the mothers in the estimation sample were from the ST but that their non-social group attributes –gender of the last born child, region, location, highest education, consumption quintile, age group, freedom to travel unaccompanied – were unchanged at observed values. Then the ST coefficient was applied to this synthetic sample of 'all-ST mothers' in order to compute the PUR for the ST, shown in Table 3.1, under the columns headed 'Probability', as 44.6 percent for pregnancy benefits, 55.1 percent for immunisation, 43.4 percent for health check-up, 52.7 percent for growth monitoring, 30.4 percent for education, and 50.4 percent for food.

The PUR for mothers from the NMUC (which was the reference group) were computed similarly, this time assuming that *all* the mothers were from the NMUC with the mothers' non-social group attributes being as observed. Applying the NMUC coefficients to this synthetic sample of 'all-NMUC mothers' yielded the PUR for NMUC mothers, shown in Table 3.1, under the columns headed 'Probability', as 25.9 percent for pregnancy benefits, 39.8 percent for immunisation, 28.7 percent for health check-up, 38.5 percent for growth monitoring, 24.4 percent for education, and 37.4 percent for food. Since the *only* difference between the 'all-ST mothers' and the 'all-NMUC' synthetic samples was the social group to which the mothers belonged, the difference between the two sets of PUR could be attributed *entirely* to social group difference.

The marginal PUR, shown under the column headed 'MP' in Table 3.1 is the *difference* between the PUR of the category in question and that of the reference category. For example, the PUR of ST and NMUC (the reference category) mothers in respect of pregnancy benefits are, respectively, 44.6 and 25.9 percent yielding a marginal PUR of 18.7 percent (= 44.6-25.9). The ** against the marginal PUR indicates that this difference in PUR between ST and NMUC mothers was significantly different from zero at the 5 percent level. [8]

Table 3.1 shows that, for all the six benefits offered by *anganwadis*, the PUR of ST, SC, and NMOBC mothers was significantly higher, but the PUR of Muslim mothers was significantly lower,

[8] This means that the likelihood of observing these values, under the null hypothesis of no difference, was smaller than 5 percent. For reasons of economy, the associated standard errors are not shown but are available on request from the author.

than the corresponding PUR for NMUC mothers.[9] The results detailed in Table 3.1 show that – *after controlling for other factors*[10] - the predicted likelihood of utilising *anganwadi* services was highest for ST mothers, next highest for SC mothers, next highest for mothers from the NMOBC, next highest for mothers from the NMUC, and lowest for Muslim mothers. So, in terms of reaching mothers from vulnerable groups, the evidence presented here suggests that *anganwadi* services were tilted in favour of mothers and children from the ST and the SC; however, a worrying features was that the likelihood of utilising *anganwadi* services by Muslim mothers was lower than that for Hindus.

There did not appear to be any gender bias with respect to the utilisation of *anganwadi* services. The difference between the PUR associated with male and female (last born) children was not significantly different from for any of the five post-birth *anganwadi* services It would appear, therefore, that in utilising *anganwadi* services, mothers were not influenced by whether these services were for a male or female child.

In the context of regions, Table 3.1 shows that, compared to mothers living in the North (which was the reference region), mothers living in the South, the West, and the East had significantly higher PUR for all *anganwadi* services. In the context of location, compared to mothers in urban areas, rural mothers were much more likely, in terms of their PUR, to access *anganwadi* services: by 17.3 points for lactating mothers, by 18.6 points for children's immunisation; by 14.3 points for the children's health check; by 15.4 points for children's growth monitoring; by 11.1 points for children's education; and by 15.4 points for children's food.

In terms of the education of mothers, Table 3.1 shows that the PUR of mothers who were graduates (the reference educational category) was significantly lower than the PUR of mothers who either had no education or whose education did not exceed the secondary level. So, not only was the ICDS tilted towards mothers from deprived social groups it was also slanted towards mothers with relatively low educational qualifications.

[9] Except that there was no significant between the PUR of NMOC and NMUC mothers in respect of children's education benefit and that there was no significant between the PUR of Muslim and NMUC mothers in respect of food for children.

[10] These were: gender of the last born child, region, location, highest education, consumption quintile, age group, and freedom to travel unaccompanied.

The economic position of the mothers – as measured by their HPCE – also exerted a significant influence on their PUR. The PUR of mothers who belonged to the highest quintile of HPCE (the reference economic category) was significantly lower than the PUR of mothers who belonged to the lowest three quintiles of HPCE. Compared to mothers in the highest HPCE quintile, mothers in the lowest quintile of HPCE were much more likely, in terms of their PUR, to access *anganwadi* services: by 10.5 points for lactating mothers, by 5 points for children's immunisation; by 6.4 points for the children's health check; by 10.8 points for children's growth monitoring; by 8.5 points for children's education; and by 15.6 points for children's food.

An important aspect affecting the utilisation of *anganwadi* services was the autonomy that mothers enjoyed in their households and, in particular, whether they were permitted by household members to travel to the health centre unaccompanied. Mothers who could travel unaccompanied had a significantly higher PUR for all *anganwadi* services than mothers who needed to be accompanied in order to avail of health services.

3.4. An Analytical Model for Decomposing the Probabilities of Utilising *Anganwadi* Services

The analysis of the previous section raises a more general question: how much of the mean difference in the utilisation of an ICDS service between mothers in the different social groups was due to differences between them in their (non-group) attributes (gender of the last born child, region, location, highest education, consumption quintile, age group, and freedom to travel unaccompanied)? And how much was due to the fact that the mothers belonged to different social groups? The purpose of this section is to answer this question, using a method of decomposition pioneered by Oaxaca (1973) and Blinder (1973), with respect to the following binary comparisons: (i) mothers from the SC versus NMUC mothers; (ii) Muslim mothers versus mothers from the NMUC.

The Oaxaca (1973) and Blinder (1973) method of decomposing group differences in means into a "coefficients" effect and an "attributes" effect is, arguably, the most widely used decomposition technique in economics. This method has been extended from its original setting within regression analysis to explaining group differences in probabilities derived from models of discrete choice with a binary dependent variable and estimated using logit/probit methods (Gomulka and Stern, 1990; Blackaby *et. al.*, 1999; Nielsen, 1998; Borooah and Iyer, 2005; Sinning *et.al.*, 2008).

Under the Oaxaca-Blinder decomposition (and its extension to binary choice models) the sample is subdivided into mutually exclusive and (collectively exhaustive) groups - for example, by social group - which allows one to decompose the difference in, for example, average utilisation rates of *anganwadi* services between SC and NMUC mothers into two parts, one due to inter-group differences in the coefficient vectors and the other due to differences between the groups in their attribute vectors.

The attributes effect is computed by asking what the average NMUC-SC difference in utilisation rates for a service *would have been* if the difference in attributes between NMUC and SC mothers had been evaluated using a common coefficient vector. The coefficients effect is obtained by asking what the average NMUC-SC difference in utilisation rates for that service *would have been* if the average utilisation rate associated with a set of attributes (say, those of the SC) had been computed first using the NMUC, and then using the SC, coefficient vector. These ideas are made explicit in the following paragraphs.

There are N mothers (indexed, $i=1...N$) who can be placed in K mutually exclusive and collectively exhaustive social groups (hereafter simply 'groups'), $k=1..K$, each group containing N_k persons, $\sum_k N_k = N$. Define the variable Y_i such that $Y_i=1$, if the mother utilised a particular ICDS benefit, $Y_i=0$, if she did not. Then, under a logit model, the likelihood of a mother, from group k, utilising that benefit is:

$$\Pr(Y_i = 1) = \frac{\exp(\mathbf{X_i^k \beta^k})}{1+\exp(\mathbf{X_i^k \beta^k})} = F(\mathbf{X_i^k \hat{\beta}^k}) \qquad (3.3)$$

where: $\mathbf{X_i^k} = \left\{ X_{ij}, j = 1...J \right\}$ represents the vector of observations, for mother i belonging to group k, on J variables which determine her likelihood of utilising a benefit, and $\hat{\boldsymbol{\beta}}^{\mathbf{k}} = \left\{ \beta_j^k, j = 1...J \right\}$ is the associated vector of coefficient estimates for mothers belonging to group k.

The average probability of a mother from group k utilising an ICDS benefit is:

$$\overline{Y}^k = \overline{P}(\mathbf{X_i^k}, \hat{\boldsymbol{\beta}}^{\mathbf{k}}) = N_k^{-1} \sum_{i=1}^{N_k} F(\mathbf{X_i^k \hat{\beta}^k}) \qquad (3.4)$$

Now for any two (of the K) groups, say Hindu (k=H) and Muslim (k=M):

$$\begin{aligned}\overline{Y}^{H} - \overline{Y}^{M} &= \overline{P}(\mathbf{X_i^H}, \hat{\boldsymbol{\beta}}^{\mathbf{H}}) - \overline{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{M}}) \\ &= [\overline{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{H}}) - \overline{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{M}})] + [\overline{P}(\mathbf{X_i^H}, \hat{\boldsymbol{\beta}}^{\mathbf{H}}) - \overline{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{H}})]\end{aligned} \tag{3.5}$$

which can be rearranged as:

$$\overline{Y}^{H} - \overline{Y}^{M} = \underbrace{[\overline{P}(\mathbf{X_i^H}, \hat{\boldsymbol{\beta}}^{\mathbf{H}}) - \overline{P}(\mathbf{X_i^H}, \hat{\boldsymbol{\beta}}^{\mathbf{M}})]}_{\textit{coefficients effect}} + \underbrace{[\overline{P}(\mathbf{X_i^H}, \hat{\boldsymbol{\beta}}^{\mathbf{M}}) - \overline{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{M}})]}_{\textit{attributes effect}} \tag{3.6}$$

The first term in square brackets, in equation (3.6) represents the "coefficients effect": it is the amount by which the mean probability of Hindus utilising an ICDS benefit (average utilisation rate of Hindus) would change if Hindu attributes ($\mathbf{X_i^H}$), rather than being evaluated at *Hindu* coefficients ($\hat{\boldsymbol{\beta}}^{\mathbf{H}}$), were, instead, evaluated at *Muslim* coefficients ($\hat{\boldsymbol{\beta}}^{\mathbf{M}}$). Under the "coefficients effect", a particular set of attributes – in this case, Hindu – is evaluated using two different coefficient vectors – that of Hindus and Muslims.

The second term in square brackets in equation (3.6) represents the "attributes effect": it is the difference in the average utilisation rates which would result from both Hindu ($\mathbf{X_i^H}$) and Muslim attributes ($\mathbf{X_i^M}$) being evaluated using a *commo*n coefficient vector, that of Muslims ($\hat{\boldsymbol{\beta}}^{\mathbf{M}}$). Under the "attributes effect", the same (Muslim) coefficient vector is used to evaluate two different attribute vectors – that of Hindus and Muslims. Equation (3.6) shows the overall difference between Hindus and Muslims in their average utilisation rates as the *sum* of differences due to: (i) inter-group differences in coefficients (the "coefficients effect"); and (ii) inter-group differences in attributes (the "attributes effect"). The *coefficients contribution* is the percentage of the overall difference in means, $\overline{Y}^{H} - \overline{Y}^{M}$, that is due to the "coefficients effect". Similarly, the *attributes contribution* is the percentage of the overall difference in means, $\overline{Y}^{H} - \overline{Y}^{M}$, that is due to the "attributes effect".

The same decomposition could have been achieved by using the Hindu coefficients ($\hat{\boldsymbol{\beta}}^{\mathbf{H}}$) as the common coefficient vector:

$$\overline{Y}^{H} - \overline{Y}^{M} = \underbrace{[\overline{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{H}}) - \overline{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{M}})]}_{\textit{coefficients effect}} + \underbrace{[\overline{P}(\mathbf{X_i^H}, \hat{\boldsymbol{\beta}}^{\mathbf{H}}) - \overline{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{H}})]}_{\textit{attributes effect}} \tag{3.7}$$

The first term in square brackets, in equation (3.7) represents the "coefficients effect" and is the amount by which the average utilisation rate of Muslims would change if Muslim attributes ($\mathbf{X_i^M}$), rather than being evaluated at *Muslim* coefficients ($\hat{\boldsymbol{\beta}}^{\mathbf{M}}$), were, instead, evaluated at *Hindu* coefficients ($\hat{\boldsymbol{\beta}}^{\mathbf{H}}$). Under the "coefficients effect" in equation (3.5) the set of Muslim attributes ($\mathbf{X_i^M}$) are evaluated using two different coefficient vectors – that of Muslims and Hindus.

The second term in square brackets in equation (3.7) represents the "attributes effect": it is the difference in the average utilisation rates which would result from both Hindu ($\mathbf{X_i^H}$) and Muslim attributes ($\mathbf{X_i^M}$) being evaluated using a *commo*n coefficient vector, that of Hindus ($\hat{\boldsymbol{\beta}}^{\mathbf{H}}$). Under the "attributes effect", the same (Hindu) coefficient vector is used to evaluate two different attribute vectors – that of Hindus and Muslims. Both equations (3.6) and (3.7) show, in their different representations, the overall difference between Hindus and Muslims in their average utilisation rates as the *sum* of differences due to: (i) inter-group differences in coefficients (the "coefficients effect") and (ii) inter-group differences in attributes (the "attributes effect").

In the context of ICDS benefit utilisation, 'attributes" refer to all those factors – social group, gender of the last born child, region, location, highest education, consumption quintile, age group, and freedom to travel unaccompanied - which determine whether benefits are utilised. The coefficients of the equation then translate these attributes into probabilities of benefit utilisation. Lying at the heart of this translation is a set of *attitudes* that a particular social group has towards using *anganwadi* services. Because different social groups have different coefficient vectors – or, equivalently, have different attitudes towards using *anganwadi* services - this translation could be different for the different social groups even if they had the same attributes.

Some Methodological Qualifications

The method of computing the coefficients effect needs to be qualified in, at least, two respects. First, this effect is computed *conditional upon a given set of attributes*. If these attributes are added to, or subtracted from, then the size of the coefficient (or, attitudinal) effect would also change. For example, if more or better data became available, then the coefficients effect computed

from the new data would be different from the original estimate. So, there is no unique measure of the coefficients effect.

Second, even if one could establish a definitive vector of relevant attributes, a unique size of the coefficients effect might still not be established. This is because the attributes contribution could be computed using either the coefficients of one group (Muslims in equation (3.6), above) or the other group (Hindus in equation (3.7), above) and the two methods may not yield the same result. There is nothing in the methodology to suggest that one computation is to be preferred over the other. Consequently, the coefficients or attitudinal effect – computed as the difference between the overall difference and the contribution of attributes effect - would be different depending upon the coefficient vector used to compute the attributes contribution.

3.5 Decomposition Results

The probabilities computed from estimating the logit equation, shown in Table 3.1, were used to put empirical flesh on equation (3.6), with the NMUC coefficient vector used as the basis for the decompositions; these results are shown in Tables 3.2 and 3.3 for, respectively, SC and Muslim mothers. Column 1 of the Table 3.2 and 3.3 shows, respectively, the mean probabilities obtained from evaluating the attributes of the SC and Muslim mothers *at NMUC coefficients*.

<Tables 3.2 and 3.3>

For mothers in group *Z* (*Z*=SC, Muslims), these probabilities are defined as:

$$\Pr(Y_i = 1) = \frac{\exp(\mathbf{X_i^Z \beta^{NMUC}})}{1 + \exp(\mathbf{X_i^Z \beta^{NMUC}})} = F(\mathbf{X_i^Z \hat{\beta}^{NMUC}}) \qquad (3.8)$$

where: $\mathbf{X_i^Z} = \{X_{ij}, j = 1...J\}$ represents the vector of observations, for mother *i* belonging to group *Z*, on *J* variables which determine her likelihood utilising *anganwadi* services and $\mathbf{\hat{\beta}^{NMUC}} = \{\beta_j^{NMUC}, j = 1...J\}$ is the associated vector of coefficient estimates for mothers belonging to the NMUC. The mean probability of utilisation, shown in the column 1 of Tables 3.2 and 3.3, is the average of $\Pr(Y_i = 1)$ in equation (3.8) computed over all the mothers in group *Z*. So, for example, column 1 of Table 3.1 show that if the attributes of SC mothers were evaluated at NMUC coefficients, their mean probability of utilising *anganwadi* services would have been: 27.3 percent for pregnancy

services; 39.8 percent for immunisation; 28.2 percent for health checks; 38.6 percent for growth monitoring; 24.7 percent for education; and 39 percent for food.

Column 2 of the Tables 3.2 and 3.3 show, respectively the mean probabilities obtained from evaluating the attributes of SC and Muslim mothers *(Z=ST, SC, NMOBC, MOBC, and MUC)* at own group (that is, SC or Muslim) coefficients.

For mothers in group *Z* (*Z*=SC or Muslim), these probabilities are defined as:

$$\Pr(Y_i = 1) = \frac{\mathbf{exp(X_i^Z \beta^Z)}}{\mathbf{1 + exp(X_i^Z \beta^Z)}} = \mathbf{F(X_i^Z \hat{\beta}^Z)} \qquad (3.9)$$

where, as before $\mathbf{X_i^Z} = \{X_{ij}, j = 1...J\}$ represents the vector of observations, for mothers *i* belonging to group *Z*, on *J* variables which determine her likelihood of utilising *anganwadi* services, and $\hat{\boldsymbol{\beta}}^{\mathbf{Z}} = \{\beta_j^Z, j = 1...J\}$ is the associated vector of coefficient estimates for mothers belonging to group *Z*. The mean probability of utilisation, shown in column 2 of Tables 3.2 and 3.3, is the average of $\Pr(Y_i = 1)$ in equation (3.9), computed over the mothers in group *Z*.[11] For SC mothers (Table 3.2), these were: 33.3 percent for pregnancy services; 45.4 percent for immunisation; 33.3 percent for health checks; 43.3 percent for growth monitoring; 26.7 percent for education; and 45 percent for food.

The difference between the mean probabilities reported in columns 1 (group *Z* attributes evaluated at NMUC coefficients) and 2 (group *Z* attributes evaluated at group *Z* coefficients) of Tables 3.2 and 3.3 are shown in column 3 as the "attitudes effect". This is because differences, as discussed earlier, between the estimated coefficients for the groups reflect differences between them in their attitudes towards utilising *anganwadi* services. Asterisks against any of the numbers in column 3 of the tables indicate whether the attitudes effect was significantly different from zero.

Column 4 shows the mean probabilities resulting from NMUC attributes evaluated at own (NMUC) coefficients[12] while column 5 shows the mean probabilities resulting from group *Z* (SC in

[11] Note that these are different from those shown in Table 3.1 which were computed by assuming that all the mothers, across all the social groups, were from the SC. The probabilities shown in column 2 of Table 3.2 were computed over only SC mothers.
[12] See preceding footnote.

Table 3.2 and Muslim in Table 3.3) attributes evaluated at NMUC coefficients (these are identical to those shown in column 1 of Tables 3.2 and 3.3). The difference between these two mean probabilities – shown in column 6 – represents the attributes effect because it emanates from two different sets of attributes (that of the NMUC and of group Z) evaluated at the same coefficient vector (that of the NMUC). Column 7 shows the overall difference in mean probabilities between the NMUC and group Z (this is the sum of the values reported in columns 3 and 6); column 8 and 9 show, respectively, the attitude and attributes contributions where these are the attitude and attributes effects expressed as a percentage of the overall gap.

Table 3.2 shows that, for *every* ICDS benefit, the likelihood of utilising that benefit was always *lower* for mothers from the NMUC than from the SC: the gap in their mean probabilities of utilising *anganwadi* services, as shown in column 7 of Table 3.2, was always negative and these ranged from -11.1 percentage points for children's food to -4.4 points for children's education. These gaps could be explained by the fact that, relative to SC mothers, mothers from the NMUC had less "utilisation favourable" attitudes (coefficients) and also less "utilisation friendly" attributes. For example - remembering that, as Table 3.1 showed, the PUR of mothers was inversely related to their education level and that the PUR was lowest for mothers who were graduates – only 2 percent of SC mothers, compared to 13 percent of NMUC mothers, were educated up to graduate level. In a similar vein, remembering that, as Table 3.1 showed, the PUR of mothers was inversely related to their HPCE, only 11 percent of SC mothers, compared to 32 percent of NMUC mothers, were in households which belonged to the highest quintile of HPCE.

The relative size of these attitude and attribute contributions differed, however, by the type of benefit. The attributional contribution was largest (and *ipso facto* the attitudinal contribution was smallest) for children's education (55 and 45 percent could be explained by the fact that, relative to NMUC mothers, SC mothers had, respectively, attributes and attitudes favourable to utilising this benefit) and it was smallest for children's health checks (28 and 72 percent could be explained by the fact that, relative to the NMUC, the SC had, respectively, attributes and attitudes favourable to utilising this benefit). So, in terms of using *anganwadi* services, attitudinal and attributional forces were working in the same direction for SC mothers vis-à-vis their NMUC counterparts: in terms of

both attitudes and attributes, SC mothers were more inclined to use *anganwadi* services than mothers from the SC.

Comparing mothers from the NMUC with Muslim mothers, Table 3.3 shows that, for five of the six *anganwadi* benefits – the exception being food - the likelihood of utilising that benefit was always *higher* for mothers from the NMUC than Muslim mothers: the gap in their mean probabilities of utilising *anganwadi* services, as shown in column 6 of Table 3.3, was positive and these ranged from 3.3 percentage points for children's immunisation to 1 percent point for children's education. As before, this finding raises two questions. Firstly, were Muslim mothers less willing to utilise *anganwadi* services than NMUC mothers simply because they were Muslims – that is, was there a difference in attitudes (coefficients) between them? Secondly, were Muslim mothers' attributes, vis-à-vis mothers from the NMUC, such that they were less willing to utilise *anganwadi* services?

Table 3.3 offers a clue as what the answers to these questions might be. Column 2 of Table 3.3 shows that the likelihood of Muslims utilising *anganwadi* immunisation services was 32.2 percent. If, however, this likelihood was evaluated in the hypothetical situation in which Muslim mothers had the same attitudes (coefficients) towards using *anganwadi* immunisation services as did mothers from the NMUC – in other words, evaluating Muslim attributes at NMUC coefficients – this likelihood would have risen to 37.5 percent or, by 5.3 percentage points. So, Muslim mothers' attitudes towards using *anganwadi* immunisation services were *less* favourable than those of NMUC mothers. On the other hand, the attributes of Muslim mothers, in terms of using *anganwadi* services, were *more* favourable than those of NMUC mothers. For example – again remembering that, as Table 3.1 showed, the PUR of mothers was inversely related to their education level and that the PUR was lowest for mothers who were graduates – only 2 percent of Muslim mothers, compared to 13 percent of NMUC mothers, were educated up to graduate level; similarly, again remembering that, as Table 3.1 showed, the PUR of mothers was inversely related to their HPCE, only 12 percent of Muslim mothers, compared to 32 percent of NMUC mothers, were in households which belonged to the highest quintile of HPCE.

So, in terms of using *anganwadi* services, there were *opposing* forces at work on Muslim mothers vis-à-vis their NMUC counterparts. In terms of attitudes, Muslim mothers were *less* inclined,

but in terms of attributes they were *more* inclined, to use *anganwadi* services. The fact that their observed usage of *anganwadi* services was lower than that the NMUC suggested that attitudinal reluctance prevailed over attributional inclination. The figures cited in columns 3, 6 and 7 of Table 3.3 confirm this – the overall gap of 3.3 points (column 7) between NMUC and Muslim mothers, in their utilisation of *anganwadi* immunisation services, would have been -2 points (column 6) – that is, the NMUC utilisation rates would have been smaller than that for Muslims – *if attributes had been the only source of difference between the two groups*. However, attitudinal differences meant that, *in the absence of attribute differences*, the gap between NMUC and Muslim mothers, in their utilisation of *anganwadi* immunisation services, would have been 5.3 points (column 3) – that is, the NMUC utilisation rates would have been higher than that for Muslims. In the face of both attitudinal and attributional differences, the overall gap for *anganwadi* immunisation, was 3.3 points as shown under column 7 of Table 3.3.

3.6. The Link between the Quality of *Anganwadi* Services and their Utilisation

As the previous sections showed, the evidence is that the utilisation rate of *anganwadi* services was higher for mothers and children from "vulnerable" groups (SC and ST) compared to those from relatively "privileged" groups (NMUC: non-Muslim Upper Classes). If this was purely a supply side effect, such that these services were directed towards vulnerable groups (and away from privileged groups), then the ICDS could be credited for this "socially responsible" orientation of services. However, if mothers from the privileged group, relative to those from the vulnerable group, spurned *anganwadi* services then the higher utilisation of *anganwadi* services by the latter would arise because of demand-side effects. Mothers and children from privileged group would not utilise *anganwadi* services - not because they *could not,* but because they *did not wish to*, do so. This effect could arise if it was generally perceived that the quality of *anganwadi* services was poor compared to that of equivalent "market-provided" services. Then, in the face of this general perception of quality difference, it would be persons from the privileged group, with their superior resources, who were more able and willing to buy the higher quality service.

There is a considerable amount of evidence about the poor quality of *anganwadi* services particularly with respect to supplementary feeding and early education. Davey *et. al.* (2008), in

interviews with 200 users of *anganwadi* services at 20 *anganwadis* in Delhi reported that a majority (53 percent) of respondents were dissatisfied with the quality of services provided, the highest levels of dissatisfaction being recorded for: the location of, and space available in, the *anganwadis* (69 percent of respondents), the poor quality of food distributed (67 percent of respondents), and irregular pre-school education (57 percent of respondents).

Qadiri and Manhas (2009) in a study of 200 parents in the Kashmir Valley found that 71 percent of parents regarded the *anganwadis* as "ill-equipped to provide pre-school education. The teachers are not properly trained …and there is no proper schedule or curriculum". Dhingra and Sharma (2011) in a random sample of 60 *anganwadis* in Jammu and Kashmir pointed to the lack of adequate facilities "in terms of space (both indoor and outdoor), quality of accommodation, drinking water and toilet facilities, furniture and fixtures and teaching learning material in *anganwadis*." In a World Bank report, Gragnolati *et. al.* (2005) also drew attention to the poor facilities at *anganwadis* – most *anganwadis* had no toilet facilities and cooking space was typically inadequate – and to supply-side inadequacies, "especially issues of access, information, and irregularity of food supply". They also pointed out that, in the context of the Supplementary Nutrition component of the ICDS program "field studies have shown that food is sometimes badly cooked, dry, and salty and should be supplemented by sugar, rice, or vegetables to be more wholesome and palatable to children". Most recently, Barnagarwala (2017) has pointed out the contents of the ready-to-eat Take Home Rations (THR) packets, provided as a supplementary diet to children, are often fed to families' livestock because it is so unpalatable.

The idea that faced with a drop in product quality, some customers abandon a product for a competing product while other customers remain loyal to it (perhaps, at the same time, voicing their discontent) has been analysed by Hirschman (1970). On the basis his "exit-voice" theory of market behaviour by consumers, the provision of *anganwadi* services poses a conundrum. If they are to be directed towards vulnerable mothers and their children, then the quality of the services needs to be low for it is low quality which keeps away mothers from the privileged groups. On the other hand, any attempt to raise the quality of services will attract mothers from the privileged groups and erode accessibility by vulnerable group mothers.

With fixed resources, ICDS providers have to choose an appropriate mix of quality and quantity of a service: lower service quality means more of the service can be provided; on the other hand, attempts to raise quality means that service quantity has to be reduced. In Figure 1, below the curve *TT* represents the trade-off between quality and quantity: the slope of *TT* represents the rate at which, at the margin, quality can be transformed into quantity.[13] The points *X* and *Y* represent the minimum acceptable quality levels to mothers from the privileged and vulnerable groups respectively: mothers from the privileged group will not use the service at, or below, the quality at *X* and mothers from the vulnerable group will not use the service at, or below, the quality at *Y*.

The line *YZV* represents demand for the service by mothers from the vulnerable group. The segment *YZ* of this line also represents market demand since, up to *Z*, demand by mothers from the privileged group is zero. After *Z*, when demand by mothers from the privileged group is positive, market demand is represented by *ZW*: for any quality level, market demand *(ZW)* exceeds demand by mothers from the vulnerable group *(ZV)* by the amount of demand by mothers from the privileged group.

So, for a level of quality level between points *Y* and *X*, there is excess supply: supply by the government exceeds demand by mothers from the vulnerable group. For the quality level represented by the point *X*, demand equals supply. Lastly, for quality levels in excess of that at *X*, there is excess demand: the total of demand by mothers from both groups exceeds total supply.

Universal Utilisation of ICDS

This chapter suggested that a good ICDS program would be one in which mothers from privileged groups participated less, and mothers from vulnerable and marginalised groups participated more, *consistent with a satisfactory quality of anganwadi services*. While it makes sense to direct limited government resources to needier groups, two questions arise. First, are resources limited? Or is the bigger problem that most allocated resources don't make it to the village level? Second, it may be that including better-off and more powerful groups in a program would improve the quality of services for everyone.

[13] That is, how much of quality one would have to give up to get an additional unit of quantity.

The Central Vigilance Committee (CVC) on the public distribution system (PDS) appointed by the Supreme Court has said that the criteria for the selection of Below Poverty Line (BPL) households is inappropriate.[14] The finding of the CVC shows that there are large number of inclusion and exclusion errors in the provision of below poverty line (BPL) and Antodaya Anna Yojana (AAY) cards. The IHDS-2011 showed that 15 percent poor households in the country (that is, those in the lowest quintile of HPCE) did not have a ration card. The other alarming fact is that 16.8 percent of households in the highest income quintile have BPL cards while only 49 percent of households in the lowest income quintile have BPL or AAY cards (Commissioners' 7th report, 2007).

These facts show that government programmes targeted towards BPL households have inherent problems in directing services towards people in need. Access to subsidised food by the poor after the introduction of the Targeted Public Distribution System (TPDS) has worsened at an all India level. The TPDS performs poorly not only in terms of its objective of providing services for the poor but also in terms of program implementation which is marked by leakages and corruption. But in states like Tamil Nadu, Andhra Pradesh, Orissa and Chhattisgarh where the public distribution system is universal or quasi-universal it covers poor people in need of subsidized grains (Himanshu 2013).

Further, the literature on the implementation of 'universal' programmes shows all poor and needy children are included in the programme (Commissioners' 7th report, 2007). Midday meals (MDM), which is another universal programme covering all the children going to school from classes 1-8, provides an opportunity for the children from marginalized section to be included (Harris-White 1994) and, consequently, poor and the marginalized children are ensured one full meal a day. Universality also means that there is pressure from the public to improve the quality of MDM and governments respond to such pressure. For example, the MDM menu in Tamil Nadu consists of a variety of food (including eggs 2-3 times a week) provided to the children. Even small problems in the programme are reported by the media placing the government under pressure to offer immediate redress. Attempts in the 1990s to 'target' the PDS in Tamil Nadu met with public resistance and, in consequence, was made 'universal' (Harris-White 2004).

[14] Seventh Report of the Commissioners of the Supreme Court in the case: PUCL v. UOI & Others. Writ Petition (Civil) No. 196 of 2001, November, 2007.

Before 2006, the ICDS programme provided benefits to a limited number of persons. However, in the wake of a Supreme Court order, of December 13th, 2006, extending all *anganwadi* services to every child under the age of six, all pregnant women and lactating mothers and all adolescent girls, Dreze (2006) found that the number of *anganwadis* increased without any commensurate importance being given to improving the quality of services. Consequently, many of the eligible beneficiaries opted out. Along with making anganwadi services a universal benefit there is also an urgent need to improve the quality of *anganwadi* services (Dreze 2006).[15]

3.7. Conclusions

The ICDS Program, by addressing issues of early education, malnutrition, and morbidity is an imaginative response by the Indian government to the multi-faceted challenge of providing for the health and development of children and their mothers. In its implementation, however, the program embodies several inequalities. Although the ICDS policy stipulates that there should be one *anganwadi* per 1,000 persons (and 700 persons in tribal areas), the coverage is much better in the wealthier states. As Gragnolati *et. al.* (2005) show, ICDS coverage by state rises with per capita Net State Domestic Product with five states with the highest prevalence of underweight children – Bihar, Madhya Pradesh, Orissa, Rajasthan, and Uttar Pradesh – having the lowest coverage. At the same time, states like Manipur, Mizoram, Nagaland, which have a low prevalence of under nutrition, have high ICDS coverage.

The second type of inequality is the distribution of *anganwadis* within states: in 1998, while only half the villages from the lowest two deciles of the all-India wealth distribution had *anganwadis*, the ICDS program covered 80 percent of the richest villages in India (Gragnolati *et. al.*, 2005). The third type of inequality is locational inequality within a village. Mander and Kumaran (2006) have observed that, in mixed-caste villages, the *anganwadi* was never located in the Scheduled Caste hamlet.

[15] Tamil Nadu leads the way in nutrition programme for children with the first nutrition programme starting in 1956. The quality of *anganwadi* services in Tamil Nadu is considered better than in most other states (Rajivan 2006). Similarly, in Andhra Pradesh, forming village level committees involving different stakeholders in monitoring the programme has helped to improve the quality of *anganwadi* services and caters services to eligible beneficiaries (Sinha 2006).

The fourth type of inequality is based on excluding – or, more accurately, restricting - persons from certain groups from using *anganwadi* services. Mander and Kumaran (2006) provide a comprehensive account about the forms that such exclusion/restriction take. To a large extent this involved the attitude of the service provider: *anganwadi* workers might be reluctant to collect children from lower caste hamlets; *anganwadis* might be more reluctant to enrol children from the lower castes, compared to those from the upper castes, if there was an overall ceiling on enrolment; lastly, lower caste parents might be anxious about how their children would be treated while at the *anganwadi.*

However, notwithstanding the validity and, indeed, importance, of these points, the evidence is that, for whatever reasons, mothers from the SC and the ST were more likely – and Muslim mothers less likely - to use *anganwadi* services compared to non-Muslims, either from the upper classes or from the other backward classes.. This suggests that there is a complexity of factors underlying the observed outcome in terms of group beneficiaries. First, leavening the accounts of exclusion, there might be enlightened and progressive persons involved in the delivery of *anganwadi* services who actively promote the usage of these services by mothers from the SC and the ST. Second, there might be the perception among upper class non-Muslim mothers that the quality of *anganwadi* services is poor – in particular, poor quality food in supplementary nutrition and poor quality pre-school education - and that, recognising the importance of these services, they would prefer to obtain these elsewhere. So, while the *anganwadis* might, as a symbol of caste power, be located in the "main" village where the upper castes reside, it would be used relatively lightly by upper caste mothers. This is Hirschman's (1970) "exit response" to poor quality products.

Unfortunately, Hirschman's other idea of a "voice response" – namely, those that remained in the market expressed their discontent over poor product quality and, thereby, effected improvement - does not carry much credibility when it comes to *anganwadi* services. First, there is the reluctance to even voice discontent. In their survey of 14 villages in four states, Mander and Kumaran (2006) remarked on the reluctance of villagers to criticise *anganwadis*, preferring, instead, to deflect blame on themself. Second, given the nature of the caste hierarchy in rural India, remaining silent in the face of bureaucratic highhandedness is probably a rational strategy for the lower castes since expressions

of discontent, rather than resulting in service improvements à la Hirschman (1970), are more likely to result in a denial of service. Thirdly, even if the voice of the deprived was heard, and quality improvements in *anganwadi* services resulted, this would lead to the upper classes entering the market for *anganwadi* services and, thereby, pushing out those for whom these services were intended. That is the Catch-22 of the ICDS program.

References

Barnagarwala, T. (2017), "Palghar: Take Home Ration for Children Consumed by Cattle", Indian Express, 12 June 2017.

Blackaby, D.H., Leslie, D.G., Murphy, P.D. and O'Leary, N.C. (1999), "Unemployment Among Britain's Ethnic Minorities", *The Manchester School*, **67**:1-20.

Blinder, A.S. (1973), "Wage Discrimination: Reduced Form and Structural Estimates", *Journal of Human Resources*, **8:** 436-55.

Borooah, V.K. and Iyer, S. (2005), "Vidya, Veda, and Varna: The Influence of Religion and Caste on Education in Rural India", *Journal of Development Studies*, **41**: 1369-404.

Borooah, V.K., Sabharwal, N.S., and Diwakar, D. (2014), "Evaluating the Social Orientation of the Integrated Child Development Services Programme", *Economic and Political Weekly*, **XLIX**: 52-62.

Davey, A., Davey, S., and Datta, U. (2008), "Perception Regarding Quality of Services in Urban ICDS Blocks in Delhi", *Indian Journal of Public Health*, **52(3)**: 156-158.

Desai, S., Dubey, A., and Vanneman, R. (2015). *India Human Development Survey-II* University of Maryland and National Council of Applied Economic Research, New Delhi. Ann Arbor, MI: Inter-university Consortium for Political and Social Research.

Dhingra, R. and Sharma, I. (2011), "Assessment of Preschool Component of ICDS Scheme in Jammu District", Global Journal of Human Science, **11(6)**: 13-18.

Diwakar G.D. (2010), Critical Appraisal of ICDS Programme: Budget and Resource Analysis, *Journal of the Madras School of Social Work, A half yearly review of social work and social sciences, Special Edition-II*, pp 133-146

Dreze, Jean (2006), 'Universalisation with Quality ICDS in a Right Perspective', *Economic and Political Weekly*, vol. 41, no. 34, pp. 3706- 3715.

FOCUS (2009), *Focus on Children under Six*, New Delhi: Citizens' Initiative for the Rights of Children under Six (CIRCUS).

Gill, K. (2012), *Promoting 'Inclusiveness': A Framework for Assessing India's Flagship Social Welfare Programs,* Social Policy Working Paper Series – 2, New Delhi: UNICEF.

Ghosh, S. (2006), "Food Dole or Health, Nutrition, and Development Program", *Economic and Political Weekly*, **41**(34)**:** 3664-3666.

Gragnolati, M., Shekar, M., Das Gupta, M., Bredenkamp, C., Lee. Y-K. (2005), *India's Undernourished Children: A Call for Reform and Action*, Washington DC: The World Bank.

Harris-White, Barbara (1994), *'Child nutrition and poverty in South India'*, New Delhi: Concept Publishers.

Harris-White, Barbara (2004), 'Nutrition and its Politics in Tamil Nadu', *South Asia Research*, pp 51-71.

Himanshu (2013), *Food security in India*, ADB Working Paper Series (No.369), Asian Development Bank: Manila.

Hirschman, A.O. (1970), *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organisations, and States*, Cambridge, Mass: Harvard University Press.

Human Development Sector (2004), *Reaching out to the Child: An Integrated Approach to Child Development*, Washington DC: The World Bank.

Kapil, U. and Pradhan, R. (1999), "Integrated Child Development Services scheme (ICDS) and its impact on the nutritional status of children", *Indian Journal of Public Health*, **43**(1): 21-25.

Mander, H. and Kumaran, K. (2006), *Social Exclusion in ICDS: a Sociologist Whodunit*, ftp://ftp.solutionexchange.net.in/public/food/resource/res15071101.pdf.

Nayak, N. and Saxena, N.C. (2006), "Implementation of ICDS in Bihar and Jharkhand", *Economic and Political Weekly*, **41**(34)**:** 3680-3684.

Nielsen, H.S. (1998), "Discrimination and Detailed Decomposition in a Logit Model", *Economics Letters*, **6**1:15-20.

Oaxaca, R. (1973), "Male-Female Wage Differentials in Urban Labor Markets", *International Economic Review*, **14**: 693-709.

Planning Commission (2008), *Eleventh Five Year Plan, 2007-2012: Volume 1 Inclusive Growth*, New Delhi: Oxford University Press.

Qadiri, F. and Manhas, S. (2009), "Parental Perception Towards Preschool Education Imparted at Early Childhood Education Centres", *Studies on Home and Community Science*, **3(1)**: 19-24.

Rajivan, A.K. (2006), "ICDS with a Difference", *Economic and Political Weekly*, **41**(34)**:** 3685-3688.

Sinning, M., Hahn, M., and Bauer, T.K. (2008), "The Blinder-Oaxaca Decomposition for non-linear Regression Models", *The Stata Journal*, **8**: 480-492.

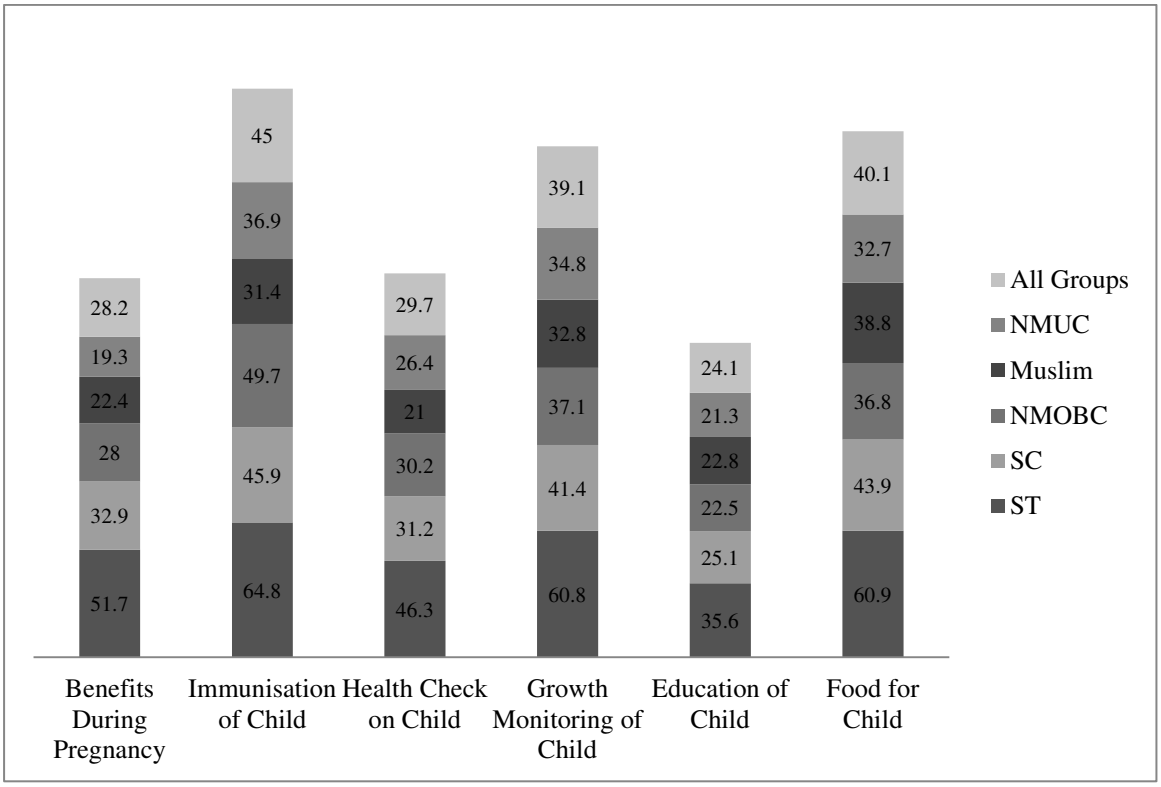
Sinha, Dipa (2006), 'Rethinking ICDS: A Right Based Perspective', *Economic and Political Weekly*, 41:34, pp. 3689- 3684.

Sundararaman, T. (2006), "Universalisation of ICDS and Community Health worker Programs: Lessons from Chhattisgarh", *Economic and Political Weekly*, **41**(34)**:** 3674-3679.

Tandon, B.N. and Gandhi, N. (1992), "Immunisation Coverage in India for Areas Served by the Integrated Child Development Services Program", *Bulletin of the World Health Organisation* **70**(4): 461-465.

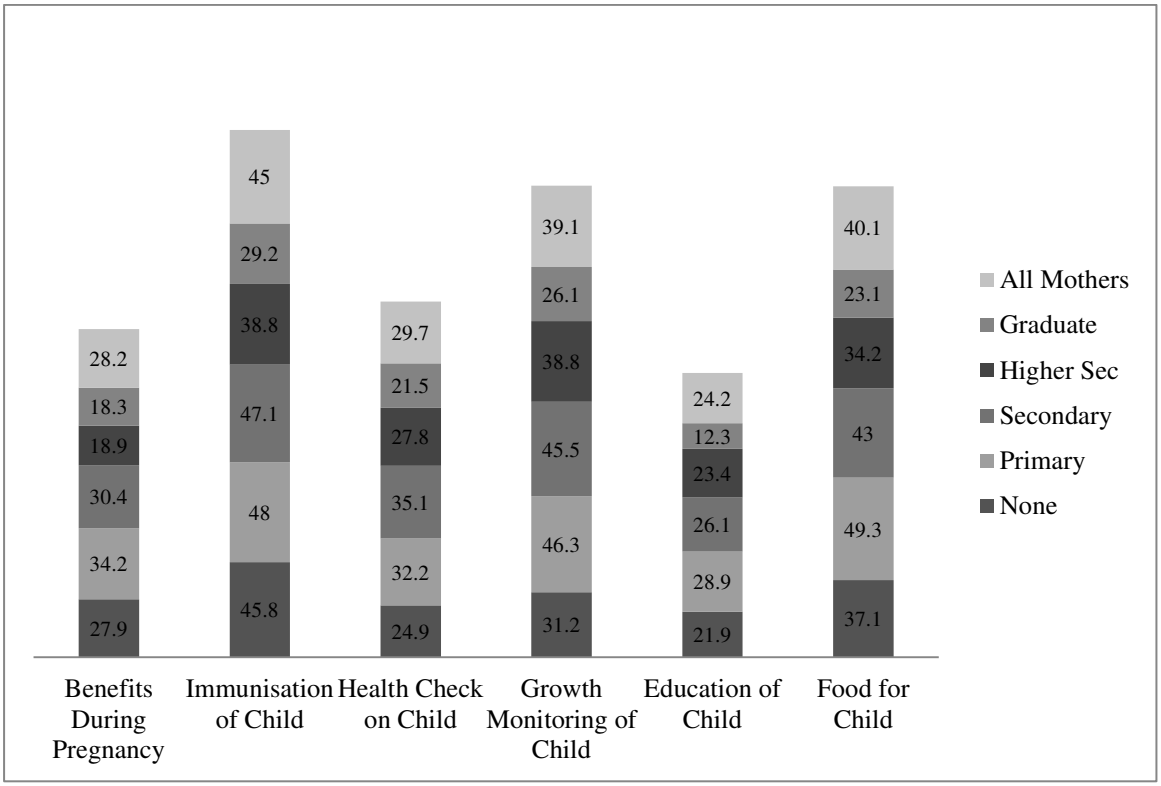
Thorat, S. and Sadana, N. (2009), "Discrimination and Children's Nutritional Status in India", *IDS Bulletin*, 40(4): 25-29.

Figure 3.1: Take-up of *Anganwadi* Benefits by Social Group



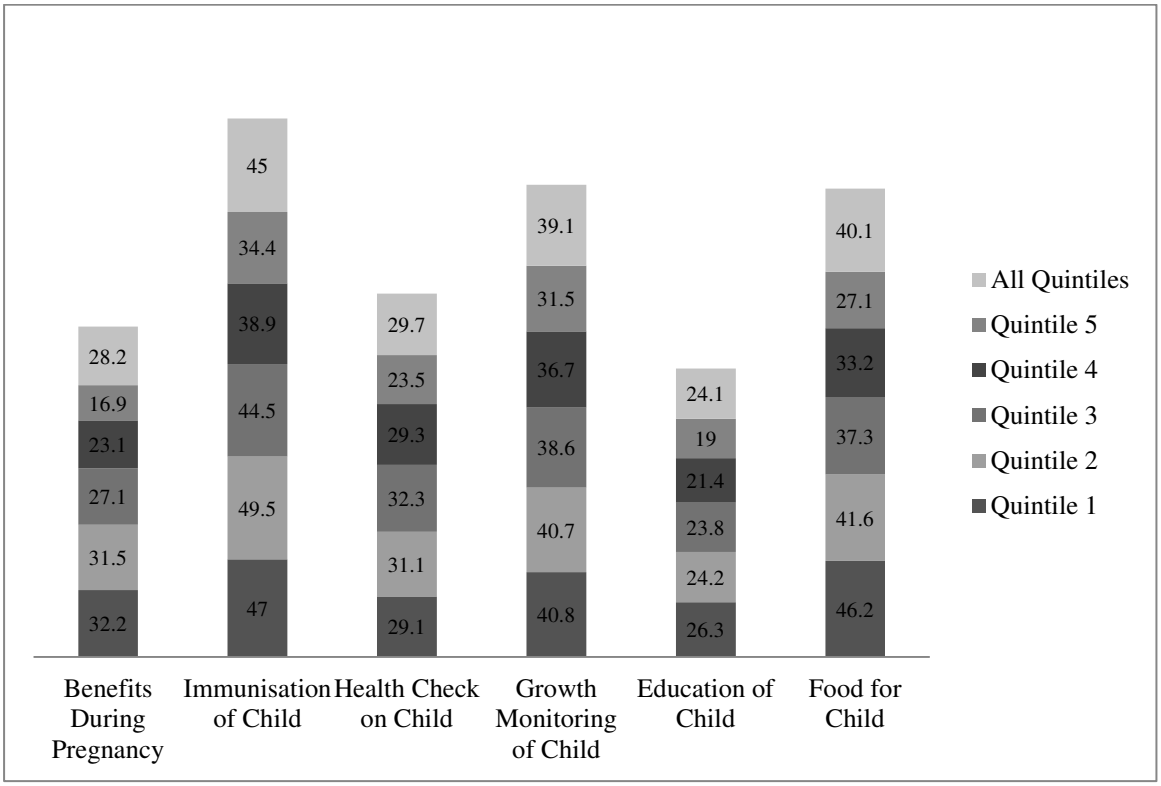
NMUC=non-Muslim Upper Classes; NMOBC=Non-Muslim Other Backward Classes; SC=Scheduled Castes; ST=Scheduled Tribes.
The numbers in the figure represent the percentage of mothers, aged 15-49, in a social group who availed of a particular benefit.
Source: IDHS-2011

Figure 3.2: Take-up of *Anganwadi* Benefits by Mothers' Education



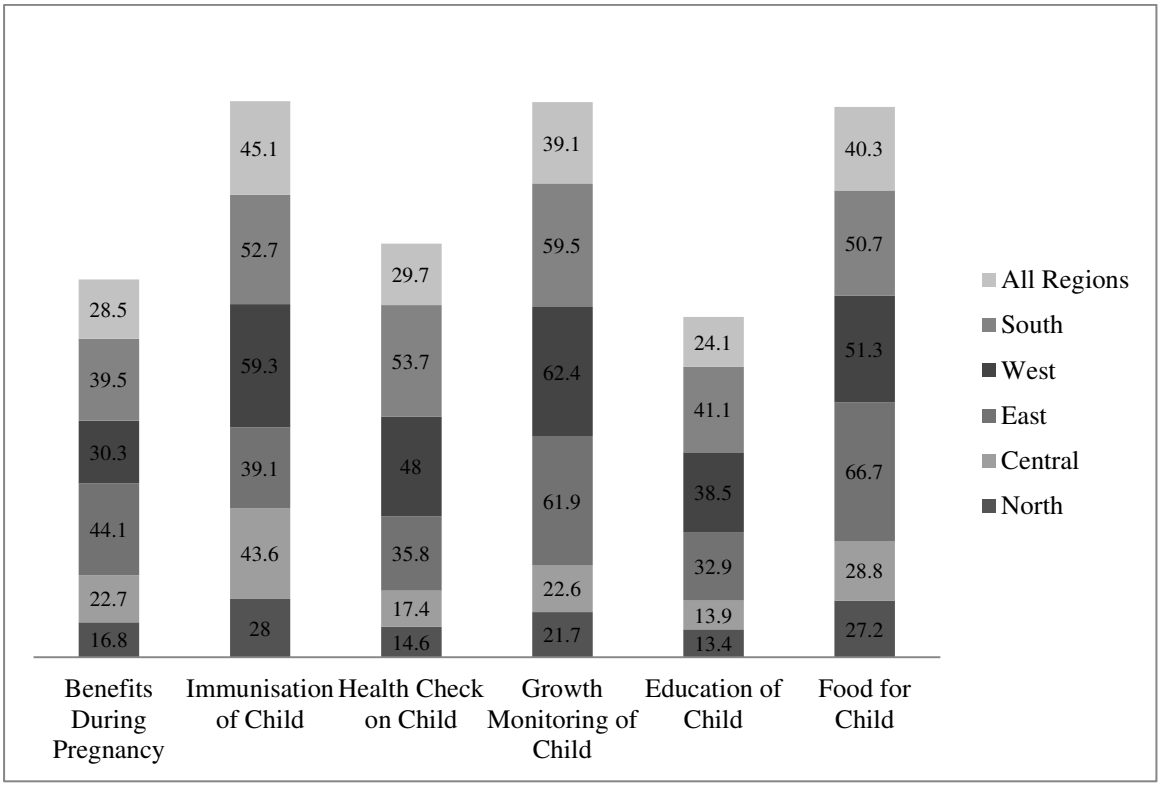
NMUC=non-Muslim Upper Classes; NMOBC=Non-Muslim Other Backward Classes; SC=Scheduled Castes; ST=Scheduled Tribes.
The numbers in the figure represent the percentage of mothers, aged 15-49, by education level who availed of a particular benefit.
Source: IDHS-2011

Figure 3.3: Take-up of *Anganwadi* Benefits by Quintile of Household Per-Capita Consumption Expenditure



NMUC=non-Muslim Upper Classes; NMOBC=Non-Muslim Other Backward Classes; SC=Scheduled Castes; ST=Scheduled Tribes.
The numbers in the figure represent the percentage of mothers, aged 15-49, by quintile who availed of a particular benefit.
Source: IDHS-2011

Figure 3.4: Take-up of *Anganwadi* Benefits by Region



NMUC=non-Muslim Upper Classes; NMOBC=Non-Muslim Other Backward Classes; SC=Scheduled Castes; ST=Scheduled Tribes.
The numbers in the figure represent the percentage of mothers, aged 15-49, in a social group who availed of a particular benefit.
Source: IDHS-2011

Table 1: Predicted Probabilities of Take-Up of *Anganwadi* Benefits

	Benefits while Pregnant & Lactating (8,379 observations)		Immunisation of Child (12,610 observations)		Health Check-up of Child (12,608 observations)		Growth Monitoring of Child (12,608 observations)		Education of Child (12,578 observations)		Food for Child (12,593 observations)	
	Probability	MP	Probability	MP	Probability	MP	Probability	MP	Probability	MP	Probability	MP
Households' Social Group												
Scheduled Tribe	0.446	0.187**	0.551	0.153**	0.434	0.147**	0.527	0.141**	0.304	0.060**	0.504	0.130**
Scheduled Caste	0.317	0.058**	0.453	0.056**	0.338	0.051**	0.431	0.046**	0.264	0.019*	0.432	0.058**
Non-Muslim OBC	0.313	0.055**	0.501	0.103**	0.343	0.056**	0.439	0.053**	0.250	0.006	0.421	0.047**
Muslims	0.212	-0.047**	0.344	-0.054**	0.249	-0.03**	0.335	-0.050**	0.224	-0.020*	0.364	-0.010
Non-Muslim Upper Class [R]	0.259		0.398		0.287		0.385		0.244		0.374	
Sex of Last Born Child												
Male	0.301		0.455		0.331		0.420		0.255		0.410	
Female	0.293	-0.008	0.445	0.010	0.318	-0.012	0.417	-0.003	0.251	-0.005	0.417	0.007
Mothers' Region of Residence												
North [R]	0.223		0.327		0.188		0.290		0.192		0.350	
Central	0.214	-0.009	0.415	0.087**	0.199	0.011	0.260	-0.030**	0.139	-0.053**	0.290	-0.060**
East	0.430	0.206**	0.435	0.108**	0.392	0.204**	0.576	0.286**	0.281	0.089**	0.563	0.213**
West	0.362	0.139**	0.628	0.300**	0.523	0.335**	0.636	0.346**	0.386	0.194**	0.529	0.179**
South	0.441	0.217**	0.547	0.220**	0.568	0.380**	0.641	0.351**	0.477	0.285**	0.570	0.220**
Mothers' Location												
Rural [R]	0.358		0.504		0.368		0.464		0.287		0.464	
Urban	0.186	-0.173**	0.318	-0.186**	0.225	-0.143**	0.310	-0.154**	0.176	-0.111**	0.292	-0.172**
Mothers' Highest Education Level												
None	0.280	0.026	0.464	0.122**	0.315	0.057**	0.378	0.043**	0.243	0.100**	0.383	0.076**
Primary	0.307	0.053**	0.470	0.129**	0.336	0.077**	0.451	0.115**	0.296	0.153**	0.458	0.151**
Secondary	0.325	0.071**	0.461	0.120**	0.348	0.089**	0.453	0.118**	0.261	0.118**	0.437	0.129**
Higher Secondary	0.262	0.007	0.393	0.052**	0.288	0.030	0.410	0.075**	0.248	0.105**	0.405	0.097**
Graduate and above [R]	0.254		0.342		0.259		0.335		0.143		0.308	
Household per capita Consumption												
Lowest quintile	0.326	0.105**	0.465	0.050**	0.343	0.064**	0.459	0.108**	0.285	0.085**	0.471	0.156**
2nd quintile	0.319	0.098**	0.465	0.050**	0.330	0.051**	0.430	0.080**	0.263	0.064**	0.430	0.115**
3rd quintile	0.301	0.080**	0.458	0.044**	0.334	0.055**	0.411	0.060**	0.243	0.044**	0.395	0.080**
4th quintile	0.255	0.034*	0.407	-0.008	0.295	0.016	0.369	0.018	0.217	0.017	0.349	0.035**
Highest quintile [R]	0.221		0.414		0.279		0.351		0.200		0.315	
Mothers' Age												
15-20	0.298	0.036	0.451	0.063**	0.290	0.014	0.397	0.038*	0.121	-0.157**	0.361	-0.015
21-25	0.327	0.065**	0.476	0.088**	0.345	0.069**	0.438	0.080**	0.213	-0.065**	0.410	0.035**
26-30	0.302	0.040**	0.462	0.073**	0.334	0.058**	0.425	0.066**	0.278	0.000	0.426	0.050**
31-35	0.258	-0.004	0.415	0.026*	0.309	0.034**	0.407	0.049**	0.301	0.023	0.427	0.051**
36-40 [R]	0.262		0.388		0.276		0.359		0.278		0.376	
Mothers' Autonomy												
Can't travel alone [R]	0.284		0.430		0.295		0.386		0.227		0.382	
Can travel alone	0.305	0.021**	0.462	0.032**	0.343	0.048**	0.437	0.050**	0.267	0.040**	0.431	0.049**

[R] denotes the reference category. ** Significant at 5 percent level; * significant at 10 percent level.
Source: IHDS-2011

Table 3.2: The Decomposition of Mean Probabilities of ICDS Benefit Utilisation when Scheduled Castes were evaluated at Non-Muslim Upper Classes Coefficients

	1	2	3	4	5	6	7	8	9
	SC attributes evaluated at NMUC coefficients[+]	SC attributes evaluated at own coefficients[++]	Difference Attitude Effect	NMUC Attributes evaluated at own Coefficients[+++]	SC Attributes evaluated at NMUC Coefficients[++++]	Difference Attributes Effect	Overall Difference in Mean Probabilities Between NMUC and SC[+++++]	Attitude Contribution (percent)	Attributes Contribution (percent)
Benefits while Pregnant	0.273	0.333	-0.06**	0.227	0.273	-0.046**	-0.106	57	43
Immunisation	0.398	0.454	-0.056**	0.355	0.398	-0.043**	-0.099	57	43
Health Check	0.282	0.333	-0.051**	0.262	0.282	-0.02**	-0.071	72	28
Growth Monitoring	0.386	0.433	-0.047**	0.361	0.386	-0.025**	-0.072	65	35
Education of Children	0.247	0.267	-0.02*	0.223	0.247	-0.024**	-0.044	45	55
Food for Children	0.390	0.450	-0.06**	0.339	0.390	-0.051**	-0.111	54	46

[+]This is $\bar{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{H}})$ of equation (3.6); [++] this is $\bar{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{M}})$ of equation (3.6); [+++] this is $\bar{P}(\mathbf{X_i^H}, \hat{\boldsymbol{\beta}}^{\mathbf{H}})$ of equation (3.6); [++++] this is $\bar{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{H}})$ of equation (3.6); [+++++]this is $\bar{Y}^H - \bar{Y}^M$ of equation (3.6)

** Significant at 5 percent level; * Significant at 10 percent level.

Source: Own calculations from IHDS-2011.

Table 3.3: The Decomposition of Mean Probabilities of ICDS Benefit Utilisation when Muslims were evaluated at Non-Muslim Upper Classes Coefficients

	1	2	3	4	5	6	7	8	9
	Muslim attributes evaluated at NMUC coefficients[+]	Muslim attributes evaluated at own coefficients[++]	Difference Attitude Effect	NMUC Attributes evaluated at own Coefficients[+++]	Muslim Attributes evaluated at NMUC Coefficients[++++]	Difference Attributes Effect	Overall Difference in Mean Probabilities Between NMUC and Muslims[+++++]	Attitude Contribution (percent)	Attributes Contribution (percent)
Benefits while Pregnant	0.242	0.198	0.044**	0.227	0.242	-0.015	0.029	152	-52
Immunisation	0.375	0.322	0.053**	0.355	0.375	-0.020*	0.033	160	-60
Health Check	0.272	0.235	0.037**	0.262	0.272	-0.01	0.027	137	-37
Growth Monitoring	0.370	0.322	0.048**	0. 361	0.370	-0.01	0.039	123	-23
Education of Children	0.233	0.213	0.02	0.223	0.233	--0.01	0.01	200	-100
Food for Children	0.363	0.353	0.01	0.339	0.363	-0.024**	-0.014	-71	172

[+]This is $\bar{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{H}})$ of equation (3.6); [++] this is $\bar{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{M}})$ of equation (3.6); [+++] this is $\bar{P}(\mathbf{X_i^H}, \hat{\boldsymbol{\beta}}^{\mathbf{H}})$ of equation (3.6); [++++] this is $\bar{P}(\mathbf{X_i^M}, \hat{\boldsymbol{\beta}}^{\mathbf{H}})$ of equation (3.6); [+++++]this is $\bar{Y}^H - \bar{Y}^M$ of equation (3.6)

** Significant at 5 percent level; * Significant at 10 percent level.

Source: Own calculations from IHDS-2011.

Figure 3.5: The Quality-Quantity Trade-off by Different Customer Types