

**THE PDS, CASH TRANSFERS AND NUTRITION
IN URBAN INDIA**

AN ANALYSIS OF THE NUTRITIONAL STATUS OF POOR HOUSEHOLDS
IN DELHI AND THEIR PREFERENCE FOR PDS OVER CASH TRANSFERS



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Introduction

Food Security is an issue which never fails to capture the attention of the masses. The National Food Security Ordinance, 2013 aims at providing Food Security to 67% of households in India through the Targeted PDS, a mammoth task involving an expenditure of gargantuan proportions; this calls for analysis of the following major issues:

1. Does the existing PDS, which the NFSO relies upon so heavily, provide the so-called "Food Security" to the targeted populace?
2. What is the opinion of the people regarding the alternative mechanism for benefits, namely Cash Transfers, vis-à-vis the PDS itself?

These questions beg answering simply because of the extreme importance of ensuring food security for a populace, and because a scheme which provides for a level of Public Expenditure estimated at 2% of the GDP requires the promise of efficacy at achieving its stated goals. In attempting to answer the above, our study fulfils a crucial gap by providing a framework within which to understand the nutritional status of the household as a measure of food security for the household itself. We then go ahead and attempt to analyse if the PDS has a measurable outcome in improving the same.

Our study, conducted in June and July 2013, aims at asking the following questions:

1. What is the nutritional status of poor households in Delhi, and whether there has been any measurable impact of the PDS on the same?
2. Do poor people in Delhi prefer Cash Transfer schemes or the PDS?

Within this study, we initially provide a background regarding the definitions of food security we adopt and the state of food security in India. We briefly analyse two major schemes aimed at raising the level of food security in India, namely the in-kind transfer scheme called the Targeted Public Distribution System and the Cash Transfer based schemes, such as the recently launched Dilli Annashree Yojana. We then present our analytical framework and present an analysis of data collected from our survey of 40 households in three localities of Delhi.

We find that the PDS provides no measurable impact on the level of nutritional attainment of households, and also that there are no identifiable patterns of improvements in its functioning. We qualitatively assess the major issues faced with the PDS as well; following this, we identify the preference of households for Cash Transfers in the place of the PDS. We find that most APL Households prefer Cash Transfers, while BPL and AAY households are uncertain as to their preferences. We also find that the preference is, in general, unaffected by access to a “functioning” PDS.

Objectives of the Study

Within the scope of this study we hope to address two major issues:

What is the nutritional status of Poor Households in Delhi, and has the PDS contributed towards improving this?

Studying the level of malnourishment of households in Delhi is essential owing to the implications for policy design for correcting this issue¹. In addition, it is essential to study the level to which the PDS has actually contributed towards improving nutritional outcomes, and whether households availing of the PDS are better off than those who rely solely on the open market. Our research attempts to provide a simpler framework for analysis of malnutrition in terms of actual consumption of food items. Our analysis does not consider individual food items; instead, it adopts a classification of food items into food groups which can easily be identified. We observe that the majority of established material on the nutritional status of Indians is based on metrics of height and weight, which may vary for a wide variety of reasons outside malnourishment;² by virtue of being convertible to a system of nutritional intake, our study actually verifies the and quantifies the extent to which a household fails to consume the bundle of goods it requires. We develop a framework for analysis of the nutritional status, and attempt to determine the extent to which the PDS has improved the same.

Do poor people in Delhi want a system of Cash Transfers instead of the PDS?

In the ambit of the debate between Cash Transfers and the PDS, we discover that major arguments are grounded in theoretical analysis. An important stakeholder in the Government's final policy decision is the individual household beneficiary of the final scheme; hence, despite the minimal levels of theoretical knowledge they may possess on the relative merits and demerits of the PDS vis-à-vis Cash transfers, their viewpoints on the same are highly useful sources of qualitative data regarding the daily functioning of schemes for policy makers to consider while framing policies. Further,

¹ We observe that lack of obtaining reliable data is a major issue in Policy formulation, an issue addressed even by Sen and Dreze, 2013 (pp 161-2)

² We observe recent trends in literature citing the "Small but Healthy" hypothesis, which claims essentially that the measurement of malnutrition based on a single global standard is flawed and that height is a poor indicator of malnourishment, although stunting is a result of malnourishment. Essentially, "shortness" is need not be a sufficient indicator of malnutrition.

households are the most important sources for ground data on the actual implementation of Government schemes owing to the fact that they, being beneficiaries, are the most “in-touch” with these schemes and their actual implementation.

Background

Food Security

Food Security is a perennially burning issue; the failure to provide food security to all of its residents is arguably one of India's greatest failings as an emerging Global Power. In general, the term "Food Security" conjures up the idea of "having food today, and confidence that there will be food on the plate tomorrow, and confidence that there will be food on the plate tomorrow, next week, month and in a year. [1]"

According to the WHO, Food Security is said to exist "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life." This definition commonly indicates that Food Security encompasses both physical and economics access to food meeting a person's dietary needs as well as their food preferences. The WHO definition is built upon three pillars:

1. Food Availability: Consistent availability of sufficient quantities of food
2. Food Access: Possession of sufficient resources to obtain appropriate foods for a nutritious diet
3. Food Use: Appropriate use based on knowledge of basic nutrition, care, adequate water, sanitation.

The "Capability" Approach to Food Security, introduced first by Amartya Sen (Sen, 1993), and discussed by Burchi and De Muro, 2012, emphasises the need to also focus on the "utilisation" aspect of Food Security. The Capability approach emphasises that the well being of a human being depends upon his/her capacity to function, which in turn depends upon their opportunities undertake and engage in activities they desire to; as a result, any policy seeking to benefit the poor must focus on enhancing their capacity to choose a livelihood of their choice.³ As a result, the conceptual framework within which Food Security is achieved must necessarily move beyond narrow notions of sufficiency of food items available for consumption, but also look at:

³ The Capability Approach defines a "functioning" as any desirable state of "being" (e.g. good health) or "doing" (e.g. ability to perform an activity one chooses to do), and a "capability" as a set of functionings which an individual may realize given current resources. Broadly speaking, a Capability Approach analysis to a policy would prefer a policy which leads to an expansion of the Capability Set.

1. Variations in nutritional requirements across classes of individuals
2. Abilities to access or utilise adequate nutrition
3. Existence of a multiplicity of other factors affecting nutrition, including access to sanitation, clean water etc. [2]

Food Security in India

To say that India performs poorly on the parameter of food security is to understate the situation significantly. UNICEF estimated in 2012 [3] that as many as 43% of India's children were underweight for their age, a statistic worse than similar values for South Asia in general (42%), Sub-Saharan Africa (20%) and 'Least Developed Countries' in general (25%). The comparable estimate for China is 4%. A staggering 48% of children below the age of 5 were chronically malnourished in 2005-2006[4], a data that did not show much improvement even in the 2012 report on the children by MSPI. [5]

Adult malnutrition is an equally pernicious issue in India. The proportion of adult women with a BMI less than 18.5⁴ was 36% in 2005-06 (NFHS 3⁵), a proportion higher than any nation for which comparable data is available. The NFHS-3 identifies that 36% of urban Women are "too thin," defined on the criterion of low BMI; it further states that 59% of women who are pregnant are anaemic, an issue because anaemic mothers tend to face pregnancy related issues and give birth to malnourished, underweight children.

Given the stark implications of a large malnourished populace, it is imperative that Indian policy makers step up to the challenge of combating such levels of undernourishment.⁶ In this study we discuss two major programmes, one in effect and one being implemented even at the time of preparing this study. The former is the Public Distribution System, acknowledged as one of the India's (and perhaps the world's) largest programmes of economic security, a programme which costs India

⁴ BMI-Body Mass Index, defined as the ratio between weight in kg and the square of height in m. A BMI of less than 18.5 is an internationally recognised standard of chronic deficiency.

⁵ The fact that NFHS-3 data are already nearly 8 years old and that few subsequent comparable surveys have been conducted is an issue which Dreze and Sen claim is an outcome of lack of concern regarding nutrition by policymakers and authorities.

⁶ Sen and Dreze, 2013 argue that "the really important issue is to put in place an effective system of income support and economic security."

an estimated Rs. 750 billion per annum. [6] The latter, a system of Cash Transfers, has so far only been established as a pilot in certain areas of the country, but is fast shaping up to be potentially a true panacea for the poor; it envisions the direct transfer of the food subsidy equivalent to the AADHAAR-linked Bank Account of every household. We now present a short account of the functionality of the two schemes, and review some literature on the efficacy of the measures.

The Public Distribution System

The Public Distribution System is a national programme of in-kind transfers⁷ wherein beneficiaries who possess a Ration Card are provided certain Food items at subsidised rates from a local-level Fair Price Shop (commonly referred to as the Ration Shop).

Under the PDS, the Central Government procures specified essential commodities and provides them to the State Governments for Distribution at fixed Central Issue Prices. At present, the PDS in Delhi provides two food grains- rice and wheat- and also certain quantities of Sugar and Kerosene Oil. Supplies are distributed to the populace through a network of Fair Price Shops and Kerosene Oil Depots. To avail of the subsidy, a family is required to produce a valid Household Consumption Card, commonly known as a Ration Card.

While the PDS was initially conceived as a rationing system under the British Raj, by the end of the Second Five Year Plan, it had changed into a Social Safety System, providing food grains at “fair prices” to the populace. The creation of the Food Corporation of India and Agricultural Prices Commission in 1965 consolidated the position of PDS; Governments were now committed towards procurement at the Minimum Support Price, and selling it at unremunerative prices through the Fair Price Shops.

At present, the PDS is one of India’s largest social sector schemes, targeting an estimated 300 million BPL households across the country. The Targeted PDS Scheme (TPDS) was introduced in 1997, envisaging the identification of BPL households by each state, who would then be provided with

⁷ An in-kind Transfer is designed to provide, at free or subsidized rates, a certain bundle of commodities to the poor directly in the hopes that the provision of the commodities will influence their consumption bundle of the beneficiary. (Bhagwati and Panagariya, 2012, pp 186)

grains at half the economic cost of procuring them (Planning Commission, 2005). The TPDS targets the provision of grains to the Poor in All Areas, instead of the earlier idea of All in Poor Areas (ibid).

Cash Transfer Schemes

Cash Transfer Schemes cover a wide range of policies designed at providing an increased level of purchasing power in the hands of the poor. As Bhagwati and Panagariya argue, adding to the purchasing power of the poor is an important policy recommendation for poverty alleviation (Bhagwati and Panagariya, 2012 pp. 185).

A Cash Transfer Scheme involves the direct provision of Cash into an account held by a beneficiary at a Bank; in India, these bank Accounts are usually linked to the AADHAAR Card held by household members, for the identification and the biometric verification of the identities of beneficiaries.

Cash Transfer Schemes have been implemented, so far, only on a pilot basis in certain areas of the Country; the Central Government's ambitious Direct Benefit Transfer (DBT) Scheme⁸, as of 22 April 2013, covered 121 Districts. The Minister for Petroleum and Natural Gas, M Veerappa Moily, reports that the DBT has met with considerable success [8].

In Delhi, we concentrate upon the programme of Cash transfers intended to substitute for the Food Subsidy through the PDS. This programme, the Dilli Annashree Yojana (DAY), provides poor households with annual incomes less than Rs 100,000 lacking a ration card⁹ with Rs 600 a month per household, which is transferred into the AADHAAR-linked bank account held by the eldest woman of the household. The DAY was recently expanded to include within its ambit widows.[9] As of May 7, 2013 the DAY was claimed to have reached out to 60,000 beneficiaries, and expected to reach 1,20,000 by the end of July.[10]

⁸ In its Pilot phase, the DBT, launched on June 1, 2013, covers 72 lakh LPG consumers across 19 districts and over 600 LPG providers. It provides for direct provision of the LPG subsidy of approximately Rs 4,000 in the form of Cash to the accounts of beneficiaries. (<http://www.zdnet.com/lots-of-glitches-to-iron-out-in-indias-cash-transfer-scheme-7000014906/>)The DBT also includes several scholarship programmes within its ambit (25 programmes in all. See http://planningcommission.gov.in/sectors/dbt/hand_book1305.pdf).

⁹ An additional eligibility criterion is that the family should have been a resident of Delhi since January 1 2010.

Comparative Analysis of the Two Schemes

SYSTEM	MERITS	DEMERITS
Public Distribution System	<ul style="list-style-type: none"> • Provision of a Real entitlement in terms of actual grains transferred, making it, in general, immune to inflation • Provision of necessary commodities at a high level of subsidy allows consumers to shift their purchasing bundles towards other food items • Promotes food consumption and encourages the consumption of a “preferred” bundle; prevents the misuse of the implicit subsidy • Direct Grain transfer benefits women and children and thus encourages the distributional aspects of food security • Required infrastructure exists, although faulty; existence of nearly 4 lakh ration shops • Has exhibited a significant revival in certain states 	<ul style="list-style-type: none"> • Existence of a massive centralised procurement system leads to large scale losses at each stage of the procurement and distribution system • Faulty distribution systems lead to wastage of large volumes of grain procured due to improper storage over long periods • Due to the large implicit subsidy, Ration dealers and bureaucrats have incentives to divert the grains away from the PDS and sell them in the open market; grain diversion is a severe challenge • Lack of a centralised monitoring system and non-implementation of suggestions and guidelines for Ration dealers • Presence of bogus ration cards and significant inclusion and exclusion errors in the targeting mechanism of the PDS • Provision of grains on a household basis ignores the fact that households have widely varying sizes, from 5-13 members on an average. • Households rarely receive their entire entitlement; in our sample, the best off households only received about 50% of their entitlement.
Cash Transfer Schemes	<ul style="list-style-type: none"> • Promotes Choice between food grains and other types of food • Prevents the wastage of grains and the inefficiencies associated with a long procurement and transfer chain for food grains • Allows for large scale computerisation, which would discourage corruption and leakages in the scheme • Computerisation and linkages to AADHAAR would largely decrease the potential for misdirection of targeting 	<ul style="list-style-type: none"> • Potential inability of the Government to accurately index the transfer amount to the level of inflation could adversely affect purchasing power of the household • Cash Transfers on a household basis ignores the variation in household sizes; what may be adequate for a family of 5 may not be adequate for a family of 13. • Does not provide any accountability on the part of the household in terms of nutritional improvement. Provides the potential for misuse of funds intended for nutritional welfare. • Potential bureaucratic hurdles in disbursement and delays in the same could severely impact the purchasing power of the household

Literature Review

Food Security and Malnutrition

In India, the lack of Food Security is extensively documented in several works. Dreze and Sen, 2013 documents and collates a wide range of sources to conclusively demonstrate the extent of malnourishment existing in the country.

On the measurement of malnutrition, we referred to several Reports issued by the NNMB (National Nutrition Monitoring Bureau); however, most of these reports date back to 2003. The latest data on malnutrition (quoted earlier) is available from the National Family Health Survey, Third Round (NFHS-3).

On the issue of the optimal measure of food security and trends in the same, we refer to NIN's (National Institute of Nutrition) Recommended Dietary Allowances for Indians, published in 2010 based on a report by the Indian Council of Medical Research (ICMR), 2009. The same report was utilised in formulation of the NIN's 2011 Dietary Manual for Indians, from which the Recommended Daily Allowances of various food groups required was obtained. The Dietary Manual specifies requirements for a wide range of age groups, for different genders in certain age groups, and also with the form of work in the case of adults; hence, it was adopted as the standard of food requirement.

For the purposes of our analysis, we view malnourishment as the inability of a household to access the minimum recommended daily volume of food groups for consumption so as to not be able to consume a balanced diet.¹⁰ We accept the NIN's standards for a Balanced Diet and go on to provide a quantitative framework for analysis of undernutrition within the same.

Cash or Food: The Optimal Policy

While there is no disagreement on the requirement of action towards alleviation of Food insecurity in India, there is a widespread level of divergence on the appropriate policy response.

¹⁰ This is in keeping with points 1 and 2 of the Capability approach to food security, defined in an earlier section. Analysing functionings outside food availability and access was outside the scope of our study.

Economists Arvind Panagariya and Jagdish Bhagwati have argued repeatedly and passionately regarding the efficacy of cash transfers over the PDS in improving nutritional outcomes. They argue that the provision of a subsidy in terms of grains at lower prices is in any case equivalent to an effective cash transfer, since poor households can sell their allotted grains in the open market for an equivalent cash amount¹¹ (Bhagwati and Panagariya 2012, pp 208-9); thus, far from producing nutritional outcomes, the PDS does nothing but function as a wasteful intermediary whose procurement policies regularly distort market outcomes. They argue that the expansion of the PDS (as will occur under the National Food Security Ordinance, 2013) will achieve no significant betterment in Nutritional outcomes. Supporting Cash Transfers, Panagariya and Bhagwati reject the arguments of Cash being misdirected by arguing that households can achieve this misuse even in status quo through the sale of their excess grain. They argue that Cash Transfers “empower the beneficiary instead of placing her at the mercy of the provider.”

Eminent economists Amartya K Sen and Jean Dreze argue, however, for the need to “not make a hasty transition to Cash Transfers.” Repeatedly citing Reetika Khera’s 2011 study on the PDS and its functioning, they describe a revival in the PDS (a “new” PDS, as described in Sen and Dreze, 2013 (pp 205), particularly in the Southern States. Khera’s Study also shows an overwhelming preference for the PDS over Cash Transfer schemes; 67.2% of her respondents expressed an absolute preference for food over cash, while 5.6% presented a conditional preference for Food over Cash. Sen and Dreze argue that there is a case for strengthening existing systems instead of dismantling them thoroughly.

While both of the aforementioned points of view have their merits, there are issues with both accounts of the problem. Panagariya and Bhagwati appear to assert that households can easily sell their grains off in the open market in exchange for cash; we feel that this presents a nuanced view of

¹¹ This can be ignored in case there is a minimal difference between the price at the Ration Shop and the open market, due to opportunity costs of time spent in queues and the transactions costs associated with selling the grains. However, the NFSB proposes a significantly large difference. A poor priority household of 5 members, under the NFSB, could earn close to Rs 1000 by selling a portion of their rice entitlement on the market.

a complex situation.¹² We find that Sen and Dreze paint a more optimistic picture of the PDS than exists in urban areas in reality; whereas the PDS may function in rural areas, households in Delhi are unlikely to receive regular entitlements from their PDS shop. As a result, we find that their guarded assessment of the situation calling for thoughtful analysis of the situation is the correct way to go.

Analysing Popular Preference for Cash Transfers

Several studies done in the past have attempted to gauge the preference among the poor for Cash Transfers or the PDS. The following noteworthy studies were considered and their merits and demerits were weighed while considering the construction of our own analytical framework.

1. Reetika Khera, 2011, studies the functioning of the PDS in rural areas of India, through a survey covering 9 Indian States, and analyses the preference for PDS and Cash Transfer schemes, and concludes that a marked resurgence has occurred in the functionality of the PDS in many states as a result of reform measures undertaken; she finds that households usually receive 84-88% of their entitled amount (Khera, 2011). Not surprisingly, in States where the PDS is functional, people tend to prefer the PDS far more than they do for Cash Transfers¹³. This study was, however, conducted in Rural Areas; as we conducted our survey in urban areas, we utilise this Study as more of an instructive guide than a reference for data or conclusions.
2. SEWA, Delhi, 2009, studies the preference for Poor People in three localities in Delhi with a high degree of SEWA concentration. The survey of 150 households concludes that about 60% of households prefer Cash Transfer Schemes over the PDS; however, those who prefer the PDS are more vocal in their preference. This is a trend we observed as interesting and attempted to analyse qualitatively. However, in analysis of the preference between the schemes, we observe that SEWA adopted focus group discussions prior to their analysis of individual preferences; this leads us to question their results, as the focus groups had an

¹² In reality, households are rarely able to meet their food requirements from the PDS; as a result, even if they were allotted grains through a grain transfer scheme, they would be more likely to consume this amount for personal use rather than incur the costs of selling them (the opportunity costs of time spent in finding a buyer.)

¹³ In Chattisgarh, widely cited as a model for the resurgent PDS, 90% of respondents preferred the PDS over Cash Transfers.

undeniable effect on swaying the preferences of many households. SEWA admits that the opinions of those who “strongly” oppose the PDS tend to overwhelm the opinions of those who support the Cash Transfer Schemes.

3. Rozi Roti Adhikaar Abhiyan (RRAA), 2011, studies the pattern of preference on a larger scale (4,005 households). The survey concludes that 91.4% of respondents would prefer a “revamped” PDS over Cash Transfer Schemes; we reject this form of analysis on the grounds that:

- 1) A “revamped” Government system is an idealistic concept which households would usually fail to understand.
- 2) Presenting households with two “ideal” systems without enabling their knowledge regarding theoretical benefits of the schemes presents households with a negative bias against the scheme they are not familiar, which may have contributed to their choice.

We thus observe that a large volume of existing literature on our issue involves insufficiencies in analysis. The structure of our study and analysis are now described.

The Study

Selection of a Nutritional Standard

In order to evaluate the nutritional standard of the households, the authors decided that the appropriate standard of evaluation was not an internationally recognised standard 2,000-2,200 calorie diet, the primary reason behind this being that this standard was too broad to account for differences in individual needs for nutrition. Human needs for nutrition depend upon age, body weight and physiological status (NIN, 2009), all of which vary widely across the globe. In addition, these standards suffer from the drawback of recommending only allowances of specific nutrients; collection of data to evaluate a diet would require data on daily consumption of each food item consumed, a prohibitively time consuming and impractical survey.

The authors considered the National Institute of Nutrition's 2010 report on Recommended Dietary Allowances for the purposes of the study. The Authors decided to choose the National Institute of Nutrition's 2011 Dietary Manual for Indians, which details consumption required of seven major food groups- cereals and millets, pulses, vegetables, fruits, milk, sugar and visible fats- for members of different age groups, and for adults involved in sedentary, moderate and heavy work. The Standard is explained in more detail in subsequent sections.

Selection of Localities

In selecting appropriate localities for the purposes of surveying, the authors were constrained by the limited availability of financial resources, official region-based poverty figures, official data regarding the functionality of local Public Distribution System Shops and temporal constraints. As a result, it was not possible to make informed choices regarding the sampling of localities; ideally, the authors would have chosen at least two localities where the PDS shop functions well and an equal number where the Shop does not. The authors resorted to the following convenience sample:

- 1. Nabi Karim, North Delhi.** This locality, located near the New Delhi Railway Station, possesses a large concentration of households possessing APL ration cards and a poorly functioning PDS. The locality was chosen owing to proximity to a major landmark.

2. **Seelampur, East Delhi.** Secondary Data indicates a large population of BPL and AAY households along with a relatively well-functioning PDS (Jamia Milia Islamia, 2009). This locality was chosen due to its inherent suitability for the purpose of the study, as determined by secondary data.
3. **Shahpur Jat, South Delhi.** This locality was chosen due to personal experiences of interaction with lower income group individuals and its proximity to the Research Centre. Primary Research revealed a poorly functioning PDS.

Selection of Households within localities

Due to the absence of sequential numbering of households within the majority of the areas surveyed, the methodology adopted involved systematic random sampling of households from individual areas, involving the selection of the first identifiable doorway and the subsequent identification of every odd doorway. Thus, the first, third, fifth, etc. doorways were chosen. It is to be noted that certain doorways opened into public spaces surrounded by up to four households. Due to eagerness of the households to participate in the survey, data was collected from all individual households in this case.

Collection of Data and Utilisation of a Spreadsheet

Data was collected from the eldest woman encountered in the household only.¹⁴ Responses were entered into a spreadsheet directly to facilitate data handling, and also into a handheld copy, in order to ensure the existence of a hard copy of the data collected. (Please refer to Annexure 1 for a copy of our instrument).

The data we collected can broadly be classified under the following headings.

1. **Basic Demographic Data:** The Respondent's Name and Age.
2. **Family Income details:** The number of working individuals in the household and their occupations and estimated monthly income.

¹⁴ It must be noted that it was impossible to, in some instances, control for the presence of other individuals, including family members, children and at times neighbours. The authors acknowledge the fact that such presences may have a bearing on the preference aspect of the study. In one case, the respondent was responding positively towards Cash transfers, when her mother-in-law came in and emphatically emphasized the importance of the PDS towards their daily welfare.

- 3. The Family's possession of a Ration Card:** The Number of ration cards held in the household and their type.
- 4. Details of the Family's Structure:** The number of individuals under different age groups and by gender, as defined by the NIN's Study. Refer to the section on Analysis of Data for further details.
- 5. Details of the Family's Food Consumption:** The quantity of the food groups consumed by the family in a month.
- 6. The Family's Preference for PDS as opposed to Cash Transfers:** The concept of Cash Transfers was explained briefly to the respondent, following which their preference was noted.

Analysis

Nutritional Status of the Household

The following major assumptions were made by the authors:

- a. A standard month length is 30 days.
- b. Approximate uniformity in the day to day consumption of various food groups, i.e. a household consuming approximately 2.5 kg of vegetables every day consumes approximately 75 kg in a month.
- c. General honesty and reliability of the reporting of figures by households.
- d. Distribution of food within the members of the household is in accordance with their requirements as defined in the survey. This assumption is important in justifying the calculation of the daily food basket requirements of the individual family.¹⁵

We define the following:

1. There are m **families**, grouped into k **grades**, with the i^{th} grade G_i being a set of g_i families, such that $\sum_{i=1}^k g_i = m$. Membership in a grade depends upon the possession of certain characteristics of suitability; for the purpose of this study, this characteristic was the type of ration card. Households are indexed such that the first g_1 households all belong to grade 1; the next g_2 households belong to grade 2 etc.
2. The **Class** of any individual is the code of classification that individual is assigned within the family, based upon age, gender and Occupation type.
3. The **Household Family Member Number Matrix**, $F_{m \times n}$ defined as $F = [a_{ij}]_{m \times n}$ where a_{ij} is the number of members in the i^{th} family belonging to class j .
4. The **Food Group Requirement Matrix** $R_{n \times f}$ defined as $R = [b_{ij}]_{n \times f}$ where b_{ij} is the requirement by the i^{th} class of food group j .
5. The **Food Group Consumption Matrix** $C_{n \times f}$ defined as $C = [c_{ij}]_{n \times f}$ where c_{ij} is the actual consumption by the i^{th} class of food group j .

¹⁵ We note the possibility that certain family members may monopolise on the majority of food resources available to a household (However, this is a possibility we as authors are unable to control for, owing to the inability of obtaining reliable person-by-person consumption details.

Then, the Family Requirement Matrix $\mathbf{R}'_{m \times f}$, defined as $\mathbf{R}' = [r'_{ij}]_{m \times f}$ where r'_{ij} is the required consumption of the i^{th} Family of food group j , is given by

$$\mathbf{R}' = \mathbf{F} \times \mathbf{R}$$

Similarly, the Family Consumption Matrix $\mathbf{C}'_{m \times f}$, defined as $\mathbf{C}' = [c'_{ij}]_{m \times f}$ where c'_{ij} is the actual consumption by the i^{th} Family of food group j , is given by

$$\mathbf{C}' = \mathbf{F} \times \mathbf{C}$$

Corresponding entries in \mathbf{R}' and \mathbf{C}' indicate the quantities of a certain food group a household requires for consumption of a balanced diet, and the quantities of the Food group actually consumed.

The following are summary statistics we utilise as indicators of dietary insufficiency:

1. The Proportion of Requirement of food group j actually consumed by the i^{th} Family, given by

$$p_{ij} = \frac{c'_{ij}}{r'_{ij}}$$

2. The Index of Undernourishment Ratio for the i^{th} Family, which we define as the arithmetic mean of the p_{ij} 's for a given value of i .

$$u_i = \frac{1}{f} \sum_{j=1}^f p_{ij}$$

3. The Index of Grade Undernourishment for the q^{th} grade, defined as

$$U_q = \text{Median}(u_l) \text{ for all } u_l \in \{u_l | \text{family } l \in \mathbf{G}_q\}$$

4. The Index of Food Group Undernourishment for the j^{th} food group and the m^{th} Grade, defined as

$$f_{jm} = \frac{1}{n} \sum_{i=g_{m-1}}^{g_m} p_{ij}$$

The above summary statistics summarise the degree to which a particular household is deficient in its consumption of specific nutrient groups, and also to a cumulative extent. The justification of the level of aggregation is as follows: We recognise that it is not necessary for households to adhere to the recommended consumption pattern in achieving nutritional sufficiency, since a household's consumption of the major food groups we have identified depends largely on the household's composition in terms of family members, the origin of the members of the household and individual

preferences in terms of nutrients chosen. However, we recognise that a household can attain nutritional sufficiency in this manner only if it consumes more than the required volume of certain food groups in the study and less than the required food group volume for some, i.e. the i^{th} household, to attain nutritional sufficiency, must have $p_{ij} \geq 1$ for at least some values of j . This is because the extra nutrient content in the groups with $p_{ij} \geq 1$ may counter the nutrient deficiency caused due to the lower consumption of others¹⁶. If a household is such that all the values of $p_{ij} < 1$, then it does not consume sufficient quantities of any nutrient to meet its family members' requirements; as a result, it is possible to conclude that the diet for such a household must necessarily be deficient nutritionally. We thus identify the arithmetic mean of the p_{ij} 's as the best suited summary statistic for indicating whether the overall consumption bundle at the individual household level falls short of the required level or not.

At the Grade level, we find that the wide range of variation in the u_1 's makes the mean an unhelpful and rather unrepresentative statistic. We thus utilise the Median, which neglects the impact of outlying extremes and provides an estimate of the extent of malnutrition above which 50% of sampled households in that specific grade fall.

We now provide definitions of the grades we utilised.

1. The Grades we utilised in dividing the households.
2. The Food Groups we analysed

¹⁶ The authors acknowledge that the food groups cited need not be perfect substitutes for one another, and that severe malnutrition may occur even if a family consumes more than their daily quota of cereals and consumes less than their daily quota of dals.

Grades Utilised

1. PDS Card Ownership:

The Authors analysed Data based on the type of the Ration Card held by the Family. There are 3 types

CARD TYPE	GRADE ASSIGNED	SCALE OF ENTITLEMENT			
		RICE	WHEAT	SUGAR	KEROSENE
APL	1	10-25 kg @ Rs 9.25	10-25 kg @ Rs 7.05	-	-
BPL	2	10-25 kg @ Rs 6.30	10-25 kg @ Rs 4.80	6 kg @ Rs 13.65	12.5 L @ Rs 14.96
AAY	3	10-25 kg @ Rs 3.00	10-25 kg @ Rs 2.00	6 kg @ Rs 13.50	12.5 L @ Rs 14.96
NONE	4	-	-	-	-

of Ration Cards commonly issued in Delhi, whose levels of entitlements and commodity prices are shown in the adjoining diagram. Since the Sample included a few Households who did not possess a Ration Card, we assigned to them the Grade NONE, coded as 4.

2. **Locality of Residence:** We hypothesize the functioning of the Public Distribution System in a locality influences both the nutritional status of households and the preference for the PDS over Cash transfer Schemes, as a result we classified Families into an alternate Grading Scheme based on the locality of residence. The Codes we assigned were:

Source: DFPD, 2012. All prices are quoted per unit.

- Nabi Karim: 1
- Shahpur Jat: 2
- Seelampur: 3

Food Groups: The NIN Standard

Food Group	0-1	1-3	4-6	7-9	10-12 M	10-12 F	13-15 M	13-15 F	16-18 M	16-18 F	Ad Sed ¹⁷ M	Ad Sed F	Ad Mod ¹⁸ M	Ad Mod F	Ad H ¹⁹ M	Ad H F
C&M²⁰ (g)	15	60	120	180	300	240	420	330	450	330	375	270	450	330	600	480
Pulses²¹ (g)	7.5	30	30	60	60	60	75	60	90	75	75	60	90	75	120	90
Milk²² (ml)	400	500	500	500	500	500	500	500	500	500	300	300	300	300	300	300
Veggies (g)	100	150	250	300	400	400	450	400	500	500	500	500	500	500	500	500
Fruits (g)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Sugar (g)	10	15	20	20	30	30	20	25	30	25	20	20	30	30	55	45
Visible Fat²³ (g)	20	25	25	30	35	35	45	40	50	35	25	20	30	25	40	30

Source: NIN, 2011.

The NIN's Dietary Manual for Indians identifies seven major food groups, which are as below.

1. Cereals and Millets, includes Rice, Wheat and Coarse Grains such as Jowar, Bajra and Ragi. These are good sources of Carbohydrates and certain micronutrients such as alanine.
2. Pulses, includes all Dals and leguminous food items including certain types of beans (rajma). These are good protein sources.

¹⁷ Sedentary Work, Adult. Less than 2 hours spent standing per workday, defined as 9 AM-5 PM.

¹⁸ Moderate Work, Adult. Between 2 and 6 hours spent standing per workday.

¹⁹ Heavy Work, Adult. Over 6 hours spent standing per workday.

²⁰ Cereals and Millets

²¹ One Serving of Pulses may be substituted by 1 serving (50 gm) of Eggs, Meat or fish.

²² This category includes Milk products like Cheese and Paneer. For the purpose of quick analysis, 1 gm of solid milk product is approximately a substitute for 1 ml of Food.

²³ In our survey, we used litres of oil as the unit of input, since Oil is usually sold in Litres, and made the conversion using the conversion ratio of 1 l containing approximately 1 kg of visible fat.

3. Milk and Milk products, whether they be solid (paneer, cheese) or not (curd). Milk products are good sources of proteins
4. Vegetables, includes all types of green, leafy vegetables (spinaches, cabbages), fruit vegetables (tomatoes, pumpkins, eggplants, etc.), tubers (potatoes), flower and bud (Cauliflowers) and roots (carrots, radishes etc.). Provide Vitamins and micronutrients such as Iron and help in maintaining immunity.
5. Fruits of all types (apples, bananas, etc) are good sources of vitamins and starch, especially consumed raw.
6. Sugar
7. Visible Fats, which include all forms of cooking media

The NIN Standard described above, presented in the format as shown, provides the Matrix **R**. This matrix, when multiplied by the Family Composition Matrix, **F** provides the Family Consumption Matrix, **C'**. We do not obtain the Matrix **C** through survey methods since this would require knowledge of the consumption of food by each individual member of the household, which presents impracticality in the conducting of the survey. Rather, we directly obtain the corresponding row of the Matrix **F'** by questioning Families about their total consumption of specific food items. Since this data is often available in kilograms per month, we convert this into daily consumption using the formula²⁴:

$$C_d = \frac{C_m \times 1000}{30}$$

Corresponding entries in Matrices **R'** and **C'** are then compared to obtain the summary statistic measures previously described.

Analysing Preferences

We record a family's absolute preference for Cash Transfers or for the PDS in terms of a dichotomous response; this is because while initially we also included an "unsure" option, the households we visited possessed a strongly affirmative or negative opinion of the PDS in each case. As a result, we

²⁴ In this portion of our analysis, we assume that a month is equivalent to 30 days or is equivalent to 4 weeks, depending upon the units in which the consumption is reported.

are able to compute the proportion of respondents in a particular region, possessing a particular card type, who prefer Cash Transfer Schemes over the PDS.

We utilise a qualitative framework for the analysis of the preference, by directly asking households why they prefer the PDS or the Cash Transfer Schemes as stated; the justification for this is that the limited sample size we achieved does not permit extensive quantitative analysis. The responses to this question provided interesting insights into public perceptions of the PDS and of Cash Transfer Schemes.

Analysis

The structure of our sample is given at right, classified by the major grades we proposed to utilise in determining the extent of under-nutrition and preference for Cash Transfer based schemes over the PDS. A total of 40 households were sampled, of whom 19 lived in Seelampur, an area with a relatively well functioning PDS, and 21 lived in Nabi Karim and Shahpur Jat, areas with poorly functioning PDS shops.

Card Type	Nabi Karim	Seelampur	Shahpur Jat	Total
APL	7	2	3	12
BPL	3	9	2	14
AAY	-	7	3	10
None	1	1	2	4
	11	19	10	40

The figure below provides an analysis of the actual entitlement received by households holding a particular card in an area. The scale of entitlement has previously been defined in the Table.

As is clearly visible, APL households are unequivocally worse off in all three surveyed areas, in terms of the percentage of their allotment they received; in general, they received no allotments at all. While AAY households receive a certain portion their entitlements regularly, BPL households present an ambiguous picture.

	APL	BPL	AAY	NONE
Nabi Karim	No Entitlements	14.28% of allotted Grains only	None Found	No Entitlements
Seelampur	No Entitlements (Earlier used to get up to 5 kg Sugar, 17 kg grains)	28.57% Grains of allotted grains only	57.14% Grains only	No Entitlements
Shahpur Jat	No Entitlements (Earlier, used to get up to 10 kg Wheat)	28.57% of allotted Grains only	57.14% Grains only	No Entitlements

Nonetheless, it is unreasonable to view the PDS as functioning 'well' in any of these localities²⁵; a qualitative analysis of the major issues faced unequivocally by all households is presented in a later section. There is no evidence to suggest the evolution of the "new PDS"²⁶ in the localities surveyed; rather, the PDS appears to have actually gotten worse in recent times, with Sugar price decontrol adversely affecting sugar supplies to PDS Shops²⁷.

The functioning of the PDS is indicated through an index of PDS functionality, defined as follows²⁸:

$$i_{PDS} = d_o \% \times \sum_{\text{commodities}} (f_{ei}^{APL}\% + f_{ei}^{BPL}\% + f_{ei}^{APL}\%)$$

In the above, $f_{ei}^{APL}\%$ represents the proportion of the actual allotment of commodity i actually received by an APL household and $d_o\%$ represents the proportion of days the PDS shop actually functions as opposed to the required 6 days a week [11]. Clearly, the index i_{PDS} can range from 1 to 12, since there are 4 commodities delivered by the PDS. We define an index of 6 or higher as an indicator of a "well-functioning" PDS²⁹.

²⁵ The functioning of the PDS appears significantly poorer in these areas than is suggested in SEWA, 2009 which claims that Delhi's implementation of the PDS is significantly better than most other urban centres. Their study also showed that APL families received 83% of their entitlement on an average; this points at the fact that PDS functioning is nowhere near uniform across the City of Delhi.

²⁶ The "New PDS" is characterized by community ownership of the PDS Shop and the use of technology in tracking shipments, as well as a system of social audits and universalisation. A Detailed account is available in Dreze and Sen, *The Uncertain Glory*, 2013 pp.205-212.

²⁷ Sugar prices being decontrolled implies that mills are no longer obligated to supply certain quantities of sugar sweetener to states, and that states will now be required to procure sugar at the market price. This has already led to severe sugar shortages in the PDS, as in Himachal Pradesh.

²⁸ The rationale for the definition is as follows: 1. We multiply by $d_o\%$ as this factor is an index of accessibility to the PDS. Thus even if all are entitled to their full amount, a $d_o\%$ of 0 implies a non-functional PDS. Further, we assign all food items in the basket an equal weight in determining efficiency. The use of a percentage of recommended value assigns no value to absolute measures of allotment, since a functional PDS would at best guarantee all its beneficiaries their entitlement. We acknowledge that this index fails to account for quality of grains obtained under the PDS.

²⁹ Note that this requirement requires Ration shops to be open on more than 3 days of the week at least, and also attains this value if the PDS Shop functions regularly for at least 2 groups out of 3 of card holders.

This data suggests that the PDS functions best in Seelampur, followed by Shahpur Jat and finally by Nabi Karim. It is clear that:

1. Nabi Karim and Shahpur Jat have PDS systems which are barely functional. The primary reason for

this is qualitatively determined to be the Ration Shop

Locality	i _{PDS}
Nabi Karim	0.0357 ³⁰
Shahpur Jat	0.0714
Seelampur	0.42855

Owner's apathy and propensity to sell grains in the Open Market.

2. Seelampur has a PDS system which functions better than the other two localities surveyed, yet is still woefully deficient in providing food grains to the intended beneficiaries.
3. Khera, 2011 shows how, on an average, a "revival" in the PDS has led households usually receiving 84-88% of their food entitlements. Our study of the three localities shows that this is a dream yet to be achieved in Urban Delhi.

³⁰ We were unable to find any AAY households in Nabi Karim; hence we calculate this by using the standard formula and then multiplying by a correction factor of 1.5. The rationale behind this is that on an average, AAY households should receive roughly the same proportion of their entitlements as APL and BPL households, and thus their exclusion from the sum can be corrected by assuming that the sum represents 2 categories instead of 3. This is corrected by multiplying the sum by 1.5. We still come out with a value significantly below the threshold of functionality.

Nutritional Status

The Summary Statistic presented is the Mean Percentage of Recommended Daily Allowance of each food group consumed by the households belonging to a particular Grade. We utilise the mean due to its properties of efficiency and consistency as compared to other measures of central tendency.

The Data points to certain interesting conclusions (though the scope for quantitative analysis of the same is limited owing to sampling constraints):

Statistic	APL	BPL	AAY	NONE
Mean Per Capita Income	Rs. 1888.85	Rs.2247.28	Rs.1720.23	Rs. 939.53
Mean Per Capita Expenditure on Food (as a percent of Income)	64.59	49.4	62.52	77.49
Mean Percentage Consumption of RDA of:				
Cereals & Millets	59.55	60.04	53.03	76.57
Pulses	65.33	34.33	41.98	33.55
Milk & Milk Products	53.06	56.45	48.33	16.24
Vegetables	58.66	54.96	51.29	94.22
Fruits	28.33	20.87	27.53	25.3
Sugar	113.25	108.84	116.56	158.32
Visible Fats	91.96	96.83	89.5	88.05

1. APL Households spend, on an average, close to 64.6% of their monthly income on food items, pointing at an

abnormally large proportion of expenditure on food. This appears to be a result of the fact that APL families rely almost wholly on the market to provide their food grain and other nutritional requirements, where prices are higher.

2. AAY households, having the lowest income, end up spending 62.5% of their income on food despite usually receiving a significant proportion of their entitlement from the PDS.
3. BPL households surveyed possessed the highest per capita income among households surveyed, a situation which might arise out of:
 - 1) Inclusion error in the BPL list, whereby several households who belong to the BPL list are above the defined poverty line.
 - 2) Inclusion error in the APL list, whereby households below the poverty line are included in the APL list instead.

4. Household expenditure on food accounts for 60-70% of monthly income for APL and AAY families. Though the BPL mean per capita income and percentage of income spent on food is influenced by inclusion errors, several BPL households spend as high as 80% of their income on food items. The average household expenditure on food appears to be significantly higher in the localities surveyed than the national urban average of 44% [12].
5. Households across the board are deficient in most nutrients, indicating the severe insufficiency of food for consumption in an average poor household. Consumption of food grains is at only about 60%. Even BPL and AAY households, who receive their regular entitlements from the PDS, fail to consume their full requirement of Food grains, Rice and Wheat. The PDS does not appear to significantly improve nutritional outcomes for the BPL and AAY households who utilise it most.
6. The Mean percentage of Recommended Daily Allowance is:
 - 1) Minimum for fruits. Qualitative analysis on this issue indicates that People are aware of the benefits for fruits, since families with more children tend to purchase fruits for nutrition of the children, yet consume less than the required quantity purely because they are expensive and must be purchased at market prices.
 - 2) Maximum for Sugar. Qualitative data is inconclusive on this issue, yet most families claim they require sugar for Tea consumption.³¹
7. Families consume significant proportion of their required quantity of Oil; the deficiency in the other food groups indicates an excess of Oil used in proportion to other food groups. This provides some evidence for concluding that most diets are oily in nature, pointing at an additional explanation for the high incidence of heart attacks in India among the poor³².
8. We observe that consumption of pulses varies widely across Card holders and suspect that this is the result of the PDS distorting consumption in favour of cereals. Although this cannot be verified quantitatively, we observe that the groups of cardholders receiving their allotted entitlements tend to

³¹ It is interesting to note, on this issue, the existence of literature indicating that India carries one of the World's highest burdens of diabetes; in 2010, an estimated 50.8 million individuals were afflicted with Diabetes, expected to grow to 87 million by 2030 (Sicree et al, 2010). This may be correlated with the high importance accorded to sugar in the Indian Diet.

³² Mortality rates due to Acute Coronary Syndrome reached 8.2% for the poor, according to a study done by ASSOCHAM and Deloitte. This occurs due to a cycle of deprivation leading to tension and the onset of heart disease. We suspect an added reason might be unhealthy diets; indeed, the same report talks of how poor diets lacking vegetables, etc. are an important contributor.

consume a higher percentage of their requirement of Cereals than pulses, while APL households consume a lower percentage of their required pulses than cereals.

- If fruits, Sugar and Oil are excluded we observe that most households are uniform in their consumption of about 50-60% of their daily requirements of Cereals, Vegetables, pulses and Milk. This shows that the households purchase proportionately appropriate quantities of the same for balance in a diet, i.e. household diets are deficient in quantity, but the quantity they do consume is balanced in composition of nutrients. This points towards the fact that households have the capacity to choose a balanced diet³³ in the case of major macronutrients including non-starch carbohydrates, vitamins and proteins, a fact that was verified when questioned informally³⁴ regarding the nature of the composition of their diet.

Analysis by Locality

In analysing data by the Grade of Locality, we utilise the Median index of Undernourishment, for its

property of representation of the central value which exceeds half the population. The interesting points to note from the data at Right are:

- The Median household in Seelampur is NOT better off, nutritionally, than the median household in Nabi Karim or Shahpur Jat. As a result, we

	APL	BPL	AAY	NONE	Total
Nabi Karim	68.72	43	-	78.36	69.67
Seelampur	65.95	49.05	64.88	130.04	59.16
Shahpur Jat	60.19	74.08	68.94	40.26	54.4
Total	64.46	56.42	66.91	56.91	

observe (qualitatively) that the PDS fails to generate significant improvements in Nutritional Status in households.

- The Median BPL household, which on an average spends the least percentage of income on food per capita (refer to the previous section), is nutritionally the worst off of the median households. As a

³³ Panagariya and Bhagwati point out that India's malnutrition levels may be seen as the outcome of "unhealthy" consumption, which appears ambiguous here. We observe that while households do, indeed, consume a disproportionately high percentage of their RDA of Oils, we observe that they consume less Grains.

³⁴ Households often volunteered information including the fact that they would, given a choice, consume a greater quantity of cereals and vegetables than was possible, given rising prices.

result, we see further that the **mere access to a functioning PDS ration shop is insufficient in improving nutritional outcomes.**³⁵ This is a conclusion which is clearly seen qualitatively as well, due to the low receipt of PDS rations and the manner in which consumption of PDS grains distorts the family's consumption pattern away from the recommended basket.

IN CONCLUSION, we observe that:

1. Poor Households in Delhi are severely undernourished in terms of consuming a balanced diet. The average consumption of any food group identified remains well below the required quantity; only about 60-70% of the daily requirement of even cereals is consumed.
2. Poor Households in Delhi spend over half of their incomes on Food Alone; qualitatively, this challenges arguments against the augmentation of Family income due to poor utilisation of funds by the household itself³⁶.
3. Access to the PDS does not improve the proportion of requirements of any food group to rise significantly, even for cereals which are provided at subsidised rates³⁷.
4. Consumption of Fruits is hugely deficient among the urban poor. The primary reason identified for this is the high price of Fruits, which dissuades households from consuming them as often as they would like.

³⁵ Analysis of the Mean Index of Undernourishment, calculated as the Arithmetic Mean of the household malnourishment indices for all households belonging to a specified grade, reveals a similar trend. Assuming symmetry of the samples of indices of undernourishment taken, a two-sample t-Test conducted on the Index of households in Seelampur and households in Nabi Karim and Shahpur Jat found no significant difference between the means at the 90% level of significance, indicating that the group which had access to a functional PDS was not significantly better off nutritionally. The 2-Sample t-Test was chosen owing to its robustness in dealing with small samples from data which is not significantly skewed. The results of this T Test must, however be interpreted with caution, since we were unable to control for other factors influencing nutrition reliably.

³⁶ Bhagwati and Panagariya, 2012 (pp 207) argue that Poverty should be measured in terms of ex-ante calorie affordability, and should be targeted through programmes seeking to enhance disposable income. Our analysis of the high percentage of income spent on food by households grants further credence to this view.

³⁷ The National Food Security Ordinance, 2013 guarantees an individual 5 kg of food grains per month at a subsidized rate, similar to the PDS entitlement received by an AAY family of 7. This result seriously questions the possibility of improving Food Security through this measure; rather, it is to be seen as what Bhagwati and Panagariya call "bring(ing) marginal benefits to all." (Bhagwati and Panagariya, 2012. pp. 189)

5. While the functioning of the PDS varies across the spectrum of localities, we observe that there exists everywhere a market in vegetables and food grains which caters to the majority of food requirements of individual families.³⁸

Preference

The table at right documents the proportion of individuals who said they would prefer Cash Transfer schemes over their established PDS entitlements. The following are interesting conclusions to be drawn from this data.

	Seelampur	Shahpur Jat	Nabi Karim	Total
APL	1.0	1.0	1.0	1.0
BPL	0.556	0.5	0.667	0.43
AAY	0.286	0.333	-	0.3
NONE	1.0	1.0	1.0	1.0
TOTAL	0.526	0.7	0.818	

1. APL households preferred a system of Cash Transfers over the PDS in any situation. Qualitative questioning on the reasoning behind their preference revealed that they anticipated the ability to choose the kind of food they would buy, and that the PDS was, in any case, non-functional.
2. BPL Households were undecided on the issue, with those preferring Cash Transfers stating that they preferred the idea of being able to choose their grains and citing problems with the PDS. Those preferring the PDS talked about how inflation was eroding the purchasing power of money, and how food was a real entitlement they received from the Ration Shop.
3. AAY Households were, in general, critical of cash transfer schemes, citing the essential nature of the real PDS entitlement in terms of grains for their daily livelihoods. The primary concern with Cash Transfers was the potential of inflation to wipe out savings.
4. Households not possessing a Ration Card preferred a Cash Transfer scheme as they spoke of the difficulties they faced in obtaining and updating details on a Ration Card, as well as the insufficient quantity and quality of grains they received.

³⁸ This is proof that in the presence of functioning non-government controlled markets, private markets function appropriately and provide food grains to the people. Cash transfers for households in such a scenario would lead to augmentation of incomes which could be spent on food. Thus, the arguments against CCT

5. There is no significant difference in the preference due to presence of a functional PDS in the area. This is because even a functional PDS presents significant challenges in terms of low grain delivery and poor quality.³⁹

³⁹ A 2-Sample t-Test for the Population proportion fails to reject the null hypothesis of equality between the proportions even at the 90% level of significance. Again, sampling constraints make us reluctant to hypothesize quantitatively on this issue. Nonetheless, the test's conclusions do not contradict qualitative observations.

Comparing the PDS and Cash Transfers: Qualitative Analysis

Functioning of the PDS

1. The Ration Shop: We observe that:
 - a. The Ration Shop is an important institution in the locality, with most of our respondents (90%) depending upon it for some form of entitlements.
 - b. The Ration Shops in the other localities fail to comply with certain directives issued, including
 - i. The requirement that ration shops open regularly, 6 days a week
 - ii. The requirement that ration shops display, prominently, the scale of entitlements to be provided and the prices of the same.

Irregularities in the opening and closing times in the Ration Shop (sometimes, the ration shop opened only once a week, and that too for a limited time period, in some cases for just one hour) imply that when open, enormous queues develop around the ration shop. Further, there is no mechanism to inform residents of a locality when a ration shop opens, as a result of which they rely on word of mouth to learn about the opening times. The queues tend to result in chaos, which dissuades beneficiaries from availing of the ration shop in the first place⁴⁰.

- c. Residents lack the option in most cases of buying their allotment in a staggered manner; rather, the Ration Card Dealer persuades them to purchase their entire entitlement at one go. This dissuades individuals on daily wages from availing of the Ration Card facility, primarily because they are unable to afford the lump-sum cost of the grains received.⁴¹
2. The Ration Card: Many deserving households have been unable to get their cards stamped, or worse, to get ration cards at all. On the other end, we surveyed households owning multiple cards. We also found households who complained of wrong or no entries at all of the procurement process.
3. The Rations Received: Every household complained about the appalling quality of the food – wheat that would dough to make black 'rotis', rice that required to be sieved extensively. Sugar

⁴⁰ This is an example of the opportunity costs of standing in queues and navigating through chaos which raises the cost of purchasing Grain at subsidized prices and selling at higher prices.

⁴¹ Depending on the actual basket of rice and wheat delivered, the cost of the Antyodaya Grain at the Ration Shop varies from Rs 70-105. Most Antyodaya Families are unable to afford this kind of one-time expenditure; their daily incomes are approximately Rs 100-150.

was mostly unavailable for BPL households. Given the poor, far below average quality of food grains, many households claimed to have fallen ill due to consumption of items from the ration shop. Many a times, households (APL and BPL) didn't get the full entitlements, or underweight entitlements.

Parameters	PDS system	Cash transfers
Quality of Food	The quality of food, in our primary analysis, was unequivocally worse than open market.	People were largely satisfied by the quality of food in open market. ⁴²
Availability of Food	Non availability of grains/ sugar is common.	No such cases of non availability of grains in open market were encountered with.
Affordability of food	Extreme subsidization of foodgrains makes it affordable for people, but also encourages the purchase of grains for sale in the black market.	Cash transfers do not protect a consumer from inflation, thus non affordability of food was a concern among respondents.
Entitlement errors	There were very obvious exclusion and inclusion errors in the entitlement of ration cards. A large number of people in Nabi Karim who were below the official Poverty line were entitled to a APL card, whereas there were some families in Seelampur who had a BPL card despite being above the Poverty line.	Considering that the Cash benefit transfers would be an electronic AADHAR based cash transfer system, probability of inclusion/ exclusion error would be low.

⁴² Although one specific household of Seelampur raised the concern of chemical tampering in foods/ sweets from the open market, but when enquired about her preference vis a vis ration shop, she said she'd buy food from the open market if she could afford it.

Effectiveness	<p>PDS system directly transfers food to the ration holder's account, effectively providing him with food that the government feels would fulfil their nutritional criterion. In our primary survey, we found that BPL families, albeit were on an average claiming to want PDS rather than the cash, were severely lacking in quantitative nutritional values. We also found that the PDS tends to distort consumption bundles towards cereals, and that households heavily reliant on the PDS tended to decrease their consumption of other food groups.</p>	<p>People who depended on cash to buy food (APL people of Nabi Karim, and people who didn't get ration cards in spite of being entitled to), were not worse off than the aforementioned people. They in fact, had a closer consumption of fruits and pulses than the people who depended entirely on ration cards. Also, their consumption of Cereals and millets was not significantly different from their counterparts. This implies that, when given a choice, people make good dietary choices; further, that the provision of grains is subsidiary to increasing household purchasing power when improving nutritional outcomes is concerned.</p>
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Trends in the Preference:

We observe that:

1. Households preferring the PDS do so due to the following:
 - a. Familiarity with the scheme was an important factor in the choice; thus some respondents preferred the PDS simply because they were aware of their entitlements and were familiar with the system, not because they recognised its inherent merit as a direct in-kind transfer.
 - b. The opinion voiced particularly strongly in Seelampur was that Food was a real entitlement, and that cash had, at best, a limited purchasing power due to rapid inflation. Thus, households were able to foresee the impact of inflation wiping out the purchasing power and the real food entitlement they were to receive.
 - c. One additional trend we observed was that awareness regarding the Dilli Annashree Yojana tended to have a negative influence on the decision of many households to favour Cash Transfers; this was owing to the fact that the DAY's Rs 600 per month entitlement was widely considered insufficient at the household level. Thus, the mention of Cash Transfers immediately triggered negative references based solely upon the low quantity of the Transfer amount itself.
2. Households preferring Cash Transfer Schemes did so due to the following:
 - a. We observed a strong degree of disgust with the functioning of the PDS amongst most households; these households failed to evaluate the merits and demerits of both Cash Transfers and the PDS in a rational manner. When we attempted to overcome this bias through playing the Devil's Advocate and explaining the possible shortfalls of both measures, households tended to remain unmoved, with the general opinion that the PDS would never guarantee them any entitlement at all, and that Cash Transfers would provide less scope for pilferage.

"Garibon ka guzara anaj se hai, paisa se nahi."

(The livelihood of the poor depends on Food Grains, not on Cash.)

-a Resident of Seelampur, New

- b. Households appreciated the choice that Cash would provide for them to purchase goods from the market; this indicates that households are, in general, aware of the most essential aspects of the benefits Cash Transfers bring in.
- c. Households observed that the poor quality of PDS grains would no longer be a factor in their entitlements under a cash transfer system and that they would be able to purchase grains of their choice from the market.

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