

# Usage of Portability under Aadhaar Enabled Distribution System in Andhra Pradesh

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April 2018

## Key Facts

- Andhra Pradesh is the first state in the country to have used Aadhaar ecosystem to introduce portability of PDS starting October 2015.
- Between March 2016 to November 2017, about 46% of Fair Price Shops (FPS) witnessed portability utilization in any given month.
- Beneficiaries used shops located in districts/mandals other than the ones they are residing in.
- Choice of a Fair Price Shop (FPS) among beneficiaries that utilized this functionality varied month on month
- Usage of portability in urban areas was about 2 times higher in comparison to non-urban areas

## Data Sources

Data from the Aadhaar enabled Public Distribution System (AePDS), Department of Consumer Affairs, Food & Civil Supplies, Government of Andhra Pradesh was used for this analysis. AePDS is an online portal containing data uploaded from ePOS devices used in fair price shops (FPS) for distribution of subsidized food grains. This website is updated daily. For further information about AePDS and the data, visit:

<http://epos.ap.gov.in/ePos/index.jsp>

All the data for the analysis was scraped from the website for a period of 20 months (March 2016 to November 2017) and analysed using open source tools.

## Summary

Portability of entitlements is one of the key benefits of Aadhaar enabled Public Distribution System (AePDS). This functionality enables beneficiaries to claim their entitlements at any Fair Price Shop (FPS) within their state instead of being restricted to their registered shop. Such functionality has twofold benefits. First, it enables beneficiaries to choose an FPS based on their convenience. Second, it allows migrant workers to access their PDS entitlements at their place of work. However, utilization of this functionality depends on several factors such as awareness about portability, cooperation of FPS owners and availability of alternate FPS in the vicinity.

In this data brief, we analyse utilization patterns of portability in the state of Andhra Pradesh over a period of 20 months starting from March 2016 to November 2017.

We find substantial utilization of the functionality in all months during the observation period. Further, there is evidence of inter-district usage of portability with beneficiaries claiming their grain entitlements from FPSs located in a district different from the one that their registered FPS belongs to. Finally, utilization of portability seems to be higher in urban regions compared to non-urban regions.

Future studies should focus on understanding the influence of factors such as FPS owner incentives, grain replenishment policy and the density of FPSs, on the usage of portability. Such studies will help improve the implementation of this functionality in states where it is offered. In addition, studies should also aim to assess the costs incurred by the states in offering portability and measure the corresponding benefits reaped by the beneficiaries. Also, given that portability is being offered in only 4 states, these studies can help other state governments in deciding if they want to offer this functionality to their beneficiaries.

**Keywords:** Public Distribution System; Portability; Aadhaar

# 1. Background

Portability of entitlements is one of the key benefits of Aadhaar enabled Public Distribution System (AePDS). This functionality enables beneficiaries to claim their entitlements at any Fair Price Shop (FPS) within their state instead of being restricted to their registered shop. Restricting beneficiaries to one FPS creates a monopoly in favour of the FPS owners in a region. Such monopoly is commonly cited as the cause of several inefficiencies in the PDS<sup>1</sup>. Also, this restriction prevents migrant workers from being able to access their entitlements.

Four states, Chhattisgarh, Haryana, Telangana and Andhra Pradesh have started providing portability of PDS entitlements with a twofold objective – providing access to PDS entitlements for migrant workers and empowering beneficiaries to choose an FPS based on their convenience. The latter is expected to dismantle the monopoly of FPS owners by inducing competition. However, utilization of portability, is contingent on several factors such as awareness amongst beneficiaries and FPS owners, cooperation of the FPS owners, availability of an alternate FPS within the vicinity and so on. For example, instances of FPS owners denying service to beneficiaries not registered in their shops have been reported in Chhattisgarh<sup>2</sup>. Therefore, there is a need to study the extent to which beneficiaries are able to utilize portability.

In this data brief, we analyze portability utilization in the state of Andhra Pradesh (AP) over a period of 20 months starting from March 2016 to November 2017. We chose AP as it is the first state in the country to have implemented portability using the Aadhaar ecosystem, starting October 2015

## *Measure of portability utilization*

A true measure of portability utilization would be the percentage of transactions that beneficiaries make at FPSs different from their registered shops. However, in the absence of such data, we use a proxy measure described below.

Before the start of each month, the Food & Civil Supplies department of AP announces the total quantity of grains allocated to an FPS based on the total number of beneficiaries registered at the FPS. Without portability, the total quantity of grains sold in a month at the FPS will be no more than quantity allocated as only registered beneficiaries can procure their grains from an FPS. Hence, all instances where an FPS witnesses a larger quantity of sales than the allocated quantity, can be treated as an indication of portability usage.

For ease of representation, we define a term called *Portability Index (PI)* as the ratio of quantity sold ( $Q_s$ ) to quantity allocated ( $Q_a$ ). All instances where PI (i.e.  $Q_s/Q_a$ ) is greater than 1 are an indication of portability usage. Also, the magnitude of PI is an indication of the number of beneficiaries gained or lost by the FPS vis-à-vis the number of beneficiaries allocated to it. It is important to note that PI is a conservative estimate of the true utilization of portability. This is because even at an FPS with quantity sold less than quantity allocated, the sale of grains could have been made to beneficiaries not registered to the FPS. The proxy measure does not capture such instances.

# 2. Key Findings

## *2.1 Extent of usage*

Extent of portability usage in the state can be measured by the percentage of FPSs that witness  $PI > 1$  in a given month. Figure 1 shows the extent of usage in each month. The trend suggests that the utilization of

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<sup>1</sup> Dhanaraj, S. and Gade, S., 2012. Universal PDS: efficiency and equity dimensions Vaidya, A.S., Somasekhar, A.K. and NIC, C., 2014. CORE PDS: Empowering with portability. Hyderabad: National Institute for Smart Government (NISG), [http://niscg.org/files/documents/UP\\_14011\(11\).pdf](http://niscg.org/files/documents/UP_14011(11).pdf), p.4

<sup>2</sup> Sharma, N. and Gupta, S., 2017. An investigation of IT-intervention adoption in public distribution system: A stakeholder and agency theory perspective. Information Development, p.0266666917736714

portability at FPSs has been significant and is observed in all the months over the period of 20 months. Also, the average % of shops that witnessed portability decreased from 51% to 43% post February 2017<sup>3</sup>.

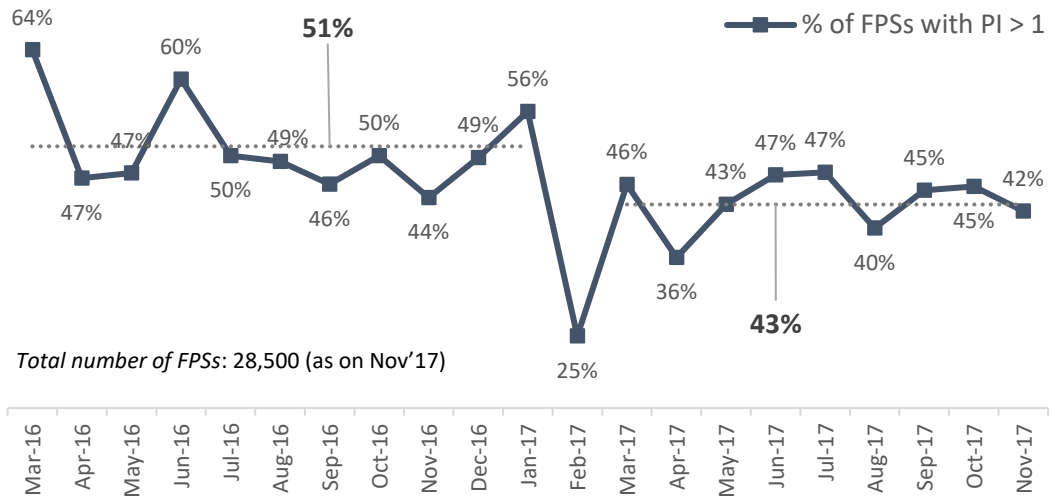


Figure 1: Trends in % of FPSs witnessing PI > 1

The bars in Figure 2 denote the number of districts that witnessed PI > 1 during the observation period by aggregating the quantities sold and allocated over all FPSs in each district. Except for February 2017 and April 2017, PI is greater than 1 for at least one district in each month. This suggests that beneficiaries are claiming their grain entitlements from FPSs that are not only different from their registered FPS but are also located in a different district. The same is true for usage across mandals as seen from the line graph in Figure 2 which represents % of mandals in a month with PI > 1. In line with our observation in Figure 1, we see a decrease in the average percentage of mandals (51% to 35%) and number of districts witnessing PI > 1 post February 2017.

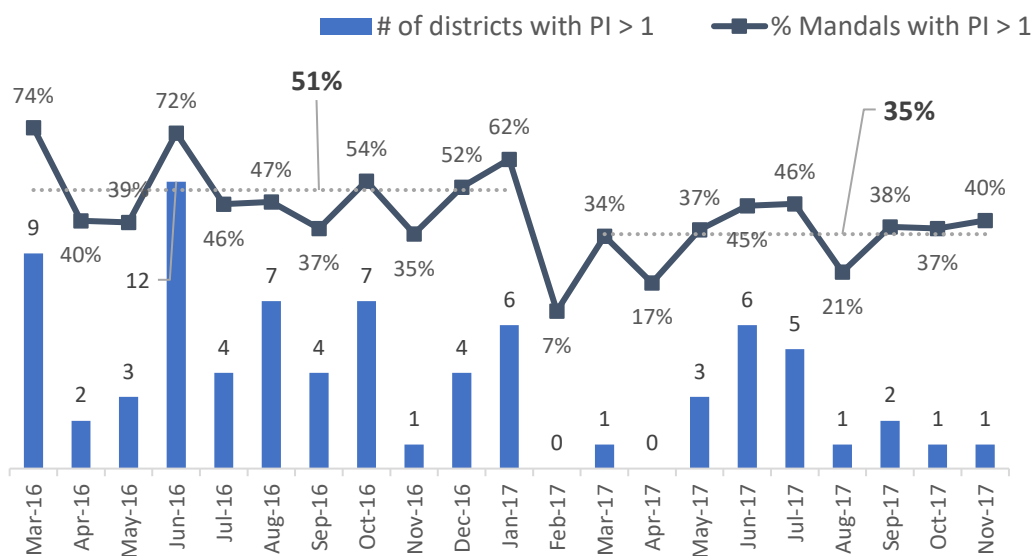


Figure 2: Trends in number of districts and % of Mandals witnessing PI > 1

<sup>3</sup> This analysis was performed separately for each of the 13 districts and FPSs located in urban and rural mandals. The observed trends in all cases are similar to Figure 1.

## 2.2 Frequency of usage

Figure 3 shows the distribution of FPSs by number of months in which they witnessed PI > 1. 96% of FPSs witnessed PI > 1 in more than 4 months. This indicates that utilization of portability is not limited to a specific region or a specific set of stores. Also, it is noteworthy that there are FPSs which witnessed PI > 1 in more than 18 of the 20 months of observation period.

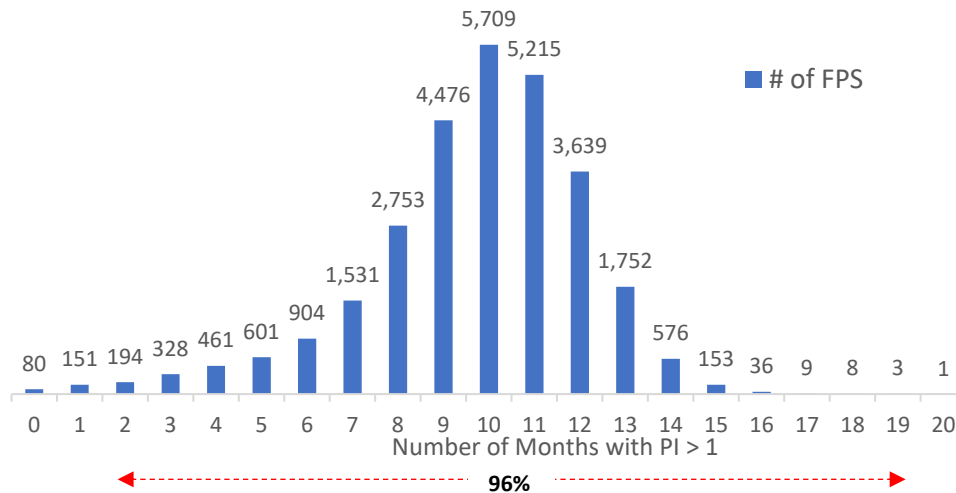


Figure 3: Distribution of FPSs by number of months with PI > 1

## 2.3 Magnitude of usage

Dispersion in the magnitude of PI<sup>4</sup> across FPSs in a given month can be used as a directional indicator of the number of beneficiaries that utilized portability in that month. This is because, a high value of PI for an FPS indicates more number of non-registered beneficiaries claiming their entitlement at the FPS. Similarly, a low value of PI at an FPS indicates more number of registered beneficiaries claiming their entitlements at other FPSs. The dispersion is a measure of this inter-shop migration of beneficiaries in a region. Figure 4 shows the dispersion of PI across FPSs in urban and non-urban regions respectively.

Two observations can be made from the figure. First, dispersion of PI among urban FPSs is higher than non-urban FPSs suggesting a higher utilization of portability in urban regions. Second, there is no significant change in the magnitude of portability utilization among FPSs except for March 2016 and November 2017, especially among the non-urban FPSs.

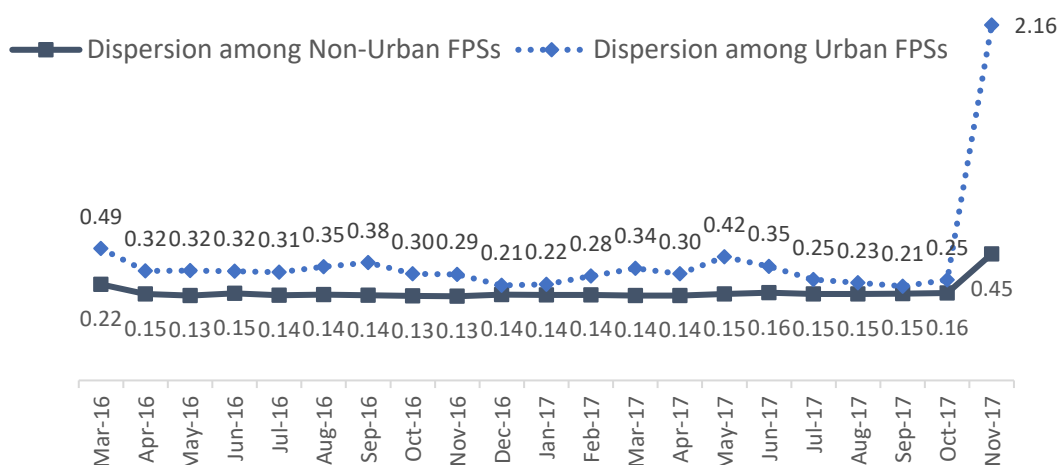


Figure 4: Dispersion of PI among Urban and Non-Urban FPSs

<sup>4</sup> We measure Dispersion as the difference between 95<sup>th</sup> percentile and the 5<sup>th</sup> percentile value of the distribution of PI over FPSs. Other measures of dispersion, such as standard deviation of PI across FPSs, show similar trends.

### 3. Conclusion & Future Scope

Trends in portability utilization indicate that a reasonable percentage of beneficiaries are using this functionality in Andhra Pradesh. However, we believe more studies focussed on three central themes are needed. First, understanding the influence of factors such as state's FPS level grain replenishment policy, density of FPSs and incentives of FPS owners, on the utilization of portability. Such studies can be used to improve the implementation of this functionality in four states where it is being currently offered. Second, understanding the factors which lead the beneficiaries to choose a certain FPS over others. Such studies can help FPS owners improve their service offerings, thereby ensuring profitability. Third, detailed cost to benefit analysis of this functionality to help other state governments in making their decision on offering portability.

#### About DIRI

This data brief was prepared by the Digital Identity Research Initiative (DIRI), which was launched in July 2017 with funding from Omidyar Network. DIRI is aimed at producing high-quality and timely research on digital identity, engaging relevant stakeholders, and building a global research ecosystem for digital identity. In addition to such briefs, DIRI's activities include [Research Fellowships](#), [Summer Fellowships](#), and the International Conference on Digital Identity (11-13 July 2018). For more information, visit <http://www.isb.edu/digital-identity-research-initiative>

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