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## Data Article

# Maternal and child health care services' utilization data from the fourth round of district level household survey in India

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## ABSTRACT

In this article, we briefly discuss the data used in the article entitled “How Much Do Conditional Cash Transfers Increase the Utilization of Maternal and Child Health Care Services? New Evidence from Janani Suraksha Yojana in India” (Rahman and Pallikadavath, 2018), which has estimated the effects of demand-side financing program named as Janani Suraksha Yojana (JSY) on the utilization of maternal and child health care services in India, using the fourth round of District Level Household Survey (DLHS-4) surveyed on 76,847 Indian women in 2013–14. This survey contains the detailed information on the women's utilization of maternal and child care services, demographic characteristics, and socio-economic status.

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**Specifications table** [Please fill in right-hand column of the table below.]

Subject area	<i>Economics and Econometrics</i>
More specific subject area	<i>Impact evaluation of a demand-side financing program on the utilization of maternal and child health care services</i>
Type of data	<i>Table and graph</i>
How data was acquired	<i>The authors acquired the survey data from the official website of International Institute for Population Sciences (IIPS) through registration.</i>
Data format	<i>Filtered and analyzed</i>
Experimental factors	<i>The data was based on the DLHS-4 dataset and was extracted using STATA and reorganized using the Stata tabstat, reg and psmatch2 packages.</i>
Experimental features	<i>The data was collected from a household survey</i>
Data source location	<i>India's eighteen high-performing states, such as, Andhra Pradesh, Arunachal Pradesh, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tamil Nadu, Telangana, Tripura, West Bengal, and three high-performing union territories, such as, the Andaman and Nicobar Islands, Chandigarh, and Puducherry.</i>
Data accessibility	<i>Data is available with this article</i>
Related research article	<i>Rahman, M. M., and Pallikadavath, S., How Much Do Conditional Cash Transfers Increase the Utilization of Maternal and Child Health Care Services? New Evidence from Janani Suraksha Yojana in India. <i>Economics &amp; Human Biology</i> 31 (2018) 164–183.</i>

**Value of the data**

- The data can be used to analyze the causal effect of postnatal hospital stay on post-discharge complications, as the data has a rich set of information about delivery and post-discharge complications in addition to the hours of postnatal hospital stay.
- The data will be useful to estimate the determinants of maternal and child mortality, as it has a wide range of socio-economic determinants and thorough information on maternal and child health.
- It is also possible to use the data to analyze how much birth rate has reduced due to the family planning program.
- The data can also be used to estimate sexual harassment faced by women.

**1. Data**

The data is based on the fourth round of district level household survey (DLHS-4), surveyed in 2013–2014, on India's eighteen high-performing states, Andhra Pradesh, Arunachal Pradesh, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tamil Nadu, Telangana, Tripura, West Bengal, and three high-performing union territories, the Andaman and Nicobar Islands, Chandigarh, and Puducherry, while the previous rounds of that survey collected data from all parts of India. This repeated cross-section survey surveyed on 76,487 women including beneficiaries of Janani Suraksha Yojana (JSY) and other similar schemes, and non-beneficiaries of any scheme. The data used in this study excludes beneficiaries of other schemes.

**2. Experimental design, materials, and methods***2.1. Survey design*

International Institute for Population Sciences (IIPS), India, conducted the DLHS-4, including the Clinical, Anthropometric and Biochemical (CAB) components for data collection, suggested by Ministry of Health and Family Welfare (MOHFW), Government of India. The survey was planned in 336 districts in the 26 high performing states and Union Territories excluding those covered under the Annual Health Survey. Using the multistage stratified sampling method, the DLHS-4 was planned to include around 1400 households with a population of approximately 7000 per district.

The survey was also designed to undertake some CAB tests so that district-level estimates for nutritional status and prevalence of certain lifestyle disorders can be produced not only among women in reproductive ages and their children below age six but also among all other members of households.

**Table 1**  
Descriptive statistics of covariates.

Covariates	JSY		NonJSY		Diff.	p value
	Mean	Obs.	Mean	Obs.		
Household has below poverty line card (1 yes, 0 no)	0.469	15,841	0.318	57,220	0.151	<0.0001
Household has scheduled caste affiliation (1 yes, 0 no)	0.310	15,144	0.221	53,925	0.089	<0.0001
Household has tribal affiliation (1 yes, 0 no)	0.177	15,837	0.176	57,159	0.002	0.596
Current age of woman/mother	23.854	15,844	25.047	57,239	-1.193	<0.0001
Birth order/parity	1.842	15,788	2.163	56,796	-0.320	<0.0001
Wealth Index	-0.654	15,838	-0.016	57,204	-0.639	<0.0001
Highest years of education taken by woman/mother	8.675	13,665	9.563	47,616	-0.888	<0.0001
Highest years of education taken by husband	8.812	14,032	9.821	50,431	-1.009	<0.0001
Religion: Hindu (1 yes, 0 no)	0.698	15,842	0.653	57,223	0.045	<0.0001
Residence: Rural (1 yes, 0 no)	0.683	15,844	0.593	57,239	0.090	<0.0001

Note: Birth year dummies and state dummies were also used as covariates, but they are not reported here.

**Table 2**  
Descriptive statistics of outcome variables.

Outcome Variables	JSY		NonJSY		Diff.	p value
	Mean	Obs.	Mean	Obs.		
<b>Main outcomes</b>						
At least one antenatal care (ANC) service (1 yes, 0 no)	0.949	15,844	0.826	57,239	0.122	<0.0001
Institutional delivery (1 yes, 0 no)	0.935	15,843	0.773	57,236	0.162	<0.0001
At least one postnatal care (PNC) service for mother (1 yes, 0 no)	0.747	15,844	0.632	57,234	0.115	<0.0001
At least one PNC service for baby (1 yes, 0 no)	0.824	15,770	0.741	56,708	0.084	<0.0001
<b>ANC services</b>						
Weight measured (1 yes, 0 no)	0.872	15,835	0.742	57,207	0.130	<0.0001
Height measured (1 yes, 0 no)	0.512	15,835	0.420	57,207	0.092	<0.0001
Blood pressure checked (1 yes, 0 no)	0.806	15,835	0.671	57,207	0.136	<0.0001
Blood tested (haemoglobin) (1 yes, 0 no)	0.717	15,835	0.613	57,207	0.104	<0.0001
Blood tested (blood group) (1 yes, 0 no)	0.648	15,835	0.544	57,207	0.105	<0.0001
Urine tested (1 yes, 0 no)	0.783	15,835	0.667	57,207	0.117	<0.0001
Abdomen examined (1 yes, 0 no)	0.574	15,835	0.485	57,207	0.088	<0.0001
Breast examined (1 yes, 0 no)	0.352	15,835	0.311	57,207	0.041	<0.0001
Ultrasound done (1 yes, 0 no)	0.634	15,835	0.581	57,207	0.053	<0.0001
Iron Folic Acid tablet/syrup (1 yes, 0 no)	0.795	15,844	0.633	57,239	0.162	<0.0001
At least one tetanus injection (1 yes, 0 no)	0.921	15,842	0.788	57,230	0.133	<0.0001
<b>PNC services for mother</b>						
Abdomen examined (1 yes, 0 no)	0.495	15,841	0.387	57,228	0.108	<0.0001
Advice on breastfeeding (1 yes, 0 no)	0.501	15,841	0.386	57,228	0.116	<0.0001
Advice on baby care (1 yes, 0 no)	0.468	15,841	0.373	57,228	0.095	<0.0001
Advice on Family Planning (1 yes, 0 no)	0.341	15,841	0.249	57,228	0.092	<0.0001
<b>PNC services for baby</b>						
Weight taken at birth (1 yes, 0 no)	0.918	15,769	0.754	56,708	0.164	<0.0001
Days of first breastfeeding	1.450	15,769	1.567	56,698	-0.117	<0.0001
Advice on infant diarrhoea (1 yes, 0 no)	0.551	15,842	0.566	57,226	-0.015	0.001
Advice on infant pneumonia (1 yes, 0 no)	0.284	15,843	0.312	57,234	-0.029	<0.0001
<b>Immunizations for baby</b>						
Bacille Calmette Guerin (BCG) (1 yes, 0 no)	0.971	7779	0.945	32,573	0.027	<0.0001
Polio (1 yes, 0 no)	0.973	7782	0.956	32,571	0.017	<0.0001
First Polio in two weeks of birth (1 yes, 0 no)	0.807	7782	0.738	32,574	0.069	<0.0001
Diphtheria, pertussis and tetanus (DPT) (1 yes, 0 no)	0.906	7782	0.860	32,570	0.046	<0.0001
Measles (1 yes, 0 no)	0.865	7781	0.805	32,570	0.060	<0.0001
Hepatitis-B (1 yes, 0 no)	0.773	15,721	0.684	56,488	0.089	<0.0001
Vitamin-A (1 yes, 0 no)	0.665	15,723	0.599	56,490	0.066	<0.0001

Major CAB components include measuring height & weight, blood pressure, estimation of hemoglobin, and plasma glucose along with testing of salt for iodine component used by all households.

Many questions, which were asked to women, are related to maternal and child health and reproductive health while other adult infectious diseases received very little attention in the survey. There are questions on tobacco and alcohol use, antenatal care, delivery and postnatal care, birth history, family planning immunization, breastfeeding practices and common childhood morbidity symptoms (cough, fever and diarrhoea). The survey also collected information on fertility preferences and menstruation.

## 2.2. Sample selection

The DLHS-4 collected socioeconomic data by surveying 378,487 households and their members, but it interviewed only 76,847 pregnant women (sample units of this study) to obtain data on the utilization of maternal and child health care (MCHC) services. They fall in the age group of 15–49 years gave their last births in 2008 and onward. The DLHS-4 discarded a woman of a household from asking questions regarding MCHC services' utilization if she gave her last birth before 2008. All 76,847 pregnant women were supposed to be included in our analysis as the proper implementation of JSY started in 2007. However, there are different numbers of missing observations in different MCHC services' utilization. For example, only around 42,370 women responded in some MCHC outcomes, and the rest of the women have missing values. We also exclude those women, who received benefits from other schemes, because of their different eligibility criteria and different benefit packages. In this way, we drop 3000 to 3764 women in different MCHC outcomes, but those fallen women change results of treatment effects only after third or fourth decimal points.

## 2.3. Data measurements and variable definition

We used a set of covariates in the logit regressions, which were used in the propensity score matching (PSM) estimations' of average treatment effects on the treated. These covariates are a mixture of self-selection criteria and the selection criteria set by the JSY administrators. Table 1 shows them with their sample sizes and means by treatment and control groups, and differences of means and p-values to know their statistical significance. Three dummy variables on poverty status,<sup>1</sup> scheduled caste status,<sup>2</sup> and tribal status<sup>3</sup> are the key selection/eligibility criteria set by the JSY administrators. Those who have below poverty line card and/or scheduled caste affiliation and/or scheduled tribe affiliation are entitled to get JSY benefits. Two continuous variables, the current age of woman and birth order, are also selection criteria established by the program administrators. The rest of the covariates include both continuous, and dummy variables are mostly self-selection criteria. To note that wealth index is constructed by applying principal component analysis over a list of wealth of household – cooking fuel,

<sup>1</sup> The government of India provides below poverty line (BPL) card to the poor who are identified based on some criteria collected after doing a population survey in each state. Three such surveys were conducted in 1992, 1997 and 2002. After 1992 survey, an annual income threshold 11,000 Indian rupees is used to identify the poor. After the survey in 1997, along with an annual income threshold (Rs 20,000) some asset holdings such as house type and landholding were also used. After the survey 2002, the criteria to identify the poor were further widened by including the size of the operational landholding, type of house, availability of clothes, food security, sanitation, ownership of consumer durables, literacy status, status of household labour force, means of livelihood, status of school-going children, type of indebtedness, reason of migration and preference of assistance. The total score ranged from 0 to 52, and the states were given the flexibility of deciding the cut-off point. BPL card holders are entitled to obtain food grain, kerosene, cooking gas, etc., at highly subsidized rates, free housing, old age pension and free/subsidized healthcare services [1].

<sup>2</sup> Those who are untouchables are included in one of the schedules of the Indian Constitution, and therefore they are called the Schedule Caste people. The Varna System in the Hindu mythology has put them in the fifth category by calling them Ati Shudras (Untouchables) who were condemned for all dirty and polluting jobs. Although they call themselves Dalits or Harijans (son of God), they are the marginal people in the society.

<sup>3</sup> Schedule Tribes are also included in one of the schedules of the Indian Constitution are those people who live in the tribal areas, which are mainly forest or hilly areas where transport facilities and all other facilities are inferior. They are often called Adivasis who are traditionally the marginal people and not in the mainstream of society.

**Table 3**  
Effects of JSY on the utilization of individual MCHC services.

	Sample 1			Sample 2		
	Bootstrap			Bootstrap		
	ATT	S.E.	N	ATT	S.E.	N
<b>ANC services</b>						
Weight measured	0.089***	(0.005)	54,622	0.110***	(0.005)	68,491
Height measured	0.062***	(0.008)	54,622	0.069***	(0.006)	68,491
Blood pressure checked	0.093***	(0.006)	54,622	0.114***	(0.005)	68,491
Blood tested (haemoglobin)	0.088***	(0.007)	54,622	0.108***	(0.006)	68,491
Blood tested (blood group)	0.088***	(0.006)	54,622	0.099***	(0.006)	68,491
Urine tested	0.090***	(0.006)	54,622	0.107***	(0.005)	68,491
Abdomen examined	0.083***	(0.008)	54,622	0.091***	(0.008)	68,491
Breast examined	0.044***	(0.005)	54,622	0.048***	(0.006)	68,491
Ultrasound done	0.058***	(0.007)	54,622	0.072***	(0.007)	68,491
Iron Folic Acid tablet/syrup	0.104***	(0.008)	54,659	0.125***	(0.006)	68,531
At least one tetanus injection	0.097***	(0.005)	54,650	0.117***	(0.005)	68,521
<b>PNC services for mother</b>						
Abdomen examined	0.083***	(0.006)	54,650	0.090***	(0.007)	68,517
Advice on breastfeeding	0.085***	(0.006)	54,650	0.089***	(0.007)	68,517
Advice on baby care	0.078***	(0.005)	54,650	0.085***	(0.007)	68,517
Advice on Family Planning	0.076***	(0.007)	54,650	0.081***	(0.006)	68,517
<b>PNC services for baby</b>						
Weight taken at birth	0.106***	(0.004)	54,586	0.136***	(0.004)	68,427
Days of first breastfeeding	-0.088***	(0.012)	54,579	-0.086***	(0.011)	68,418
Advice on infant diarrhoea	0.038***	(0.007)	54,648	0.041***	(0.007)	68,517
Advice on infant pneumonia	0.034***	(0.005)	54,654	0.034***	(0.005)	68,526
<b>Immunizations for baby</b>						
BCG	0.024***	(0.004)	30,366	0.026***	(0.003)	38,326
Polio	0.020***	(0.004)	30,368	0.016***	(0.003)	38,327
First Polio in two weeks of birth	0.047***	(0.008)	30,371	0.060***	(0.007)	38,330
DPT	0.037***	(0.007)	30,366	0.043***	(0.007)	38,326
Measles	0.037***	(0.007)	30,365	0.045***	(0.006)	38,325
Hepatitis-B	0.076***	(0.006)	54,326	0.094***	(0.005)	68,091
Vitamin-A	0.072***	(0.007)	54,332	0.080***	(0.006)	68,096

Note: We impute values of the above outcomes of the counterfactual groups using third nearest neighbors of log-odds ratios estimated from the logit regressions of JSY dummy on covariates under sample 1 and sample 2. We then estimate ATTs for these outcomes applying the simple mean difference formula. Bootstrapped standard errors are in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

house type, number of dwelling rooms, electricity, house ownership, landholding, radio, television, computer, internet, telephone, mobile phone, washing machine, refrigerator, sewing machine, watch, bicycle, motorcycle, car, tractor, tube well, cart and air cooler.

Table 2 shows summary statistics of outcome variables (utilization of MCHC services) similarly as we did in Table 1. Except “Days of first breastfeeding”, which is after how many days of birth a mother started breastfeeding her child, all outcomes are dummy variables. We see that all outcomes have statistically significant mean differences between treatment and control groups. They imply that JSY will have significant effects on the utilization of MCHC services. However, we expect a negative effect of JSY on only “Days of first breastfeeding”, but we also see negative mean differences in the cases of “Advice on infant diarrhoea” and “Advice on infant pneumonia.” We have got positive effects for these two outcomes when we estimate average treatment effects on the treated.

#### 2.4. Data description

Table 1 shows the summary statistics of socio-economic variables, and Table 2 shows the summary statistics of maternal and child health care outcomes. Now, Table 3 shows the results of the average treatment effect on the treated (ATT), estimated using the propensity score matching (PSM), for the outcome variables (e.g., the utilization of MCHC services). ATTs are the estimates of the treatment

effects of JSY on the outcomes. They are estimated for samples 1 and 2. In Table 1, we see that there are some missing values in socio-economic variables as sample sizes are not the same. Mother and her husband's education have significantly lower samples than others. In sample 2, we drop them when we estimate ATTs, but sample 1 includes all covariates in Table 1. With the increase in sample sizes in sample 2, the control group mainly includes more poor people than the treatment group, and thus the treatment effect estimates, ATTs, increase. We use `psmatch2` command in STATA to estimate ATTs. The do file and the dataset are available in Mendeley data.

## 2.5. Method

As [2–5], and [6] estimated causal effects using the DLHS-3, the DLHS-4 also allows us to employ a multivariate regression model to identify the causal effects of JSY on the utilization of MCHC services. Using STATA, we did analyses of PSM and fuzzy regression discontinuity design.

PSM is a method estimating treatment effects when we assume that treatment is provided based on observed covariates. If the unconfoundedness and overlapping assumptions are satisfied, PSM produces unbiased estimates of treatment effects. However, there can be some unobserved factors, such as political or social connections with JSY administration, which can influence the selection for JSY. In such a situation, PSM gives biased treatment effects. Therefore, we also use fuzzy regression discontinuity design, which is an instrumental variable regression that corrects endogeneity of the treatment dummy, JSY. See our paper [7] for the detailed explanation of these methods.

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## Transparency document

Transparency document associated with this article can be found in the online version at <https://doi.org/10.1016/j.dib.2019.103778>.

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