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Renewing membership in three community-based health insurance schemes in rural India

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ABSTRACT

Low renewal rate is a key challenge facing the sustainability of Community-based Health Insurance (CBHI) schemes. While there is a large literature on initial enrolment into such schemes, there is limited evidence on the factors that impede renewal. This paper* uses longitudinal data to analyse what determines renewal, both one and two years after the introduction of three CBHI schemes, which have been operating in rural Bihar and Uttar Pradesh since 2011. We find that initial scheme uptake is about 23-24 % and that two years after scheme operation, only about 20 % of the initial enrolees maintain their membership. A household's socio-economic status does not seem to play a large role in impeding renewal. In some instances, a greater understanding of the scheme boosts renewal. The link between health status and use of health care in maintaining renewal is mixed. The clearest effect is that individuals living in households that have received benefits from the scheme are substantially more likely to renew their contracts. We find that having access to a national health insurance scheme is not a substitute for the CBHI. We conclude that the low retention rates may be attributed to limited benefit packages, slow claims processing times and the gaps between the amounts claimed and amounts paid out by insurance.

Keywords

Introduction

Since the late 1990s, there has been a proliferation of community-based health insurance (CBHI) schemes in low and middle-income countries (Ekman, 2004; Mebratie *et al.*, 2013). Such schemes bring together individuals from a common background (for example, geographical, economic, occupational, ethnic, gender) to set up, own and operate a health insurance scheme on a not-for-profit or profit sharing basis (Dror, 2014). It is based on the principle of risk sharing amongst the community of insured people to provide financial protection against the impoverishing effects of health expenditure (Carrin *et al.*, 2005). Enrolment in most CBHI schemes is voluntary, typically premiums are low and independent of individual health status (Radermacher and Dror, 2006). There is substantial evidence that being affiliated to CBHI schemes is associated with an increase in health care utilisation and some evidence that such schemes provide financial protection in terms of reduced out-of-pocket spending (Panda *et al.*, 2014c). Despite such effects, initial uptake and renewal rates in CBHI schemes tend to be low. Based on a systematic review of 46 micro level studies conducted between 1995 and 2012, Mebratie et al. (2013) report an unweighted average uptake rate of 37%.

Although initial uptake is important (Panda, Chakraborty, Dror & Bedi, 2013), scheme sustainability clearly requires renewal of membership. While the literature that has examined renewal is limited (Friedman, 2013), the few studies that have dealt with this issue report a high dropout rate. For instance, in a scheme in Guinea-Conakry, initial enrolment rate was 8% in 1998 which dropped to 6% a year later (Criel and Waelkens, 2003). In the Nouna district scheme in Burkina Faso, enrolment lay between 5.2% and 6.3% in the years 2004 to 2006 with a drop-out rate of 30.9% in 2005 and 45.7% in 2006 (Dong *et al.*, 2009). In Senegal, for three schemes set up between 1997 and 2001, Mladovsky (2014) reports that in 2009, scheme drop-out rates ranged between 58 and 83%. While low renewal rates appear to be the norm, an exception is the case of a CBHI scheme in Ethiopia which reports a drop-out rate of only 18% (Mebratie *et al.*, 2015). Turning to the Indian context, a scheme operating in Gujarat witnessed a drop-out rate of 49% (Bhat and

Jain, 2007), while another scheme operating in Maharashtra observed a drop-out rate of 67% (Platteau and Ontiveros, 2013).

An assessment of the literature suggests that there are four broad sets of factors that inhibit renewal. These are scheme affordability, the poor quality of care that may be accessed through the scheme, the health status of individuals and information failures, which include poor understanding of insurance in general and insufficient information on how to use the insurance scheme on offer (Panda *et al.*, 2014c). For example, in Guinea-Conakry, scheme affordability and poor quality of care on offer were identified as the main reasons for declining enrolment rates (Criel and Waelkens, 2003). Another study reports a similar finding in Burkina Faso (Dong *et al.*, 2009). A recent study in Senegal concluded that episodes of ill-health and active scheme participation increase retention, while a negative perception of quality of care increases scheme drop-out (Mladovsky, 2014). In the case of Ethiopia's CBHI scheme, it was found that households that have greater knowledge about the CBHI scheme and those who have actually used services through the scheme are more likely to renew their contracts (Mebratie *et al.*, 2015).

In the Indian context, low level of awareness about the CBHI schemes, affordability, no-claim in the previous term and exclusion of out-patient services from the benefit package were the primary reasons for dropping out (Sinha *et al.*, 2007). While there are some variations, similar conclusions may be drawn from the experience of micro health insurance schemes in Gujarat (Bhat and Jain, 2007) and Karnataka (Aggarwal, 2011). Most recently, based on a CBHI scheme in Maharashtra, the authors concluded that a better understanding of insurance reduced attrition (Platteau and Ontiveros, 2013). The same study also demonstrated that a better understanding of insurance reduced the negative effect of not having received any pay outs through insurance, on contract renewal.

The current study contributes to the existing literature by analysing the factors that affect renewal decisions in the case of three CBHI schemes operating in rural India, one each in Pratapgarh and Kanpur Dehat districts of Uttar Pradesh and one in Vaishali district, Bihar. The data on hand allows an analysis of renewal both, one year and two years after scheme launch. The paper focuses

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on the role played by socio-economic status, health status, scheme-related features and knowledge and understanding of insurance - both general and scheme-specific, in influencing renewal.

The paper proceeds by providing, in the next section, a description of the three CBHI schemes, followed by a description of our analytical framework and a discussion of the data. The subsequent section contains results and a discussion, while the final section concludes the study.

Scheme description and uptake

The three CBHI schemes are located in Uttar Pradesh and Bihar, two of India's most populated and poorest states. The study sites are rural areas, about 50-100 kilometres from the nearest urban centres. The project's target group was defined as households with at least one woman registered as a member of a woman's self-help group (SHG) in March 2010 (when the baseline study was conducted). The target group for the project consisted of 3685 SHG households (1283 in Pratapgarh, 1039 in Kanpur Dehat and 1363 in Vaishali) representing a total of 24,094 individuals (8852, 6931 and 8311 in Pratapgarh, Kanpur Dehat and Vaishali respectively).

Each of the CBHI schemes has been designed as a cluster randomised control trial (CRCT) with a three wave implementation process (Doyle *et al.*, 2011). Each cluster was designed to contain approximately the same number of SHG-affiliated households and subsequently, each cluster was randomly assigned to one of the three waves of treatment. In each wave, one-third of clusters received treatment, that is, they were offered a chance to join the CBHI.

At all locations, the project was implemented by the Delhi-based Micro Insurance Academy (MIA) in co-operation with a local non-governmental organization which had well-established relations with the SHGs. The three field partners were BAIF (Bharatiya Agro Industries Foundation) in Pratapgarh, Shramik Bharti in Kanpur Dehat and Nidan in Vaishali. The implementation process followed MIA's 17-step model that includes awareness building, insurance education, initial package design and premium-pricing based on information obtained from a baseline survey, modification of package design and premium-setting on the basis of interactions with the SHGs during benefit options consultation workshops, and finally training of SHG members to manage the scheme (Dror

et al., 2014). Following insurance education, the SHG members participated in designing the benefit package through a simulation game called CHAT (Choosing Health-Plans All Together). Details on the benefit package selected at each site are provided in Table 1. The packages in Pratapgarh and Kanpur Dehat are similar except that in the first year, SHGs in Pratapgarh did not opt for coverage of outpatient services. SHGs in Vaishali district opted not to include coverage of inpatient care but opted for out-patient care and coverage of various diagnostic tests. There are caps on the maximum amounts that may be claimed for inpatient care and for the use of laboratory and imaging services. There is no limit in terms of using outpatient care. However, at all three sites such care is provided only by designated practitioners. During the second year of the project, the scheme in Pratapgarh also offered out-patient services.

Following the CRCT design, during the first phase of implementation in 2011, 7722 individuals were offered the possibility of joining the CBHI schemes (see Table 2). A year later, the schemes were offered to 6,493 individuals (see Annexure 1 for detailed timeline). Of the 7722 individuals offered the scheme in the first year, 1806 enrolled (23%). A year later 46% (768 individuals among 1667 resurveyed in 2012 out of 1806) renewed their membership and two years later 301 individuals of those who had enrolled in 2011 retained their membership (see Table 2). There is some variation across the three schemes, with renewal rates in 2013 ranging from 13% in Kanpur Dehat to 21% in Pratapgarh. Amongst those who were offered the scheme in the second year, the overall enrolment rate was 24% and a year later, only 37% renewed their membership. While there are variations across the schemes both in terms of initial enrolment and renewal, there is no clear indication that one scheme is performing systematically better than others in terms of uptake and renewal. The low initial uptake and high dropout rates in these three CBHI schemes is reminiscent of the patterns that have been observed in other CBHI schemes in India. The low and declining renewal rates despite the efforts that have been put in to involve the community before and after scheme implementation, calls for an analysis of factors that influence the decision to renew membership in the CBHI schemes.

		Year I			Year II			Year III		
Indicators		**Pratapgarh**	**Kanpur Dehat**	**Vaishali**	**Pratapgarh**	**Kanpur Dehat**	**Vaishali**	**Pratapgarh**	**Kanpur Dehat**	**Vaishali**
Annual CBHI premium per person/per year		176	192	197	250	192	197	250	199	197
Coverage for hospitalization (more than 24 hours)										
Fees (cap per person per event)	per event	6000	3000	-	4000	3000	-	4000	4000	-
	per family per year			-	30000	25000	-	30000	30000	-
Wage loss (per day)	per event per day	100	75	100	100	50	100	100	50	100
		3-8th day	4-13th day	4-9th day	4-7th day	3-6th day	4-9th day	4-7th day	3-7th day	4-9th day
Transport (maximum coverage per episode)	per event	100	100	-	100	250	-	100	300	-
Coverage for outpatient care										
Fees		-	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Lab tests (per year)[*]	per event	-	-	200	-	-	200	-	-	400
	per family per year	-	-		-	-		-	-	2000
Imaging tests (per year)[*]	per event	-	-	300	-	-	300	-	-	500
	per family per year	-	-		-	-		-	-	2000
Injuries (if plaster is required)	per event	-	-	-	-	400	-	-	100	-
	per family per year	-	-	-	-	1000	-	-	500	-
Coverage for maternity care										
Caesarean (per episode)	per event	5000	-	-	-	-	-	-	-	-

Table 1 Description of benefit packages under the CBHI schemes (in INR)

"-" *indicates "Not Included in package"*

[*] *Maximum amount, per person per year*

Table 2 Renewal rates for individuals over the years				
Indicators	**Pratap-garh**	**Kanpur Dehat**	**Vaishali**	**All**
Individuals offered CBHI in 2011				
1st Year of Implementation (2011)				
Offered to enrol in 2011	2594	2264	2864	7722
Enrolled in 2011	604	334	868	1806
Percentage of enrolment in 2011	23%	15%	30%	23%
2nd Year of Implementation (2012)				
Resurveyed in 2012 among the enrolled in 2011	547	314	806	1667
Renewed in 2012	222	110	436	768
Percentage of renewal in 2012	41%	35%	54%	46%
3rd Year of Implementation (2013)				
Resurveyed in 2013 among the renewed in 2012	194	99	381	674
Renewed in 2013	125	45	131	301
Percentage of renewal with respect to 2012	64%	45%	34%	45%
Percentage of renewal with respect to 2011	21%	13%	15%	17%
Individuals offered CBHI in 2012				
2nd Year of Implementation (2012)				
Offered to enrol in 2012	2593	1907	1993	6493
Enrolled in 2012	491	451	600	1542
Percentage of enrolment in 2012	19%	24%	30%	24%
3rd Year of Implementation (2013)				
Resurveyed in 2013 among the enrolled in 2012	419	386	534	1339
Renewed in 2013	110	177	206	493
Percentage of renewal in 2013	26%	46%	39%	37%

*Note: *With respect to enrolment in 2011*

Methodology

Analytical Framework

Our aim is to identify the factors that determine scheme renewal. Drawing on the existing literature as well as our knowledge of the context we focus mainly on the role of four sets of factors in influencing renewal. These are scheme affordability, scheme use, knowledge of insurance and understanding of the scheme, and recent episodes of illness. We do not have information on the quality of care on offer but control for access to care. We also control for a range of individual demographic attributes (membership in SHG, age, gender, marital status, relation to the head of

household) and whether an individual is a member of the Rashtriya Swasthya Bima Yojna (RSBY).[1] Having access to the RSBY may be likely to reduce the expected benefits of enrolling in the CBHI schemes.

We specify the probability that an individual i belonging to household h renews (*RENEW* = 1) their subscription in time period t as a function of a set of variables in time period $t-1$. Regressing current renewal status on past values of the various sets of covariates allows us to provide estimates that are less likely to be influenced by the endogenous nature of some of the explanatory variables.

A household's ability to afford the scheme is treated as a function of a set of socio-economic characteristics (*SES*) which includes caste, household size, education and employment status of the household head, the monthly per capita expenditure tertile in which a household falls, and monthly per capita financial liability. Since scheme use (*SU*) is likely to beget scheme renewal we include a variable which indicates whether the household to which an individual belongs, has been reimbursed through the scheme in the preceding period. Two indices are constructed to capture knowledge of insurance and understanding of the CBHI scheme (*KU*) (respondent is the SHG member). The indices are constructed using responses to six questions related to insurance and seven questions on the concepts and operational aspects of the CBHI schemes (for details, see Panda, Chakraborty, & Dror, 2014). Each correct answer is assigned a score of 1 and 0 otherwise. These scores are added to obtain a total score and subsequently dummy variables are used to indicate whether a household has a score above or below average.[2] The role of an individual's health status (*HE*) in influencing enrolment is captured by the number of episodes of short-term (acute), long-term (chronic) and hospitalisation. Access to care (*AC*) is proxied by the time taken to reach the nearest available source of in-patient and out-patient care. Precise definitions of the variables included in the specification are contained in Table A1 and descriptive statistics are provided in Table 3.

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[1] RSBY is a dummy variable indicating whether households are members of a public provided health insurance scheme which covers in-patient care. The scheme provides coverage of up to Rs. 30,000 for families who are below the poverty line.

[2] We also experimented with a three-part classification of these variables. However, given the small number of observations, especially in the site-specific regressions, we switched to a two-part classification.

	Individuals who joined CBHI in 2011 and renewed/dropped out in 2012				Individuals who joined CBHI in 2012 and renewed/dropped out in 2013				Individuals who joined CBHI in 2011, renewed in 2012 and renewed/dropped out in 2013			
Variable	**Pratap-garh**	**Kanpur Dehat**	**Vaishali**	**All**	**Pratap-garh**	**Kanpur Dehat**	**Vaishali**	**All**	**Pratap-garh**	**Kanpur Dehat**	**Vaishali**	**All**
Household Socio-Economic Indicators												
Schedule caste/Schedule tribe	0.39±0.49	0.23±0.42	0.47±0.50	0.40±0.49	0.43±0.50	0.15±0.36	0.37±0.48	0.32±0.47	0.41±0.49	0.27±0.45	0.50±0.50	0.44±0.50
Economic status												
Poor by MPCE (tertile 1)	0.53±0.50	0.21±0.41	0.27±0.45	0.35±0.48	0.46±0.50	0.13±0.33	0.36±0.48	0.32±0.47	0.45±0.50	0.16±0.37	0.31±0.46	0.33±0.47
Middle by MPCE (tertile 2)	0.32±0.47	0.31±0.46	0.39±0.49	0.35±0.48	0.33±0.47	0.34±0.47	0.33±0.47	0.33±0.47	0.32±0.47	0.33±0.47	0.40±0.49	0.36±0.48
Rich by MPCE (tertile 3)	0.15±0.36	0.48±0.50	0.34±0.47	0.30±0.46	0.21±0.41	0.53±0.50	0.31±0.46	0.35±0.48	0.23±0.42	0.51±0.50	0.30±0.46	0.31±0.46
Monthly per capita financial liability	256±407	448±957	363±905	344±792	298±699	539±855	565±749	474±775	245±322	491±661	403±446	370±462
Household size	6.26±2.42	5.83±1.83	5.66±1.85	5.89±2.07	6.58±3.36	6.05±2.11	5.57±1.95	6.02±2.55	6.18±3.09	5.76±1.82	5.65±1.87	5.82±2.29
Head of Household Characteristics												
Years of education												
Illiterate	0.35±0.48	0.28±0.45	0.46±0.50	0.39±0.49	0.36±0.48	0.24±0.43	0.45±0.50	0.36±0.48	0.34±0.48	0.24±0.43	0.47±0.50	0.40±0.49
Primary	0.18±0.38	0.13±0.34	0.18±0.39	0.17±0.38	0.14±0.35	0.17±0.38	0.13±0.34	0.15±0.35	0.18±0.38	0.05±0.22	0.18±0.38	0.16±0.36
Middle	0.18±0.38	0.16±0.37	0.14±0.34	0.16±0.36	0.13±0.33	0.21±0.41	0.18±0.38	0.17±0.38	0.12±0.33	0.24±0.43	0.14±0.35	0.15±0.36
Secondary and above	0.30±0.46	0.42±0.49	0.22±0.41	0.28±0.45	0.36±0.48	0.38±0.48	0.24±0.43	0.32±0.47	0.36±0.48	0.46±0.50	0.21±0.41	0.29±0.46
Employment												
Employed in agriculture	0.23±0.42	0.66±0.47	0.17±0.38	0.28±0.45	0.27±0.45	0.59±0.49	0.25±0.44	0.36±0.48	0.16±0.37	0.66±0.48	0.33±0.47	0.31±0.46
Employed in non-agri.	0.12±0.33	0.06±0.24	0.12±0.33	0.11±0.31	0.18±0.39	0.08±0.27	0.13±0.34	0.13±0.34	0.16±0.37	0.03±0.17	0.06±0.24	0.09±0.28
Other works	0.39±0.49	0.16±0.37	0.53±0.50	0.41±0.49	0.33±0.47	0.11±0.32	0.33±0.47	0.27±0.44	0.42±0.50	0.18±0.39	0.39±0.49	0.37±0.48
Not working	0.26±0.44	0.11±0.32	0.18±0.38	0.19±0.40	0.21±0.41	0.22±0.41	0.27±0.45	0.24±0.43	0.25±0.44	0.13±0.34	0.23±0.42	0.22±0.42
Scheme Related Characteristics												
Claimed in previous year (1)	0.17±0.37	0.08±0.28	0.68±0.47	0.40±0.49					0.19±0.39	0.04±0.20	0.70±0.46	0.46±0.50
Claimed in previous year (2)					0.05±0.22	0.15±0.36	0.47±0.50	0.25±0.43	0.14±0.35	0.08±0.27	0.52±0.50	0.35±0.48
Household Insurance Understanding												
Insurance knowledge												
Below average	0.35±0.48	0.38±0.49	0.33±0.47	0.34±0.48	0.34±0.47	0.35±0.48	0.31±0.46	0.33±0.47	0.27±0.44	0.17±0.38	0.29±0.45	0.27±0.44
Above average	0.65±0.48	0.62±0.49	0.67±0.47	0.66±0.48	0.66±0.47	0.65±0.48	0.69±0.46	0.67±0.47	0.73±0.44	0.83±0.38	0.71±0.45	0.73±0.44
CBHI understanding												

Table 3 Descriptive statistics (mean and standard deviation)

	Individuals who joined CBHI in 2011 and renewed/dropped out in 2012				Individuals who joined CBHI in 2012 and renewed/dropped out in 2013				Individuals who joined CBHI in 2011, renewed in 2012 and renewed/dropped out in 2013			
Variable	**Pratap-garh**	**Kanpur Dehat**	**Vaishali**	**All**	**Pratap-garh**	**Kanpur Dehat**	**Vaishali**	**All**	**Pratap-garh**	**Kanpur Dehat**	**Vaishali**	**All**
Below average	0.54±0.50	0.24±0.43	0.45±0.50	0.44±0.50	0.64±0.48	0.63±0.48	0.61±0.49	0.62±0.48	0.39±0.49	0.31±0.47	0.57±0.50	0.48±0.50
Above average	0.46±0.50	0.76±0.43	0.55±0.50	0.56±0.50	0.36±0.48	0.37±0.48	0.39±0.49	0.38±0.48	0.61±0.49	0.69±0.47	0.43±0.50	0.52±0.50
Individual Health Events												
No of long-term illnesses	0.24±0.43	0.30±0.46	0.26±0.44	0.26±0.44	0.36±0.48	0.37±0.49	0.27±0.45	0.33±0.47	0.33±0.47	0.40±0.49	0.29±0.45	0.32±0.47
No of short-term illnesses	0.25±0.44	0.24±0.43	0.26±0.44	0.25±0.44	0.36±0.48	0.35±0.49	0.40±0.52	0.37±0.50	0.37±0.48	0.52±0.52	0.36±0.48	0.38±0.49
No of hospitalization events	0.06±0.24	0.03±0.16	0.03±0.17	0.04±0.20	0.02±0.15	0.05±0.22	0.04±0.20	0.04±0.19	0.05±0.22	0.02±0.14	0.03±0.17	0.03±0.18
Other Individual Characteristics												
SHG member	0.29±0.45	0.32±0.47	0.29±0.45	0.29±0.46	0.37±0.48	0.27±0.44	0.33±0.47	0.32±0.47	0.41±0.49	0.39±0.49	0.29±0.46	0.34±0.47
Age	25.9±19.0	28.2±18.0	21.7±17.1	24.3±18.1	30.6±19.5	28.3±18.7	24.4±18.2	27.4±18.9	29.4±18.4	29.0±17.7	22.3±17.7	25.4±18.2
Male	0.44±0.50	0.43±0.50	0.43±0.50	0.43±0.50	0.39±0.49	0.47±0.50	0.38±0.49	0.41±0.49	0.34±0.47	0.37±0.49	0.39±0.49	0.37±0.48
Married	0.47±0.50	0.55±0.50	0.41±0.49	0.46±0.50	0.56±0.50	0.50±0.50	0.49±0.50	0.51±0.50	0.59±0.49	0.54±0.50	0.45±0.50	0.50±0.50
Relationship to head of household												
Self	0.22±0.41	0.25±0.43	0.20±0.40	0.21±0.41	0.27±0.45	0.23±0.42	0.23±0.42	0.24±0.43	0.27±0.44	0.27±0.45	0.21±0.41	0.24±0.43
Spouse of head	0.19±0.39	0.26±0.44	0.17±0.38	0.19±0.40	0.25±0.43	0.23±0.42	0.23±0.42	0.23±0.42	0.26±0.44	0.30±0.46	0.19±0.39	0.23±0.42
Child of head	0.42±0.49	0.41±0.49	0.52±0.50	0.47±0.50	0.29±0.45	0.41±0.49	0.41±0.49	0.37±0.48	0.36±0.48	0.40±0.49	0.44±0.50	0.41±0.49
Others	0.17±0.37	0.09±0.28	0.12±0.32	0.13±0.33	0.20±0.40	0.13±0.34	0.13±0.34	0.15±0.36	0.12±0.32	0.02±0.14	0.15±0.36	0.12±0.33
Subscription to RSBY												
Household enrolled in RSBY	0.12±0.33	0.32±0.47	0.43±0.49	0.31±0.46	0.33±0.47	0.68±0.47	0.71±0.46	0.58±0.49	0.38±0.49	0.56±0.50	0.73±0.44	0.60±0.49
Access to Health Facilities												
Travel time for inpatient service	49.9±41.2	130±95.9	37.1±32.3	58.9±63.3	42.3±28.9	123.±72.7	30.4±30.2	60.8±61.1	40.7±23.4	132.±77.7	35.4±33.3	51.1±52.9
Travel time for outpatient service	23.0±22.2	32.0±24.7	19.0±27.9	22.8±26.0	18.2±11.6	24.9±27.4	15.9±17.6	19.2±19.9	15.9±10.6	19.2±22.7	14.0±11.8	15.3±13.8
Observations	545	314	806	1665	419	386	534	1339	194	99	381	674

Table 3 Descriptive statistics (mean and standard deviation)

Thus, the probability of renewing membership in the CBHI schemes may be written as:

$$RENEW_{iht} = \alpha' SES_{ht-1} + \beta' SU_{iht-1} + \gamma' KU_{ht-1} + \delta' HE_{iht-1} + \mu' AC_{ht-1} + \varepsilon_{iht}. \qquad (1)$$

Marginal effects based on a logit specification of (1) are estimated for each of the three schemes separately and also for the pooled data. We provide three sets of estimates of equation (1). These correspond to individuals who joined the CBHI schemes in 2011 and renewed or dropped out in 2012 (or those who joined in 2012 and dropped out in 2013) and those who stayed in the scheme for two years, that is, joined in 2011 and renewed/dropped out in 2013. Estimates for those who were followed for one year are provided in Table 4 and those who were followed for two years is presented in Table 5. Instead of estimating a logit model for each of these sub-samples, at least for those who joined the scheme in 2011, it is also possible to estimate an ordered logit model to estimate the probability of staying in the scheme for one, two or three years. However, such an approach is perhaps rather restrictive as the role played by different variables in determining renewal may change over time. Hence, we persist with a standard logit model.

Data

Analysis of the factors that determine renewal is based on combining information from three household surveys with information on enrolment, renewal, premium payments and claims obtained from MIA's Management Information System (MIS). The three household surveys were conducted between March and May of 2010, 2012 and 2013. The first survey covered 3685 households of which 3318 were resurveyed in 2012 and 3307 were revisited in 2013. In all, 3034 households were covered in all three survey rounds. The survey gathered information on various socio-economic indicators, including demographic details of each household member, household consumption expenditures, and household assets. Data were collected on self-reported illness events for a 30-day recall period and for hospitalization or pregnancy in the 12 months, preceding the survey. Information was also gathered on the treatment sought for illnesses and expenditure incurred. A detailed module was used to obtain information on understanding of insurance and knowledge of the CBHI schemes. The analysis is based on individuals who enrolled in the scheme in 2011 and in 2012.

	Individuals who joined CBHI in 2011 and renewed/dropped out in 2012				Individuals who joined CBHI in 2012 and renewed/dropped out in 2013			
Variable	**Pratapgarh**	**Kanpur Dehat**	**Vaishali**	**All**	**Pratapgarh**	**Kanpur Dehat**	**Vaishali**	**All**
Household Socio-Economic Indicators								
Schedule caste/Schedule tribe	0.0792	0.0140	0.0297	0.0468	-0.0272	0.156	0.0786	0.0675
	(0.0818)	(0.114)	(0.0728)	(0.0470)	(0.0698)	(0.142)	(0.0761)	(0.0504)
Economic status - Middle by MPCE (tertile 2)	0.0571	0.110	-0.0976	-0.0182	-0.0366	0.161	0.0336	0.0304
	(0.0899)	(0.148)	(0.0804)	(0.0533)	(0.0778)	(0.181)	(0.0908)	(0.0590)
Economic status - Rich by MPCE (tertile 3)	0.0981	-0.00247	-0.0359	0.0168	0.0510	0.321**	0.181*	0.170***
	(0.113)	(0.137)	(0.0989)	(0.0621)	(0.104)	(0.148)	(0.0965)	(0.0629)
Monthly per capita financial liability	-1.78e-06	-0.000154*	8.13e-06	-1.74e-05	-7.72e-05	-9.69e-06	-5.37e-06	-1.38e-05
	(9.46e-05)	(8.55e-05)	(2.76e-05)	(3.14e-05)	(6.28e-05)	(5.34e-05)	(3.81e-05)	(2.54e-05)
Household size	0.00161	0.0167	-0.0141	-0.00351	-0.00133	-0.00934	0.0331*	0.00576
	(0.0144)	(0.0327)	(0.0207)	(0.0108)	(0.0121)	(0.0236)	(0.0190)	(0.00991)
Head of Household Characteristics								
Years of education - primary	-0.00135	-0.00816	-0.0317	-0.0243	-0.0967	-0.0692	-0.116	-0.0578
	(0.126)	(0.151)	(0.0952)	(0.0650)	(0.0848)	(0.156)	(0.0867)	(0.0682)
Years of eductaion - middle	-0.000943	0.337**	-0.0333	0.0675	-0.0227	-0.107	0.0223	-0.0107
	(0.119)	(0.171)	(0.0961)	(0.0651)	(0.0981)	(0.140)	(0.0945)	(0.0623)
Years of education - secondary & above	0.0753	-0.0299	-0.0712	-0.00761	0.0712	0.0952	0.249**	0.149**
	(0.107)	(0.130)	(0.0948)	(0.0587)	(0.0852)	(0.144)	(0.103)	(0.0613)
Occupation - employed in agriculture	-0.0995	0.170	-0.0682	-0.0416	0.113	-0.273**	-0.0606	-0.0353
	(0.105)	(0.120)	(0.116)	(0.0649)	(0.123)	(0.124)	(0.0909)	(0.0608)
Occupation - employed in non-agriculture	-0.191*	0.364	-0.286**	-0.143*	0.0114	-0.00170	0.0772	0.0503
	(0.101)	(0.273)	(0.119)	(0.0814)	(0.109)	(0.180)	(0.129)	(0.0790)
Occupation - other works	-0.0295	0.325	-0.164*	-0.0576	0.120	-0.180	-0.00754	-0.0170
	(0.102)	(0.201)	(0.0899)	(0.0604)	(0.117)	(0.153)	(0.100)	(0.0632)
Scheme Related Characteristics								
Claimed in previous year	0.145	-0.142	0.129*	0.0724	0.278	0.191	0.428***	0.345***
	(0.121)	(0.152)	(0.0687)	(0.0529)	(0.204)	(0.152)	(0.0627)	(0.0590)
Household Insurance Understanding								
Insurance knowledge - Above average	-0.0336	0.0323	0.0511	0.0389	0.177***	0.0103	0.0285	0.0799
	(0.0829)	(0.107)	(0.0740)	(0.0472)	(0.0569)	(0.112)	(0.0832)	(0.0487)
CBHI understanding - Above average	0.0606	-0.0905	-0.0720	-0.0205	0.0408	0.0693	0.248***	0.144***

	Individuals who joined CBHI in 2011 and renewed/dropped out in 2012				Individuals who joined CBHI in 2012 and renewed/dropped out in 2013			
Variable	**Pratapgarh**	**Kanpur Dehat**	**Vaishali**	**All**	**Pratapgarh**	**Kanpur Dehat**	**Vaishali**	**All**
	(0.0794)	(0.116)	(0.0656)	(0.0458)	(0.0792)	(0.109)	(0.0739)	(0.0466)
Individual Health Events								
Health events - No of long-term illness events	0.133**	-0.0346	0.0328	0.0423	0.0478	-0.147**	0.0165	-0.00749
	(0.0598)	(0.0755)	(0.0522)	(0.0336)	(0.0547)	(0.0710)	(0.0646)	(0.0370)
Health events - No of short-term illness events	0.0873	0.0256	-0.000403	0.0499	-0.0844*	-0.0448	0.0978**	-0.00441
	(0.0563)	(0.0736)	(0.0453)	(0.0319)	(0.0451)	(0.0651)	(0.0487)	(0.0303)
Health events - No of hospitalization events	-0.126	-0.111	0.0806	-0.0381	-0.126*	-0.121	0.00849	-0.146**
	(0.102)	(0.209)	(0.105)	(0.0667)	(0.0688)	(0.124)	(0.110)	(0.0566)
Other Individual Characteristics								
Individual is SHG member	0.159**	0.156	0.190**	0.165***	0.0307	0.353***	0.237***	0.208***
	(0.0773)	(0.125)	(0.0743)	(0.0457)	(0.0677)	(0.0857)	(0.0719)	(0.0471)
Age	0.00393	0.00134	-0.00303	0.00102	-0.000237	-0.00834**	0.00188	-0.00147
	(0.00254)	(0.00304)	(0.00235)	(0.00150)	(0.00205)	(0.00327)	(0.00294)	(0.00147)
Male	-0.0325	-0.0635	0.00458	-0.0288	-0.0126	0.00476	0.00630	0.0121
	(0.0558)	(0.0695)	(0.0407)	(0.0308)	(0.0527)	(0.0780)	(0.0623)	(0.0375)
Married	0.147**	-0.372**	0.133	0.0193	-0.108	-0.0326	-0.00984	-0.0451
	(0.0714)	(0.146)	(0.0893)	(0.0499)	(0.0702)	(0.103)	(0.100)	(0.0513)
Relation to head - Self	-0.134	0.314	-0.306***	-0.116*	0.161	0.417***	0.00263	0.139*
	(0.0954)	(0.211)	(0.0993)	(0.0624)	(0.110)	(0.144)	(0.133)	(0.0799)
Relation to head - Spouse of head	-0.127	0.201	-0.392***	-0.181***	0.166	0.208	-0.0493	0.0668
	(0.100)	(0.204)	(0.0985)	(0.0636)	(0.128)	(0.177)	(0.124)	(0.0814)
Relation to head - Child of head	0.0766	-0.0838	-0.241***	-0.0805	-0.0665	0.0888	-0.00515	-0.00424
	(0.0970)	(0.108)	(0.0822)	(0.0580)	(0.0661)	(0.119)	(0.111)	(0.0570)
Subscription to RSBY								
Household enrolled in RSBY	-0.0537	-0.145	-0.0453	-0.0378	-0.110*	0.202**	-0.00443	-0.0148
	(0.114)	(0.106)	(0.0686)	(0.0485)	(0.0638)	(0.100)	(0.0801)	(0.0495)
Access to Health Facilities								
Average travel time for inpatient service	0.000734	-0.000831	0.00209**	-0.000161	-0.000358	0.000793	-0.00103	0.000492
	(0.000844)	(0.000656)	(0.00101)	(0.000413)	(0.00117)	(0.000687)	(0.00120)	(0.000519)
Average travel time for outpatient service	0.00116	-0.00477**	0.000216	-0.000181	-0.000798	-0.00315	-0.00663**	-0.00393*

Table 4 Logit regression marginal effect estimates (standard errors) (Renewal / drop out after one year in CBHI)

Variable	Individuals who joined CBHI in 2011 and renewed/dropped out in 2012				Individuals who joined CBHI in 2012 and renewed/dropped out in 2013			
	Pratapgarh	Kanpur Dehat	Vaishali	All	Pratapgarh	Kanpur Dehat	Vaishali	All
	(0.00155)	(0.00240)	(0.000990)	(0.000805)	(0.00295)	(0.00251)	(0.00290)	(0.00231)
Locational Characteristics								
Pratapgarh				0.0233				-0.176**
				(0.0780)				(0.0702)
Vaishali				0.143*				-0.172**
				(0.0808)				(0.0732)
Observations	547	314	806	1667	419	386	534	1339
Pseudo R-Square	0.0904	0.2092	0.0885	0.0537	0.1355	0.1895	0.2623	0.1538

Table 4 Logit regression marginal effect estimates (standard errors) (Renewal / drop out after one year in CBHI)

*Note: ***P<0.01, **P<0.05, *P<0.1*

While we have complete information on the enrolment status of all individuals who enrolled in 2011 and in 2012 from the MIS, due to sample attrition, the household survey does not contain information for a small proportion of such individuals. Thus, the econometric analysis is based on following up with 1665 of the 1806 individuals who enrolled in 2011 for two years and 1339 of the 1542 who enrolled in 2012 for one year.

Results

Renewal after experiencing CBHI for one year (renewed in 2012, joined in 2011)

Across all sites and the sample as a whole, variations in socio-economic status as captured by caste, household expenditure tertiles, household size or education of the household head, do not have a bearing on renewal status. While there is some evidence, in the case of Kanpur Dehat, that households with a greater financial liability are less likely to renew contracts, the overall impression is that renewal is not impeded by scheme affordability. The premiums charged by the scheme range from 0.89% to 1.24% of monthly per capita expenditure and are set based on discussions with potential beneficiaries. Based on these estimates, it does seem that this interaction has led to the setting of affordable premiums (see Table 4).

Scheme experience and interaction as captured by household claim incidence is positively linked to renewal, at least for the full sample and two of the three sites. However, the effect is not precise. Analysis of claim data information (see Table A2) during the first year of the scheme confirms that claim incidence for individuals who did renew their contracts is higher (15%, 119/768) as compared to those who do not renew (9%, 93/1038). In fact, this is the key difference in terms of scheme experience across the two groups, as the ratio of amount received to claims is about 50% for both groups and the turn-around times are 25 and 27 days for those who renew and do not renew, respectively. Knowledge of insurance and understanding of the CBHI scheme do not have a bearing on renewal.

Given the voluntary nature of the schemes, a pertinent concern is the extent to which renewal is driven by an individual's recent experiences of illnesses and recent use of health care. For the sample as a whole, none of the three variables used to capture the illness status of an individual

have a bearing on renewal. In the case of one of the sites, Pratapgarh, the configuration of the coefficients indicates that individuals who have recently experienced illness symptoms for more than 30 days are 13% more likely to renew their contracts. For the sample as a whole being hospitalized does not seem to be associated with a reduction in the probability of renewing the CBHI contract.

With regard to the two access variables, there are some variations across sites and in Kanpur Dehat an increase in the time taken to access outpatient care reduces the attractiveness of insurance. The descriptive statistics show that, on average, the travel time to access outpatient care in Vaishali and Pratapgarh lies in the range of 19 to 23 minutes while in the case of Kanpur Dehat the corresponding figure is 32 minutes. Thus, Kanpur Dehat is not as well served as the other two schemes and reducing the time to access outpatient care in Kanpur Dehat by ten minutes would work towards enhancing renewal by about 5 percentage points. The other sites are well served and distance to outpatient care has no bearing on renewal. For the sample as a whole distance to care is not systematically linked to the probability of renewal.

With regard to the other variables we see that across all three sites SHG members that is, women, are more likely to renew insurance. This is likely to be due to the scheme conditionality that any member from the household can enrol / renew their membership in CBHI provided the SHG member is doing so. Controlling for SHG status, there are no gender differences in renewal rates. Finally, we see that belonging to the RSBY has no bearing on renewal suggesting that the two schemes are not viewed as substitutes.

Renewal after experiencing CBHI for one year (renewed in 2013, joined in 2012)

Renewal probability estimates for those individuals who were offered and enrolled in the insurance scheme in 2012 are provided in Table 4. The discussion focuses on notable differences across the two data waves.

Similar to the first year of the scheme we see that caste has no bearing on enrolment. However, a number of other traits tend to suggest that scheme affordability is more of a challenge

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for individuals in this data wave. In two of the three sites, individuals in the highest tertile of the consumption distribution are more likely to renew their subscriptions. The effects are large and indicate that in Vaishali individuals in the highest tertile are 18 percentage points more likely to re-enrol while the figure is 32 percentage points in the case of Kanpur Dehat. Education of the household head is also positively linked to renewal and indicates that for the sample as a whole, secondary education is associated with a 15 percentage point increase in renewal. Given the randomized offering of the insurance schemes these differences are not due to wave-level differences in the socio-economic traits of the individuals to whom insurance is offered. It is more likely that the increasing importance of socio-economic status is to do with the stricter imposition of scheme rules as the scheme administration gains experience and the schemes mature.[3]

The direct effect of scheme experience is captured by the coefficients on the incidence of having received benefits through the scheme. The estimates are qualitatively similar to the results based on the first wave but are now much larger. Depending on the site, individuals living in households who have received benefits through the scheme are 19 to 43 percentage points more likely to renew their contracts. For the sample as a whole the effect is 34.5 percentage points and statistically significant. As shown in the appendix, there are marked differences in scheme experience across the two groups. The claim incidence for those who renewed is 18% (91/493) versus 5% (54/1049) for those who did not renew. For those who renewed the time taken between submission of claim and receipt of funds is 19 days while it is 27 days for those who did not renew.[4] The ratio of the amount of money received through the insurance and the amount claimed is 33% for those who renewed and 23% for those who did not.[5] These figures are also much lower than the 50% money-received to claim ratio in the first data wave. The gap in the share of claims honoured

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[3] Our interactions with the scheme administration revealed that while there have been no changes in scheme rules over time, claim administrators have become more careful in terms of requiring appropriate and accurate documentation to honour claims.
[4] A formal test for differences in means yields a p-value of 0.115.
[5] A formal test for differences in proportions yields a p-value of 0.20. Although, this is not statistically significant the differences in amount received to claim in the second data wave is far lower than that in the first data wave where it was more than 50%.

across the two groups illustrates the growing importance of scheme experience in determining renewal status.

Across all three sites, both, insurance knowledge and a greater understanding of the insurance scheme are associated with a higher probability of renewing contracts. For the sample as a whole, those with greater understanding of insurance are 8 percentage points more likely to renew contracts while for CBHI understanding the effect is about 14 percentage points. Similar to the claims effects discussed above, in the second wave the importance of knowledge and understanding in determining enrolment is substantially higher. Individuals in both waves are similar in terms of their socio-economic status, and have experienced the same set of awareness activities. Hence, it is likely that the changing importance of these variables over time arises due to the greater need to comply with scheme regulations as the schemes mature.

The health related indicators reveal unexpected patterns. For all three illnesses, long-term, short-term and hospitalisation, the coefficients for the full sample indicate that such events lead to a reduction in the probability of renewing contracts. In some instances, as in Vaishali for short-term illnesses, there is a positive link. However, perhaps the intriguing aspect is that the coefficient on the use of inpatient care is statistically significant and indicates that having been hospitalized in the year that an individual was insured leads to a reduction in the probability of renewal. According to the estimates, those who perhaps have had the most need to rely on insurance are 15 percentage points less likely to renew their membership. There could be several reasons for this. First, the quality of care on offer that is accessible through the scheme may be poor. While this may be true in general, the scheme does not restrict the use of hospital care to specific facilities and so it is unlikely that poor quality of care offered through the scheme affects renewal behaviour. It could be that the cap of Rs. 4000 in Pratapgarh and of Rs. 3000 in Kanpur Dehat (see Table, 1, Year II) are too low and potential clients, despite having played a role in determining the package, find that the product on offer is not suitable. The claims data support this argument as the average claim amongst those who drop-out is Rs. 6538 while it is Rs. 2998 amongst those who renew.[6] The third possibility is that, by

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[6] The differences are statistically significant.

definition, those who have been hospitalized are more likely to have engaged with the scheme administration in terms of attempting to claim benefits. Their experience in terms of the gap between their expectations and the amount they received from the insurance (on average, the receipt to claim ratio is 25%) may have spurred their decision to leave the scheme. For the use of outpatient consultation services individuals do not need to file claims which may also underlie, in some cases, the positive link between short-term illnesses and renewal probabilities.

Determinants of renewal after experiencing CBHI for two years

This section focuses on the determinants of renewal for those individuals who have been in the CBHI scheme for two consecutive years (joined in 2011, renewed in 2012, and then renewed/ dropped out in 2013). This is a subset of individuals who enrolled in the scheme in 2011. Given the high dropout rates we are unable to estimate the specification for Kanpur Dehat. Estimates for the two other sites and the full sample are provided in Table 5.

Consistent with the discussion in the previous section, there is no evidence that socio-economic status deters enrolment. In fact, for the sample as a whole, schedule caste/tribe individuals are more likely to renew their memberships. Once again, the importance of claims in determining renewal is clear. Individuals who have received benefits through the scheme are 32 percentage points more likely to renew. Understanding of the scheme and knowledge of insurance are positively linked to scheme renewal but are not statistically significant. The pattern of coefficients on the health status variables matches what has been seen earlier. Hospitalization is negatively associated with renewal probability although not statistically significant and the number of short-term illnesses increases the probability of renewal.

Table 5 Logit regression marginal effect estimates (standard errors) (Renewal / drop out after two years in CBHI)

Variables	Pratapgarh	Vaishali	All
Household Socio-Economic Indicators			
Schedule caste/Schedule tribe	-0.0253	0.0566	0.131*
	(0.110)	(0.0903)	(0.0748)
Economic status - Middle by MPCE (tertile 2)	-0.0468	0.0786	-0.0540
	(0.158)	(0.0953)	(0.0805)
Economic status - Rich by MPCE (tertile 3)	0.179	0.114	0.0817
	(0.114)	(0.135)	(0.0903)
Monthly per capita financial liability	-0.000140	-3.05e-05	-6.76e-05
	(0.000108)	(8.64e-05)	(6.39e-05)
Household size	0.0113	0.0716***	0.0293
	(0.0186)	(0.0262)	(0.0180)
Head of Household Characteristics			
Years of education – primary	0.303***	-0.110	0.0758
	(0.0846)	(0.0926)	(0.0853)
Years of eductaion – middle	-0.0538	0.0853	0.0121
	(0.235)	(0.150)	(0.111)
Years of education - secondary & above	-0.0199	-0.0318	-0.0571
	(0.176)	(0.172)	(0.105)
Occupation - employed in agriculture	0.175	0.0192	0.0681
	(0.123)	(0.150)	(0.104)
Occupation - employed in non-agriculture	-0.0494	-0.123	0.00326
	(0.179)	(0.183)	(0.137)
Occupation - other works	0.308**	0.0526	0.111
	(0.125)	(0.146)	(0.106)
Scheme Related Characteristics			
Claimed in year 1	0.128	-0.0470	-0.0172
	(0.0976)	(0.0831)	(0.0739)
Claimed in year 2	-0.211	0.385***	0.316***
	(0.173)	(0.0760)	(0.0860)
Household Insurance Understanding			
Insurance knowledge - Above average	-0.159*	0.0870	0.0617
	(0.0959)	(0.0730)	(0.0699)
CBHI understanding - Above average	0.227**	-0.0620	0.0455
	(0.113)	(0.0699)	(0.0637)
Individual Health Events			
Health events - No of long-term illness events	0.0619	-0.0204	-0.0511
	(0.0937)	(0.0604)	(0.0490)
Health events - No of short-term illness events	0.127*	0.0953*	0.0728*
	(0.0774)	(0.0514)	(0.0416)
Health events - No of hospitalization events	0.183	-0.0497	-0.134
	(0.116)	(0.107)	(0.109)

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Table 5 Logit regression marginal effect estimates (standard errors) (Renewal / drop out after two years in CBHI)

Variables	Pratapgarh	Vaishali	All
Other Individual Characteristics			
Individual is SHG member	0.519***	0.452***	0.426***
	(0.0903)	(0.113)	(0.0653)
Age	0.00198	-0.00402	0.00202
	(0.00423)	(0.00325)	(0.00259)
Male	0.240***	0.210***	0.134**
	(0.0899)	(0.0746)	(0.0571)
Married	-0.397***	0.0744	-0.112
	(0.112)	(0.137)	(0.0817)
Relation to head – Self	0.0892	0.237	0.0937
	(0.178)	(0.168)	(0.119)
Relation to head - Spouse of head	0.0197	0.0917	-0.00516
	(0.199)	(0.155)	(0.119)
Relation to head - Child of head	-0.0607	0.190	0.0752
	(0.149)	(0.148)	(0.106)
Subscription to RSBY			
Household enrolled in RSBY	-0.245*	-0.0532	-0.0767
	(0.138)	(0.0797)	(0.0662)
Access to Health Facilities			
Average travel time for inpatient service	0.00117	-0.00104	0.00141
	(0.00253)	(0.00211)	(0.000949)
Average travel time for outpatient service	-0.0150***	0.00487	-0.00164
	(0.00416)	(0.00301)	(0.00228)
Locational Characteristics			
Pratapgarh			0.308**
			(0.129)
Vaishali			-0.108
			(0.148)
Observations	194	381	674
Pseudo R-Square	0.2879	0.2600	0.1884

Conclusions

Retaining members in voluntary community-based health insurance schemes is challenging and only a handful of studies have examined renewal of membership in such schemes. This study contributed by examining the factors that determine renewal one year and two years after enrolling in one of three CBHI schemes located in rural India. On average, across the three schemes, which are located in Pratapgarh and Kanpur Dehat districts in Uttar Pradesh and in Vaishali district in Bihar, initial enrolment was 23% in 2011 and by 2013 only 17% of those who had enrolled in 2011 retained their membership. We examined the role of four sets of factors in determining renewal, namely, scheme affordability, scheme use, knowledge of insurance and understanding of the scheme, and recent illness episodes.

Scheme affordability was measured by differences in renewal status across socio-economic groups. Amongst those who were offered insurance in 2011 and could renew in 2012 and 2013 we found no link between economic status and retention. In fact retention rates seemed to be positively associated with belonging to a schedule caste/tribe. For those who were offered insurance in 2012 and renewed in 2013 we did find stronger economic status effects, with those in the richest tertile more likely to renew their membership. However, the overall impression emerging from the estimates was that differences in socio-economic status as captured by caste, education and consumption tertiles does not have a very large bearing on renewal. This is perhaps not surprising as the premium for the benefit package and its composition were determined in consultation with the target group.

Scheme use, defined in terms of whether anyone in a household had claimed benefits in the year prior to renewal was found to be positively associated with scheme retention. The importance of this effect increased over time and amongst those who renewed for a second year the marginal effect of this variable was 32 percentage points. The claims data also illustrated the role of scheme use, speed of processing claims and the extent to which claims are honoured in determining retention. Households whose claims took longer to process and who received a lower amount of money as compared to the claims they made were less likely to renew their contracts.

Similar to the effects of scheme use, there was some evidence that over time there is increasing importance of knowledge of insurance and a better understanding of the scheme in contributing to scheme retention. However, the effects were not always so clear-cut.

We found mixed-evidence on the link between short-term illness events in influencing retention. For those who renewed their contracts for two years it was clear that their decision to renew depended on experiencing such events. For the sample as a whole, we found that experiencing a short-term illness event increased the probability of renewal by 7 percentage points. For those who renewed after one year short-term illness did not play a role. The increasing importance of short-term illness in influencing renewal over time may perhaps, raise concerns about scheme viability. However, the link between hospitalization and retention suggests that such concerns are not well-founded and perhaps there should be greater concern about the insurance product on offer and scheme administration. The estimates showed that those who had been hospitalized, and who should have found the insurance product most useful were *less* likely to renew their contracts. While this effect was statistically significant for the sample as a whole only for one set of estimates, it was negative for all three sets of estimates. We argued that the unwillingness to renew amongst those who have had perhaps the most interaction with the scheme maybe due to unsuitability of the insurance product on offer, in particular, the caps on cost coverage per hospitalization event, the slow claims processing times and the gap between the amount claimed by households and the amount paid out by insurance.

While the lack of a negative effect of the RSBY on insurance uptake suggests that there is a need for additional insurance, the low initial enrolment rate and low rates of retention in the CBHI schemes explored in this paper, suggests that such schemes, which are entirely community-financed and community-managed and which offer limited benefit packages are unlikely to be able to meet these needs. In short, such schemes are affordable, but not desirable. The current analysis suggests that financial support may be needed to provide more attractive benefit packages and to finance activities which lead to both a greater awareness of scheme entitlements and claims procedures and enhance the management capacity of scheme administrators.

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Appendices

<div align="center">Table A1 Variable decsription</div>

Variable	Variable Type	Detailed Variable Description
<td colspan="3" align="center">Household Socio-Economic Indicators</td>		
Schedule caste/Schedule tribe	Binary	Dummy=1 if Households belonging to Schedule Caste / Schedule Tribe group
General caste*	Binary	Dummy=0 if Households belonging to General Caste or Other Backward Caste
Economic status		
Poor by MPCE (tertile 1)*	Binary	Dummy=1 if HH belonged to the bottom 0-33% of MPCE tertile
Middle by MPCE (tertile 2)	Binary	Dummy=1 if HH belonged to the bottom 34-67% of MPCE tertile
Rich by MPCE (tertile 3)	Binary	Dummy=1 if HH belonged to the bottom 68-100% of MPCE tertile
Monthly per capita financial liability	Continuous	Monthly per capita health and non-health financial liability including borrowing, dissaving, asset sale, other forgone essential expenditure etc.
Household size	Continuous	No of individuals in a HH, where members have food from the same kitchen
<td colspan="3" align="center">Head of Household Characteristics</td>		
Education		
Illiterate*	Binary	Dummy=1 if HoH is illiterate
Primary	Binary	Dummy=1 if HoH is primary level educated
Middle	Binary	Dummy=1 if HoH is middle level educated
Secondary and above	Binary	Dummy=1 if HoH is secondary and above level educated
Employment		
Self-employed in agriculture	Binary	Dummy=1 if HoH is self-employed in agriculture
Self-employed in non-agri.	Binary	Dummy=1 if HoH is self-employed in non-agriculture
Other works	Binary	Dummy=1 if HoH is other works (regular salaried, wage labourer, rentier/pension earner)
Not working*	Binary	Dummy=1 if HoH is not working (Student, pre-school child, domestic worker, unable to work)
<td colspan="3" align="center">Scheme Related Characteristics</td>		
Claimed in previous year (1)	Binary	Dummy=1 if any member in the HH received any money through claim process in the previous year from CBHI (2011-12)
Claimed in previous year (2)	Binary	Dummy=1 if any member in the HH received any money through claim process in the previous year from CBHI (2012-13)
<td colspan="3" align="center">Insurance and CBHI Understanding</td>		
Insurance knowledge		
Below average*	Binary	Dummy=1 if the total insurance knowledge of the HoH is below the average score of that location
Above average	Binary	Dummy=1 if the total insurance knowledge of the HoH is above the average score of that location
CBHI understanding		
Below average*	Binary	Dummy=1 if the total CBHI knowledge of the HoH is below the average score of that location
Above average	Binary	Dummy=1 if the total CBHI knowledge of the HoH is above the average score of that location

		Individual Health Events
No of long-term illnesses	Continuous	Total no of long term illness/chronic the individual was suffering during the 30 days prior to the survey
No of short-term illnesses	Continuous	Total no of short term/acute illness the individual was suffering during the 30 days prior to the survey
No of hospitalization events	Continuous	Total no of hospitalisation events the individual has suffered during last one year of the survey
		Individual Characteristics
SHG member	Binary	Dummy=1 if individual is a member of the SHG under the study
Non-SHG member*	Binary	Dummy=1 if individual is not a member of the SHG under the study
Age	Continuous	Age of the individual
Male	Binary	Dummy=1 if individual is male
Married	Binary	Dummy=1 if individual is married
Unmarried*	Binary	Dummy=1 if individual is unmarried
Relationship to head of household		
Self	Binary	Dummy=1 if individual is head of household
Spouse of head	Binary	Dummy=1 if individual is spouse of head of household
Child of head	Binary	Dummy=1 if individual is child of head of household
Others*	Binary	Dummy=1 if individual is in other relations (spouse of child of head, grandchild of head, parents of head, in-laws of head, siblings of head, other relations, non-relatives)
		Subscription to RSBY
Household enrolled in RSBY	Binary	Dummy=1 if household is enrolled in RSBY
Household not-enrolled in RSBY*	Binary	Dummy=1 if household is not-enrolled in RSBY
		Access to Health Facilities
Travel time for inpatient service	Continuous	Average travel time (in minutes) to the IPD service that the HH generally visits
Travel time for outpatient service	Continuous	Average travel time (in minutes) to the OPD service that the HH generally visits

Note: '' indicates the base category used for regression analysis;*

Table A2 Claim statistics for individuals

Indicators	Pratapgarh			Kanpur Dehat			Vaishali			All		
	Amount claimed	Amount received	Turn-around time (days)	Amount claimed	Amount received	Turn-around time (days)	Amount claimed	Amount received	Turn-around time (days)	Amount claimed	Amount received	Turn-around time (days)
Joined in 2011 & renewed in 2012 - (Renewal)												
No of claims	13	13	13	1	1	1	105	105	105	119	119	119
Average	4947	2174	25	.	.	.	441	207	24	2470	1319	25
Standard deviation	6066	3642	27	8194	4800	14	514	325	50	1185	725	47
Joined in 2011 & dropped out in 2012 - (Drop-out)												
No of claims	17	17	17	7	7	7	69	69	69	93	93	93
Average	5256	2252	20	2609	1665	5	428	272	27	3350	1650	27
Standard deviation	6481	3033	24	4686	3806	12	549	410	47	1945	1145	40
Joined in 2012 & renewed in 2013 - (Renewal)												
No of claims	3	3	3	10	10	10	78	78	78	91	91	91
Average	5545	1364	18	5910	1040	18	468	217	19	2998	1007	19
Standard deviation	6597	2908	29	6759	2945	24	612	357	28	1484	726	27
Joined in 2012 & dropped out in 2013 - (Drop-out)												
No of claims	7	7	7	10	10	10	37	37	37	54	54	54
Average	9475	1452	16	5758	747	45	316	185	20	6538	1490	27
Standard deviation	14708	3371	18	8065	3132	48	470	322	31	3722	1237	33
Joined in 2011, Renewed in 2012, Renewed in 2013 - (Renewal)												
No of claims	6	6	6	5	5	5	61	61	61	72	72	72
Average	9515	1607	8	3826	1617	20	366	228	16	3360	844	16
Standard deviation	7512	2246	13	3177	1580	33	563	376	28	1324	615	27
Joined in 2011, Renewed in 2012, dropped out in 2013 - (Drop-out)												
No of claims	4	4	4	0	0	0	30	30	30	34	34	34
Average	2917	1582	18	.	.	.	533	235	17	1985	869	18
Standard deviation	5766	2454	44	.	.	.	544	338	26	1158	587	28

Annexure I Timeline for the CBHI project

2010	March	• Received the list of all the SHG members (3685 HHs) affiliated to the implementing partners under the study locations
2010	March-May	• Baseline survey of 3685 households • Spatial survey of the study locations
2010	June	• Clustering of the 3685 HHs using baseline survey data (quantitative and spatial) so that each cluster contains roughly equal number of HHs (total 48 clusters) and in the same geographic location (to control information spill over); each cluster was then randomly assigned in three waves of implementation (1/3rd in each wave). o Year 1 of implementation – Wave 1 clusters in treatment; Wave 2 & 3 clusters in control o Year 2 of implementation – Wave 2 clusters in treatment; Wave 3 clusters in control o Year 3 of implementation – Wave 3 clusters in treatment;

Year 1 of Implementation - 2011

2010	July-October	• Initiation workshop, design workshop, awareness tool development workshop, benefit option consultation workshop, training workshop for awareness campaign
2010-11	Nov-Feb	• Awareness campaign to the treatment population (Wave 1 households)
2011	March	• Enrolment process in CBHI for the treatment group (wave 1 HHs); 1806 individuals enrolled
2011	April	• CBHI scheme launch. For one year, enrolled people enjoyed the coverage of CBHI. No new enrolment during this period.

Year 2 of Implementation - 2012*

2011	Jul-Oct	• Benefit option consultation workshop, training workshop for awareness campaign
2011-12	Nov-Feb	• Awareness campaign to the treatment population (Wave 2 households)
2012	March	• Enrolment and renewal process in CBHI; 1542 individuals enrolled and 768 renewed
2012	Mar	• Midline survey of 3318 HHs (same baseline questionnaire with inclusion of a section on insurance and CBHI understanding)
2012	April	• CBHI scheme launch, for one year, the enrolled people enjoyed the coverage of CBHI. No new enrolment during this period.

Year 3 of Implementation - 2013**

2012	Jul-Oct	• Benefit option consultation workshop, training workshop for awareness campaign
2012-13	Nov-Feb	• Awareness campaign to the treatment population (Wave 3 households)
2013	March	• Enrolment and renewal process in CBHI for the treatment group; 1017 individuals enrolled, 852 renewed (359 renewed from 2011 and 493 renewed from 2012))
2013	Mar	• Endline survey of 3307 HHs (same midline questionnaire)
2013	April	• CBHI scheme launch, for one year, the enrolled people enjoyed the coverage of CBHI.

*Note: * HHs that did not join CBHI in 2011, did not have the option to join in 2012; ** Households that did not join in 2012 and dropped out in 2012, did not have the option to join / re-enrol in 2013*