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Correlation Between New Cooperative Medical Scheme Policy Design and Catastrophic Medical Payment: Evidence From 25 Counties in Rural China

Linxiu Zhang, PhD[1], Shaoping Li, MA[2], Hongmei Yi, PhD[1], Luisa Majnoni d'Intignano, BS[3], and Yilei Ding, MS[4,5]

Abstract

Few studies have examined the association between the New Cooperative Medical Scheme (NCMS) policy design and its achievement of providing financial protection to rural residents. This study collected data on NCMS policy design and health care spending from 25 counties and rural households in their catchment areas. It shows that on average, NCMS has a growing but small effect on the reduction of catastrophic medical payment (CMP) incidence. If outpatient spending can be reimbursed from an NCMS pooled account, the incidence of CMP before a reimbursement and that after a reimbursement will be reduced. Higher nominal reimbursement rate for inpatient spending at provincial hospitals is correlated with higher incidence of CMP before a reimbursement. Higher ceiling for annual reimbursement from NCMS is associated with lower incidence of CMP after a reimbursement. Thus, NCMS policy design can be improved to strengthen its effects on the reduction of CMP incidence.

Keywords

catastrophic medical payments, New Cooperative Medical Scheme, policy design, rural China, variation

Introduction

By 2008, China realized universal population coverage of health insurance in rural areas. The Chinese government initiated the New Cooperative Medical Scheme (NCMS), a community (county)-based health insurance program, in 2003. The program is administered at the county level and aims at providing financial protection for all rural residents liable for catastrophic medical payment (CMP).[1] By the end of 2008, the NCMS covered more than 815 million rural population in 95% rural counties and the enrollment rate reached 91.5%.[2]

[1]Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing, China
[2]University of Chinese Academy of Sciences, Beijing, China
[3]New York University, New York, NY, USA
[4]School of Governance, Nanjing University, Nanjing, China
[5]National Health and Family Planning Commission, Beijing, China

Corresponding Author:
Hongmei Yi, Center for Chinese Agricultural Policy, Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, No. Jia 11, Datun Road, Beijing 100101, China.
Email: yihm.ccap@igsnrr.ac.cn

County governments have been given significant flexibility in designing local programs since its initiation. Previous studies show that the fundamental characteristics of the NCMS dramatically vary by county.[3-6] For instance, the funding level significantly depends on a county's financial situation[6]; only a small share of counties cover outpatient spending using a pooled account [4]. Further, the nominal reimbursement rate as well as deductibles and ceilings vary widely.[3,7]

New Cooperative Medical Scheme policy design within counties is also expected to have considerably changed in the past decade. With increasing government investments, the total funding available for each participant increased from 30 CNY in 2003 to 309 CNY in 2012.[8] The ceiling for annual reimbursement and nominal reimbursement rate also increased over time.[7] Although the NCMS primarily focused on inpatient care before the 2009 Health Care Reform,[9] local governments have been encouraged to set up pooled funding for outpatient spending reimbursement.[10]

However, few studies have systematically examined the effects of different NCMS policy design on its objective of providing financial protection for rural residents. Although several studies have suggested that the NCMS does not reduce out-of-pocket medical expenditures of patients,[4,7,9] the effects of NCMS policy design on the incidence of CMP remain unclear. Furthermore, previous studies on the relationship between NCMS policy design and financial protection have often used a policy bundle or an indicator to measure variations in NCMS policy design across counties; however, these studies have failed to determine the elements of NCMS policy that drive the heterogeneity of the effect.[4,9,11]

Thus, in this study, we aim to understand the association between NCMS policy design and its achievement of protecting farmers from CMP. To meet this goal, we set 3 objectives. First, we will describe the variation of NCMS policy design across regions and years; second, we will estimate the incidence of CMP before and after an NCMS reimbursement among rural households, and third, we explore the association between county NCMS policy design and the incidence of CMP before and after a reimbursement.

Methods

We used the 2 most recent waves of the China Rural Development Survey, 2008 and 2012. Survey data were collected by the Center for Chinese Agricultural Policy, Chinese Academy of Sciences. For this study, we collected detailed information from NCMS county administrative offices on NCMS policy design and from rural households on health care spending. The data allow us to track changes in CMP incidence within NCMS' evolving framework.

Sampling

The China Rural Development Survey uses a multistage stratified cluster sampling procedure. Using random selection, we first determined a province (respectively Jiangsu, Sichuan, Shaanxi, Jilin and Hebei) from each of China's 5 major agro-climatic zones and then, 5 sample counties from each province by stratifying each province's counties into quintiles of gross industrial output per capita, followed by one county per quintile. Next, we selected 2 towns from each county: one from the top and the other from the bottom half of the distribution of industrial output per capita. Similarly, we selected 2 villages from each township. Finally, we used official village rosters supplemented by our own enumeration of study villages to randomly select 20 households from each village. If a sample household surveyed in the previous survey round migrated out of the village, the enumeration team selected a replacement household using the same procedure.[7,11-13] The final sample includes 25 counties and 2017 households for 2008 and 2026 households for 2012 in their catchment areas. Appendix Figure A1 illustrates the geography of our sample counties.

Data Collection

The survey comprises 2 modules. Information collected under the NCMS county administrative office module includes NCMS funding, benefit package, reimbursement policy, and local rural per capita net income of the previous year. The household (individual) module contains detailed information about demographics and spending on medical care in the past year for each family member. In addition, we used per capita gross value of industrial output, a good predictor of standards of living and development potential,[14] from statistical yearbooks of the sampled provinces. Table 1 provides the descriptive statistics for these variables.

Measurement of NCMS Policy Design

New Cooperative Medical Scheme policy design is measured on the basis of 3 dimensions. Specifically, we used NCMS funding level and ceiling for annual reimbursement to measure the general generosity of NCMS. Second, we constructed 2 variables to measure variations in NCMS reimbursement policy for outpatient spending among counties: whether outpatient spending can be reimbursed from a pooled NCMS account and whether outpatient spending can be reimbursed from a family account. Finally, because inpatient spending can be reimbursed from a pooled account in all counties, we used nominal reimbursement rates for inpatient spending at different administrative level health care facilities (township health centers, county hospitals, and provincial hospitals) to measure the intensity of the coverage for inpatient spending.

Statistical Analysis

We performed statistical analyses using STATA software 12.0. To identify the association between NCMS policy design and the incidence of CMP, we used ordinary least squares to estimate. Our 2 outcome variables were incidence of CMP before an NCMS reimbursement and that after an NCMS reimbursement. There are various definitions of CMP ranging from the total health care spending exceeding 10% of total household income[15-18] to the total health care spending exceeding 60% of capacity to pay.[19-23] In this article, we adopt the definition in which a household will be entitled to CMP before a reimbursement when annual health care spending before an NCMS reimbursement exceeds 40% of household's capacity to pay. And a household will be entitled to CMP after a reimbursement when annual health care spending after an NCMS reimbursement exceeds 40% of household's capacity to pay. A household's capacity to pay was estimated by multiplying county-level rural per capita net income with household size.

Our regressions also include household characteristics and county characteristics, dummy variables for provinces and years. In the regression which outcome is incidence of CMP after an NCMS reimbursement, we further controlled for the incidence of CMP before an NCMS reimbursement. The standard errors were adjusted for village-level clustering to account for the cluster nature of our sample, relaxing general requirements that the observations be independent.

Ethical Considerations

Ethics approval was not required for this study. Patient consent forms were waived since the presented data are anonymized and the risk of identification is low.

Table 1. Descriptive Statistics of Variables.[a]

Variable	Overall	2007	2011
County NCMS characteristics			
N	50	25	25
Funding level of NCMS in the county (CNY/person), mean (SD)	144 (94)	51 (8)	237 (20)
Proportion of counties where outpatient spending can be reimbursed from a pooled NCMS account	66% (33/50)	40% (10/25)	92% (23/25)
Proportion of counties where outpatient spending can be reimbursed from a family account	34% (17/50)	60% (15/25)	8% (2/25)
Ceiling (for annual reimbursement from NCMS (10 000 CNY), mean (SD)	5.1 (3.6)	2.5 (1.8)	7.6 (3.0)
Nominal reimbursement rate for inpatient spending at township health center (%), mean (SD)	69 (12)	59 (8)	78 (5)
Nominal reimbursement rate for inpatient spending at county hospitals (%), mean (SD)	58 (12)	49 (7)	67 (7)
Nominal reimbursement rate for inpatient spending at provincial hospitals (%), mean (SD)	43 (9)	37 (6)	49 (7)
Household characteristics			
N	4043	2017	2026
Share of household members aged >60 years (%), mean (SD)	18 (29)	16 (28)	20 (31)
Share of males among household members (%), mean (SD)	53 (15)	53 (16)	52 (15)
Share of household members who had off-farm income (%), mean (SD)	39 (28)	35 (28)	42 (28)
Proportion of being bottom 10 percentile of family assets	10% (405/4043)	10% (202/2017)	10% (203/2026)
County characteristics			
N	50	25	25
Medical expenditure of other households in the county(1000 yuan), mean (SD)	2.2 (1.0)	1.6 (0.6)	2.9 (1.0)
Per capita gross value of industrial output (10 000 CNY/person), mean (SD)	2.3 (2.7)	1.4 (1.5)	3.3 (3.2)

Abbreviations: NCMS, New Cooperative Medical Scheme; SD, standard deviation.
[a]Data source: Authors' survey. For continuous variables, SDs are shown in parentheses and for dichotomous variables, n/N values are shown in parentheses. CNY is China's national currency. All money values are adjusted for inflation and reported in currency value as of 2007. 1 CNY = £0.10; €0.15; $0.16.

Results

The NCMS policy design varies across regions. Here, we take the NCMS policy design in 2007 as an example (Appendix Table A1 shows the county NCMS characteristics by province in 2007). First, the per capita funding level in Jiangsu province (an eastern coastal province) was slightly higher than other provinces. Second, even among the 4 provinces that had the same per capita funding level, the ceiling for annual reimbursement varied with a range of 11 000 to 30 000 CNY. Third, the availability of a pooled NCMS account varied across regions with 80% of counties in Jiangsu, 100% of counties in Jilin, and 20% of counties in Shaanxi,

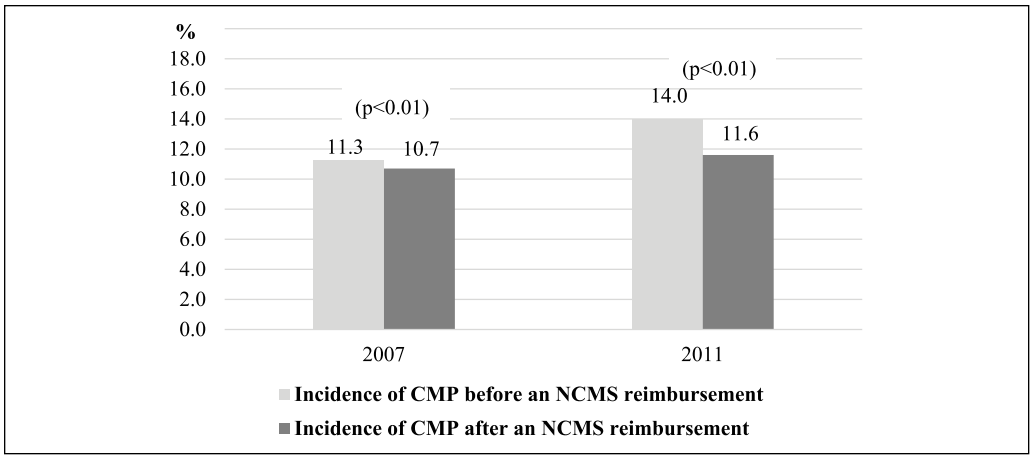

Figure 1. Incidence of catastrophic medical payment among rural households before and after New Cooperative Medical Scheme (NCMS) reimbursement, 2007 and 2011.
Date Source: authors' Survey. Incidence of catastrophic medical payment before an NCMS reimbursement = number of households whose annual health care spending is more than 40% of household's capacity to pay before an NCMS reimbursement/number of households in sample 100%. Incidence of catastrophic medical payment after an NCMS reimbursement = number of households whose annual health care spending is more than 40% of household's capacity to pay after an NCMS reimbursement/number of households in sample × 100%.

and none in Sichuan and Hebei province. Finally, there is a big gap in the nominal reimbursement rate for inpatient spending among provinces. For example, at township health center level, the nominal reimbursement rate was 66% in Shaanxi province while it was 53% in Jiangsu province.

In addition to regional differences, the NCMS policy design also changes over the years. Appendix Table A2 shows the county NCMS characteristics by province in 2011. In comparison with that in 2007, the policy design in 2011 had 2 outstanding changes. First, per capital funding level, ceiling for annual reimbursement, and nominal reimbursement rate for inpatient spending substantially went up. Second, almost all of counties (except two counties in Hebei provinces) abandoned the family account and set up a pooled NCMS account for outpatient spending reimbursement.

Our data show that the incidence of CMP among rural households are also very different among regions. On average, 229 households (11.3%, 229/2017) received CMP before an NCMS reimbursement in 2007 (Figure 1). Of which, 19.0% of rural households in Shaanxi province received a CMP while only 4.0% of rural households in Jiangsu province did so. Even after an NCMS reimbursement, the incidence of CMP among Shaanxi rural households is as high as 18.5%.

We also find that the incidence of CMP among rural households increased between 2007 and 2011. In 2011, 283 households (14.0%, 283/2026) received CMP before an NCMS reimbursement (Figure 1). That is, the incidence of CMP before an NCMS reimbursement increased by 24% between 2007 and 2011. Even after an NCMS reimbursement, the incidence of CMP increased from 10.7% (216/2017) in 2007 to 11.6% (235/2026) in 2011 (Figure 1).

However, the magnitude of reduction of incidences of CMP by an NCMS reimbursement increased over years. Figure 1 also shows that after an NCMS reimbursement, the incidence of CMP significantly reduced by 5.3% (0.6 percentage points, $P < .01$) in 2007 and 17.1% (2.4 percentage points, $P < .01$) in 2011. Taken together, these results imply that the NCMS played a growing role in reducing the incidence of CMP over time.

Table 2. Univariate Analysis of Association Between NCMS Policy Design and Incidence of CMP Among Rural Households.[a]

	(1) Incidence of CMP Before an NCMS Reimbursement		(2) Incidence of CMP After an NCMS Reimbursement	
	Coefficient	*P* Value	Coefficient	*P* Value
Funding level of NCMS in the county (CNY/person)	0.000†	.370	0.000†	.427
Whether outpatient spending can be reimbursed from a pooled NCMS account (yes = 1)	–0.028	.185	–0.039*	.064
Whether outpatient spending can be reimbursed from a family account (yes = 1)	0.039**	.043	0.044**	.021
Ceiling for annual reimbursement from NCMS (10 000 CNY)	–0.001	.632	–0.005	.146
Nominal reimbursement rate for inpatient spending at township health center (%)	0.001	.450	0.001	.451
Nominal reimbursement rate for inpatient spending at county hospitals (%)	0.000†	.912	0.000†	.951
Nominal reimbursement rate for inpatient spending at provincial hospitals (%)	0.002*	.057	0.002**	.047

Abbreviations: CMP, catastrophic medical payment; NCMS, New Cooperative Medical Scheme.
[a]Province dummies and year dummy are controlled. CNY is China's national currency. All money values are adjusted for inflation and reported in currency value as of 2007. 1 CNY = £0.10; €0.15; $0.16.
*$P < .10$, **$P < .05$, ***$P < .01$.
†$0 < b < 0.001$.

Table 2 reports the results of the univariate analysis. It shows that the incidence of CMP before an NCMS reimbursement was positively associated with whether outpatient spending could be reimbursed from a family account ($P = .043$) and the nominal reimbursement rate for inpatient services at provincial hospitals ($P = .057$). In addition, the incidence of CMP after an NCMS reimbursement was also positively associated with whether outpatient spending could be reimbursed from a family account ($P = .021$) and the nominal reimbursement rate for inpatient services at provincial hospitals ($P = .047$). Furthermore, a lower incidence of CMP after an NCMS reimbursement was found to be associated with a higher possibility of having a pooled NCMS account for outpatient spending reimbursement ($P = .064$). These results imply that a pooled NCMS account for outpatient spending is potentially more effective than a family account in reducing the incidence of CMP.

Table 3 shows the multivariate analysis results. We first look at the effect of NCMS policy design on the incidence of CMP before a reimbursement (columns 1 and 2, Table 3). Consistent with the univariate analysis results, the results shows that a higher nominal reimbursement rate for inpatient spending at provincial hospitals was associated with a higher incidence of CMP before an NCMS reimbursement ($P = .047$). We found that the incidence of CMP before an NCMS reimbursement would increase by 0.2 percentage points (2% increase) if the nominal reimbursement for inpatient spending at provincial hospitals increased by 1 percentage point. In addition, the probability of a household receiving a CMP could reduce by 6.4 percentage points (51% reduction) if outpatient spending was reimbursed from a pooled NCMS account ($P = .050$).

Table 3. Multivariate Analysis of Factors Potentially Affecting Incidence of CMP Among Rural Households.[a]

	(1) Incidence of CMP Before an NCMS Reimbursement		(2) Incidence of CMP After an NCMS Reimbursement	
	Coefficient	*P* Value	Coefficient	*P* Value
Incidence of CMP before NCMS reimbursement (yes = 1)			0.876***	<.001
County NCMS characteristics				
Funding level of NCMS in the county (CNY/person)	0.001	.198	0.000†	.652
Whether outpatient spending can be reimbursed from a pooled NCMS account(yes = 1)	–0.064**	.050	–0.019**	.030
Whether outpatient spending can be reimbursed from a family account (yes = 1)	0.003	.895	–0.004	.537
Ceiling for annual reimbursement from NCMS (10 000 CNY)	0.003	.317	–0.003**	.034
Nominal reimbursement rate for inpatient spending at township health center (%)	0.002	.310	0.000†	.733
Nominal reimbursement rate for inpatient spending at county hospitals (%)	–0.001	.430	–0.000†	.891
Nominal reimbursement rate for inpatient spending at provincial hospitals (%)	0.002**	.047	0.000†	.264
Household characteristics				
Share of household members aged >60 years (%)	0.001***	<.001	0.000†	.183
Share of males among household members (%)	–0.001	.150	0.000†	.932
Share of household members who had off-farm income (%)	–0.001***	<.001	0.000†	.998
Bottom 10 percentile of family assets (yes = 1)	0.031	.131	0.009	.121
County characteristics				
Average medical expenditure of other households in the county (1000 CNY)	0.067***	<.001	0.005	.264
Per capita gross value of industrial output (CNY/person)	–0.013***	.002	–0.002*	.085
Province and year dummies				
Sichuan	–0.074**	.018	–0.043***	<.001
Shaanxi	–0.025	.536	–0.032**	.014
Jilin	0.019	.352	–0.012	.144
Hebei	–0.027	.273	–0.033***	.001
Year 2011	–0.202*	.081	–0.012	.660
Constant	–0.061	.420	.013	.568
Observations	4043		4043	
R^2	.068		.868	

Abbreviations: CMP, catastrophic medical payment; NCMS, New Cooperative Medical Scheme.
[a]CNY is China's national currency. All money values are adjusted for inflation and reported in currency value as of 2007.
1 CNY = £0.10; €0.15; $0.16.
*$P < .10$, **$P < .05$, ***$P < .01$.
†$0 < b < .001$.
‡$-0.001 < b < 0$.

Next, we estimate the effect of NCMS policy design on the incidence of CMP after a reimbursement. As shown in Table 3 (columns 4 and 5), whether outpatient spending can be reimbursed from a pooled NCMS account ($P = .030$) and a higher ceiling for annual reimbursement from the NCMS ($P = .034$) reduced the incidence of CMP after a reimbursement. Specifically, if a pooled NCMS account was established to reimburse outpatient spending, the incidence of CMP after an NCMS reimbursement would reduce by 1.9 percentage points (ie, 15%). In addition, if the ceiling for annual reimbursement increased to 10 000 CNY, the incidence of CMP after an NCMS reimbursement rate would reduce by 0.3 percentage points (ie, 2%). These results indicate that, all else equal, the NCMS with a pooled account for outpatient spending and a higher ceiling for annual reimbursement will be more effective in reducing the incidence of CMP.

Discussion

This study shows that the incidence of CMP before an NCMS reimbursement among rural households was 11.3% in 2007 and 14.0% in 2011. We find that a pooled NCMS account for outpatient spending reimbursement can reduce the incidence of CMP before a reimbursement. The possible explanation is that patients will be more likely to choose outpatient services when related spending can be reimbursed. Otherwise, patients would choose more expensive inpatient services to claim a reimbursement, even if they did not need. The result also reveals that a higher reimbursement rate for inpatient spending at higher level health facilities will increase the incidence of CMP before an NCMS reimbursement. A possible reason is that higher reimbursement rate at higher level health facilities might encourage patients to visit these health care facilities which are perceived to deliver higher quality but at a high price.

After an NCMS reimbursement, the incidence of CMP was reduced by 5.3% in 2007 and by 17.1% in 2011. We find that a pooled account for outpatient spending reimbursement, instead of a family account, can reduce the incidence of CMP after an NCMS reimbursement. The insignificant effect of a family account may be partially due to the nature that maintains the funding for each household and is not shared as a risk pool. The lack of significance of NCMS funding level suggests that increased investment does not necessarily reduce the incidence of CMP after a reimbursement. A possible reason is that patients use more expensive care (regardless of whether it is appropriate and of quality).[9] The associations between nominal reimbursement rates for inpatient spending and the incidence of CMP after an NCMS reimbursement are found to be nonsignificant. This might be explained by the wide disparity between nominal and real reimbursement rates.[7]

In our study, the establishment of a pooled account for outpatient spending reimbursement, instead of higher reimbursements for inpatient services, significantly reduced the incidence of CMP before an NCMS reimbursement and that after a reimbursement. This poses certain doubts on the current policy design. Every year, about 80% of NCMS funding is allocated for the reimbursement of inpatient services.[24] However, it has at least 2 shortcomings that we focus on inpatient service reimbursements. First, patients (especially the elderly, poor, and chronic patients) might not seek medical services on a timely basis until their disease is serious enough to use inpatient services[25]; this in turn increases the total health care spending and risk of CMP. With epidemiological transitions and demographic transitions in China,[26] the need for outpatient spending reimbursement will become more pronounced. Second, a higher reimbursement for inpatient services (with negligible outpatient service reimbursement) might induce patients to unnecessarily use inpatient services so that they can claim an NCMS reimbursement. This simply translates to a less than optimum

utilization of NCMS funding and insufficient resources for inpatients who genuinely need financial aid.

An advantage of our study is its unique data collection of nationwide county NCMS administrative offices. Detailed information about the nature of each county's approach to the scheme allows us to identify the effects of a wide range of NCMS policy design attributes across counties on the reduction of the incidence of CMP. The limitation of this study is that the income or expenditure data at the household level are absent. Although the incidence of CMP found in this study is similar to that at the national level,[27] it has a 2-fold effect on the estimation of the incidence of CMP to use county-level rural per capital net income as a proxy for household's per capita net income. It overestimates the incidence of CMP among the rich because their household income is above the average income of local households, and vice versa among poor households.

Conclusion

Although China has been significantly increasing its investment in NCMS, our study finds that NCMS provides increasing, but small, financial protection to rural households who incur CMP. Our findings highlight that a more generous NCMS funding and higher reimbursement for inpatient spending does not necessarily reduce the incidence of CMP. In contrast, the establishment of a pooled NCMS account for outpatient spending reimbursement and a higher ceiling for annual reimbursement can effectively reduce CMP incidence after an NCMS reimbursement. Thus, we conclude that the policy design of NCMS can be improved to strengthen the effects of NCMS on the reduction of CMP incidence.

The Chinese government is initiating a series of medical and health reforms, which sets the stage for a promising future for NCMS. In 2012, the government started an insurance plan designed for catastrophic illness as a supplement to the NCMS.[28] If designed correctly, these program could help achieve NCMS' goal of protecting rural residents. Thus, it is fundamental that impact evaluations are conducted to help the government develop appropriate evidence-based policies and implement program changes in the NCMS.

Appendix

Table A1. County New Cooperative Medical Scheme (NCMS) Characteristics by Province (2007).[a]

Variable	All	Jiangsu	Sichuan	Shaanxi	Jilin	Hebei
Funding level of NCMS in the county (CNY/person), mean (SD)	51 (8)	56 (0)	50 (0)	50 (0)	50 (0)	50 (0)
Proportion of counties where outpatient spending can be reimbursed from a pooled NCMS account	40% (10/25)	80% (4/5)	0% (0/5)	20% (1/5)	100% (5/5)	0% (0/5)
Proportion of counties where outpatient spending can be reimbursed from a family account	60% (15/25)	40% (2/5)	100% (5/5)	40% (2/5)	20% (1/5)	100% (5/5)
Ceiling for annual reimbursement from NCMS (10 000 CNY), mean (SD)	2.5 (1.8)	5.6 (1.7)	1.3 (0.4)	1.1 (0.2)	3 (0)	1.5 (0)
Nominal reimbursement rate for inpatient spending at township health center (%), mean (SD)	59 (8)	53 (14)	58 (5)	66 (7)	60 (0)	57 (3)

(continued)

Table A1. (continued)

Variable	All	Jiangsu	Sichuan	Shaanxi	Jilin	Hebei
Nominal reimbursement rate for inpatient spending at county hospitals (%), mean (SD)	49 (7)	46 (11)	46 (7)	55 (9)	50 (0)	46 (2)
Nominal reimbursement rate for inpatient spending at provincial hospitals (%), mean (SD)	37 (6)	37 (12)	32 (4)	39 (7)	40 (0)	35 (4)

[a]Data source: Authors' survey. For continuous variables, standard deviations are shown in parentheses and for dichotomous variables, n/N values are shown in parentheses. CNY is China's national currency. 1 CNY = £0.10; €0.15; $0.16.

Table A2. County New Cooperative Medical Scheme (NCMS) Characteristics by Province (2011).[a]

Variable	All	Jiangsu	Sichuan	Shaanxi	Jilin	Hebei
Funding level of NCMS in the county (CNY/person), mean (SD)	237 (20)	254 (32)	229 (2)	244 (31)	230 (0)	230 (0)
Proportion of counties where outpatient spending can be reimbursed from a pooled NCMS account	92% (23/25)	100% (5/5)	100% (5/5)	100% (5/5)	100% (5/5)	60% (3/5)
Proportion of counties where outpatient spending can be reimbursed from a family account	8% (2/25)	0% (0/5)	0% (0/5)	0% (0/5)	0% (0/5)	40% (2/5)
Ceiling for annual reimbursement from NCMS (10 000 CNY), mean (SD)	7.6 (3.0)	12.0 (2.7)	7.8 (1.6)	6.6 (3.6)	6.0 (0)	5.6 (0.9)
Nominal reimbursement rate for inpatient spending at township health center (%), mean (SD)	78 (5)	76 (4)	84 (4)	81 (2)	74 (5)	78 (4)
Nominal reimbursement rate for inpatient spending at county hospitals (%), mean (SD)	67 (7)	64 (5)	72 (6)	73 (7)	64 (5)	66 (7)
Nominal reimbursement rate for inpatient spending at provincial hospitals (%), mean (SD)	49 (7)	50 (7)	49 (11)	47 (7)	51 (5)	49 (8)

[a]Data source: Authors' survey. For continuous variables, standard deviations are shown in parentheses and for dichotomous variables, n/N values are shown in parentheses. CNY is China's national currency. All money values are adjusted for inflation and reported in currency value as of 2007. 1 CNY = £0.10; €0.15; $0.16.

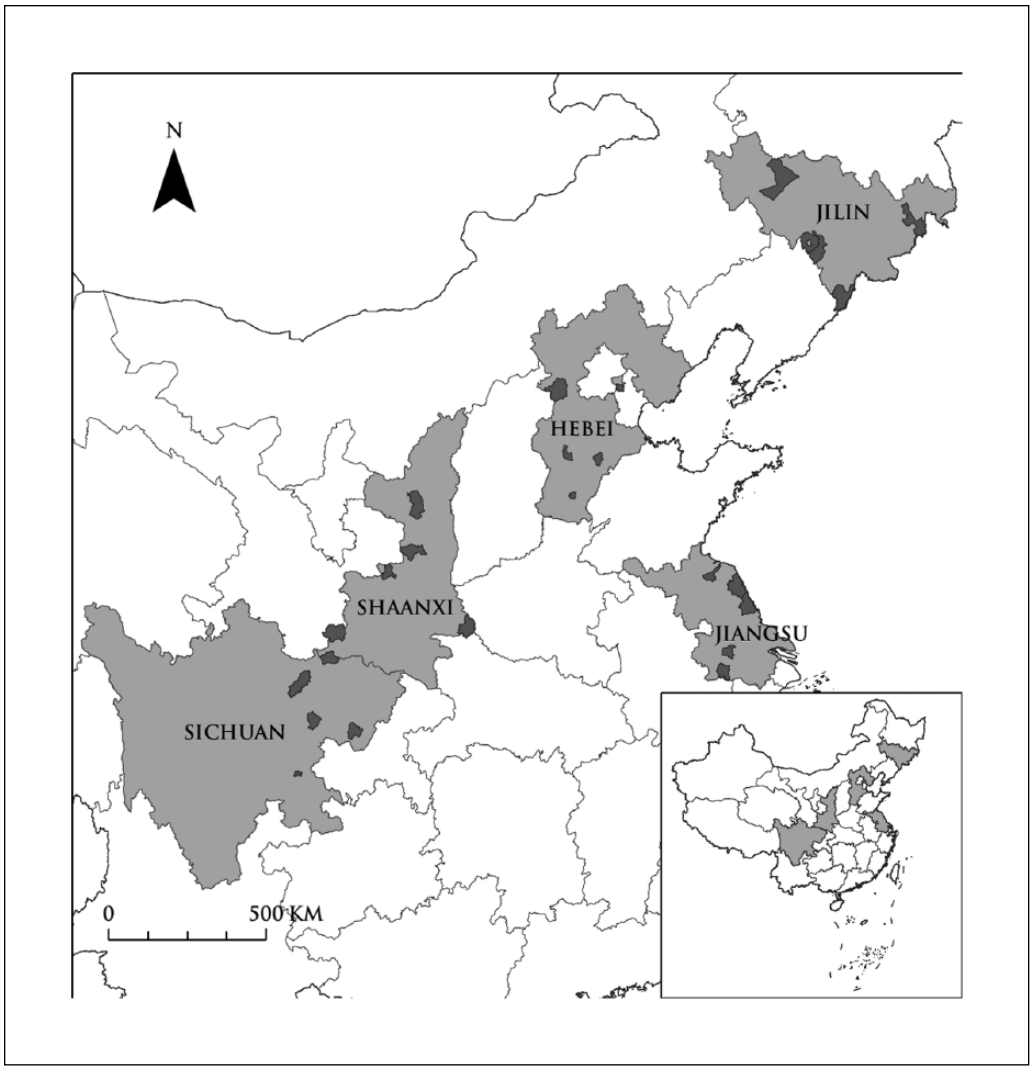

Figure A1. Location of sample provinces and counties.

Authors' Note

The technical appendix, statistical code, and the data set are available from the corresponding author at yihm.ccap@igsnrr.ac.cn. The funding sources did not have a role in the design or conduct of the study; collection, management, analysis, or interpretation of the data; preparation, review, or approval of the manuscript; or decision to submit the manuscript for publication.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: We declare that Yilei Ding is an employee of NCMS Office in China National Health and Family Planning Commission. The terms of this arrangement have been reviewed and approved by the Center for Chinese Agricultural Policy in accordance with its policy on objectivity in research. Other authors have no conflicts of interest.

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