Implementing the New Cooperative Medical System in China

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Introduction

Although China's economy has grown rapidly since reforms began in 1979, little or no progress has been made on some measures of economic development. More specifically, the health of China's citizens has not improved as much as one would expect with its economic growth (Deaton, 2003). For example, Grigoriou, Guillaumont, and Yang (2005) show that gains in infant mortality have not been as rapid as could be expected with GDP growth. Furthermore, other statistics that are considered to be good indicators of health status, such as life expectancy, have not risen with national income (China National Statistical Yearbook, 2004).

At least some of the lack of improvement in the health status of China's citizens can be attributed to the fiscal decentralization that has taken place since the reforms. In particular, the autonomy of rural communities has grown since reforms began (e.g. Naughton, 1995). It is likely that this autonomy has had a negative effect on health outcomes, as rural communities became responsible for providing their own health clinics and goods. Not surprisingly, urban-rural differences in access to health care have risen sharply (Zhang and Kanbur, 2005). Illness has also become a leading cause of poverty among China's farming households (Jalan and Ravallion, 1999).

In October 2002, China's government officially put health care for China's 900 million rural residents back on the Party agenda. The New Cooperative Medical System (NCMS) seeks to institute a new system of group insurance, allowing farmers to benefit from risk pooling. To date, NCMS programs have been implemented in over 300 pilot counties, and by 2010 the NCMS is meant to operate nationwide.

As with other social programs implemented gradually in China, lower level governments (in this case, counties) have been given autonomy in designing and implementing several aspects

of NCMS programs. As a result, eligibility, benefits, and management vary a great deal across counties. In some counties, whole households must enroll in the program, whereas in other counties individuals may sign up without other household members. Policies regarding eligibility of out-migrants also differ. Some counties allow out-migrants to participate, whereas others do not. Among counties that allow migrant participation, some require migrants to return home for treatment, whereas others allow migrants to seek treatment where they work. Regarding benefits, the minimum reimbursable expense, reimbursement schedules, maximum total payouts, and the ailments covered differ across localities. For example, the share of reimbursable medical costs ranges from as low as 20% to as high as 80%. In some counties, the focus of the program is on catastrophic care, whereas preventative measures such as physical examinations are included as part of the program in others. Finally, counties have implemented different management structures, and these differences may impact the effectiveness of the local programs.

The objective of this paper is to describe the variation in the implementation of NCMS programs to date. To meet this objective, we will use a unique data set collected by students at Nanjing Agricultural University, Yunnan Agriculture University, Northeast Agricultural University, and Northwest Agricultural and Forestry Science and Technology University in January, 2005. It includes 226 unique villages that have implemented NCMS programs in 27 different provinces in China. We will describe variation in enrollment rates, contributions made by villagers, and reimbursement procedures. The variation will be described regionally and correlations between variables will also be discussed.

The paper will proceed as follows. First, we describe the recent history of collective health insurance in rural China in more detail, and discuss two specific NCMS programs in more

detail. Second, we discuss the data set and its limitations. Third, we provide our main analysis. The final section concludes.

Cooperative Medical Systems in Rural China

Prior to economic reforms, rural health care was an integral part of the collective farming system. Under the auspices of the Rural Cooperative Medical System, individual commune members contributed a portion of their incomes to a commune-based medical fund. In the event that a commune member needed medical care, the fund paid all or part of the expenses incurred. The Rural Cooperative Medical System thus served as a risk-pooling measure for China's farmers.

The Rural Cooperative Medical System was quite successful at providing health services for residents of China, and as a result health indicators for China were much better than other countries with similar levels of economic well-being in the 1970s. For example, in 1980 life expectancy was 67 years in China, the same as in Mexico, which had a much higher GDP per capita, whereas India and Pakistan both had life expectancy of 56 years and somewhat higher GDPs than China (World Development Indicators, 2004).

The collapse of the Rural Cooperative Medical System contributed to the stagnation of health improvements after reforms began. Farmers who became sick either spent down family savings to purchase health care or forwent medical services altogether. Illness, then, may lead to poverty persistence in rural China, as either the depletion of savings or labor difficulties associated with a lack of medical attention may force some households into poverty. Not surprisingly, life expectancy in China only rose to 71 years by 2002 despite an approximately fivefold increase in per capita GDP between 1979 and 2004.

The New Cooperative Medical System (NCMS) includes three features that differentiate it from the original Rural Cooperative Medical System. First, participation is not mandatory, so local governments are charged with encouraging farmers to voluntarily enroll. Second, individual contributions are matched by local and national government entities to increase the total funds available for medical treatment. Third, program assets are managed by health departments in local governments, typically at the county level. To date, NCMS programs have been implemented in 304 pilot counties. By 2010, the program will operate nationwide.

Because local governments are charged with designing individual systems, significant variation exists, even within neighboring counties. In the summer of 2004, the authors visited Feidong and Feixi counties in Anhui province, both adjacent to the capital, Hefei. Feixi had become a national experimental county (which qualifies participants for matching funds from the national government) in 2003, whereas Feidong was not. All of the townships in Feixi were thus included in the NCMS, while Feidong county had begun experimental programs in three of its 36 townships.

Since the scale of programs in the two visited counties was quite different, it is not surprising that there were some administrative differences. For example, since Feixi is a national experimental county, the national government gives the program a 10 yuan subsidy per person, and the provincial government gives 3 yuan. Neither government gives anything to Feidong for its program right now, although they will if Feidong becomes an experimental county. Since the provincial and national governments subsidize the Feixi but not the Feidong programs, the Feixi program was better funded, at 30 yuan per person versus 20 yuan per person. Each participant contributes 10 yuan in each county, so the Feixi members have a larger subsidy as well. Moreover, the administration of the program takes place at the county level in Feixi, with four

full-time administrators. In Feidong, the administration presently takes place at the township level. However, administrators claimed that it would move to the county level if the county becomes a national experimental county.

The programs also differed in ways that one would not expect, especially for neighboring counties. For example, the reimbursement schemes differed dramatically (Table 1). In Feixi county, the percentage of a medical expenses that was covered depended upon the type of hospital that performed the treatment. Holding the cost of treatment constant, treatments that were performed at township hospitals receive larger contributions than county hospitals, and treatments performed at other hospitals (such as hospitals in Hefei) receive even lower reimbursements. In Feidong, the minimum expense that is reimbursed is higher; a patient must incur a 500 yuan expense before any portion is reimbursed. However, there were no restrictions on repayment by hospital type. According to administrators, a villager could theoretically receive treatment in the city hospital and would receive reimbursement as if they had been treated in the township hospital. Nonetheless, villagers were encouraged to use hospitals in the townships.

Our interviews show that there was a great deal of variation in the way NCMS programs are administered and designed, even between neighboring counties. Although some of these differences are related to the fact that Feixi is an experimental county while Feidong is not, it is remarkable that two adjacent counties have such different programs. In the next section, we describe the data we will use to analyze variation in programs all across China.

Data Set

Our primary analysis will be conducted using data collected by undergraduate students at Nanjing Agricultural University, Yunnan Agriculture University, Northeast Agricultural University, and Northwest Agricultural and Forestry Science and Technology University during January of 2005. The students were asked to interview village leaders in their home villages about any cooperative medical system in the village. After eliminating obviously incorrectly completed forms and duplicates, we have a sample of 602 villages in 28 different provinces. Of the 602 villages, 226 had an NCMS program, although 328 of the villages were located in a county with an NCMS program. The 226 affirmative villages are in 27 different provinces and 142 unique counties. Even though we do not have a random sample, the sample should nevertheless capture a great deal of the variation in the implementation of the NCMS. The sample draws most heavily from the provinces enrolling the most students at these agricultural universities, particularly Jiangsu, Gansu, Heilongjiang, Shaanxi, Ningxia, Henan, and Yunnan

The survey attempted to describe several aspects of each program from the perspective of the village. After asking about the demographics of the village and whether or not a program existed, the survey asked about participation in the program, how the program was promoted, how the funding of the program works, and how reimbursements take place. The survey specifically asked about migrants to learn whether migration affected the implementation of the program. The survey also included a module that was designed to learn how much individuals were paid back for medical expenses of various amounts. Finally, the survey asked why non-participating villages did not participate in an NCMS program.

Lack of resources is the most common explanation for why a village does not participate (Table 2); particularly in poor provinces; indeed, such a response is consistent with the fact that some counties have experienced difficulty meeting the unfunded mandate to match individual

contributions to the system. Other villages lacked awareness about the NCMS program. Interestingly, few village leaders asserted that participation levels were too low or that there was a general lack of interest, although the latter explanation was somewhat higher in richer villages.

Our analysis will proceed by describing the survey results in the 226 villages with a program when discussing variables that will vary by village and by describing the survey results in the 142 counties when variables can vary by county. Although our sample is not particularly large, it captures a significant portion of the counties that had NCMS programs by the beginning of 2005.

Describing the NCMS

In the 226 villages with NCMS programs, the average enrollment rate in our sample is 68%. However, enrollment rates are not normally distributed. Rather, there are a number of villages with enrollment rates between 20 and 40%, whereas the majority of villages have enrollment rates between 75 and 90% (Figure 1). The median enrollment rate in the sample matches the national target enrollment of 80%. Finally, 10% of villages have full enrollment in the program. Moreover, methods of enrollment differ; in about half the sample, individuals are allowed to enroll on their own, whereas in the other half whole households must enroll at one time. Enrollment rates tend to be higher when whole household is required to enroll as a unit; the average enrollment rate is 75% versus 60% when individuals can choose whether or not to enroll.

The treatment and enrollment of migrants differs across villages as well. Conditional on having any migrants enrolled, the average enrollment rate is only 45%. The migrant enrollment rate is zero in over one fourth of the villages, indicating that migrants may not be eligible in

many villages.[§] Somewhat surprisingly, the rates do not differ by enrollment method; they are almost the same whether households or individuals enroll. There are several reasons migrants might enroll at lower rates than permanent residents. As migrants tend to be younger, they may not feel the need for health insurance. They might alternatively be skeptical that they can receive treatment in their destination and be reimbursed for it by township or county authorities at home.

We find that average enrollment is highest in high income provinces. In the average village in high income provinces, 83% of villagers have enrolled, whereas only 62% of villagers have enrolled in middle income provinces and 59% in low income provinces. There are several reasons this might be so. First, it could be that the program is still considered expensive by villagers in poorer areas of rural China. As a result, few villagers choose to participate. Alternatively, it could be that because governments in higher income provinces have more resources available to them, they can better promote the NCMS, and therefore more people enroll. Finally, it could be that the value inherent in the program varies by income level. In places with higher incomes, higher reimbursements may be offered for large expenses than in places with lower incomes. We will explore these hypotheses as the paper continues.

To encourage villagers to enroll in the NCMS, county health officials, county or township officials, or village leaders are responsible for promoting the program (Table 3). The data show that village leaders are the most effective advocates of an NCMS program. Of the 226 villages for which we have data, village leaders were involved in promotion 88% of the time. Enrollment rates were much lower when village leaders were not involved in promotion; whereas 70% of villagers enrolled when village leaders were involved, only 50% enrolled when they were not. Part of this difference may be explained by income level; village leaders are

[§] Unfortunately, the survey did not ask directly whether or not migrants were eligible for the NCMS program in the village.

almost always involved in promotion in high income provinces. Health officials were the least effective in promoting the program, as there is almost no difference in average enrollment rates whether health officials were involved or not. Township and county officials were somewhat effective, but not as effective as village leaders. There are again several explanations for these differences. It could be that villagers trust their leaders and are more likely to enroll when they are involved in promoting the program. Alternatively, they may feel coerced into joining by government officials, whereas they do not feel coerced by health officials.

Officials adopted a surprising range of promotion mechanisms, including newspaper, radio, and television advertisements, mobile loudspeakers, home visits by health workers and village, township, and county officials, and public performances (Table 4). Counties in high-income provinces tend to employ more and different promotion strategies (including several high-cost strategies) than counties in low-income provinces, including conferences, home visits, advertisements in the media, and public performances. Counties in less well-off provinces rely disproportionately on mobile loudspeakers and lists of other participants' names. Again, counties in wealthy provinces tend to have higher enrollment rates, suggesting that their promotion strategies may be more effective.

In addition to designing the promotion strategies for the NCMS programs, local officials are also charged with deciding the required contribution for participants, determining matching contributions made by the township and county governments, and applying for matching funding from the prefectural, provincial, and national governments. Table 5 details these contributions.

The average personal contribution is 15.8 yuan, with an additional 19.8 yuan match from other sources. The personal contribution varies from as little as 2 yuan to as much as 70 yuan.[**] The median personal contribution is 10 yuan. The matching contribution also varies substantially by county, with 57 townships offering no match at all and 15 offering at least 50 yuan in matching funds. Not unexpectedly, the match offered by townships in higher in wealthier areas, and the contribution made by the national government is inversely related to wealth. Curiously, however, prefectures give substantially higher matching contributions in wealthy areas, suggesting that progressive targeting on the part of the national government may be offset.

With an average contribution of just 35.6 yuan per person, counties have adopted a number of strategies for provide health coverage.[††] To be sure, the NCMS program is widely intended to provide catastrophic insurance for poor farmers, so reimbursement rates generally rise with the total medical bill.[‡‡] To identify this effect, village leaders were asked to describe reimbursement rates for five expenditure levels: 200 yuan (suggesting a relatively minor procedure), 600 yuan, 1200 yuan, 6000 yuan, and 12,000 yuan (suggesting a major operation). In addition, local leaders have an interest in seeing local hospitals used as much as possible, so reimbursement schemes are often biased in favor of local hospitals.

As shown in Figure 2, there is a penalty for seeking health care outside the county, particularly for inexpensive procedures that can likely be performed in the county; the penalty is

[**] In one surveyed township, a local business paid the individual contribution for all village residents.

[††] While many counties have adopted best practices developed by pilot counties, one colleague was told that the local junior high math teacher derived the reimbursement scheme in one NCMS county.

[‡‡] Again, some counties pay fixed amounts for specific ailments. The discussion below emphasizes the case in which expenses are partially reimbursed.

less severe for expensive procedures. Village clinics also have low reimbursement rates, perhaps because the program directors are generally township and county-level officials rather than village leaders.

Tables 3 through 6 indicate the reimbursement rates at village clinics, township hospitals, county hospitals, and prefecture hospitals (and other specialty hospitals). Except in wealthy provinces, reimbursement rates at village clinics decline with expenditures (Figure 3), perhaps as a means of encouraging participants to use township and county hospitals for more difficult medical procedures. In wealthy provinces, reimbursement rates at village clinics rise with expenditures, although it may be the case that village clinics in wealthy areas have the machinery necessary for more complicated medical procedures. Reimbursement rates in township and county hospitals rise in both high-income and low-income provinces (Figures 4 and 5) but are generally static for middle-income counties. For prefecture hospitals, reimbursement rates rise with expenditures in middle-income and high-income provinces, but not in low-income provinces.

Again, it is worth noting that counties in high-income provinces generally offer higher reimbursement rates than counties in other provinces. Moreover, we have reimbursement rates for a total of 9 low-income townships. All 9 make reimbursements for small expenses (200, 600, 1200 RMB), but only 6 pay a percentage if the bill is 6000 RMB and only 4 pay a percentage of the bill is 12,000 RMB. Contrast this with high-income counties, of which we have reimbursement data for 42. Only a few make reimbursements for 200 and 600 RMB (13 and 17 counties, respectively). But all 42 reimburse a percentage on 6000 RMB expenses and 39 reimburse a percentage on 12,000 RMB expenses.

Concluding Remarks

Table 1. Reimbursement Schemes for the NCMS, Feixi and Feidong Counties, Anhui Province

Feixi County				Feidong County	
	Reimbursement Rate for:				
Amount	Township Hospital	County Hospital	Other Hospital	Amount	Reimbursement Rate
301-1000 yuan	20%	15%	10%	501-1000 yuan	30%
1001-3000 yuan	35%	30%	10%	1001-5000 yuan	35%
3001-5000 yuan	40%	30%	15%	5001-10000 yuan	40%
5001-10000 yuan	45%	35%	15%	over 10000 yuan	5000 yuan
10001-15000 yuan	50%	35%	15%		
15001-20000 yuan		50%	30%		
over 20000 yuan			30%		

Notes: The reimbursement rate shows the amount the patient would be reimbursed for expenses. For example, a farmer with a medical expense of 6000 yuan in Feidong County would be reimbursed 40% of 6000 yuan, or 2400 yuan.
Source: Interviews of county and township officials by authors.

Table 2. Explanations for why Individual Villages Were Not NCMS Participants

	All villages	Villages in NCMS counties	Low income provinces	Middle income provinces	High income provinces
Lack of awareness	23.4%	27.5%	20.3%	26.9%	21.9%
Lack of resources	48.4%	45.1%	49.2%	50.3%	34.4%
Lack of interest	6.7%	5.9%	4.0%	9.6%	6.3%
Participation levels too low to qualify	10.4%	4.9%	9.6%	10.2%	15.6%
Waiting for the program to become available	5.1%	3.9%	6.8%	3.0%	6.3%
Other	22.3%	24.5%	28.8%	13.8%	31.3%
N	376	102	177	167	32

Notes: Columns may not sum to 100% because many survey respondents identified multiple explanations.

Table 3. Responsibility for Promoting the NCMS

	All villages	Low income provinces	Middle income provinces	High income provinces
Community health workers	67.7%	67.6%	65.1%	71.63%
Village leaders	81.0%	76.5%	72.6%	97.3%
Township government	50.8%	47.1%	38.7%	71.6%
County government	30.2%	35.3%	22.6%	3.5%
N	248	68	106	74

Notes: Columns may not sum to 100% because multiple entities were responsible for promotion in some villages.

Table 4. Promotion Strategies

	All villages	Low income provinces	Middle income provinces	High income provinces
Posters	68.6%	66.2%	64.2%	77.0%
Mobile loudspeakers	26.6%	33.8%	25.5%	21.6%
Newspaper articles	27.4%	29.4%	18.9%	37.8%
Radio and TV advertisements	41.9%	33.8%	35.9%	58.1%
Village meetings	63.7%	58.8%	53.8%	82.4%
Visits by health workers	41.1%	36.8%	34.9%	54.1%
Public performances	13.7%	11.8%	6.6%	25.7%
Visits by leaders	42.3%	36.8%	38.7%	52.7%
Published lists of participants	25.0%	30.9%	17.9%	29.7%
Conferences	28.2%	29.4%	21.7%	36.5%
Other	4.0%	4.4%	2.8%	5.4%
N	248	68	106	74

Notes: Columns may not sum to 100% because many villages employed multiple promotion strategies.

IGNORE TABLE 5 – still working on it

Table 5. Contributions and Matches by Various Entities

	All villages	Minimum contribution	Maximum contribution	Low income provinces	Middle income provinces	High income provinces
Personal contribution	14.3	0	70	11.8	14.5	15.9
Township matching contribution	4.3	0	40	2.6	4.1	5.9
County matching contribution	3.4	0	30	2.5	3.8	3.5
Prefecture matching contribution	4.6	0	40	2.1	3.4	8.2
Province matching contribution	3.1	0	50	3.1	3.5	2.5
National matching contribution	3.1	0	60	3.8	3.7	1.7
Total contribution	14.3	0	214	11.8	14.5	15.9
N	226			60	93	73

Figure 1. Enrollment Rates by Participating Village

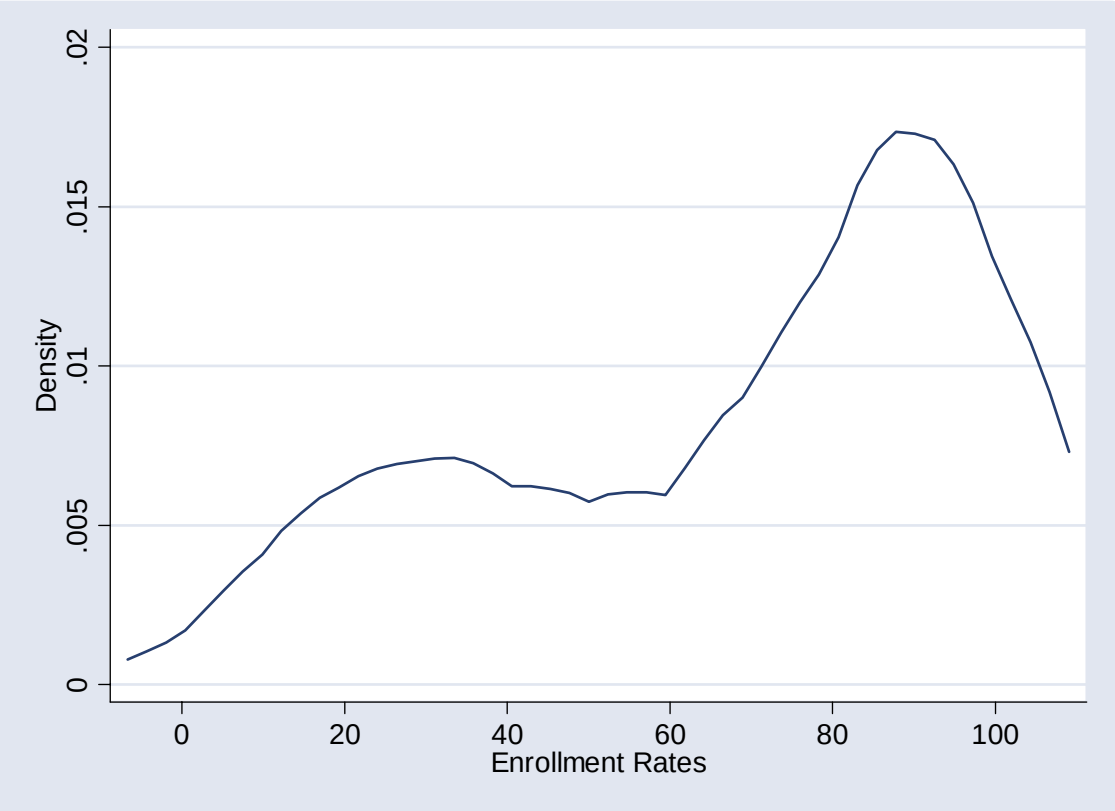


Figure 2.

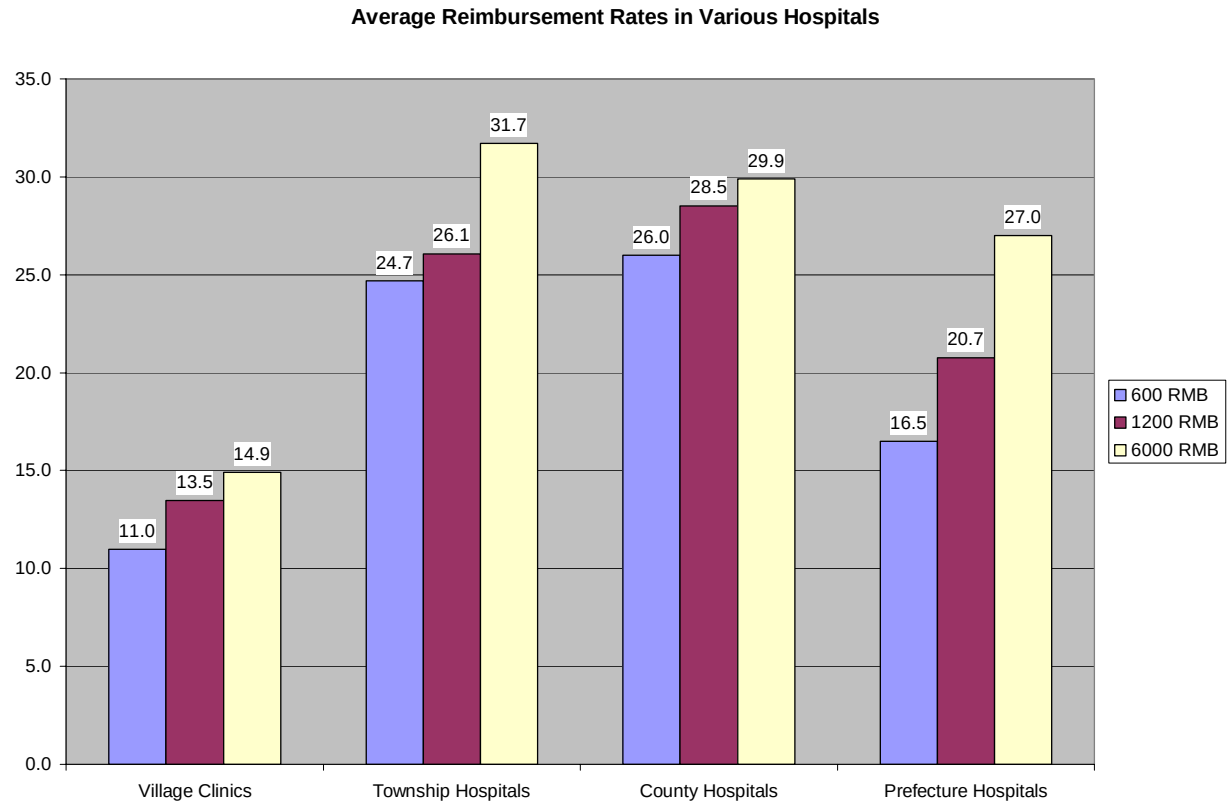

Average Reimbursement Rates in Various Hospitals
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
11.0
13.5
14.9
24.7
26.1
31.7
26.0
28.5
29.9
16.5
20.7
27.0
Village Clinics
Township Hospitals
County Hospitals
Prefecture Hospitals
600 RMB
1200 RMB
6000 RMB

Figure 3.

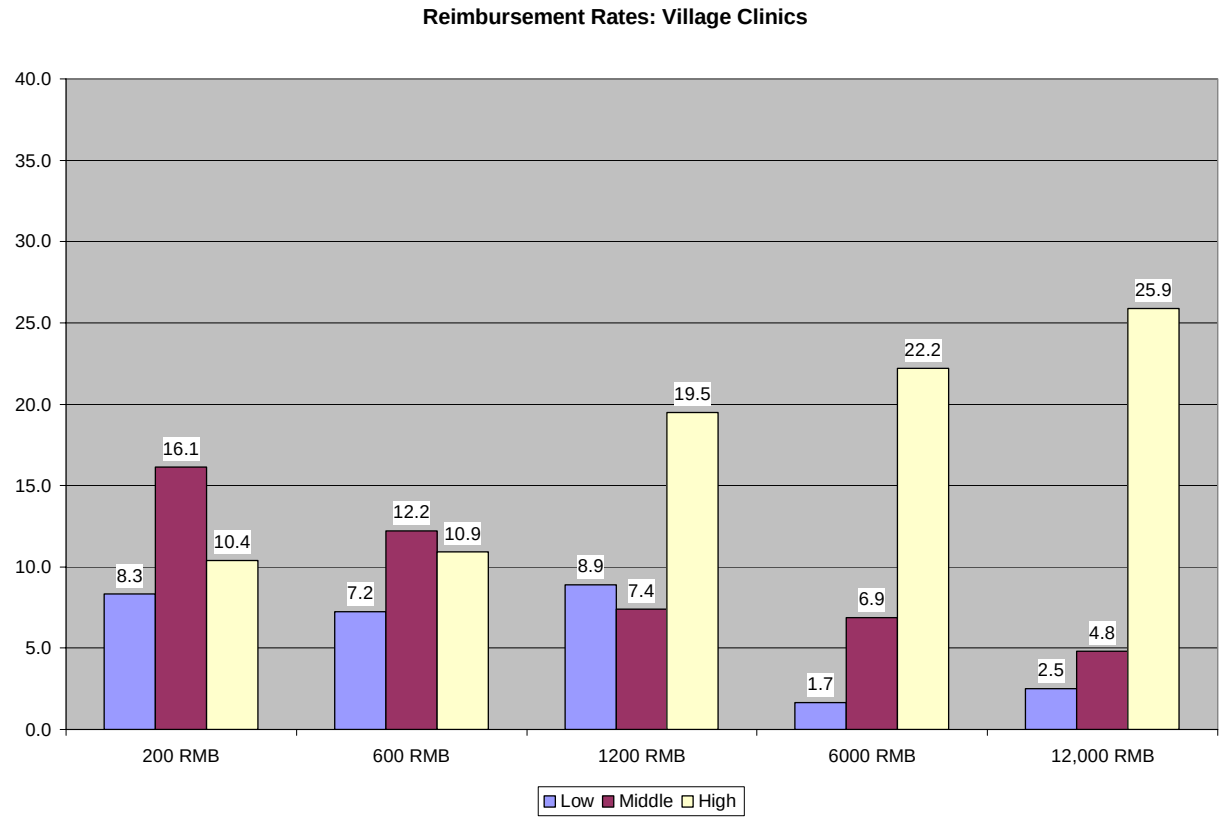

Reimbursement Rates: Village Clinics
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
8.3
16.1
10.4
7.2
12.2
10.9
8.9
7.4
19.5
1.7
6.9
22.2
2.5
4.8
25.9
200 RMB
600 RMB
1200 RMB
6000 RMB
12,000 RMB
Low
Middle
High

Figure 4.

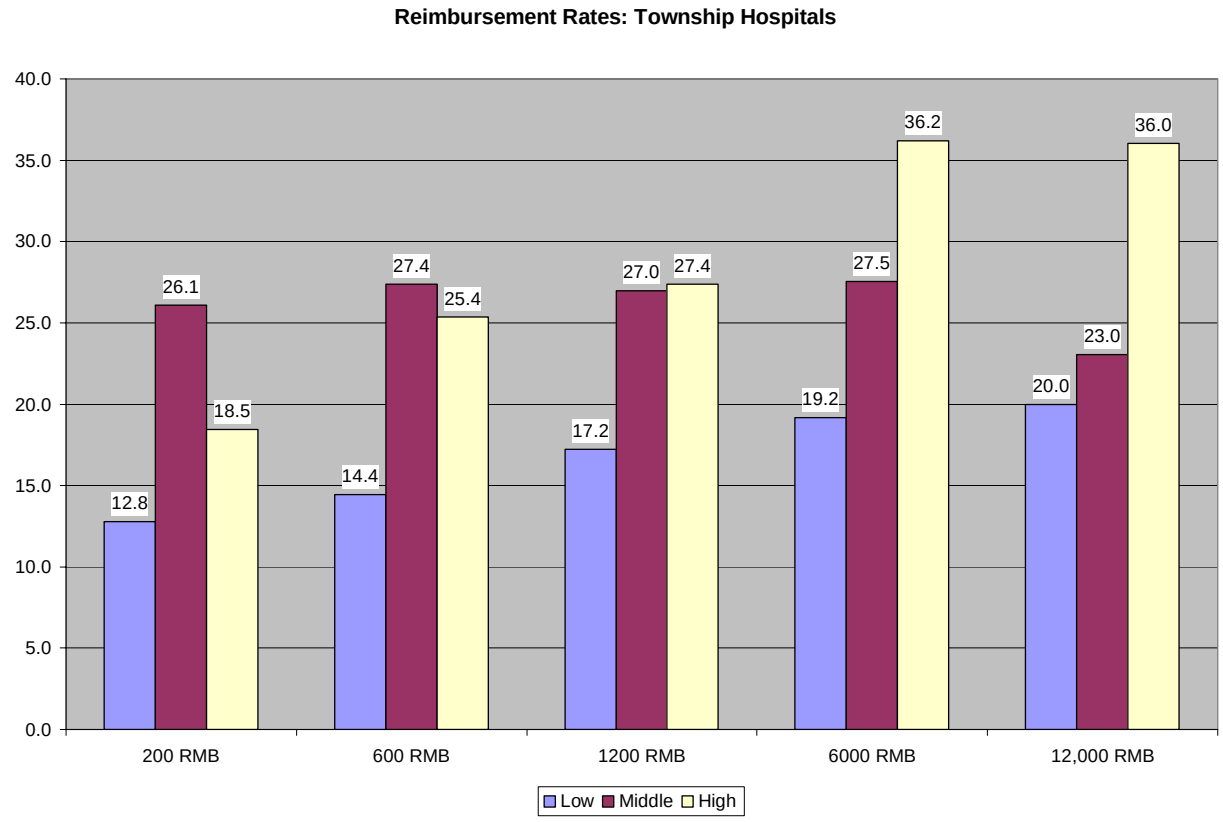

Reimbursement Rates: Township Hospitals
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
12.8
26.1
18.5
14.4
27.4
25.4
17.2
27.0
27.4
19.2
27.5
36.2
20.0
23.0
36.0
200 RMB
600 RMB
1200 RMB
6000 RMB
12,000 RMB
Low
Middle
High

Figure 5.

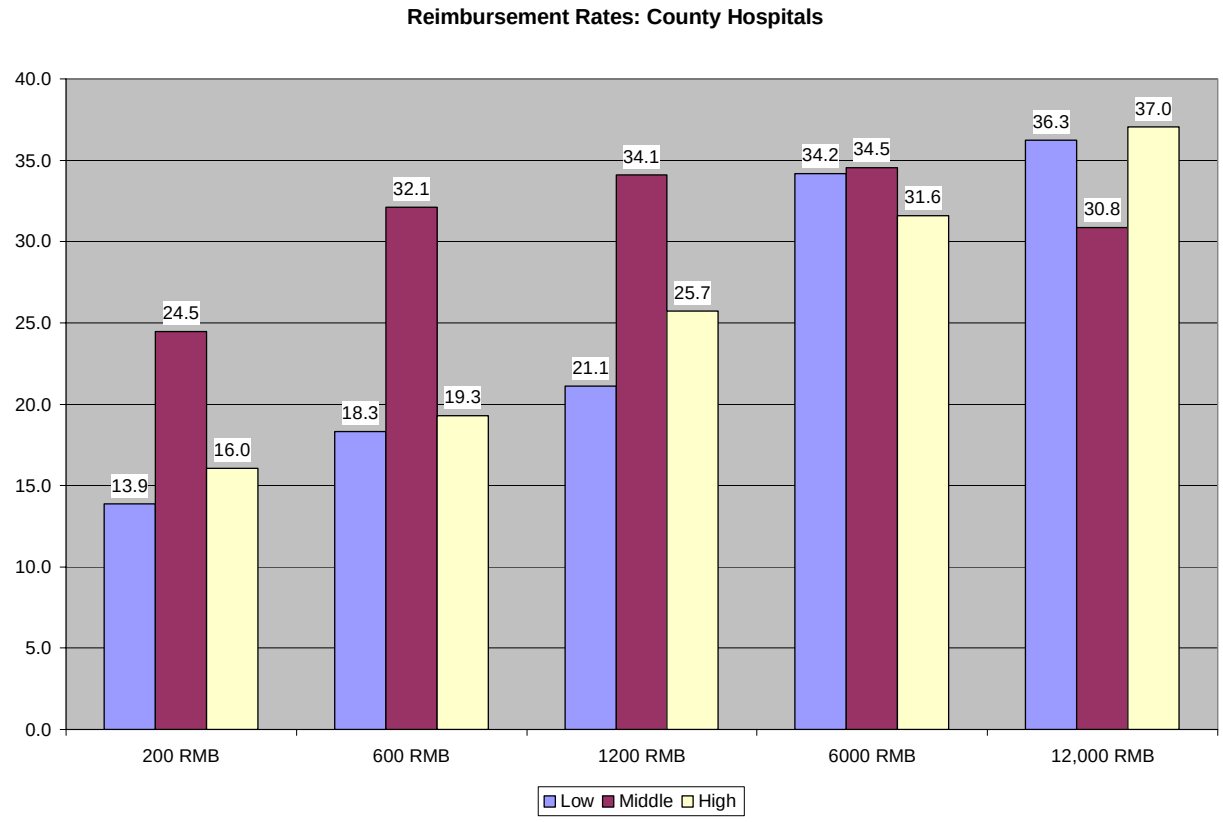
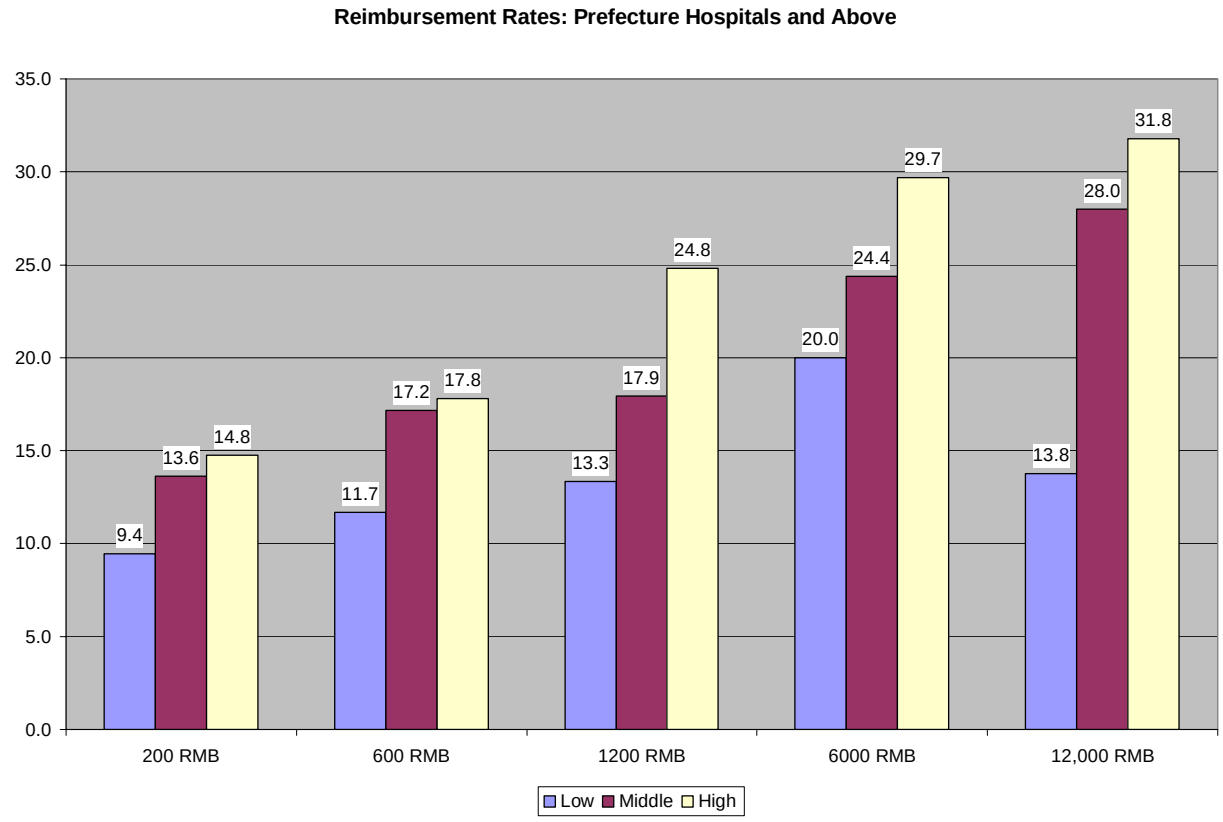

Reimbursement Rates: County Hospitals
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
13.9
24.5
16.0
18.3
32.1
19.3
21.1
34.1
25.7
34.2
34.5
31.6
36.3
30.8
37.0
200 RMB
600 RMB
1200 RMB
6000 RMB
12,000 RMB
Low
Middle
High

Figure 6.


Reimbursement Rates: Prefecture Hospitals and Above
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
9.4
13.6
14.8
11.7
17.2
17.8
13.3
17.9
24.8
20.0
24.4
29.7
13.8
28.0
31.8
200 RMB
600 RMB
1200 RMB
6000 RMB
12,000 RMB
Low
Middle
High