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Abstract:

Government and private roles in this segment of health service delivery remain controversial in China, as in many countries. Using 2004 data from over 360 government-owned and private hospitals in Guangdong Province, we find that non-government hospitals serve an overlapping but distinct market. They are smaller, newer market entrants, more likely to specialize, and less likely to be included in urban social insurance networks. We also document differences in staffing and financial performance, but no systematic ownership differences in simple measures of quality, controlling for size, location, case-mix and other confounding factors.

Key words: China, hospitals, ownership, private providers, quality

Introduction

In China, as in many countries, controversy surrounds the roles of government and the private sector in health service delivery, particularly hospitals. Although private ownership is common for outpatient services such as village clinics, private presence in inpatient delivery is small and recent in China. Similar to China's development strategies in agriculture and other sectors, ownership transformation of China's inpatient healthcare delivery has been a combination of official, top-down directive and spontaneous, bottom-up reform.[1,2] By 2003, 51.65% of China's healthcare organizations were for-profit.[3] Most of these organizations are clinics and offices focusing on ambulatory services. The for-profit presence in inpatient services remains small, accounting for just 3.21% of hospital beds and 8.04% of health personnel.[3] Policies begun in 2000 and reinforced by the 2009 health policy reforms – which for the first time prominently call for expansion of private not-for-profit investments in health service delivery in China – set the stage for nationwide reform from almost universal government ownership of hospitals to greater ownership diversification, albeit with government ownership still considered the leading sector.

Evidence on ownership differences in China's health sector to date is limited and primarily derived from ambulatory services. For village clinics, Meng, Liu and Shi[4] find no difference in quality or willingness to provide preventive services between government, private, and mixed-ownership clinics in Shandong Province in 1997. Two others studies analyze separate survey data collected in the past few years in China for any evidence of differences in prices and quality of care in government and private

ambulatory services. Lim et al.[5] suggest that private clinics tend to be lower cost and lower quality, whereas Liu et al.[6] dispute the view that private providers are lower quality. Liu et al. make the important point that private providers' "niche" in the ambulatory service market is not just the better off, but rather patients of lower and middle socio-economic status. Huang and colleagues[7] reported results from a survey and focus groups in Guangdong Province, also finding that the prices charged by non-governmental hospitals are generally lower than or equal to those of government hospitals.

Opening to private entry and ownership transformation (*gaizhi*) of existing government hospitals over the last decade has led to a growing, albeit still small, non-governmental share of inpatient beds. Few studies to date provide evidence on the reforms' impact. Do government, private nonprofit, and for-profit hospitals serve similar patients and compete, or do they specialize in niches? Are private hospitals included in the social insurance network of providers, or are they excluded from the market for publicly financed patients? Does the quality of care differ systematically by ownership form? This study uses 2004 data from over 360 public and private hospitals in Guangdong Province to shed light on these important policy questions.

Methods

Guangdong Province is a natural case to study hospital ownership in China. Its relatively urbanized and affluent areas host a significant and growing non-governmental presence in inpatient care (5.7% of hospitals in 2004[7]), while populous and poorer rural

areas exemplify the disparities of modern China. Guangdong boasts the highest GDP among all China's provinces; spread across its more than 76 million residents, Guangdong's GDP per capita ranks 5th nationwide. About three-quarter of Guangdong's GDP is concentrated in the 38% of the population living in nine cities along the Pearl River Delta. Private sector development has been an engine of Guangdong's double-digit growth rates.

Our sample was purposively constructed to over-sample the private sector. Specifically, a previous wave of data began by including all private for-profit hospitals officially registered by 2002 in five cities: Guangzhou, Zhongshan, Panyu, Jiangmen, and Dongguan. A comparable selection of not-for-profit hospitals involved randomly choosing a specific number of hospitals within each category of the official Chinese classification system for hospitals (*jibie*).[i] We partnered with the Guangdong Bureau of Health statistics department to obtain survey data (collected in 2005, reporting 2004 outcomes) from as many of the same hospitals as were surveyed previously as possible. Our analytic sample includes 362 hospitals, both government and private, for which we have relatively complete data. The analysis and conclusions must be interpreted with caution in light of the deliberate over-sampling of urban and semi-urban areas and private hospitals, and the quasi-random sample design. The data cannot be considered representative of the province as a whole, much less of China in general.

We define specialty hospitals and general-acute hospitals using the official hospital codes. We included traditional Chinese medicine hospitals among general-acute hospitals, since they offer a comparable range of services to those formally defined as

[i] The sample randomly selected one hospital in every 5 in the most selective category (level 3 first rank: *san ji jia deng*); one hospital in every 10 among lower-rank level-3 and level-2 categories; and one hospital in every 30 hospitals for level-1 hospitals.

general acute. The sample includes 306 general-acute hospitals; 18 hospitals are affiliated with a university, which for lack of better data we use as a proxy for teaching status. To designate a hospital as located in an urban or rural area, we used secondary data from Guangdong statistical yearbooks on the percentage of total residents that are designated agricultural in each county or district. 92 hospitals, representing 25.4% of our sample, are located in areas with more than 50% of the population agricultural; the remaining 270 are located in predominantly urban areas. Of course, the administrative locality of a hospital's address is far from synonymous with a hospital's true catchment area or market. In China most patients may self-refer a hospital of their choice, and rural residents often do self-refer to urban hospitals in hopes of receiving higher quality care. The hospitals themselves have little information about the residence of their patients, since the majority of patients pay out of pocket and are not required to give residence information.

Although this is one of the most detailed micro-data sets available to date on government and non-government hospitals in China, data limitations are numerous. We lack any patient-level data, hospital-level measures of patients' insured or uninsured status, disease severity, or number of admissions by disease category (although we do know how outpatient visits are distributed across five broad areas of service). Insurance information is limited to two items: whether the hospital is an "appointed hospital" for social insurance beneficiaries (i.e., *dingdian yiyuan*, based on secondary data from social insurance bureau documents); and the coverage rate of rural new cooperative medical schemes (NCMS) in the county or district in which the hospital is located (based on

official 2005 data available at the Guangdong NCMS webpage, http://hzylb.gdwst.gov.cn/tjxx.php).

As shown in Table 1, 58.6% of hospitals in our sample are government-owned and 19.6% were private for-profit hospitals. Private hospitals are more likely than their government counterparts to be specialty hospitals, and are controlled by non-governmental social organizations, collectives, firms, or individuals.

Hospital net margins vary widely (and multivariate analyses do not explain much of that variation with "standard suspects"). Median profit margins are positive (hovering around 1.4%), but the average profit margin is negative. The financial data in the survey is suspect, with many missing and clearly outlying values. Revenues presumably are under-reported relative to patient volume. Thus we do not emphasize financial comparisons across ownership forms.

As informative as simple descriptive statistics and univariate analysis may be, limitations abound. Differences across ownership forms may be driven by multiple factors confounding any given comparison. We further study the association between hospital ownership and operations with the following regression model:

$$Y = \alpha + \beta_1 N + \beta_2 F + \gamma X + \xi . \qquad (1)$$

The dependent variable, Y, is a measure of each hospital's operations (e.g. patient volume) or performance (e.g., net revenue or mortality rate). N indicates private not-for-profit, and F indicates private for-profit ownership (the omitted group is government ownership). X is a vector of hospital and market characteristics, such as ln(beds), indicators for whether the hospital is affiliated with a university or an appointed hospital for social insurance, the percentage of agricultural population and the new CMS coverage

rate in that area; and ξ is the error term. The coefficients β_1 and β_2 capture the effect on Y of private not-for-profit and for-profit ownership, respectively, relative to government ownership, controlling for number of beds and other factors.

Results

Table 2 shows that a 10% increase in beds is correlated with a 10.7% increase in total hospital assets. Controlling for this effect, government hospitals have higher total assets than private hospitals. Being an appointed hospital is correlated with more assets.

Table 3 reports results comparing hospitals' patient volume and outpatient services. The elasticity of patient volume with respect to beds is about 0.6. That is, a 10% larger hospital as measured by inpatient beds is associated with 6% more total patients (i.e., combined outpatient visits and inpatient admissions). After accounting for this and appointed status, government ownership is associated with higher total patient volume than private hospitals. For-profit and private nonprofit hospitals are not statistically different in their total number of patients served.

Focusing only on outpatient visits, the pattern is the same: larger size, being an appointed hospital, and government control are all associated with larger outpatient volume; private ownership (regardless of profit status) is correlated with fewer outpatient visits. These effects are similar for most sub-categories of visits. However, for outpatient *surgical* visits, for-profit hospital volume is not statistically different from that of government hospitals.

Private hospitals treat fewer emergency patients, and larger hospitals treat more. Hospital size and appointed status are also strongly correlated with more inpatients.

Private nonprofits and for-profits attract fewer inpatients than government-controlled hospitals, controlling for other factors. Larger rural population is associated with more inpatients.

Staffing in general-acute hospitals also seems to differ significantly across ownership forms (Table 4). Note that all Chinese hospitals, regardless of ownership form, generally employ physicians on staff (unlike the US model of admitting privileges for independent physicians). Private not-for-profit ownership is associated with fewer employees, fewer doctors, fewer nurses, and fewer pharmacists, controlling for beds and social insurance appointment status (which are both associated with more personnel). For-profit private and government hospitals do not statistically differ in total employment, although for-profits have fewer medical professionals and more support staff.

Government control and appointed status are associated with more patients per doctor, more patients per nurse, and generally higher occupancy rates (see tables 5 and 6). This result can be interpreted as higher efficiency of resource use or, more pessimistically, as signaling more crowding, less time per patient, and lower process or amenities quality of care. There are significantly more patients per doctor at appointed hospitals and rural hospitals, regardless of ownership. Higher cooperative medical system (CMS) coverage rates are associated with higher occupancy rates (Table 6), suggesting that expanding insurance coverage to China's rural majority increases utilization of inpatient resources, consistent with the results of other studies.[8]

Does the quality of care differ systematically by ownership form? Quality of healthcare is fundamentally multi-dimensional and has long been challenging to measure.

Our data limits us to measures of quality based on structural metrics and some patient outcomes such as hospital-level mortality rates. These measures are imperfect proxies for outcome quality, especially because the data includes few variables to control for each hospital's case mix. Hospitals with a more severe case-mix will have higher mortality rates, even if they are providing exemplary quality of care.

In our multivariate analysis, case-mix controls include the number of emergency patients; the percentage of outpatient visits for five categories of outpatient services; the percentage of inpatient beds across several different departments; and the official level of the hospital. These hospital-level indicators remain imperfect because they reflect hospital management decisions as much as case-mix and cannot control for severity of case-mix within broad service categories. Nevertheless, these controls help to disentangle the "pure" ownership effect from that associated with serving different patient clienteles.

Table 6 presents our regression results for mortality rates and, as a robustness check, the "curative ratio" (defined as the sum of patients who were cured or whose conditions improved, over the total discharges of the hospital). Mortality rates for private nonprofit and for-profit hospitals do not statistically differ from those of government hospitals of similar size and patient mix. Factors significantly associated with higher mortality rates include being an appointed hospital for social insurance beneficiaries; larger percentages of outpatient visits for internal medicine and traditional Chinese medicine; and having a higher percentage of inpatient beds in departments of internal medicine and tumors. Factors significantly correlated with lower inpatient mortality rates include a higher percentage of beds devoted to surgery and obstetrics and gynecology. These results seem plausible; for example, hospitals serving more cancer patients likely

will have higher mortality rates than those that specialize in childbirth and/or routine surgeries. Results for "curative ratio" are broadly similar.

Larger hospitals and government ownership are associated with significantly higher burdens of uncompensated care. Since the survey question asks for the cumulative total that patients owe to the hospital, private hospitals will have a smaller uncompensated care burden simply by virtue of being newer market entrants. Consistent with this, analysis of uncompensated care divided by the years the hospital has been in operation since 1985 points to size as the primary correlate of larger uncompensated care burden (results available from authors).

Discussion

The effectiveness of public health and primary care in urban China remains inextricably linked to hospital-based services and capacities. Our study provides quantitative evidence for a pattern of public-private mix in hospital services in China that resembles that of many developing and transitional economies.[9] Using data from urban and semi-urban areas in Guangdong province, we document that private hospitals are smaller, more specialized, and less likely to be included in the social insurance system and generally shoulder lower burdens of uncompensated care. Multivariate regression results show that despite significant variation in quality across hospitals, ownership form is not systematically associated with higher or lower quality, after the effects of size and case-mix are taken into account. (For example, under the current system many private hospitals serve fewer patients with life-threatening conditions.) We conclude that the

case-mix-adjusted quality of care does not appear to differ between government and private hospitals in our sample.

Non-government providers' strategies – choice of location, services offered, prices charged, and so on – reflect both patient demand and the regulatory environment. For example, government providers are more likely to be included in the network of providers under social insurance, so that private providers must compete for uninsured patients. As for studies of government and private roles in other sectors of China's economy, property rights are not always clearly defined, and ownership is often not readily discernible from the available data. In our data, for example, the label "private" and the category "private nonprofit" should be interpreted with caution; they represent a heterogeneous mixture of non-governmental organizations and providers that may be controlled by a government agency but operated as a semi-autonomous unit.

Our findings are not unique to China. International evidence regarding ownership and performance is decidedly mixed, and contradictory findings abound. Recently quantitative reviews[10,11] suggest that much of this variation can be explained by differences in study focus, region studied, analytic methods, and data quality. When statistically significant differences remain after accounting for differences in market structure and patient case-mix, the relative economic importance of ownership compared to other factors is often quite small.

Conclusion

Consistent with other evidence from ambulatory care cited earlier, our study suggests that both public and private providers respond to the incentives governing the

healthcare system. The case-mix-adjusted quality of care does not appear to differ significantly across ownership forms, after controlling for the generally smaller size of private providers.

The future of mixed ownership delivery in China remains uncertain. The plan for reform of China's health system announced in April 2009 calls for continued dominance by public-sector providers for most of service delivery, while simultaneously calling for increased non-state investment in both financing and delivery. As the new policy reforms unfold, the challenge will be to harness the potential innovation, efficiency and responsiveness of private providers, while enhancing capacity to regulate and monitor to assure equitable access and avoid unhealthy market segmentation. China's response to this challenge in the next few years will shape the equity and efficiency of the healthcare system for decades to come.

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Table 1. Descriptive Statistics

	Full Sample (362 hospitals)			General-acute hospitals (306)		
				Government	Non-government nonprofit	Private For-profit
Government	212	58.6%		189		
Non-government Not-for-profit	79	21.8%			65	
Private For-Profit	71	19.6%				52
General-acute hospital	306	84.5%		100%	100%	100%
Appointed hospital (Urban social insurance *dingdian* hospital)	231	63.8%		154 (81.5%)	29 (44.6%)	21 (40.4%)
Variable	Median	Mean	SD	Median	Median	Median
Number of Beds	100	190.268	264.376	150	71	30
Number of machines valued over 10,000 Yuan (about US$1,238)	48	199.431	487.744	96	17	28.5
Total assets (in 10,000 RMB Yuan, about US$1,238)	2498.2	1034.73	23835.6	7080.1	1205.1	1043.7
Building area (square meters)	9946.5	100490	1035731	18600	6319	4768.5
Total number of patients	114153	276740	402450	293169	32960	31916.5
Number of Outpatients	96071.5	240673	362273	250967	30137	30462.5
Outpatient visits by department						
Internal Medicine	20937	60124.9	107513	64280	11319	8407.5
Surgery	6945.5	19541.8	34584.2	16049	2197	4867.5
Ob/Gyn	7675.5	28136.4	44916.9	27991	1997	3989.5
Pediatrics	1853.5	19852.9	62485.2	13056	358	1010.5
TCM	4470.5	24061.8	54835	19227	2072	1133.5
Number of Emergency patients	8661.5	27799.3	41967.6	30759	1821	1491.5
Number of Discharges	1445	4624.45	7263.4	3926	339	442
Inpatient Mortality	0.00647	0.02078	0.06	.0095	.0039	0
Curative ratio = Number of patients cured + recovering, as a fraction of	0.8732	0.7518	0.3189	0.8597	0.8716	0.9429

total discharges						
Average Length of stay	8.04852	29.1078	159.581	8.367821	7.140959	6.608536
Occupancy Rate	0.62416	0.5758	0.36867	.7445022	.3449653	.3416942
Staffing						
Number of Employees	128.5	251.619	353.48	204	80	73.5
Number of Doctors, including *zhiye yishi* (doctors) and *zhiye zhuli yishi* (assistant doctors)	38	78.663	112.941	74	23	23
Number of Nurses	34.5	79.9006	127.52	57	19	21.5
Number of Pharmacists	9	16.3536	23.1087	16	5	5
Number of Retirees	19.5	59.232	109.565	47	2	0
Patients per doctor	2786.36	3729.88	5046.46	3612.655	2050.957	1638.89
Patients per nurse	3126.97	4980.66	8774.36	4381.027	2345.118	2147.243
Financial information						
Total income (in 10,000 Yuan)	2032.8	7246.83	14859.4	5401.8	1904.8	442.45
Government financial support (*Caizheng buzhu*, in 10,000 Yuan)	32.05	606.025	1383.74	209.6	0	0
Medical income/Total Income	0.46653	0.4244	0.22261	.5047572	.3038549	.3812081
Drug income/Total Income	0.33655	0.30409	0.17471	.3714792	.2055606	.3335837
Uncompensated care (in 10,000 Yuan)	40	206.55	8392.27	729	0	0
Net revenue/Total income	0.01382	-0.0025	0.32681	.0159499	.0005564	.0069472
Operating Profit Margin	-0.00701	-0.1915	1.7084	-.0279216	0	0

Table 2. Total assets and number of machines valued above 10,000 yuan
(2004 General-Acute Hospital Sample)

	Assets	Number of machines valued over 10,000 yuan
Private Not-for-profit	-0.974 (6.69)**	-0.662 (3.87)**
Private For-profit	-0.433 (2.62)**	0.024 -0.12
ln(beds)	1.073 (19.19)**	0.886 (13.57)**
Appointed	0.513 (4.02)**	0.401 (2.67)**
University	0.1 -0.37	0.409 -1.33
Rural	0.002 -0.01	0.189 -0.84
CMS coverage	-0.289 -1.39	-0.49 (2.02)*
Constant	3.022 (10.25)**	-0.042 -0.12
Observations	286	275
R-squared	0.74	0.58

Absolute value of t statistics in parentheses
All dependent variables are analyzed in ln(.) form
* significant at 5%; ** significant at 1%

Table 3. Patient Volume (Total Patient Volume; Outpatient Visits by Service; Emergency Patients; Inpatient Discharges)
(2004 General-Acute Hospital Sample)

	Total Patients (Inpatient and outpatient)	Total outpatient visits	Internal medicine outpatient visits	Surgery outpatient visits	Obgyn outpatient visits	Pediatrics outpatient visits	TCM outpatient visits	Number of emergency patients	Number of discharged inpatients
Private Not-for-profit	-1.283	-1.155	-0.905	-1.183	-1.088	-1.195	-1.008	-0.588	-1.047
	(8.05)**	(7.57)**	(5.04)**	(5.24)**	(5.05)**	(4.38)**	(4.60)**	(2.05)*	(6.98)**
Private For-profit	-1.075	-1.057	-1.05	-0.274	-0.516	-0.649	-1.642	-0.968	-0.597
	(5.97)**	(6.20)**	(5.30)**	-1.13	(2.24)*	(2.17)*	(6.77)**	(3.05)**	(3.54)**
ln(beds)	0.588	0.594	0.476	0.498	0.629	0.718	0.572	1.117	1.012
	(9.62)**	(10.22)**	(7.06)**	(5.92)**	(7.98)**	(6.90)**	(7.01)**	(10.29)**	(17.23)**
Appointed	0.772	0.698	0.596	0.496	0.813	1.225	0.28	0.392	0.446
	(5.51)**	(5.23)**	(3.82)**	(2.58)*	(4.52)**	(5.18)**	-1.46	-1.59	(3.39)**
University	0.125	0.156	0.382	0.299	-0.015	0.003	0.334	-0.543	-0.197
	-0.43	-0.56	-1.18	-0.76	-0.04	-0.01	-0.87	-1.09	-0.74
Rural	0.164	0.141	-0.069	-0.258	0.064	0.612	0.056	0.579	0.402
	-0.79	-0.71	-0.29	-0.86	-0.22	-1.7	-0.18	-1.52	(2.06)*
CMS coverage	-0.176	-0.11	0.248	0.499	0.167	-0.387	-0.16	-0.081	0.013
	-0.78	-0.51	-0.94	-1.53	-0.52	-0.98	-0.46	-0.2	-0.06
Constant	8.969	8.822	8.063	6.824	6.353	4.987	6.913	3.853	2.673
	(27.94)**	(28.97)**	(22.49)**	(15.35)**	(15.14)**	(8.70)**	(15.78)**	(6.77)**	(8.63)**
Observations	284	282	258	246	239	206	227	265	269
R-squared	0.63	0.64	0.52	0.38	0.5	0.54	0.5	0.47	0.72

Absolute value of t statistics in parentheses
All dependent variables are analyzed in ln(.) form
* significant at 5%; ** significant at 1%

Table 4. Staffing (Total number of employees; Doctors; Nurses; Pharmacists; Retirees)
(2004 General-Acute Hospital Sample)

	Total employees	Doctors	Nurses	Pharmacists	Retirees
Private Not-for-profit	-0.392	-0.629	-0.529	-0.736	-0.596
	(4.20)**	(5.70)**	(4.46)**	(7.08)**	(2.55)*
Private For-profit	-0.147	-0.329	-0.136	-0.618	-0.532
	-1.37	(2.60)**	-1	(5.17)**	-1.01
ln(beds)	0.729	0.657	0.822	0.529	0.636
	(20.09)**	(15.34)**	(17.86)**	(13.07)**	(7.52)**
Appointed	0.245	0.296	0.283	0.179	-0.248
	(2.96)**	(3.03)**	(2.70)**	-1.94	-1.18
University	0.148	0.259	0.11	-0.063	-0.232
	-0.85	-1.26	-0.5	-0.33	-0.63
Rural	0.016	-0.054	-0.102	0.042	-0.528
	-0.13	-0.37	-0.65	-0.31	-1.78
CMS coverage	-0.247	-0.225	-0.148	-0.393	0.366
	-1.83	-1.41	-0.87	(2.60)**	-1.16
Constant	1.61	0.825	-0.132	0.17	0.848
	(8.42)**	(3.66)**	-0.55	-0.8	-1.82
Observations	288	288	288	285	212
R-squared	0.73	0.66	0.68	0.63	0.27

Absolute value of t statistics in parentheses
All dependent variables are analyzed in ln(.) form
* significant at 5%; ** significant at 1%

Table 5. Patients per doctor and patients per nurse
(2004 General-Acute Hospital Sample)

	Patients per doctor	Patients per nurse
Private Not-for-profit	-2,184.41	-3,439.22
	(4.09)**	(2.40)*
Private For-profit	-2,619.80	-4,693.88
	(4.26)**	(2.84)**
ln(beds)	-359.346	-1,111.25
	-1.73	(1.99)*
Appointed	1,829.56	2,573.61
	(3.87)**	(2.03)*
University	-730.164	-956.565
	-0.73	-0.36
Rural	1,759.38	2,309.65
	(2.49)*	-1.22
CMS coverage	458.095	-268.67
	-0.59	-0.13
Constant	4,593.54	9,552.93
	(4.20)**	(3.25)**
Observations	288	288
R-squared	0.24	0.08

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Table 6. 2004 Quality and Case-Mix; Occupancy; and Average Length of Stay
(2004 General-Acute Hospital Sample)

	Inpatient mortality rate		"Curative Ratio"	Occupancy rate		ALOS	
Private Not-for-profit	0.003	-0.005	0.048	-0.217	-0.125	0.354	0.148
	-0.48	-0.9	-1.68	(5.17)**	(2.59)*	(2.36)*	-0.93
Private For-profit	-0.012	-0.002	0.091	-0.138	-0.08	0.026	0.177
	-1.92	-0.34	(2.81)**	(2.86)**	-1.46	-0.15	-0.98
ln(beds)	0.003	-0.001	0.059	0.119	0.127	0.216	0.264
	-1.3	-0.34	(4.57)**	(7.29)**	(5.77)**	(3.68)**	(3.48)**
ln(emergency patients)	-0.005	-0.001	-0.006				
	(3.67)**	-1.2	-0.91				
Appointed	0.012	0.014	0.036	0.135	0.082	0.161	0.295
	(2.50)*	(3.33)**	-1.44	(3.63)**	(2.17)*	-1.22	(2.39)*
University	-0.006	-0.012	-0.003	-0.082	-0.071	-0.341	-0.548
	-0.64	-1.31	-0.07	-1.04	-0.88	-1.28	(2.16)*
Rural	-0.004	-0.002	0.004	-0.054	-0.071	-0.416	-0.341
	-0.49	-0.33	-0.11	-0.98	-1.24	(2.12)*	-1.84
CMS coverage	-0.01	-0.004	0.012	0.173	0.162	0.184	0.238
	-1.18	-0.51	-0.29	(2.85)**	(2.65)**	-0.87	-1.2
Internal medicine visits as % of op visits		0.02			0.012		0.507
		(2.03)*			-0.15		-1.85
Surgery visits as % of op visits		-0.028			-0.305		0.013
		-1.55			(2.03)*		-0.03
Obgyn visits as % of op visits		0.011			0.226		-1.064
		-0.42			-1.09		-1.54
Pediatrics visits as % of op visits		0.041			-0.088		-0.448
		-1.33			-0.34		-0.53
TCM visits as % of op visits		0.044			0.155		0.681
		(3.58)**			-1.42		-1.93
Internal medicine ip beds as % of beds		0.054			-0.029		0.391
		(5.36)**			-0.35		-1.31
Surgery ip beds as % of beds		-0.027			0.195		-0.412
		(2.40)*			-1.97		-1.26
Pediatrics ip beds as % of beds		-0.05			0.086		-2.467
		-1.4			-0.3		(2.58)*
Obgyn ip beds as % of beds		-0.045			-0.185		-0.547
		(2.49)*			-1.2		-1.01
Psychiatry dept ip beds as % of beds		-0.013			-0.087		2.146
		-0.34			-0.26		(2.04)*
Infectious disease dept ip beds as % of beds		-0.041			0.067		-0.041
		-0.83			-0.29		-0.06

Tumors ip beds as % of beds		0.292 (4.11)**			0.239 -0.37		0.283 -0.14
TCM ip beds as % of beds		-0.007 -0.92			-0.005 -0.06		0.161 -0.68
Level 2		0.006 -1.04			-0.13 (2.39)*		0.213 -1.21
Level 3 (highest jibie)		0.002 -0.21			-0.124 -1.49		0.071 -0.26
Not classified into a level (no jibie)		0.004 -0.79			-0.155 (3.13)**		0.264 -1.65
Constant	0.044 (3.54)**	0.019 -1.24	0.56 (9.07)**	-0.004 -0.05	0.066 -0.55	1.129 (3.66)**	0.718 -1.68
Observations	265	265	265	288	282	267	267
R-squared	0.12	0.44	0.11	0.44	0.49	0.1	0.32

Absolute value of t statistics in parentheses
All dependent variables are analyzed in ln(.) form
* significant at 5%; ** significant at 1%