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ORIGINAL RESEARCH ARTICLE

Funding, Coverage, and Access Under Thailand's Universal Health Insurance Program: An Update After Ten Years

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Abstract

Background In 2001, Thailand implemented a universal coverage program by expanding government-funded health coverage to uninsured citizens and limited their out-of-pocket payments to 30 Baht per encounter and, in 2006, eliminated out-of-pocket payments entirely. Prior research covering the early years of the program showed that the program effectively expanded coverage while a more recent paper of the early effects of the program found that improved access from the program led to a reduction in infant mortality.

Objective We expand and update previous analyses of the effects of the 30 Baht program on access and out-of-pocket payments.

Data and Methods We analyze national survey and governmental budgeting data through 2011 to examine trends in health care financing, coverage and access, including out-of-pocket payments.

Results By 2011, only 1.64 % of the population remained uninsured in Thailand (down from 2.61 % in 2009). While government funding increased 75 % between 2005 and 2010, budgetary requests by health care providers exceeded approved amounts in many years. The 30 Baht program beneficiaries paid zero out-of-pocket payments for both outpatient and inpatient care. Inpatient and outpatient contact rates across all insurance categories fell slightly over time.

Conclusions Overall, the statistical results suggest that the program is continuing to achieve its goals after 10 years of operation. Insurance coverage is now virtually universal, access has been more or less maintained, government funding has continued to grow, though at rates below requested levels and 30 Baht patients are still guaranteed access to care with limited or no out-of-pocket costs. Important issues going forward are the ability of the government to sustain continued funding increases while minimizing cost sharing.

Key Points for Decision Makers

Governments across the world are seeking ways to expand health insurance coverage to their populations. Thailand adopted an ambitious policy of government-funded universal health insurance more than 10 years ago.

This study updates previous research covering the early years of the program to assess whether it has been able to sustain its early success at achieving universal coverage.

Policy decision makers need to understand the benefits of extending low cost universal health insurance coverage and the financial challenges of sustaining programs over the long term.

While Thailand's universal insurance program continues to deliver its intended benefits after 10 years of operation, it will be important to monitor a growing financing gap and alternative ways to finance health care in the future.

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1 Introduction

It has been more than ten years since Thailand (in 2001) implemented one of the most sweeping universal health insurance programs ever adopted in a developing country. Thailand greatly expanded government-funded coverage to the uninsured population through implementation of its "30 Baht" scheme. The program's goals were to provide equal access to quality care according to individuals' needs, regardless of their income and socioeconomic status. An important aspect of this plan was that no individual would be required to pay more than 30 Baht (about US$1.00) per visit for either outpatient or inpatient care, including drugs. In 2006, the program was later amended to eliminate out-of-pocket payments entirely (e.g. require zero out-of-pocket payments). Implementation by governments of large-scale programs to provide universal health insurance coverage faces many challenges.

One challenge relates to the possible effects of expanding coverage to a large, previously uninsured population [1, 2]. The possibility exists for demand to surge, overwhelming the existing system if supply is constrained. This can lead to long waiting lists and reduced access under the program, as patients either stop seeking care under the program or seek care from private sector providers and pay out of pocket. Another challenge relates to the long-term financing of the program [1, 3]. If demand does increase as expected, supply will also need to increase, which creates a potential funding gap. This gap can either be filled by allocation of additional funding from the government or, absent such new formal funding from government sources, providers may impose informal, under-the-table payments on patients when they use services [4–11]. While such payments are illegal, research has shown that governments, especially in Asia, often turn a blind eye to such practices since informal payments may represent an important source of financing to reach the broader goal of wider health insurance coverage. Previous research, covering the early years of Thailand's program shows that access improved and out-of-pocket payments did not emerge as a problem in Thailand [12].

In this paper, to provide an overall context, we first review trends in expenditures and funding of all of Thailand's various health insurance programs relative to overall government spending and national economic growth, as well as trends in insurance coverage, health-care contact rates for the different programs. We then analyze recent data on patient out-of-pocket payments from a large nationally representative sample of the population to update prior research findings which showed that access and utilization improved following the implementation of the 30 Baht program without diminishing access by other populations, and that the 30 Baht Program was successful in limiting out-of-pocket spending to mandated levels.

2 Health Insurance Schemes in Thailand

After extending health insurance coverage to the uninsured in 2001, Thailand sought to achieve universal coverage via three main health insurance schemes including: Civil Servant Medical Benefit Scheme (CSMBS), Social Security Scheme (SSS), and Universal Health Coverage Scheme (UCS/30 Baht Program). Each scheme serves different generally non-overlapping segments of the population. The CSMBS was first set up in 1980 for public servants, their dependents and retirees of the public sector. The scheme is financed through general tax revenue and regulated by Comptroller General's Department. Provider payment methods include fee-for-service for outpatient care and diagnostic related groups (DRGs) for inpatient care. The majority of the health-care providers for the CSMBS are public hospitals and clinics with a limited number of these being private. Because of the open-ended payment method employed by this scheme, the main problem that has been repeatedly encountered by this publicly subsidized program is the continuing escalation of medical and drug expenditures [13].

The SSS was established in 1990 to support employees in formal sector in case of illness or accident. The SSS covers the costs of medical treatment that are not related to work and is funded by contributions from the employee, employer, and the government. Fixed capitation payments are used to pay providers under this scheme. As of 2011, there were a total of 242 public and private hospitals contracted to the Social Security office to provide medical services for beneficiaries under this scheme [14].

The UCS or the "30 Baht Health Scheme" was adopted in 2001 and implemented throughout the country by 2002. The main objective was to provide equal access to quality care according to individuals' needs, regardless of their income and socioeconomic status. Thus, this government-funded program covers people working in the informal sector as well as those who were previously uninsured. Initially, the program required a 30 Baht copayment (about US$1.00) to be collected from the patient for each visit to a provider for either outpatient or inpatient care. This copayment was abolished in 2006 but was reinstated on September 1st, 2012 with several exceptions: these include emergency cases, prevention and promotion activities, those without any prescription drug, and patients visiting any health-care unit that is below community hospital. Close-ended payment method has been adopted for this program mainly to control cost.

In particular, contracted public and private providers are paid on a capitation basis for each registered patient in the area. In return, these health-care facilities function as a primary point of contact by providing primary care to patients and refer them to higher level of care when more complicated treatments are needed. This scheme has expanded its coverage over time to include more costly procedures and diseases. For example, peritoneal dialysis, hemodialysis, and kidney transplant were added in 2008; liver transplant in the youth and heart transplant were added in 2011.

3 Trends in Health Care Financing in Thailand

As shown in Table 1, total health-care expenditures in Thailand grew 55.9 % between 2005 and 2010 (from 251,693 million Baht in 2005 to 392,368 million Baht in 2010). Total expenditures in 2010 include three-quarters from public sources and one-quarter from private sources. Public sector health expenditures grew much faster than private sector expenditures (from 2005 to 2010 public spending grew by 81.9 % while private spending grew by only 9.49 %).

Thus, it is clear that health-care financing in Thailand has been heavily tilted towards the public sector both in terms of current share as well as future expansion. In 2010, public-health expenditure accounted for approximately 17.3 % of the overall government spending and 2.93 % of the country's GDP. Deeper investigation reveals that among public-health insurance schemes, the largest amount of government funding goes to the UCS, accounting for 40.2 % of public health expenditure. Furthermore, when reviewing a report by the National Health Security Office (NHSO), we find that there is a continuous mismatch between the proposed capitation and the actual capitation for the Thai UCS over the period from 2005 to the end of 2012. Figure 1 shows that the capitation proposed by the NHSO, the purchaser of care under the UCS, has always exceeded the amount ultimately approved by the government for all years except for 2008. The NHSO uses this received capitation to purchase care from contracted providers. With persistent inadequate funding over a decade of the UCS's implementation, it is possible that providers may need to look for other additional financial sources, one of which is to collect extra payments from the patients—the amount that is greater than what they expect to pay formally. This leads us to the central point of our study—to find out if there is any evidence of an informal payment system in the Thai context after the universal coverage scheme has been in place for over a decade.

4 Study Data and Methods

4.1 Data

The data employed for this study come from the 2009 and 2011 Thailand's Health and Welfare Survey (HWS) collected by National Statistical Office (NSO) of Thailand. The sample is a repeated cross-section of nationally representative households using stratified two-stage sampling where each province is considered a stratum, making a total of 76 stratums for Thailand. The unit for the first stage of the sampling is village level and the unit for the second stage of the sampling is household level. The first stage of the sampling involves sample villages both within and outside the municipal area in each stratum (i.e. province) by using a probability figure that is proportional to the population size of each village. This first-stage sample is 1,932 villages out of a total of 109,966 villages in Thailand with second-stage households sampled within villages based on household size and socioeconomic type. Systematic sampling (interval sampling) is employed where 15 and 12 households are chosen from within and outside the municipal area in each sampled village, respectively. This process results in 26,520 households included in HWS sample.

For each sampled household, the head of the household was interviewed and asked about all members of the household's health-care utilization, medical expenditure, health insurance, self-reported health status, and socio-demographic variables. The sample sizes for the 2009 and 2011 HWS are 73,087 and 71,847, respectively. The survey also provides population weights in order to estimate how the dataset represents the actual population of Thailand.

4.2 Method and Variables

We use descriptive statistical methods to analyze and provide an update on Thailand's UCS in terms of its coverage, accessibility, and informal payments. We construct the following variables in order to assess the above three issues.

4.2.1 Insurance Coverage

For both 2009 and 2011 HWS, each observation reported the type of health insurance coverage he/she had. Since there is a number of population after adjusting for the weight attached to each observation, we simply add up this number for all the observations that report having the same type of health insurance in order to uncover the total number of people in that coverage category. We then divide the figure by total number of Thai population and

Table 1 Healthcare expenditure in Thailand for 2005–2010

	2005	2006	2007	2008	2009	2010	% change 2005–2010
GDP (million Baht)	7,195,000	7,786,200	8,399,000	9,232,200	8,712,500	10,000,900	39
All government expenditure (million Baht)	1,250,000	1,360,000	1,566,200	1,660,000	1,951,700	1,700,000	36
CSMBS							
Million Baht	29,411	37,037	46,514	54,937	61,340	62,237	111.61
% All gov. health exp	18.24	18.67	20.13	20.10	21.88	21.21	
% All health exp.	11.69	13.51	15.31	15.25	16.26	15.86	
% All gov. exp.	2.35	2.72	2.97	3.31	3.14	3.66	
% GDP	0.41	0.48	0.55	0.60	0.70	0.62	
SSS							
Million Baht	19,152	21,029	21,686	23,767	27,595	28,912	50.96
% All gov. health exp	11.87	10.60	9.39	8.69	9.84	9.85	
% All health exp.	7.61	7.67	7.14	6.60	7.32	7.37	
% All gov. exp.	1.53	1.55	1.38	1.43	1.41	1.70	
% GDP	0.27	0.27	0.26	0.26	0.32	0.29	
UCS							
Million Baht	67,583	82,023	91,369	101,984	108,065	117,969	74.6
% All gov. health exp	41.90	41.34	39.55	37.31	38.54	40.21	
% All health exp.	26.85	29.93	30.07	28.31	28.65	30.07	
% All gov. exp.	5.41	6.03	5.83	6.14	5.54	6.94	
% GDP	0.94	1.05	1.09	1.10	1.24	1.18	
All government health expenditure[a]							
Million Baht	161,282	198,407	231,034	273,372	280,373	293,378	81.9
% All health exp.	64.08	72.40	76.03	75.88	74.32	74.77	
% All gov. exp.	12.90	14.59	14.75	16.47	14.37	17.26	
% GDP	2.24	2.55	2.75	2.96	3.22	2.93	
All private health expenditure							
Million Baht	90,411	75,648	72,819	86,901	96,854	98,990	9.49
% All health exp.	35.92	27.60	23.97	24.12	25.68	25.23	
% All gov. exp.	7.23	5.56	4.65	5.24	4.96	5.82	
% GDP	1.26	0.97	0.87	0.94	1.11	0.99	
All health expenditure							
Million Baht	251,693	274,055	303,853	360,272	377,226	392,368	55.88
% All gov. exp.	20.14	20.15	19.40	21.70	19.33	23.08	
% GDP	3.50	3.52	3.62	3.90	4.33	3.92	

Source: calculated from National Health Account, UCS Budget report

Average exchange rate in 2010 is US$ 1 = 31.73 Baht (source: Bank of Thailand)

UCS Universal Coverage Scheme, *SSS* Social Security Scheme, *CSMBS* Civil Service Medical Benefit Scheme

[a] Government health expenditure includes public funds that go towards CSMBS, SSS, UCS as well as others such as Ministry of Public Health, local government, state enterprise, and etc

multiply by 100 to get percentage of coverage. By comparing insurance coverage statistics between 2009 and 2011, we can observe the change in coverage overtime.

4.2.2 Contact Rate

To discover whether there was any change in health-care access between 2009 and 2011, we computed outpatient contact rates for each type of insurance coverage that people held. Outpatient contact rate was a ratio between the number of people with formal outpatient treatment and the total number of sick individuals. For the numerator, we added the number of population after adjusting for the weight attached to observations, who received outpatient care at formal establishments—including public health centers, community hospitals, general hospitals, university

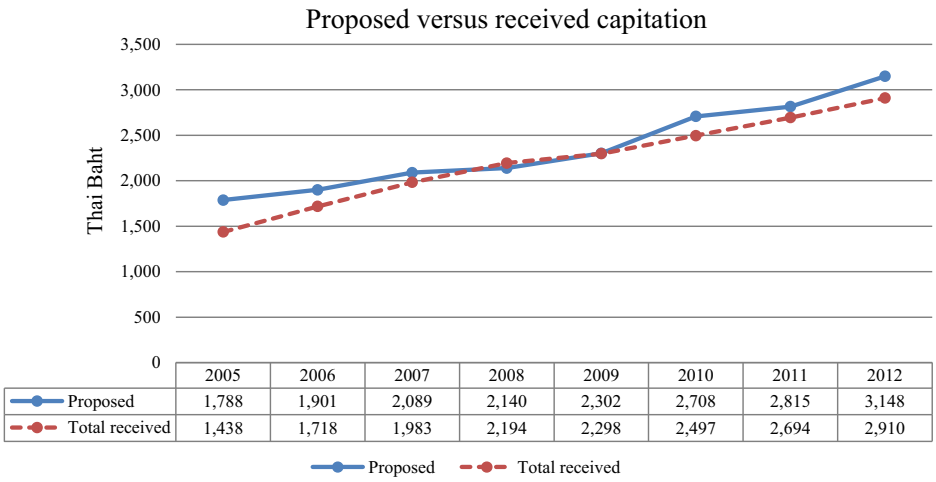

Fig. 1 Proposed versus received capitation for the universal health coverage scheme from 2005 to 2012. Source: National Health Account (NHA). Average exchange rate in 2012 is US$ 1 = 31.08 Baht (source: Bank of Thailand)

hospitals, private hospitals and private clinics. We computed the denominator by adding up the number of population, after adjusting for the weight, among those who reported ill. As outpatient contacts increased, we can conclude that accessibility to healthcare has improved overtime because there is a higher percentage of the sick that can get proper treatment from medically certified sources.

4.2.3 Out-of-Pocket/Informal Payments

As earlier mentioned, when UCS was first implemented in 2001, there was a copayment of 30 Baht for each visit. However, after the political change in 2006, this copayment was completely abolished. The collection of 30 Baht copayment was reinstated in 2012. Because our data span the period of 2009 until 2011, there should be no copayments incurred on the UCS beneficiaries during such time for neither outpatient nor inpatient visits if individuals seek care from designated providers. In this study, we define informal payment as any out-of-pocket payment that is above the official rate the people pay for medical treatment [12]. Thus, in the case of UCS during the period of our study, any out-of-pocket payment that is above and beyond zero would be considered informal if individuals visited public facilities through proper referral channel.

For outpatient treatment, each individual reported the type of health-care facility that he/she visited and the type of health-insurance coverage he/she had used and whether there was any out-of-pocket payment incurred for the last illness during the past month. Similarly, for inpatient care, each respondent was asked about out-of-pocket payments for the last hospitalization during the past year, the type of hospital visited, and the insurance coverage used. Since the length of stay at the hospital could vary between individuals, we normalized the figures by calculating inpatient out-of-pocket payments per day.

With respect to outpatient out-of-pocket payments and inpatient fee-per-day, we examined the mean, median, and 90th percentile by type of insurance coverage and health-care facility by also taking into account the weight adjustment. For example, to compute the weighted mean, we multiplied out-of-pocket payments of each observation by its number of population after adjusting for the weight. We then added this figure across all observations in the same cell (i.e. same insurance type and health-care facility), and finally divided it by the total population after adjusting for the weight associated with that cell. What the weighted mean told us is the average out-of-pocket expenditure encountered by Thai population when seeking treatment at a particular type of health-care facility and when using certain types of insurance to cover for the cost of care.

5 Results

5.1 Coverage

Table 2 summarizes trends in insurance coverage for the different schemes in Thailand between 2009 and 2011.. For employment-related health insurance plans, we found that there was a slight increase in people covered under CSMBS from 7.16 to 7.69 %, while SSS beneficiaries dropped from 11.24 to 9.97 % in 2009 and 2011, respectively. The UCS has expanded its coverage to include more than 50 million people by 2011, a slight increase from 2009, and as a result the uninsured population rate fell from 2.61 to 1.64 % by 2011. Private insurance coverage continues to cover less than 1 % of the population and a small

Table 2 Insurance coverage in Thailand, by type of insurance, 2009 and 2011

Type of insurance carried by beneficiaries	2009		2011	
	Millions	Percent	Millions	Percent
Uninsured	1.74	2.61	1.11	1.64
Civil Servant Medical Benefit Scheme (CSMBS)	4.78	7.16	5.19	7.69
Social Security Scheme (SSS)	7.51	11.24	6.73	9.97
Universal Coverage Scheme (UCS)	49.11	73.53	50.22	74.40
Private health insurance	0.49	0.73	0.52	0.77
CSMBS with private health insurance	0.26	0.39	0.28	0.41
SSS with private health insurance	0.37	0.55	0.40	0.59
UCS with private health insurance	1.30	1.95	1.37	2.03
Others	1.23	1.84	1.68	2.49
Total population	66.79	100.00	67.50	100.00

Source: Health and Welfare Survey (HWS), 2009 and 2011

fraction of the population with coverage from multiple sources (CSMBS, SSS, and UCS supplemental with private insurance).

5.2 Contact Rates for Outpatient Care

Figure 2 compares outpatient contact rates by source of coverage for 2009 and 2011. Overall, outpatient contact rates declined for all coverage categories between 2009 and 2011. CSMBS beneficiaries showed the largest decline (from 72.1 to 62.4 %) while the group with no insurance had the smallest reduction (from 49.5 to 46.5 %).

5.3 Out-of-Pocket Payments

Tables 3 and 4 summarize out-of-pocket payments for each type of health-care facility visited (for their most recent visit) according to health insurance used for outpatient and inpatient care. Among the seven different types of health-care facilities available for medical treatment, public-health centers and community hospitals function as primary gatekeepers for the Thai universal coverage program and are typically the first point of contact for UCS patients. Public health centers treat patients only on an outpatient basis while community hospitals also offer inpatient care. General hospitals serve the entire province by providing secondary care including complex, specialized procedures and services. Among public providers, there are several university hospitals, which provide the highest level of care (tertiary). Additionally, there are also private hospitals and private outpatient clinics. In terms of insurance, the survey asks each individual for the kind of health insurance used as a mean of payment for the last visit. We classify insurance used into the following categories: UCS, CSMBS, SSS, private health insurance, no insurance, and have insurance but do not use.

Table 3 shows that the vast majority of UCS beneficiaries had zero out-of-pocket payments for outpatient treatment in 2011 (the most recent year available). The distribution data show that fully 90 percent reported having no out-of-pocket payment across almost all types of health-care facilities except for university hospitals and private providers. CSMBS beneficiaries reported a similar experience, at the 90th percentile, out-of-pocket payments were zero across all types of health-care facility except for university hospitals, private hospitals, and private clinics.

Because a small number of people in Thailand have private health insurance, there are many cells in Table 3

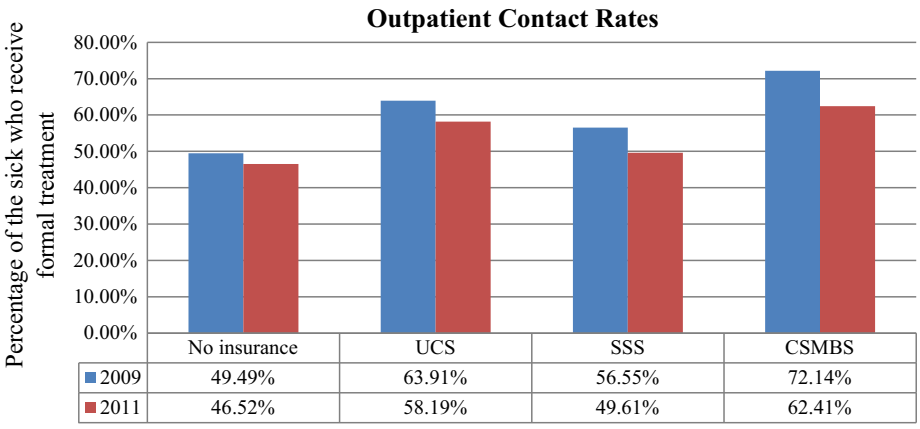

Fig. 2 Outpatient contact rates in 2009 and 2011. Source: Health and Welfare Survey (HWS), 2009 and 2011. *UCS* Universal Coverage Scheme, *SSS* Social Security Scheme, *CSMBS* Civil Service Medical Benefit Scheme

Table 3 Outpatient out-of-pocket payments per visit in Thailand, by type of insurance coverage and healthcare facility (in Thai Baht), 2011

	Health center	Community hospital	General hospital	University hospital	Other public hospital	Private hospital	Private clinic	Total
UCS								
Mean	6	12	33	14	38	512	162	22
Median	0	0	0	0	0	0	150	0
90th Percentile	0	0	0	30	0	1,200	450	0
CSMBS								
Mean	0	75	45	119	79	1,125	276	90
Median	0	0	0	0	0	0	0	0
90th Percentile	0	0	0	300	0	9,000	500	0
SSS								
Mean	0	1	8	0	0	4	4	4
Median	0	0	0	0	0	0	0	0
90th Percentile	0	0	0	0	0	0	0	0
Private health insurance								
Mean	–[a]	0	40	–[a]	–[a]	1,076	123	720
Median		0	0			0	0	0
90th Percentile		0	0			4,700	500	3,500
No health insurance								
Mean	112	353	757	–[a]	733	–[a]	339	550
Median	100	150	700		500		250	250
90th Percentile	150	1,000	1,300		1,500		500	1,100
Have insurance but not use								
Mean	203	762	1,740	442	892	1,613	370	539
Median	120	300	800	600	400	820	280	300
90th Percentile	500	2,000	6,000	800	3,000	5,000	600	1,000
Total								
Mean	12	31	80	89	110	826	350	133
Median	0	0	0	0	0	0	250	0
90th Percentile	0	0	0	300	257	3,000	600	300

Source: Health and Welfare Survey (HWS), 2011

Average exchange rate in 2011 is US$ 1 = 30.49 Baht (source: Bank of Thailand)

UCS Universal Coverage Scheme, *SSS* Social Security Scheme, *CSMBS* Civil Service Medical Benefit Scheme

[a] Fewer than five observations

corresponding to this group that have no information available. However, we do find that at the 90th percentile, copayment amounts are non-zero when visiting private hospitals and clinics. Finally, there are two groups that have relatively higher out-of-pocket payments. These two groups include those reporting either 'no insurance' and/or 'have insurance but do not use'.

Table 4 summarizes out-of-pocket payments for inpatient services for the same set of health insurance sources and providers except for the private outpatient clinic that does not provide inpatient care. The median (50th percentile) payment for UCS, SSS and CSMBS beneficiaries is found to be zero regardless of the type of health-care facility visited. When looking at the 90th percentile figures,

Table 4 Inpatient out-of-pocket payments per day in Thailand, by type of insurance coverage and healthcare facility (in Thai Baht), 2011

	Community hospital	General hospital	University hospital	Other public hospital	Private hospital	Total
UCS						
Mean	41	106	305	365	1,360	118
Median	0	0	0	0	0	0
90th percentile	0	300	600	1,000	7,000	250
CSMBS						
Mean	68	188	385	205	1,544	275
Median	0	0	0	0	0	0
90th percentile	250	333	909	429	5,714	333
SSS						
Mean	184	233	0	462	421	294
Median	0	0	0	0	0	0
90th percentile	429	1,200	0	1,200	875	1,000
Private health insurance						
Mean	5,127	489	351	0	3,340	2,684
Median	1,800	60	0	0	77	60
90th percentile	17,000	2,750	833	0	5,300	4,700
No health insurance						
Mean	650	1,479	1,463	1,081	4,570	1,918
Median	643	500	1,100	1,667	5,000	1,100
90th percentile	1,000	3,371	3,000	1,667	7,500	3,371
Have insurance but not use						
Mean	1,843	1,939	4,507	1,613	4,797	3,423
Median	1,000	1,000	3,752	1,250	2,500	1,714
90th percentile	3,000	5,000	8,333	4,000	12,500	8,750
Total						
Mean	148	208	634	463	3,053	556
Median	0	0	0	0	667	0
90th percentile	250	500	2,000	1,250	8,750	1,100

Source: Health and Welfare Survey (HWS), 2011

Average exchange rate in 2011 is US$ 1 = 30.49 Baht (source: Bank of Thailand)

UCS Universal Coverage Scheme, *SSS* Social Security Scheme, *CSMBS* Civil Service Medical Benefit Scheme

most insurance groups report positive out-of-pocket payments, including UCS members.

6 Discussion and Conclusion

In 2001, Thailand implemented a program of universal coverage by expanding government-funded health coverage to all uninsured citizens and limiting out-of pocket payments to 30 Baht per encounter. Previous research covering the early years of the program showed that the program was working as intended. Under the program, 13.6 million previously uninsured people were added into the system, resulting in a national health insurance coverage rate of 95.6 % in 2005 [12]. Further, access to care improved for the previously uninsured—the newly insured group had better access to care after the advent of universal coverage in Thailand than it had before. Analyses of national survey data showed that contact rates for the previously uninsured increased substantially while contact rates for previously insured did not decline and national survey data showed no evidence that the practice of informal under-the-table payments, seen in many other Asian countries, had risen in Thailand. Finally, a more recent paper studied the early effects of the 30 Baht program on infant mortality and found that improved access as a result of the program led to a reduction in infant mortality, especially in rural areas [15]. In this paper we will expand and update the analysis of the evolution and effects of the 30 Baht program through the year 2011.

First, we looked at enrollment in the 30 Baht program and trends in overall health insurance coverage from 2009

to 2011. The data show continued expansion of the Thai universal coverage program even ten years after implementation, though expansion now occurs at a slower pace. Enrollment in the program totaled more than 50 million people in 2011 (a one percentage point increase from 2009). More importantly, overall the number of uninsured in Thailand has continued to fall over time. By 2011, only 1.64 % of the population reported their status as uninsured (down from 2.61 % in 2009). As such, Thailand appears to have achieved and maintained near universal health insurance coverage.

Next we examined trends in health-care financing in Thailand to see if government funding for the 30 Baht program kept up with the increase in coverage and the expected increase in demand from a growing insured population. Here the picture is mixed. The funding requested by NHSO has continually increased every year reflecting expanding cover, higher cost of living as well as added benefits. According to the 2013 Annual Handbook of National Health Security [16], the added benefits and effective year include peritoneal dialysis, hemodialysis and kidney transplant in 2008; prevention and promotion in 2009; liver transplant in youth and heart transplant in 2011; dental coverage for youth and immediate treatment at any near provider in case of severe accident and emergency cases according to the regulation of NHSO in 2012.

Government funding for the 30 Baht program increased substantially during the study period (75 % between 2005 and 2010). Thus it appears, despite ongoing pressure on the national budget, the government was able to increase funding to services provided under the program. However, analysis of data comparing funding requests from capitated providers of care (NHSO) under the 30 Baht program with the amounts actually approved and paid to health-care providers shows a fairly consistent gap between amounts requested and approved amounts. In seven of the nine years between 2005 and 2012, requested amounts exceeded approved amounts. Also in the last three years, the cumulative funding gap exceeded 500 billion Baht, or about 7 % of the requested funding. This chronic underfunding picture creates the potential for growing financial pressure on providers, which could lead to imposition of informal out-of-pocket payments as seen in other Asian countries [4–6, 9, 11] as well as possible cuts in service and/or quality of care.

For example, one possible response to constrained provider budgets is to reduce service levels by reducing access to care. We examined outpatient contact rates across all insurance categories over time. Surprisingly, we did not find that outpatient contact rates fell more for UCS members when compared to other insured groups in Thailand. Rather we found that contact rates fell for all groups (ranging from 3 to 10 %) during the study period. This may reflect tightening of capacity at the system level driven by constrained provider budgets. However, taken together, these data suggest that though contact rates have fallen somewhat across all populations, access to care has not suffered differentially for UCS beneficiaries while at the same time Thailand has achieved near universal health insurance coverage.

Finally, to test whether providers had responded to financial pressures by introducing informal payments, we examined out-of-pocket payments by UCS and other patients served in outpatient and inpatient care settings using recent data (2011). The results show no evidence that an informal payment system has emerged in Thailand. Consistent with prior research based on earlier data, UCS beneficiaries continue to have zero out-of-pocket payments for both outpatient and inpatient care. This finding provides strong evidence that despite an apparent funding gap, providers have not resorted to the practice of requiring informal payments for patients under the 30 Baht program.

Overall, our findings suggest that the program is holding together pretty well after 10 years of operation. Insurance coverage continues to grow and is now virtually universal, access has been more or less maintained, government funding has continued to grow, though at rates below requested levels, and 30 Baht patients are still guaranteed access to care with limited or no out-of-pocket costs.

A number of findings suggest the potential for future problems. While funding for health has continued to grow, the ability of the government to sustain continued increases in funding comes into question given both the apparent slowdown in overall economic growth and the historical trend of year-to-year government funding increases that exceed underlying economic growth. Public health expenditures grew by 81.9 % between 2005 and 2010. This is far in excess of the growth rate of overall government spending (i.e. 36 %) and greater than GDP growth of 39 % in Thailand during the same period. Nonetheless, the reintroduction of the 30 Baht copayment in 2012 should partially help to reduce the rate of growth in public health expenditure. It is worth noting, however, that the problem of health expenditures exceeding GDP growth is not unique to Thailand but rather a global phenomenon. Recently, the Thai health officials met up to discuss the appropriate medical cost sharing under the universal health care program in response to the complaints by public hospitals that they will not be able to survive alone on the government's subsidy per head of patients, and need to collect more fees from the patients. Nonetheless, no conclusion has been reached at this point[1].

[1] 200 Health officials to discuss medical cost sharing. The Nation. 15 July 2014. Retrieved from http://www.nationmultimedia.com/national/200-health-officials-to-discuss-medical-cost-shari-30238529.html.

Another potential red flag is the finding that more UCS beneficiaries appear to purchasing drugs with out-of-pocket funding. One way for providers to control their spending and not ask for informal payments is to stop providing drugs during formal medical visits and instead refer patients to a drug store after the visit, which would lead to increased out-of-pocket spending. This finding could suggest the emergence of a longer term trend. Alternatively, this trend could reflect Thailand's rising income and a shift in demand for brand name drugs, which are not available under the 30 Baht program and are only offered in private pharmacies with out-of-pocket funding. Another indicator of a potential problem relates to declining contact rates for outpatient care. Our data show that contact rates declined for all insured population groups in just a two-year span. If, the observed drop in contact rate continues, it may reflect a longer term adjustment strategy by providers to limit or reduce their capacity due to financial stress which could undermine access and health outcomes for all population groups including UCS and other insurance populations. This will be a very important indicator for policy makers to monitor on an on-going basis.

Finally, our study does not directly address a number of important dimensions such as quality, outcomes, waiting times and satisfaction. These important areas need further study to gain a more complete picture of Thailand's grand experiment, which, so far, appears to be working.

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Author contributions Kannika Damrongplasit was the main researcher of this study. Her responsibilities included obtaining the data, conducting empirical analysis, interpreting the results as well as writing up the manuscript. Professor Glenn Melnick helped with the study concept and design, as well as writing up the manuscript. Revision of the manuscript was done by both authors. Kannika Damrongplasit is the guarantor for the overall content of the manuscript.

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