
**BENEFIT INCIDENCE ANALYSIS
BEFORE AND AFTER UNIVERSAL COVERAGE IN THAILAND**

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Introduction

Since 2001, the government of Thailand has implemented a policy on universal coverage (UC) in access to essential health care for its whole population. The objective is to guarantee equitable access to health services, regardless of individual's income and other social circumstances (Jongudoumsuk 2002; Tangcharoensathien, Wibulpolprasert et al. 2004). The government introduced a tax-funded health insurance scheme, so called "*the 30-Baht scheme*", to approximately 47 million people who were not beneficiaries of the Civil Servant Medical Benefit Scheme (CSMBS) and the Social Security Scheme (SSS). Health services included in the benefit package of the 30-Baht scheme comprise ambulatory care and hospitalization, essential interventions for health promotion and disease prevention, and a wide range of expensive medical services. Main health care providers are designated district based networks ranging from health centres, district hospitals, and co-operating provincial or regional hospitals at the provincial level. Eligible persons have to register with the networks, and then obtain a free insurance card with a payment of nominal fee of 30 Baht (approximately £ 0.4 or 0.75 USD) for each ambulatory visit or a hospital admission. Those who formerly were beneficiaries of the Low Income Card scheme (LICs), children aged under 12 years, the elderly, and the disabled are exempt from the scheme's co-payment. Drugs on prescription are free of charge. Some expensive medical care such as renal replacement therapy (RRT) for end-stage renal disease (ESRD) has been excluded from the benefit package due to its high costs and limited government health resources.

Based on these considerable changes in health care financing arrangements, this paper attempts to examine an impact of the UC policy on changes in the distribution of government health resources and tries to answer the question of who benefits more from this new government's health policy. The paper begins with some brief background details on changes in health care financing arrangements and health service systems in Thailand after implementation of the new policy. Then, it describes methods of benefit incidence analysis and data used for the investigation. The third section explores how far utilization of health services and government health resources were gained by different socio-economic groups of Thais before and after the UC era. The final section looks at

limitations of this study and lessons learnt for other developing countries in achieving universal coverage of health care.

Health care financing arrangements under UC

Reforming health care finance is a crucial tool for achieving both efficiency and equity goals under UC in Thailand. Before 2001, government health resources were allocated to public health facilities on a historical basis with neither performance nor population registered linkage. But after implementation of the UC policy, contracted health care providers have received government budgets according to the number of population registered with each network and types of health services provided. The government pays both public and private health care providers by using a contracting model which includes capitation payment for ambulatory services and diagnostic related group (DRG) with global budget for hospitalization. The amount of government subsidies for beneficiaries of the 30-Baht scheme has been increased from 1,202 Baht (approximately £ 16 or 30 USD) per capita per year in 2001 to 1,308 Baht (approximately £ 17.4 or 32.7 Baht) in 2004 (Towse, Mills et al. 2004), and reach 1,659.30 Baht per capita in 2006 (NHSO 2006). The total government budget for the 30-Baht scheme was estimated at 31% of total national health expenditure and accounted for 47% of government health spending (International Labour Office 2004).

The 30-Baht scheme promotes the use of primary care at the district level by shifting health service delivery from tertiary care hospitals to primary care providers through the contracting payment method. The government contracts a contractor unit for primary care or 'CUP' as the main provider to deliver health care for its registered population. CUP comprises all health centers in a district and a primary unit set up in the district hospital. Patients can access either the health centers or the district hospital associated with their contractor unit with the co-payment of 30 Baht or free of charge, and will be referred to a hospital in a higher level of care if they are in need. CUP receives a capitation budget for ambulatory care according to the number of registered population and reimburses the expenses for inpatient care from a provincial budget based on a

weight of the diagnostic related group (DRG). Anecdotal observation revealed that more government health resources have been allocated to those in rural areas than the past.

After implementation of the UC policy, the entire population of Thais have been covered by three main public health insurance schemes: CSMBS; SSS; and the 30-Baht scheme. Table 1 provides information about differences in health financing arrangements in terms of target population, sources of finance, the amount of government health expenditure per capita, provider payment methods, and the majority of health care providers among these three public health insurance schemes.

(Table 1 here)

A question of who benefits more from government health resources after implementation of the UC policy was raised by social scientists and the public media in Thailand (Na Ranong and Na Ranong 2002; Siamwala 2003). This is because the poor and the disadvantaged were previously protected by existing government-subsidized health insurance schemes, namely the Low Income Card (LIC), the Voluntary Health Card (VHC), and Social Security Scheme (SSS). With the previous existence of these targeting public health insurance schemes and the substantial changes in health care financing arrangements, there is a need to investigate changes in the distribution of government health resources towards different socio-economic groups of Thais. Moreover, a comparison of health service use and benefit incidence of government health subsidies between the situation before and after UC will demonstrate whether the policy on universal coverage has improved equity in the Thai health care system.

Methods and data sources

Typically, the benefit incidence analysis (BIA) which is a measure to assess the amount and proportion of government health resources gained by different socio-economic groups comprises four main steps. The first is to rank all individuals by using an appropriate measure of socio-economic parameters such as income or expenditure per capita, gender, educational level, or residential areas, etc, according to the aims of the

investigation. In this study, household income per capita is used as a measure to classify individuals into different income quintiles both before and after UC because of limitations of socio-economic parameters in the national household survey, *the Health and Welfare Survey (HWS)*. However, availability of household asset data in the 2003 HWS allows an opportunity to compare the results of using household income and the asset index to categorize individuals into different quintiles. The second step is to link each individual with the amount of health services utilized in both public and government-subsidized private health facilities. In this study, the number of ambulatory services and hospital admissions are used as the unit of measurement for ambulatory care and hospitalization, respectively. The third step involves the estimate of the net per unit cost of health service provision, and multiplying it by the number of units of public or private health services utilized by each individual. The standard approach is to use the average cost of health service provision minus any user fees paid to health facilities for that service. The last step is to analyze the distribution of net government health spending by income quintiles or by other socio-economic classification according the study's objectives.

Data of individual's monthly income and health service use in the 2001 and 2003 HWS were adjusted before the comparative analysis was carried out. For instance, the mid-point of each income bracket in the 2001 HWS was used as the estimated individual's income, while the interviewed figures of income (both in cash and in kind) in the 2003 HWS were directly employed. In addition, the distinction between questions of frequency of ambulatory services and choices of health service use in the 2001 and 2003 HWS were fine-tuned. Then, household size in 2001 and 2003 were adjusted with the OECD-modified equivalence scale*.

Unit government health subsidies for public and private facilities among different health insurance schemes were calculated by using various sources of secondary data such as the monthly financial report of public health facilities under the Ministry of Public Health

* 'OECD-modified equivalence scale' assigns a value of 1 to household head, of 0.5 to each additional adult member, and of 0.3 to each child (under 18 years old). The concept of the equivalence scale relies on the principle of economies of scale in consumption which are not proportional to additional household members, as well as different needs of different individuals (e.g. children or the elderly).

(MOPH), the annual report of Social Security of Office and the Ministry of Finance. The unit government subsidies for SSS beneficiaries registering with private providers were calculated by using the amount of capitation payment allocated to the private sector.

Results

To describe a correlation between changes in health service use and benefit incidence with the UC policy, several components of benefit incidence including changes in the distribution of beneficiaries among different health insurance schemes, health service use in terms of ambulatory care and hospitalization, unit government subsidies among different health insurance schemes, and results of benefit incidence before and after UC are compared and analyzed in the following subsections.

The distribution of beneficiaries of the 30-Baht scheme among different income quintiles

After the introduction of UC in 2001, the proportion of Thai population covered by public health insurance schemes increased from 71% in 2001 to approximately 95% in 2003. A considerable shift of those in the poorer quintiles from the LICs, VHCs, and the uninsured in 2001 towards the 30-Baht scheme in 2003 was observed (see Table 2). It is noteworthy that approximately five percents of Thais in 2003 were still uninsured due to lacking of awareness, absence of the identification cards, and incorrect housing registration (Health Systems Research Institute 2004). After implementation of the UC policy, the majority of beneficiaries of CSMBS, SSS, and private health insurance schemes were in the better-off quintiles; while those in the less well-off were mainly insured by the 30-Baht scheme.

(Table 2 here)

An analysis of previous health insurance of the 30-Baht scheme beneficiaries in 2003 reveals a significant shift of the uninsured and those in the LIC and VHC schemes to the new public health insurance scheme. This reflects a success of the role in protecting the poor of this tax-funded health insurance scheme (see Figure 1).

(Figure 1 here)

Changes in ambulatory service use between the 2001 and 2003 HWS

A comparative analysis of ambulatory service use between 2001 and 2003 illustrates significant changes in health service use among different types of health facilities and income quintiles. A significant increase in ambulatory service use of health centers and district hospitals after UC was observed (see Table 3). In contrast, the utilization rate of provincial and regional hospitals became decreased in all income categories. This reflects a shift of ambulatory service use of public facilities from tertiary care (provincial and regional hospitals) towards primary and secondary care levels (health centres and district hospitals). The negative values of the concentration indexes of public facilities indicate that ambulatory services at health centers and district hospitals were more pro-poor than tertiary care hospitals both before and after UC. Furthermore, greater negative values of the concentration indexes in all public health facilities reflect an improvement of equitable access to and utilization of ambulatory services at all types of government health facilities. Less positive values of the concentration indexes of private hospitals and clinics in 2003 mean the private sector was less pro-rich after the UC policy. This is caused by a significant increase in ambulatory service use of the less well-off quintiles at private clinics and private hospitals.

(Table 3 here)

Changes in the distribution of ambulatory service use at different types of health facilities by income quintiles between 2001 and 2003 are illustrated in Figure 2.

(Figure 2 here)

Changes in hospitalization between the 2001 and 2003 HWS

Table 4 illustrates changes in hospitalization of individuals among different income quintiles before and after UC. Compared to 2001, hospitalization at district hospitals in

2003 increased significantly in all income quintiles with the highest increasing rate of the richest category (the fifth quintile). In contrast, hospitalization at provincial and regional hospitals became considerably decreased in all income groups. Hospitalization of private hospitals also decreased in nearly all income categories, except the third quintile, but in a less extent than that of provincial and regional hospitals. This supports the previous findings of ambulatory service use which utilization of health services at public facilities was shifted from tertiary care (provincial and regional hospitals) to secondary care level (district hospitals) in all income quintiles after the introduction of the UC policy.

(Table 4 here)

The concentration indexes in Table 4 indicate that hospitalization of district hospitals was more pro-poor than that of provincial and regional hospitals, and private hospitals both before and after UC. However, the concentration index of district hospitals in 2003 show a less pro-poor manner, compared to 2001 because the increase in hospitalization of richer quintiles at district hospitals was greater than the rise in hospital admissions of the less well-off groups. In contrast, the index of provincial and regional hospitals in 2003 was more pro-poor, compared to the situation before UC because the reduction in hospitalization of the higher income quintiles was greater than that of the poorer groups.

Unit government subsidies among different health insurance schemes and types of health facilities in 2001 and 2003

An analysis of input and output data of government health facilities shows differences in unit subsidies for ambulatory services and hospitalization among different types of health facilities and health insurance schemes in 2001 and 2003 (see Table 5 & 6). Differences in provider payment methods (e.g. fee-for-service in CSMBS and capitation in SSS and the 30-Baht scheme) lead to the distinction of unit government subsidies for beneficiaries of different insurance schemes. The unit subsidies in 2003 were also adjusted with the consumer price indexes in order to allow a comparison of the distribution of government health resources gained by different income quintiles before and after UC.

(Table 5 & 6 here)

Net government health subsidies gained by different income quintiles before and after UC

Table 7 summarizes net government health subsidies for ambulatory services and hospitalization among different income quintiles, and percent changes in government health subsidies before and after UC. In net present value (NPV), the net government health subsidies increased from 58,733 million Baht in 2001 to 82,705 million Baht in 2003. The first quintile gained the highest amount and proportion of the subsidies both before and after UC, while the third quintile gained the lowest proportion. When the 2003-values of the government health subsidies were changed into the 2001 price, it reveals that the first and the second quintiles had the higher percentage of benefit incidence changes than the average (37%). In contrast, the percent changes of the third to the fifth quintiles were lower than the mean. These findings with a more pro-poor manifestation of the concentration index (from -0.0440 in 2001 to -0.1233 in 2003) can reflect an achievement of the more pro-poor net government health subsidies after implementation of the UC policy. When the components of BIA were explored, it was found that the more pro-poor manifestation of the government health subsidies came from an increase in utilization of both ambulatory services and hospitalization at primary and secondary care levels. Moreover, the greater increasing rate of the government subsidies gained by the poorer quintiles demonstrated a success in distributional impacts of UC toward the Thai households.

(Table 7 here)

Figure 3 illustrates a comparison of the distribution of the net government health subsidies among different income quintiles between 2001 and 2003.

(Figure 3 here)

Geographical distribution of the net government health subsidies before and after UC

The proportions of the net government health subsidies among different regions in 2001 and 2003 were shown in Figure 4. This study classified health facilities in Thailand into five regions according to the government administrative structure and cultural diversity. The north-eastern region which is the biggest area and contains the highest amount of the poor gained the largest share of the net government health subsidies both before and after UC, while the eastern region had the least share. Incomplete data of unit government subsidies for health services of other government health facilities (e.g. highly specialized and military hospitals) in Bangkok led to the underestimated net government subsidies.

(Figure 4 here)

BIA between using aggregated and regional unit subsidies

Inequalities in the distribution of government health resources lead to disparities in the benefits gained by those in different residential areas and different socio-economic status. The use of aggregated unit subsidies for BIA may mask inequality in government health spending if the resources are unevenly distributed towards different geographical areas. Demery supported the use of the regional variations of unit subsidies because the differences in unit subsidies would reflect variations in government health subsidies derived from the health services at different regions (Demery 2000). Moreover, evidence from South Africa proved that using the aggregated and disaggregated unit subsidies made a significant difference to BIA (Castro-Leal 1996).

In general, costs of health services provided by public health facilities in Thailand vary throughout the country. The public health facilities usually use government health budgets and additional resources from other financing sources such as out-of-pocket payments and reimbursement from private health insurance to provide health services. Moreover, differences in infrastructure, human resources, and types of health service provision inevitably lead to differences in the unit subsidies among different regions and health care levels. Based on these disparities, the analysis of benefit incidence employed

unit subsidies of health centres, community hospitals, and provincial / regional hospitals, which were derived from secondary data of the input and output report of public health facilities among different regions. Differences in the proportion of the net government health subsidies in 2003 among different income quintiles between using aggregated and regional unit subsidies are illustrated in Figure 5.

(Figure 5 here)

A comparison of benefit incidence analysis between using household income and the asset index to classify individual's socio-economic status

A concern over accuracy of a single question of individual's income in the questionnaire of the HWS leads to an exploration of the use of the asset index for classifying individual's socio-economic positions in the analysis of benefit incidence. The 2003 HWS questionnaire contained a set of questions on ownership of durable assets, housing characteristics, and availability of infrastructure such as electricity and toilet. This leads to a possibility to construct an asset index by using these asset variables.

With the 28 variables of household assets and housing constructions in the 2003 HWS, the asset index of each household was computed by using the Principal component analysis (PCA). Variables that were not dichotomous such as material types of housing construction were changed into a dichotomous character. Weights of all asset variables in the first principal component were used for computing a factor score of each asset variable. Results of the factor scores and the mean of top ten asset variables are presented in Table 8.

(Table 8 here)

After individuals in the 2003 HWS data were classified into different quintiles by using the asset index, health service utilization and net government health subsidies gained by different asset quintiles were calculated. Table 9 illustrates details of the proportion of

the net government health subsidies gained by different asset quintiles, compared to the net government subsidies gained by different income quintiles in 2003.

(Table 9)

Based on the findings in Table 9, the distributions of the net government health subsidies between using income and asset quintiles are quite similar. The first quintile gained the highest share of the net government health subsidies, followed by the second quintiles. However, the third quintile had the least share of the government health subsidies when the income quintile was used, while the fifth quintile obtained the smallest proportion when using the asset index's approach. In conclusion, these findings support the possibility to use the asset index as an alternative tool for classifying socio-economic positions in BIA.

Discussion

The UC policy is aimed to provide an equal opportunity to access essential health services for those who are not beneficiaries of CSMBS and SSS through the tax-funded health insurance scheme. Achievements of this policy's objective and the pro-poor attainment are caused by three strategies:

- the expansion of public health insurance to nearly universal coverage, especially towards those who were in the lower quintiles and uninsured;
- the removal of financial barriers to health services which lead to the significant increase in health service use of ambulatory care and hospitalization, especially by those in the less well-off quintiles; and
- the promotion of primary care use which is easier to be accessed and utilized by the poor in rural areas.

The analysis of health service use and the distribution of the government health resources indicates that the Thai health care system was previously pro-poor before the introduction of the UC policy in 2001. The existing targeted health insurance schemes, namely the

LIC and the VHC schemes, and the previous policies on protecting the poor and the disadvantaged groups mainly contribute to this achievement. The UC policy makes a further progress of health insurance protection and pro-poor distribution of the government health resources by using the universal approach of access to essential health services which primarily benefit the poor and those in the rural areas. The policy design of using primary care as the main contractor for health service provision and the comprehensive benefit package of the 30-Baht health insurance scheme are key factors contributing to the more equitable and pro-poor health service system.

In this study, there was no significant difference in the distribution of government health subsidies among different quintiles when the aggregated and regional unit subsidies were used for calculating BIA. Moreover, using the asset index to classify individuals into different quintiles does not provide a significant change in the government health resources gained by different quintiles.

A limitation of this study is the lack of a rigorous welfare indicator to classify individuals into different socio-economic groups. A single question of household income in the HWS adjusted by the household equivalent scale was used as the proxy for individual welfare. This definitely contains some errors of categorizing individuals for the analysis of benefit incidence. However, the comparative analysis between using household income and the asset index shows that there is no significant difference in the distribution of the net government health subsidies.

The variation of unit government subsidies for government health services is an important issue that can affect the results of BIA. The use of median and mean of unit subsidies seem to be insufficient for computing the likelihood and variance of benefit incidence.

A sophisticated analysis of micro-econometric decomposition techniques may help identify factors influencing changes in the net government health subsidies before and after implementation of the UC policy.

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Table1: Health care financing arrangements among three public health insurance schemes after UC

Health care financing arrangements	Health insurance schemes		
	CSMBS	SSS	30-Baht scheme
Target population	Government employees, retiree, and dependants	Formal private sector employees	The rest of population
Population coverage in 2005	~ 6 million (10%)	8 million (13%)	47 million (74%)
Sources of health care finance	General taxation (non-contributory scheme)	Payroll tax tripartite contributions (employee, employer, and the government)	General taxation and nominal fee of 30 Baht per visit
Government health expenditure per capita (Baht)	3,934 ⁽¹⁾	1,468 ⁽¹⁾	1,393 ⁽²⁾
Provider payment methods	Fee-for-service	Capitation	Capitation for ambulatory care & DRG for hospitalization
The majority of health care providers	Public providers	Private providers	More than 90% are public providers

Sources: (1) Figures of the fiscal year 2003 (Tangcharoensathien 2005)

(2) Figures of the fiscal year of 2005 (NHSO 2006)

Note: CSMBS = Civil Servant Medical Benefit Scheme, SSS = Social Security Scheme

Table 2: The distribution of health insurance schemes among different income quintiles in 2001 and 2003

Health insurance schemes	Income quintiles in 2001						Income quintiles in 2003					
	Q1	Q2	Q3	Q4	Q5	Total	Q1	Q2	Q3	Q4	Q5	Total
No health insurance	20	25	32	39	34	29	4	3	4	6	9	5
CSMBS	3	2	4	11	26	9	4	3	5	11	25	9
SSS & WCS	0	2	5	12	23	8	0	3	8	14	25	10
30-Baht scheme	1	1	1	1	1	1	92	91	82	68	38	75
LICs and VHCs	76	70	57	35	12	52	0	0	0	0	0	0
Priv H ins	0	0	1	2	4	1	0	0	1	1	3	1
Total	100	100	100	100	100	100	100	100	100	100	100	100

Note: 1. The UC policy was commenced in six piloting provinces in April 2001. Therefore, a few percentage of the population covered by the 30-Baht scheme was noticeable in 2001.

2. CSMBS = Civil Servant Medical Benefit Scheme, SSS = Social Security Scheme, WCS = Workmen Compensation Scheme, LICs = Low Income Card Scheme, VHCs = Voluntary Health Card Scheme, Priv H ins = Private health insurance

Table 3: A comparison of average ambulatory service use among different income quintiles and types of health facilities between 2001 and 2003

Health facilities	Average ambulatory service use (visits per capita per year)						Concentration indexes
	Q1	Q2	Q3	Q4	Q5	Total	
1. Health centers							
2001	1.20	1.01	0.75	0.45	0.14	0.75	-0.2944
2003	1.90	1.29	0.71	0.57	0.20	0.99	-0.3650
% Change	58.7	27.6	-4.8	26.7	46.0	32.2	
2. District hospitals							
2001	0.71	0.57	0.43	0.23	0.16	0.44	-0.2698
2003	1.84	1.27	0.89	0.66	0.25	1.03	-0.3200
% Change	159.2	122.8	107.0	187.0	56.3	133.6	
3. Provincial and regional hospitals							
2001	0.72	0.62	0.69	0.69	0.61	0.67	-0.0366
2003	0.39	0.40	0.33	0.39	0.26	0.36	-0.0802
% Change	-45.8	-35.5	-52.2	-43.5	-57.4	-46.9	
4. Private clinics							
2001	0.34	0.37	0.43	0.45	0.56	0.42	0.0931
2003	0.71	0.61	0.62	0.73	0.62	0.66	-0.0140
% Change	108.8	64.9	44.2	62.2	10.7	57.1	
5. Private hospitals							
2001	0.046	0.054	0.088	0.169	0.365	0.135	0.4313
2003	0.139	0.092	0.145	0.186	0.626	0.230	0.3484
% Change	202.2	70.4	64.8	10.1	71.5	70.4	

Table 4: A comparison of average hospitalization among different income quintiles and health facilities between the 2001 and 2003 HWS

Health facilities	Average hospitalization (admissions per capita per year)						Concentration indexes
	Q1	Q2	Q3	Q4	Q5	Total	
1. District hospital							
2001	0.036	0.027	0.019	0.011	0.005	0.021	-0.3157
2003	0.063	0.049	0.034	0.023	0.011	0.037	-0.2934
% Change	75.3	78.8	79.5	108.3	113.5	78.9	
2. Provincial and regional hospital							
2001	0.052	0.047	0.049	0.048	0.034	0.047	-0.0691
2003	0.023	0.033	0.021	0.018	0.012	0.022	-0.1375
% Change	-55.9	-30.4	-57.0	-62.6	-64.9	-53.6	
3. Private hospital							
2001	0.006	0.005	0.007	0.012	0.026	0.011	0.3199
2003	0.005	0.004	0.010	0.008	0.022	0.010	0.3094
% Change	-15.6	-31.5	38.4	-33.9	-15.4	-12.8	
4. Overall hospitalization							
2001	0.095	0.081	0.076	0.072	0.066	0.079	-0.0794
2003	0.105	0.093	0.079	0.068	0.060	0.082	-0.1208
% Change	10.5	15.6	3.8	-4.7	-9.3	4.3	

Table 5: Unit government subsidies for ambulatory visit and hospital admission among different health facilities and health insurance schemes in 2001

Health facilities	Average unit cost of ambulatory visit			Average unit cost of hospital admissions		
	Non-CSMBS and non-SSS (1)	CSMBS (2)	SSS (3)	Non-CSMBS and non-SSS (1)	CSMBS (2)	SSS (3)
Health centre	62	149	62	--	--	--
Community hospital	262	628	262	3,669	11,939	3,669
Provincial and regional hospital	378	906	378	6,812	22,166	6,812
Private hospital	--	--	277	--	16,433	7,601

Sources: (1) = Prakongsai, Patcharanarumol et al. (2002)

(2) = estimated by using data of total expenditure of CSMBS from the Comptroller General's Department adjusted with different weight of unit costs among different levels of health facilities

(3) = unit subsidies of the 30-Baht scheme were adopted as the unit subsidies of SSS because these two schemes employ the capitation contracting model for provider payment. The unit subsidies for private providers were estimated by using data of total resources of SSS allocated to private providers and divided by health service provisions.

Table 6: The median unit government subsidies for ambulatory and in-patient services among different health insurance schemes by health facilities in 2003

Health facilities	Median unit cost of ambulatory service			Median unit cost of hospital admission		
	30-Baht scheme (1)	CSMBS (2)	SSS (3)	30-Baht scheme (1)	CSMBS (2)	SSS (3)
Health centre	61	97	61	--	--	--
Community hospital	310	491	310	4,960	10,078	4,960
Provincial and regional hospital	525	832	525	9,974	20,266	9,974
University hospitals	772	1,224	772	13,889	28,221	13,889
Other public hospitals	772	1,224	772	13,889	28,221	13,889
Private hospitals	--	--	238	--	20,266	9,686

Sources: (1) = estimated by using monthly input and output financial report of public health facilities under MOPH

(2) = estimated by using secondary data of total expenditure of CSMBS for public and private facilities in 2003 and the scheme's outputs in terms of ambulatory services and hospitalization

(3) = unit subsidies of the 30-Baht scheme were adopted as the unit subsidies of SSS because these two schemes employ the capitation contracting model for provider payment. The unit subsidies for private providers were estimated by using data of total resources of SSS allocated to private providers and divided by health service provisions.

Table 7: The net government health subsidies for ambulatory services and hospitalization in 2001 and 2003 and percent changes in benefit incidence among different income quintiles

Income quintile	Net government health subsidy for ambulatory and in-patient services (million Baht)			% changes in benefit incidence between 2001 and 2003 (in 2001 value)
	2001	2003	2003 (in 2001 value)	
Q1	16,494.26	25,874.63	25,240.44	53
Q2	11,865.63	18,442.29	17,990.27	52
Q3	9,899.08	12,169.31	11,871.04	20
Q4	10,195.04	13,592.64	13,259.48	30
Q5	10,278.94	12,625.85	12,316.39	20
Total	58,732.95	82,704.72	80,677.61	37
Concentration index	-0.0440	-0.1233	----	----

Note: The consumer price index (CPI) in Thailand in 2002 and 2003 was 0.7 and 1.8 respectively

Table 8: The factor scores and the mean of top ten asset variables among different asset quintiles in the 2003 HWS

Asset variables	Factor score	Mean	Q1	Q2	Q3	Q4	Q5
washing machine	0.27448	0.47	0.03	0.14	0.42	0.80	0.95
Telephone	0.26154	0.33	0.01	0.06	0.20	0.51	0.89
video recorder	0.2443	0.62	0.15	0.40	0.69	0.87	0.96
mobile phone	0.24173	0.56	0.12	0.32	0.62	0.81	0.94
Refrigerator	0.24036	0.86	0.41	0.91	0.98	1.00	1.00
electric pot boiler	0.23851	0.68	0.21	0.53	0.78	0.91	0.98
air conditioner	0.23654	0.14	0.00	0.02	0.11	0.63	0.61
Bed	0.23368	0.63	0.19	0.44	0.68	0.88	0.97
water boiler	0.22983	0.14	0.00	0.00	0.01	0.08	0.59
electrical iron	0.22645	0.87	0.47	0.92	0.98	0.99	1.00

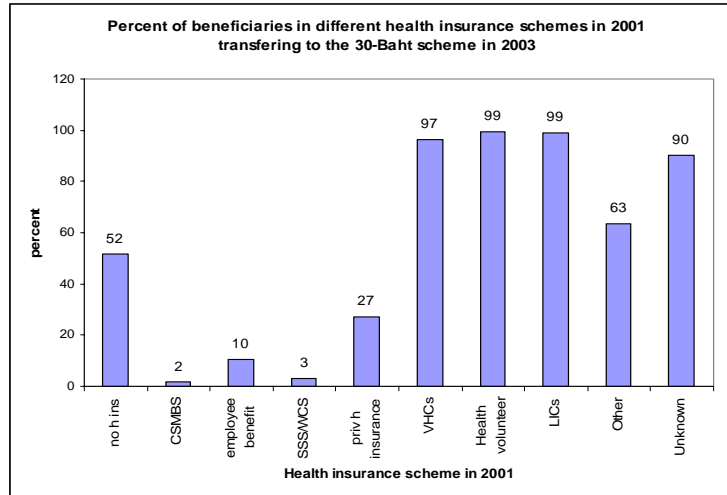
Note: The correlation between individual quintiles classified by the asset index and household income per capita is 0.52 (after the analytical weights were applied).

Table 9: The amount and proportions of the net government health subsidies for ambulatory services and hospitalization gained by different income and asset quintiles in 2003

Quintile	Net government health subsidy for ambulatory and in-patient services in 2003			
	By income quintiles (million Baht)	Percent	By asset quintiles (million Baht)	Percent
Q1	25,874.63	31	24,569.18	30
Q2	18,442.29	22	16,985.33	21
Q3	12,169.31	15	16,547.60	20
Q4	13,592.64	16	12,924.99	16
Q5	12,625.85	15	11,677.63	14
Total	82,704.72	100	82,704.72	100

Note: Using the asset index, the concentration index of government health subsidies for overall health services in 2003 = -0.0387, which is less than that of income quintiles (-0.1233)

Figure 1: The percentage of beneficiaries among different health insurance schemes in 2001 transferring to the 30-Baht scheme in 2003



Note: CSMBS = Civil Servant Medical Benefit scheme, VHCS = Voluntary Health Card scheme
 SSS/WCS = Social Security scheme and Workmen Compensation Fund scheme

Figure 2: Distribution of ambulatory service use at different types of health facilities between the 2001 and 2003 HWS

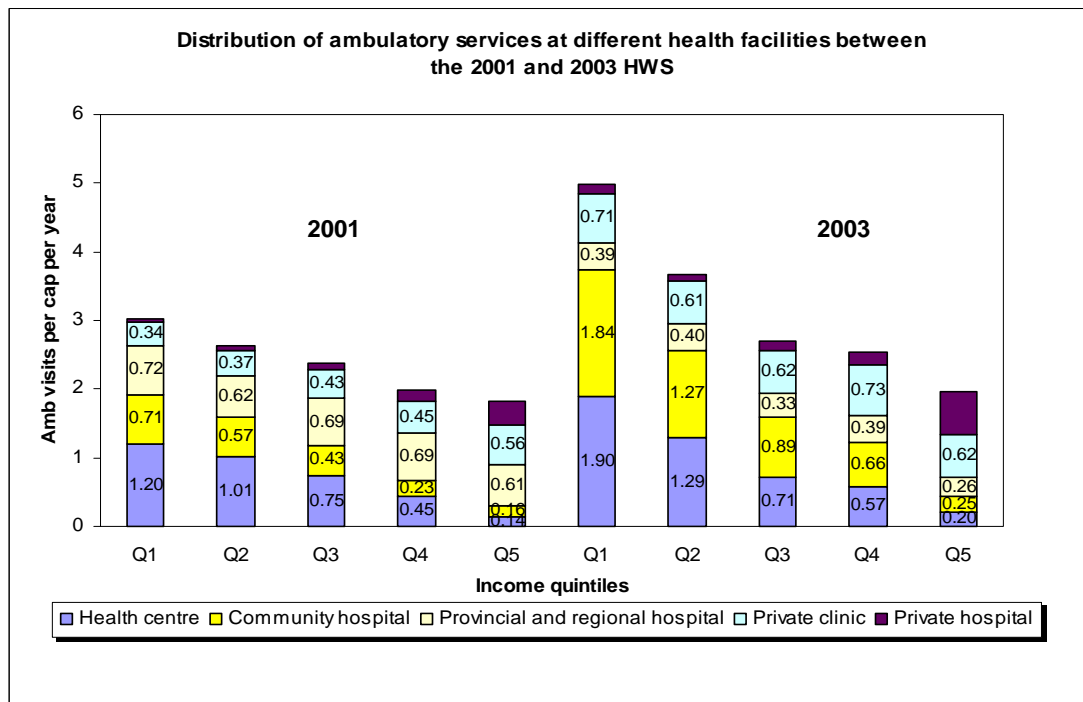


Figure 3: Percent distribution of net government health subsidies among different income quintiles in 2001 and 2003

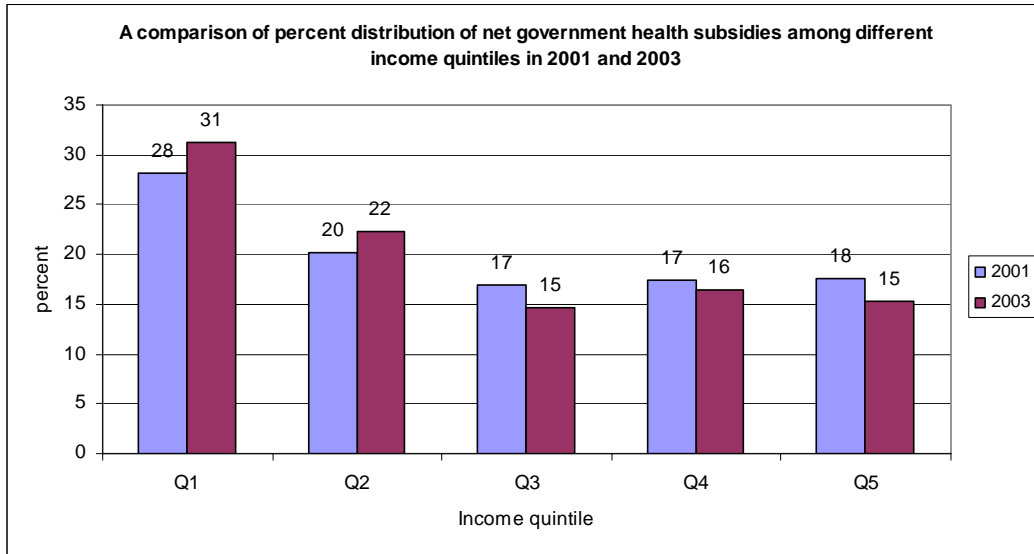


Figure 4: Geographical distribution of net government health subsidies for ambulatory services and hospitalization in 2001 and 2003

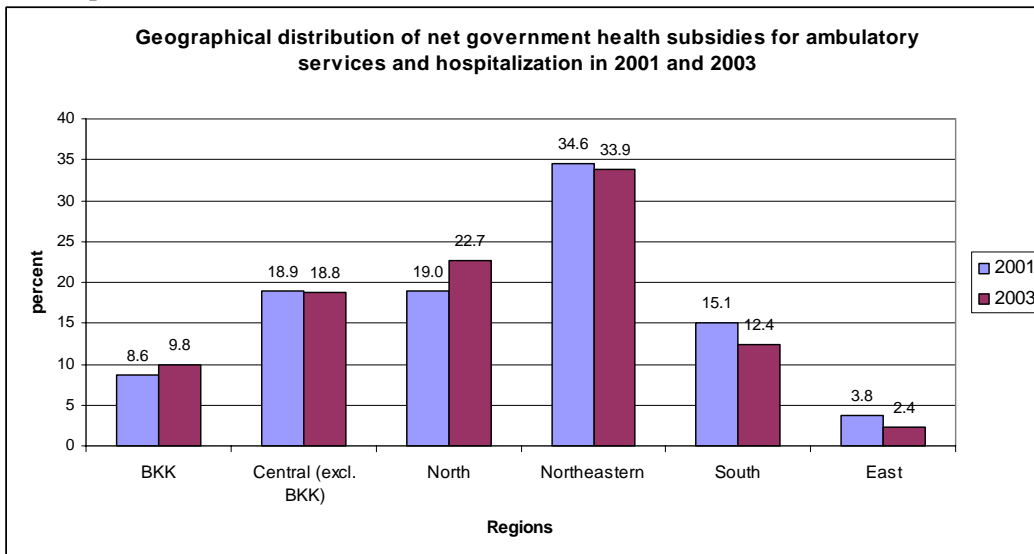


Figure 5: Differences in the proportion of the net government health subsidies in 2003 among different income quintiles between using aggregated and regional unit subsidies

