

Health insurance in Singapore: who's not included and why?

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ABSTRACT

Introduction: Health insurance and the consequent risk pooling are believed to be essential components of a sustainable healthcare financing system. We sought to determine the profile of Singaporeans who had not procured health insurance over and above MediShield, the national government-spearheaded health insurance program and the factors associated with insurance procurement.

Methods: A total of 1,783 respondents were interviewed via telephone and asked to rank their agreement with statements pertaining to healthcare cost, quality and financing on a five-point Likert scale.

Results: Respondents were representative of the general population in terms of ethnicity and housing type, but lower income households were over-represented. Respondents also had a higher education level compared to the general population. Data on 1,510 respondents, with full information on household (HH) income, education and insurance status, was analysed. HH income below S\$1,500 per month (odds ratio [OR] is 5.66, 95 percent confidence interval [CI] is 3.9–8.3, p is less than 0.0001) and a secondary education and below (OR is 2.05, 95 percent CI is 1.5–2.8, p is less than 0.0001) were associated with not procuring insurance over and above MediShield coverage. Respondents with insurance were less likely to agree that healthcare was affordable and that the “3M” framework was sufficient to meet healthcare needs.

Conclusion: Singaporeans with a lower HH income and a lower education level were less likely to possess health insurance. This may be related to a stronger belief that healthcare is affordable even without insurance. Educational efforts to encourage the more widespread use of health insurance should be targeted toward lower income groups with less formal education and

should be complemented by other interventions to address other aspects of insurance procurement considerations.

Keywords: affordability, health insurance, uninsured

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INTRODUCTION

Health insurance and risk pooling are advised to be the best ways to fund expensive medical treatment and to prevent financial ruin from catastrophic illnesses and subsequent disabilities.⁽¹⁾ Currently, a combination of government-linked and private insurance mechanisms has allowed citizens in the majority of industrialised countries to have near-universal access to healthcare.⁽²⁾ In many Asian countries including Singapore, private health insurance is a relatively new phenomenon. For the purposes of this study, we define private health insurance in Singapore as any health insurance other than MediShield and Medisave-linked private integrated plans.

Singapore has the rare distinction of providing high quality healthcare and outcomes at relatively low costs, as defined by healthcare spending as a proportion of the gross domestic product (GDP). The “3M” framework: “Medisave (formed in 1984), MediShield (formed in 1990) and Medifund (formed in 1993)”,⁽³⁾ forms the centrepiece of Singapore's healthcare financing system. This framework, together with co-payment requirements even in the most heavily subsidised government services, is designed to mitigate moral hazard and encourage a sense of shared financial responsibility among Singaporeans and the government.⁽⁴⁾

The Medisave scheme ensures that all working Singaporeans put aside a small percentage of their monthly salary into a personal medical savings account. The money saved can be used to pay for hospitalisations and, more recently, for the treatment of chronic diseases such as diabetes mellitus at the primary care level. Savings in a person's Medisave can be extended to defray the costs of the healthcare needs of his immediate family. Medisave can also be used to purchase health insurance plans, of which MediShield, which is also

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Table I. Sample population characteristics.

Variable	No. (%) of survey participants (n = 1783)	National (%) (n = 4.5 million)
Race ^a		
Chinese	1303 (74.3)	75.8*
Malay	222 (12.7)	13.5*
Indian	184 (10.5)	8.7*
Others	45 (2.6)	2.1*
Gender ^b		
Male	828 (46.7)	49.6
Female	944 (53.2)	50.4
Monthly household income (S\$) ^c		
< 1,500	285 (17.9)	19.2**
1,500–3,000	581 (36.5)	22.3**
3,000–5,000	453 (28.5)	18.7**
5,000–7,000	144 (9.1)	19.1**
> 7,000	81 (5.1)	20.7**
Housing type ^d		
HDB [†]	1533 (86.6)	87.2**
Condominium	117 (6.6)	8.1**
Landed property	116 (6.6)	4.7**

^aInformation on race was missing for 29 respondents.

^bInformation was missing for 10 respondents. ^cInformation was missing for 193 respondents. ^dInformation was missing for 17 respondents.

*Data obtained from the General Household Survey 2005.⁽⁹⁾

**Data obtained from the Singapore Census of Population 2000.⁽¹⁰⁾

[†]HDB: Housing and Development Board. This is the home ownership scheme that was introduced in 1960 to help low income groups of people to buy instead of rent their flats by allowing them to take a loan against their provident fund.

a part of the 3M framework, is an example. Health insurance ensures that Singaporeans are able to pay for large medical bills arising from catastrophic illnesses. To underline the importance of personal responsibility, all payments from MediShield are built around deductibles and co-payments. ElderShield is an extension to the 3M system. It is a private insurance scheme designed to help fund future medical expenses incurred in the event of severe disability, particularly at advanced age. In recent years, the government has allowed the private insurance market to offer additional coverage over and above basic MediShield, termed the Medisave-approved private integrated plan, for which premiums can be paid for using Medisave dollars.

With increasing access to healthcare, knowledge and information regarding pharmaceutical and medical devices, coupled with economic prosperity, consumers' expectations have risen and patients expect to have good quality healthcare that is also affordable.⁽⁵⁾ A recent national survey called the Customer Satisfaction Index of Singapore found that Singaporeans rated healthcare lowest among all the sectors considered in terms of their level of satisfaction.⁽⁶⁾ Given the dominance of the

public sector in tertiary healthcare services, it is likely that this finding reflects a desire for improved service offerings in healthcare, which generally would only be found in private hospitals and private wards/clinics in restructured hospitals. The provision of such services would require additional monies, and it is therefore timely to examine the procurement of health insurance over and above MediShield. We also sought to determine the profile of Singapore residents who do not procure health insurance over and above MediShield and the factors that influence this decision.

METHODS

The methodology for the survey has been detailed previously by Lim et al,⁽⁷⁾ and will only be briefly described here. A telephone survey was conducted in August 2006 using a sample frame generated randomly from the 2005 and 2006 telephone directory. The inclusion criterion was respondents greater than 21 years of age who self-identified as being knowledgeable about the household.

The questions in this survey were derived from the Survey of Public Perceptions of Healthcare in Singapore, 2003,⁽⁸⁾ as well as from pre-survey focus group discussions. Demographic information about the participants regarding their age, gender, race, education level, current household (HH) income, occupation and housing type was also collected.

The chi-square test and logistical regression analysis were used to determine statistical relationships between the variables, and *t*-tests and ANOVA were used for the comparison of differences. A *p*-value < 0.05 was considered to be significant. The Statistical Package for the Social Sciences version 14.0 (SPSS Inc, Chicago, IL, USA) was used for all analyses.

RESULTS

A total of 6,146 telephone numbers were generated, out of which 2,323 people were not contactable. From the remaining 3,823 telephone contacts, 2,040 respondents either refused to participate in the survey or incompletely filled out survey forms. In total, 1,783 respondents out of 6,146 generated telephone numbers (29%) or 1,783 respondents out of the 3,823 who were contactable (47%) completed the survey.

Data on 1,510 respondents, with full information on income, education level and insurance, was available for analysis. 20 respondents' information on race was missing, leading to a subgroup analysis on race that was carried out on 1,490 respondents. There was no difference with respect to the ethnic group (directly

Table II. Demographics of the study population.

Variable	No. (%)			p-value
	With Insurance (n = 870)	Without Insurance (n = 640)	Total (n = 1510)	
Age (years)				
< 40	375 (43.1)	194 (30.3)	569 (37.7)	
40–65	422 (48.5)	296 (46.3)	718 (47.5)	
> 65	73 (8.4)	150 (23.4)	223 (14.8)	
Average age \pm SD	44.3 \pm 11.7	49.3 \pm 14.9	46.5 \pm 13.4	0.0001
Race ^a				
Chinese	644 (74.9)	452 (71.6)	1096 (73.6)	
Malay	95 (11.1)	96 (15.2)	191 (12.8)	
Indian	93 (10.8)	72 (11.4)	165 (11.1)	
Others	27 (3.1)	11 (1.8)	38 (2.6)	0.039
Education				
Primary	113 (13.0)	197 (30.8)	310 (20.5)	
Secondary	384 (44.1)	286 (44.7)	670 (44.4)	
Polytechnic	183 (21.0)	88 (13.8)	271 (17.9)	
University	190 (21.8)	69 (10.8)	259 (17.2)	0.0001
Employment ^b				
Working	552 (69.3)	296 (50.2)	848 (61.2)	
Not working	169 (21.2)	184 (31.3)	353 (25.5)	
Retired	76 (9.5)	109 (18.5)	185 (13.4)	0.0001
HH income (S\$/mth)				
< 1,500	91 (10.5)	170 (26.6)	261 (17.3)	
1,500–3,000	300 (34.5)	251 (39.2)	551 (36.5)	
3,000–5,000	282 (32.4)	154 (24.1)	436 (28.9)	
5,000–7,000	106 (12.2)	34 (5.3)	140 (9.3)	
7,000–10,000	58 (6.7)	21 (3.3)	79 (5.2)	
> 10,000	33 (3.8)	10 (1.6)	43 (2.8)	0.001
Gender ^c				
Male	386 (44.6)	322 (50.5)	708 (47.1)	
Female	479 (55.4)	316 (49.5)	795 (52.9)	0.001

^aInformation was missing for 20 respondents. ^bInformation was missing for 124 respondents. ^cInformation was missing for 7 respondents.

HH: household; SD: standard deviation

queried for respondents and presumed as Chinese, Malay, Indian or Others based on the last names for non-respondents) and housing type between respondents and non-respondents.

Lower HH income groups, female and more highly educated persons were over-represented. However, the survey population was comparable to the general population in terms of ethnicity and housing type (Table I). 42% of the respondents had not procured health insurance over and above MediShield coverage (Table II).

The demographic characteristics of respondents with and without insurance differed significantly by age, education level, gender, HH income and ethnic group ($p < 0.05$ for all). A higher percentage of the uninsured was above 65 years of age, had up to a primary level of education and was of Malay ethnicity, compared to the insured respondents. A larger proportion of the uninsured respondents was male, unemployed or retired at the time of the survey, and not earning more than S\$3,000 per month (household income) when compared

to insured respondents. It was observed that the sample included significantly more female who were < 40 years old as compared to male respondents in the same age category (41% vs. 34%, $p = 0.003$). Among those who had purchased insurance, there were more female < 40 years old as compared to male (47% vs. 38%, $p = 0.009$) respondents. No significant difference was observed in the number of family members between those with and without insurance.

Logistic regression analysis was used to further understand the predictors of not procuring health insurance over and above MediShield. The purchase of private health insurance other than MediShield was the dependent variable, and income, education level, age and gender were used as independent variables. Univariate logistic regression analysis showed that when compared to respondents with a HH income above \$5,000 per month (reference group), those with HH income < \$1,500 per month, between \$1,500 and \$3,000 per month, and between \$3,000 and \$5,000 per month were 6, 2.5 and 1.7 times less likely to purchase

insurance, respectively. The level of education showed a similar association with the purchase of insurance. Using respondents with university education as the reference group, those with primary, secondary and up to polytechnic education were 5, 2 and 1.3 times less likely to possess insurance, respectively.

In a multivariate model (Table III), using HH income, education level, age and gender as independent variables, it was again observed that those with HH income < \$1,500 per month, between \$1,500 and \$3,000 per month and between \$3,000 and \$5,000 per month were 3, 2 and 1.5 times less likely to purchase insurance, respectively, as compared to respondents with HH income above \$5,000 per month. People who had up to a primary level of education were 2.5 times less likely to purchase insurance as compared to those with a tertiary level of education. Older age and male gender were also the factors that were associated with being less likely to procure insurance, but the effect was not as strong as that for the level of HH income and education.

We conducted a logistic regression analysis using HH income and education level as independent variables within race and found similar results, i.e., that lower levels of HH income (< \$5,000 per month for Chinese and < \$3,000 per month for Malay) and education (lower than university level) were associated with non-possession of insurance ($p < 0.0001$) among the Chinese and Malay ethnic groups. For Indian, only a lower income (< \$1,500 per month) was associated with a lower likelihood of possessing insurance ($p = 0.02$) (Table IV).

36% of the respondents' family members were seeking medical help for chronic diseases. However, there was no significant difference in the number of family members seeking treatment for chronic diseases between the insured and uninsured. No significant difference was observed between the insured and uninsured with regard to the monthly spending on medicines.

Table V shows that significantly more non-insured respondents agreed or strongly agreed with the following statements: "Medisave, MediShield and Medifund are sufficient to help Singaporeans pay for their healthcare needs" ($p = 0.002$), "Singapore has a good healthcare system" ($p = 0.001$), "The Government provides good and affordable basic medical care to Singaporeans" ($p = 0.001$), "I can receive good medical treatment at polyclinics" ($p < 0.0001$), "Both A and C class patients receive good hospitalisation care" ($p = 0.008$) and "Medisave should be used mainly for the person whose

Table III. Factors that discourage the purchase of insurance using multivariate logistic regression analysis.

Variable	p-value	OR	95% CI
Education level			
Up to primary	< 0.0001	2.455	1.589–3.79
4 years of secondary	NS	1.338	0.936–1.915
'A' level/polytechnic	NS	1.151	0.779–1.701
Tertiary	Ref		
HH Income (\$/mth)			
< 1,500	< 0.0001	3.188	2.075–4.896
1,500–3,000	0.001	1.831	1.267–2.644
3,000–5,000	0.031	1.483	1.037–2.121
> 5,000	Ref		
Gender			
Male	0.046	1.249	1.003–1.553
Female	Ref		
Age (years)	0.013	1.012	1.002–1.021

NB The binary dependent variable was respondents' answers (No vs. Yes) to the following survey question: "Purchase of private health insurance other than MediShield". The independent variables were education, household income, gender and age.

OR: odds ratio; CI: confidence interval; HH: household; NS: not significant; Ref: reference

account it is" ($p = 0.018$). However, more non-insured respondents disagreed with the statement "It is my personal responsibility to build my own savings to help pay for my healthcare expenses" compared to insured respondents ($p < 0.001$).

DISCUSSION

In order to effectively mitigate rising healthcare costs and ease individual financial burdens, insurance and consequent risk pooling are necessary. The Ministry of Health has recently begun to encourage the procurement of private health insurance over and above MediShield coverage,⁽¹¹⁾ including through the introduction of Medisave-approved Integrated Shield Plans. It is thus important to look into the demographics of the population without private health insurance and understand the factors associated with non-coverage by private health insurance.

Our study showed that lower levels of income and education are associated with non-procurement of private health insurance. The results were similar among the different ethnic groups in the study and consistent with other studies which showed that minority group members were much less likely to purchase non-group health insurance.⁽¹²⁾ We also ascertained that non-insured respondents are more reliant on state-initiated healthcare services and financing schemes, and have more confidence in the public healthcare system to provide for their healthcare needs in an affordable manner.

Lower levels of education may restrict the awareness

Table IV. Results of the logistic regression analysis for each ethnic group using education and income as independent variables.

Variable	p-value	OR	95% CI
Chinese			
Education			
Primary	< 0.0001	5.22	3.39–8.04
Secondary	< 0.0001	2.02	1.37–2.98
University (Ref)			
HH Income (S\$/mth)			
< 1,500	< 0.0001	5.77	3.70–9.01
1,500–3,000	< 0.0001	2.28	1.57–3.31
3,000–5,000	0.02	1.59	1.08–2.34
> 5,000 (Ref)			
Malay			
Education			
Primary	0.015	3.99	1.31–12.2
Secondary	NS		
University (Ref)			
HH Income (S\$/mth)			
< 1,500	NS		
1,500–3,000	< 0.0001	2.74	1.37–5.50
> 3,000 (Ref)			
Indian			
Education			
Primary	0.056		
Secondary	NS		
University (Ref)			
HH Income (S\$/mth)			
< 1,500	0.02	3.4	1.17–9.86
1,500–3,000	NS		
3,000–5,000	NS		
> 5,000 (Ref)			

NB In this subgroup analysis, the binary dependent variable was respondents' answers (No vs. Yes) to the following survey questions: "Purchase of private health insurance other than MediShield".

OR: odds ratio; CI: confidence interval; HH: household; NS: not significant; Ref: reference

and understanding of insurance policies and their benefits. Although consumers may feel that they have understood everything, they often express difficulty in understanding their own insurance policy.⁽¹³⁾ Lower income levels may restrict the willingness and ability to pay the necessary insurance premiums as well as hamper access to the insurance industry, which reasonably targets outreach efforts to higher net worth individuals. Participants in the pre-survey focus groups reported a mistrust of insurance agents, the traditional source of knowledge and access to insurance products in Singapore. "While the consumer knows what he wants, he does not know what he is buying" was how one participant summarised the dilemma. This is consistent with a study carried out by Aviva on consumers' attitudes, which found that a lack of trust in financial institutions prevents people from investing more.⁽¹⁴⁾

There are substantial non-price barriers that need to be addressed. The probability of purchasing private insurance is low among the lower income group, although

there are exceptions. This indicates that income may not be the sole factor driving the decision to buy insurance. This is consistent with other work in this area which has shown that even when coverage is offered to employees who have no other source of insurance, participation is not universal.^(15,16) Secondly, belief in the adequacy of state provision militates against specifically planning for future healthcare needs.⁽¹⁴⁾ In the Singapore setting, we believe that the citizens' perception that government policies and coverage are sufficient to meet healthcare needs significantly affects the decision-making process. We observed that uninsured respondents were less likely to believe in a personal responsibility to save for their healthcare, and this attitudinal stance may have further impact on the decision to think longer term and consider private health insurance.

What can be done, then, to encourage a greater uptake of private health insurance? The issue is complex and multifaceted, requiring solutions that simultaneously deal with financial issues, increase access to straightforward and trusted sources of information as well as address attitudinal and behavioural positions of the population in general and specific identified groups.

Financial incentives to encourage a greater uptake of private health insurance are probably premature at this stage without a greater understanding of the nuances of private health insurance financing and consumer beliefs. There is a much greater awareness regarding the need for private health insurance commensurate with expectations of healthcare services among the younger population, as suggested by this study, and we believe that the younger generation can be persuaded to supplement their MediShield appropriately. Nonetheless, it is probably worthwhile to consider the needs of the older generation who currently do not have private health insurance and are now "uninsurable" (due either to high premiums or to non-coverage of pre-existing illnesses), and develop bridging schemes to help this particular group cope with catastrophic healthcare bills.

As the population's attitude to health insurance tends toward inertia and apathy, educational efforts must be powerful enough to impact on behaviours rather than to simply inform. An AIA financial survey conducted in 2006 found that although 67% of people in Singapore saved and invested their monies, most still admitted that they would face financial difficulties should they fall seriously ill.⁽¹⁷⁾

While Money SENSE, the national financial education programme, is an admirable effort to enhance financial literacy in general, we advocate the greater use of community platforms such as Residents'

Table V. The mean difference in perception between insured and uninsured respondents.

Question	Mean difference \pm SD		p-value
	Insured	Uninsured	
It is my personal responsibility to build my own savings to help pay for my healthcare expenses.	3.7 \pm 0.74	3.57 \pm 0.78	< 0.0001
It is my personal responsibility to buy medical insurance to help me pay for high medical bills.	3.66 \pm 0.75	3.19 \pm 0.82	0.003
Both A and C class patients receive good hospitalisation care.	2.99 \pm 0.94	3.10 \pm 0.88	0.008
I can receive good medical treatment at Polyclinics.	2.53 \pm 0.67	3.16 \pm 0.79	< 0.0001
I can receive good medical treatment at GP clinics.	3.63 \pm 0.67	3.56 \pm 0.66	0.031
I can receive good medical treatment at private hospitals.	3.49 \pm 0.74	3.28 \pm 0.77	< 0.0001
Medisave should be used mainly for the person whose account it is.	2.44 \pm 1.03	2.56 \pm 1.06	0.018
The Government provides good and affordable basic medical care to Singaporeans.	3.1 \pm 0.95	3.22 \pm 0.89	0.001
Medical services provided at GP clinics are affordable.	3.23 \pm 0.89	3.1 \pm 0.89	0.042
Medical services provided at private hospitals are affordable.	2.44 \pm 0.89	2.31 \pm 0.85	0.017
Medisave, MediShield and Medifund are sufficient to help Singaporeans pay for their healthcare needs.	2.73 \pm 0.95	2.87 \pm 0.91	0.002
The cost of medicine in Singapore is affordable.	2.94 \pm 0.93	3.16 \pm 0.58	< 0.0001
Singapore has a good healthcare system.	2.66 \pm 0.71	2.89 \pm 0.81	0.001

Committees and Community Clubs and a more personalised approach to reach out to Singaporeans specifically for healthcare, as well as creating widely available opportunities for the average person to obtain customised non-partisan and trusted information about insurance products. These could be supplemented by information portals such as comparethemarket.com in the United Kingdom or singaporeopportunities.com, which lists price and coverage comparisons tailored to individual needs. Regardless of the medium, reducing the perceived difficulty of locating information about insurance products has been shown to spur purchase about as much as modest subsidies would,⁽¹⁸⁾ and should be actively pursued.

There are a number of limitations to this study that are mainly associated with the sampling frame. Firstly, there may be people who use only mobile phones. We could not contact people who did not have a landline connection. Secondly, we could not contact people who had a landline connection but who were not listed in the directory. Thirdly, we could not interview people who could not understand and speak English. Lastly, we interviewed only the person who answered the telephone call (may have been the breadwinner or the head of the household) and we were not able to capture information on the insurance practices of other members of the family.

Although the interpretation of the data was constrained by the limitations described above, the number of respondents was sufficiently large and reasonably representative of the study population.

We believe that this study marks a useful initial foray in Singapore into understanding more deeply the demographic profiles of those with and without health insurance. More in-depth studies using census-derived samples would shed further light on this important area of research, as would qualitative research into the motivations for procuring health insurance and the barriers encountered.

In conclusion, this study suggests that people with lower levels of education and income tend not to procure insurance other than MediShield. In addition, it was observed that people above 65 years of age tend not to procure insurance other than MediShield. The study has also highlighted the fact that uninsured as compared to insured respondents tend to believe that healthcare in Singapore is good, affordable and that the existing government schemes are adequate to meet their healthcare needs. Policy-makers need to understand and appreciate the reasons for the reluctance to purchase private health insurance, especially among Singaporeans of lower socioeconomic status, and target interventions at the fundamental causes in order to change their behaviour.

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