Price Variations among Standardized Voluntary Health Insurance Plans: Evidence from Hong Kong

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Objectives

Healthcare expenditure in Hong Kong is primarily government funded (52%) or through household out-of-pocket payments (31%). Lack of pooled funds and high out-of-pocket payments risks catastrophic health expenditure.

The Voluntary Health Insurance Scheme (VHIS) introduced in 2019 promotes risk pooling of voluntary contributions through Certified Plans offering standardized terms and benefits, including guaranteed renewal to age 100 and specified inpatient coverage for consumer protection. Insurers must disclose premium schedules for transparency although premiums are not regulated by the government. VHIS has grown steadily to 1.2million active policies by 2022 with over half insured individuals age <40, showing success in attracting a younger demographic. We analysed variations in community rated premium prices for VHIS Standard Plans and identify factors associated with higher premiums.

Methods

In 2024, 94 Certified Plans were available (31 Standard and 63 Flexi). We analyzed 7,184 annual premium rates from all 31 Standard Plans providers. Generalized linear regression models were fitted to assess the associations between age, sex, and smoking status with premiums. Interactions between age, sex, and smoking status were tested.

Results

- Standard annual premiums ranged from US$130 to US$5,862 with wide variations between providers.
- Premiums varied by age for all providers, by gender for 27 providers, and by smoking status for 6 providers.
- Most providers offered a single premium schedule for ages 15 days – 80 years, but 3 providers have higher-cost schedules for those starting coverage at ages >60 or >65.
- Mean premiums for age groups 30-40, 40-50, 50-60, 60-70 and 70-80 were 1.6x, 2.3x, 3.2x, 5.0x and 7.7x higher than those age <30.
- Mean premiums for males were 10% lower than females, but with age-dependent differences.
- Compared to those age <30, males had premiums 20% lower than females for ages 30-50, but 10% higher for those >60.
- Smokers had 30% higher premiums than non-smokers consistently across all age groups.

Conclusions

Difference in premium prices were driven mostly by age and choice of provider. Gender variations differed by age groups whereas extra premiums for smokers remained consistent. Quantifying these differences can help determine the actuarial fairness and the viability of community rating pricing for standard health insurance plans.

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	Number of premium rates	Mean price (US$)	Median price (US$)	Range of prices (US$)
All	7,184	1,228	720	130 – 5,862
Age group				
<30	2,078	275	253	130 – 685
30-40	740	404	378	197 – 845
40-50	740	588	552	279 – 1189
50-60	740	888	849	435 – 1,971
60-70	740	1,443	1,334	701 – 3,888
70-80	740	2,224	2,047	1,126 – 4,594
80-90	740	2,797	2,686	1,489 – 5,479
90-100	666	3,120	3,044	1,489 – 5,862
Female	3,592	1,229	767	130 – 5,862
Male	3,592	1,227	658	132 – 5,475
Non-smoker	6,200	1,156	650	130 – 5,097
Smoker	984	1,683	1,167	160 – 5,862

Table 1. Summary of annual premiums

Predictor	Coefficients (95% Confidence Interval)	
	Baseline model	Interaction model*
Age <30, female, non-smoker	277 (273-281)	275 (270-280)
Age group		
30-40	1.4 (1.4-1.5)	1.6 (1.5-1.6)
40-50	2.1 (2.0-2.1)	2.3 (2.2-2.3)
50-60	3.2 (3.1-3.2)	3.2 (3.1-3.3)
60-70	5.2 (5.0-5.3)	5.0 (4.8-5.2)
70-80	7.9 (7.8-8.1)	7.7 (7.4-7.9)
80-90	10.0 (9.7-10.2)	9.6 (9.3-10.0)
90-100	11.1 (10.8-11.4)	10.7 (10.3-11.1)
Male	0.9 (0.9-1.0)	0.9 (0.9-1.0)
Smoker	1.2 (1.2-1.3)	1.3 (1.2-1.3)

*Table 2. GLM results. * interaction coefficients not shown*

Figure 1. Box plots of annual premium (USD) for (a) non-smokers, and (b) smokers