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Letter to the Editor

Determinants of Supplementary Health Insurance Demand: Case Study of Iran

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Dear Editor- in- Chief

Voluntary health insurance schemes help those who are not included in social health insurance (1). These are divided into supplementary and self-employed insurance. Generally, the supplementary health insurance provides health facilities in non-governmental sectors for the insured, fills the gap in services and commitments of basic health insurance, (2) makes the room for innovation, diversity and competition in the field of health insurance activities (2). In addition, self-employed health insurance is awarded to persons who work with an employer or alone (self-funding) based on work permits issued by the competent authorities or under the recognition of Social Security Organization (3). This study emphasizes on measuring main determinants of demand for supplementary health insurance.

Data are extracted from website of Statistical Center of Iran in 2012. We select a sample of 4055 urban households and 1594 rural ones.

Due to binary nature of dependent variable (y), we use a Logistic regression model to estimate supplementary health insurance demand (4).

$$\Pr[y = 1] = \frac{\exp(\beta x)}{1 + \exp(\beta x)}$$

y indicates demand for supplementary health insurance and takes 1, if one buys supplementary health insurance policy, or 0 otherwise. Xs consist of both quantitative variables (head of household's age, income and household size) and qualitative variables (head of household's gender, and head of household's education level). Occupation was classified into government employee, non-government employee and the retiree; head of household's marital status was classified into single (base group), married and divorced or deceased. House ownership status was classified into the leased (base group), owner-occupied and mortgaged houses.

The results of Logistic regression model estimation are reported in Table (1), in which likelihood ratio (LR) and Hosmer-Lemeshow test imply goodness of fit of the model.

The odds ratios (OR) in Table 1 are of probabilistic interpretations. For example, for each year increase in age, the probability of demand for supplementary health insurance in both urban and rural households increases by 1.03 and 1.09 times, respectively. The similar interpretations are applicable for the remaining odds ratios.

The demand for supplementary health insurance is not related to gender of household's head and household size in urban areas. However, in rural areas, as the size of household increases, the higher expenses for housing, clothing, food and transportation reduce demand for supplementary health insurance (5).

Table 1: The regression results of logistic model for supplementary health insurance demand

Variable	Level of variable	Urban Households Coefficient (B)	Odds Ratio	Wald statistic	*P*-Value	Rural Households Coefficient (B)	Odd Ratio	Wald statistic	*P*-Value
Intercept		-3.5	0.03	-6	0.000	-7.2	0.0007	-6.54	0.000
Age		0.03	1.03	6.58	0.000	0.08	1.09	9.94	0.000
Household size		-0.15	0.98	-0.48	0.629	-0.1	0.9	-2.11	0.035
Income		0.033	1.03	2.85	0.004	0.13	1.14	5.8	0.000
Gender	(base) male	-	-	-	-	-	-	-	-
	female	0.6	1.8	1.76	0.08	0.89	2.4	0.96	0.34
Education	(base) illiterate	-	-	-	-	-	-	-	-
	primary	0.4	1.46	1.7	0.09	0.88	2.4	2.6	0.009
	Lower secondary	0.54	1.71	2.3	0.02	0.99	2.7	2.69	0.007
	Upper-secondary	0.83	2.3	3.77	0.000	1.8	6	5	0.000
	Tertiary	1.31	3.7	6	0.000	2.13	8.4	5.6	0.000
Occupation	retired(base)	-	-	-	-	-	-	-	-
	non-government employee	-1.15	0.31	-8.05	0.000	0.004	1	0.01	0.99
	government employee	-0.8	0.44	-5.3	0.000	-0.27	0.76	-0.87	0.39
Marital status	(base) single	-	-	-	-	-	-	-	-
	married	0.4	1.5	1.03	0.3	0.49	1.64	0.57	0.57
	divorced or deceased	0.5	1.66	1.1	0.27	1.33	3.8	1.15	0.25
House ownership	(base) leased	-	-	-	-	-	-	-	-
	Owner-occupied	0.25	1.3	2.06	0.04	-0.04	0.96	-0.13	0.9
	mortgaged	0.43	1.5	2.11	0.035	0.57	1.77	1.16	0.25
Hosmer-Lemeshow chi2 = 22.32 Prob > chi2 = 0.44 LR chi2(14)= 248.52 Prob>chi2= 0.0000						Hosmer-Lemeshow chi2= 5.72 Prob > chi2 = 0.68 LR chi2(14)= 343.03 Prob>chi2=0.0000			

The household head's age is of positive impact on demand for supplementary health insurance; possible reasons are high motivation to improve faster and greater likelihood of developing a disease with aging.

According to Table 1, the higher the income level, the more the ability of household to pay and the probability to demand for voluntary health insurance.

A positive significant relationship between education level of household head and demand for supplementary health insurance shows that low-educated people are high risk-taker but high-educated people are risk-averse.

Demand for supplementary health insurance in urban households is positively linked to occupation due to regulatory mechanisms, which provide more facilities to the retired and employed people. Lack of similar relationship in rural households originates mainly from self-employment of villagers in agriculture or animal husbandry activities.

There is no significant relationship between demand for supplementary health insurance and marital status in both urban and rural households.

In urban households demand for supplementary health insurance in house owner group is higher than tenant group, because rent costs impose additional burden on household income and as a result reduce household ability to pay [for insurance] (6). In rural households, demand for supplementary health insurance has no significant relationship with house ownership, since villagers as house owners or living together households have no extra rent expenses.

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