

Policy Brief #2

Households' opportunity to borrow from external sources, to self-insure against the costs of illness, or to misunderstand or mistrust the health insurance product could dampen the demand for health insurance.

UPecon Foundation

Why the Demand for Health Insurance Among Low- and Middle-Income Filipino Households is Low: A New Perspective on their Willingness to Pay¹

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Introduction

Why do low- and middle-income populations have low willingness to pay (WTP) for health insurance despite the substantial medical expenditures that households face in case a member gets sick? A common explanation for this paradox is that these households misperceive these financial risks, lowering their demand for health insurance. Although this seems a plausible explanation, very little empirical research has been done to unpack and verify this misperception. Moreover, while a sizeable literature has explored a multitude of reasons for low insurance demand in low-income settings, empirical investigation of the role of poor household's risk perception in the purchase of health insurance is rare.

This study introduces a new way of understanding and decomposing WTP for health insurance in low-income households in the Philippines. It first reviews the existing literature on WTP, proposes a way of decomposing WTP, and then uses data derived from a nationwide Philippine survey of the uninsured and voluntarily insured to estimate and decompose the WTP of the uninsured and, thereby, evaluate potential explanations for their decision not to insure.

Decomposition of Willingness to Pay

This study aims to explain low health insurance demand by introducing a new decomposition of the stated WTP for insurance into its fair price as well as (a) behavioral deviations from that price that arise from subjective beliefs about the distribution of medical expenses, and (b) dimensions of risk attitude consistent with prospect theory, which is the most popular model of choice under risk. Prospect theory assumes that people maximize utility defined over changes in wealth with respect to a reference point, which in this case is the state in which insurance is not purchased and medical expense is not incurred. In this situation, the insurance decision is taken by comparing outcomes entirely in the loss domain, where households behave in a risk-seeking fashion, reducing their WTP for insurance and contributing to low demand for it.

To implement the aim of the study, the analysts proceeded to estimate the difference between the WTP and the fair price of insurance, the fair price being defined as the mathematical expectation of the loss (also known as the risk premium) which is estimated by the average spending on medical care within a given population or risk pool. The components to be estimated would then be:

¹Based on the article "A behavioral decomposition of willingness to pay for health insurance" by Aurelien Baillon, Aleli Kraft, Owen O'Donnel, and Kim Wilgenburg. *Journal of Risk and Uncertainty* 64 (2022) <https://doi.org/10.1007/s11166-022-09371-2>.

- The belief premium, or the difference between (a) the perceived fair price based on subjective assessment of medical expenditure risk and (b) the fair price based on objective, empirical distribution of expenditures. Private information about their health, as well as their proneness to optimism or pessimism, may cause their beliefs to deviate from this estimated risk.
- The utility premium, which reflects the risk attitude of the household and includes the utility or “value” it places on insurance (as defined under prospect theory where households consider the value of insurance not in terms of changes in wealth but with respect to a reference point of not purchasing insurance and not incurring medical expenditures), and the probability of the adverse event (ailment) occurring. This is estimated as the difference between WTP and the perceived fair price.
- The weighting premium, which reflects the relationship between the household’s subjective perception of the probability of an event and its objective probability. With the prospect theory, small probabilities are overweighted but large probabilities are underweighted. This may increase or decrease the WTP for insurance.
- The residual.

Traditional WTP estimations only consider the fair price (first bullet above) of health insurance, with little consideration for the other three components (the belief premium, the utility premium, and the weighting premium) revealed as the household’s risk characteristics. By including these observable risk characteristics of the household, this study provides a richer perspective and deeper understanding of why health insurance demand is low in low-income settings. Knowing the signs and relative magnitudes of the four sources of difference between the reported WTP and the fair price of insurance (i.e., the belief premium, the utility premium, the weighting premium, and the residual) throws light on the perceived welfare gain from insurance and can potentially help identify broad strategies to influence insurance uptake.

Empirically, these observable risk characteristics can be written as the sum of the three premiums defined by the behavioral model, plus the residual (or the statistical error term or residual²). The equation shown in the footnote is the decomposition of the perceived welfare gain from actuarially fair insurance. The residual term includes everything that influences the household’s reported valuation of health insurance that is not captured by the model, i.e., everything besides risk perception and risk attitude, for instance, the household’s choice to self-insure against the costs of illness, the ability to borrow from external sources, and misunderstanding or mistrust of the health insurance product. It will be shown later that this residual term is important.

Data and Method

Data were collected through a nationwide survey of 1,780 Filipino households conducted in 2015. This was a follow-up to a baseline survey carried out in 2011 as part of a randomized health insurance experiment. The 2011 baseline survey had a multistage cluster sampling design to randomly select 2,950 households that were nationally representative (excluding the Autonomous Region of Muslim Mindanao). The follow-up targeted all households that, at baseline (a) were not covered by any PhilHealth program, (b) were covered either by programs for the poor and disadvantaged, or through (c) voluntary enrolment. The sample was restricted to respondents who answered all the questions needed to construct all components of the WTP decomposition; households with missing data on elicited risk attitudes were dropped. This left 1,565 observations out of the total of 1,780 interviewed at follow-up.

² Formally, this can be written as $WTP - \mu = \pi_b + \pi_u + \pi_w + \pi_\xi$ where WTP = willingness to pay; μ = fair price of insurance; and $\pi_b + \pi_u + \pi_w$ = the three observable risk characteristics, i.e., respectively, the belief premium, the utility premium, and the weighting premium; and π_ξ is the residual.

The survey elicited subjective probabilities of future spending on medical care. To reduce the cognitive task for respondents, the survey used a visual aid of four cups representing the ranges in which the household’s total out-of-pocket (OOP) expenditure on health care over the next 12 months could fall: PhP 0 (zero); PhP 1-4,000; PhP 4,001-8,000; and > PhP 8,000. Then the respondent was given ten sticks and asked to distribute them by placing more sticks (higher probabilities) in a cup if they thought it more likely that OOP would be in the range indicated by the cup. The allocation of sticks provided data to estimate each respondent’s subjective probability distribution of medical expenditures and so derive the perceived fair price for full insurance. Respondents were also asked how much OOP they spent over the last 12 months, again using the same intervals used in the visual aid. Their responses were directly compared to the sample empirical distribution of past expenditures with the subjective probability distribution of future expenditures. To elicit the parameters of risk attitudes, respondents were offered two independent sets of hypothetical lottery choices, presented also using a visual device. To elicit WTP, respondents were asked to state how much they are willing to pay for insurance covering expenses they will incur.

Results and Findings

Characteristics of the sampled population show that: (1) Majority of the respondents reported that their household spent PhP 1-4,000 on health care in the past year. A little more than a fifth reported spending nothing and 11 percent spent more than PhP 8,000. (2) The average WTP for health insurance is PhP 171 per month, which is about PhP 30 less than the premium for low-income households joining PhilHealth on a voluntary basis. (3) On average, respondents perceive a 44 percent chance of incurring medical expenses in the range of PhP 1-4,000. The perceived risk of spending in excess of PhP 8,000 is overestimated. (4) Rather surprisingly, expected spending on medical care does not seem to vary with household income, but it does rise strongly with the household respondent’s level of education.

Table 1 shows the WTP for health insurance and its decomposition among the uninsured households. The mean is approximately PhP 2,400 premium at which those with lower incomes could have enrolled in PhilHealth. However, the median is only PhP 192, and so for a majority, the model correctly predicts that health insurance is not demanded at this premium. The model indicates that 61.5 percent of the respondents with derived WTP less than PhP 2,400 perceive themselves to be made worse off if they were to insure at this premium. In fact, the model predicts that around two-fifths of the uninsured would not demand insurance at any price.

Table 1. Willingness to Pay (in PhP) for Health Insurance Among Uninsured Households and its Components

	Derived WTP	Stated WTP	Fair Price	Premium					Residual
				Belief	Utility Then Weighting ³		Weighting Then Utility ⁴		
					Utility	Weighting	Utility	Weighting	
Mean	2,413	2,054	3,086	21	-400	-294	-753	60	-359
Std. dev.	3,150	1,887	0	3,229	927	1,475	1,798	1,298	3,611
10th percentile	0	1,200		-3,070	-1,608	-484	-3,166	-259	-5,446
25th percentile	0	1,200		-3,008	-320	0	-456	-42	-2,735
Median	192	1,200		-231	-39	0	-32	0	1,046
70th percentile	4,162	2,400		2,184	-3	0	-3	0	1,200
90th percentile	7,543	4,800		4,929	1	34	3	45	3,554
N	545	545		545	545	545	545	545	545

Decomposition of WTP of the uninsured shows that on average, uninsured respondents have a belief premium close to zero. The mean perceived fair price of PhP 3,107 (= 3,086 +21) is substantially above the PhP 2,400 reduced premium for low income households at which PhilHealth offers cover; hence, a poor uninsured household would have decided to insure if it were risk-averse or risk-neutral, but in this model, the average household did not.

What can be gleaned from the statistical analysis undertaken in the study? First, misperception of risk does not explain the decision not to insure. Second, risk attitudes explain a large part of the shortfall of mean stated WTP from the fair price, i.e., the decision not to insure. Third, the negative mean residual is large: on average, the stated WTP is less than the model predicts. This unexplained low demand for formal insurance may be due to informal and self-insurance options of households, lack of trust in the insurance product, or other extraneous factors.

Conclusion and Implication

This study decomposes the deviation of WTP for insurance from its fair price into three behaviorally determined contributions that reflect risk perception, risk attitude, and a residual term that absorbs other factors not captured by the one-period model. The average WTP of uninsured households in the study is only about two-thirds of the fair price of insurance and is less than the subsidized price at which PhilHealth insurance is offered. Thus, for many of the uninsured, risk attitude and perception are not sufficient to explain their decision not to insure. Other factors depress demand, and the results of the study show that their quantitative contribution is substantial. One of the implications of the findings of the study is that belief premium is insignificant and that other factors depress demand in the purchase of health insurance, such as the availability to borrow to cover for sickness costs, or to rely on others for external support when sickness strikes, or mistrust of the health insurance product.

³In columns headed “utility then weighting,” utility premium is calculated first by applying power utility with linear probability weighting. Then the weighting premium is calculated by introducing the probability weighting function to weight power utility.

⁴In columns headed “weighting then utility,” the weighting premium is calculated first by applying the probability weighting function to linear utility. Then the utility premium is calculated by changing linear to power utility.