

11-30-2022

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Recommended Citation

Arief R H, Adang B, Cicilya C, et al. The Potential of Private Health Insurance Ownership Based on the 2018-2020 National Socioeconomic Survey Data. *Kesmas*. 2022; 17(4): 279-286

DOI: 10.21109/kesmas.v17i4.6214

Available at: <https://scholarhub.ui.ac.id/kesmas/vol17/iss4/8>

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The Potential of Private Health Insurance Ownership Based on the 2018-2020 National Socioeconomic Survey Data

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Abstract

In 2014, the Indonesian Government introduced a social security program in the health sector. However, Indonesia's out-of-pocket expenses remain high due to a lack of public interest in National Health Insurance services. Financing expensive health services with high out-of-pocket expenses has the potential to cause poverty. Private health insurance is considered a solution to this problem. This study aimed to determine the socioeconomic factors of private health insurance ownership and its potential in Indonesia. This study used secondary data from the 2018, 2019, and 2020 National Socioeconomic Surveys. Logistic regression analysis showed that the variables related to private health insurance ownership were age, sex, education, economic status, employment status, marital status, household status, and location of residence. The most dominant variable in 2018 was per capita expenditure (economic status), while education was the most dominant variable in 2019 and 2020. The result of this study can be used to formulate a strategy for increasing participation in private health insurance. The socioeconomic health sector should use this information to target specific markets for private health insurance.

Keywords: National Health Insurance, private health insurance, socioeconomic determinant

Introduction

The out-of-pocket (OOP) expenses for health insurance in Indonesia were more than 30% of total health expenditures in 2021.¹ High OOP in health financing can exacerbate the disease burden on individuals due to delayed or missing care, strained personal finances, and an increased likelihood of financial disaster, impoverishment, or deteriorating social determinants of health. The consequences experienced by the community are greater vulnerability to poverty and wider inequality in health.² Private health insurance is important in reducing OOP in health financing.² Several studies have found that private health insurance as additional insurance has a significant effect on reducing the burden of OOP payments.⁴⁻⁸

Although the National Health Insurance (NHI) program was introduced in 2014, public interest in NHI services tends to be low because the system is still considered unsatisfactory.⁹ People from middle to upper economic statuses prefer OOP rather than using NHI. The small number of private health insurance providers in Indonesia is one of the reasons why private health insurance progress has been extremely slow in Indonesia.¹⁰ Private health insurance companies must develop pro-

ducts that people need and know which potential customers to target.

This study aimed to provide a foundation for strengthening private health insurance in Indonesia by examining the characteristics of its users and analyzing its determinants so that private companies can know their marketing target. It is hoped that private health insurance companies will be interested in making health insurance services that strengthen private health insurance ownership in Indonesia. In addition, it is expected that the government will consider the results of this study when developing additional health insurance programs for NHI participants.

Method

This study used secondary data from the 2018, 2019, and 2020 National Socioeconomic Surveys (NSS)/*Survei Sosial Ekonomi Nasional* (SUSENAS). These data used the head-of-household level as the unit of research analysis. Univariate analysis was conducted to determine the characteristics of the head of household, and multivariate analysis was used to determine these characteristics' relationships to private health insurance ownership.

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Received : September 08, 2022
Accepted : November 28, 2022
Published : November 30, 2022

The univariate analysis in this study consisted of descriptive responses to the variables and examined the characteristics of 70,102,253 heads of households. The variables studied consisted of age (in years); sex, divided into two categories (male and female); educational background, divided into five categories (uneducated, elementary school/equivalent, junior high school/equivalent, senior high schools/equivalent, and higher education); and economic status or per capita expenditure (expenses per

household per month) in Indonesian Rupiah (IDR). Employment status was divided into occupations (unemployed, informal, and formal) and types of occupations (extractives, manufacturing, and services).

Marital status was divided into single and married. Household status was divided into the number of household members, the number of household children under five were considered, the NHI ownership, private health insurance ownership, and insurance ownership (without

Table 1a. Variables and Operational Definitions

Variable	Category	Operational Definition	Unit/Scale	Value Range
Age		Head of household age	Years	Numeric (15–97 years old)
Sex	Male	Head of household sex is male	Nominal	1 if the head of the household is male 0 if the head of the household is female
	Female	Head of household sex is female Female is the base variable	Nominal	1 if the head of the household is female 0 if the head of the household is male
Education	Uneducated	The head of household never received a formal education or graduated from school Uneducated is the base variable	Ordinal	1 if the head of household never received an education or graduated from school 0 if other conditions (graduating elementary school, graduating from junior high school, graduating from high school, graduating from college)
	Elementary	The highest education of household head is an elementary school graduate	Ordinal	1 if the household head graduated only from elementary school 0 if other conditions (not going to school, graduating from junior high school, graduating from high school, graduating from college)
	Junior high school	The highest education of household head is a junior high school graduate	Ordinal	1 if the household head graduated only from junior high school 0 if other conditions (not going to school, graduating from elementary school, graduating from high school, graduating from college)
	Senior high school	The highest education of household head is a senior high school graduate	Ordinal	1 if the head of the household graduated only from senior high school 0 if other conditions (not going to school, graduating from elementary school, graduating from junior high school, graduating from college)
	Higher education	The highest education of household head is a college graduate	Ordinal	1 if the head of the household graduate from college 0 if other conditions (not going to school, graduating from elementary school, graduating from junior high school, graduating from senior high school)
Occupation	Unemployed	The household head has no job Unemployed as the base variable	Ordinal	1 if the head of household has no job 0 if other conditions (informal worker or formal worker)
	Informal	The household head is a blue-collar worker	Ordinal	1 if the head of household is an informal worker 0 if other conditions (has no job or a formal worker)
	Formal	The household head is a white-collar worker	Ordinal	1 if the head of household is a formal worker 0 if other condition (has no job or an informal worker)
Types of occupation	Extractive	Head of household works in the extractive sector	Nominal	1 if the head of household works in the extractive sector (agriculture, plantation, fishery, forestry, mining) 0 if other conditions (not working, working in the manufacturing sector, working in the service sector)
	Manufacture	Head of household works in the manufacturing sector	Nominal	1 if the head of household works in the manufacturing sector (manufacturing, utilities, construction) 0 if other conditions (not working, working in the extractive sector, working in the service sector)
	Service	Head of household works in the service sector	Nominal	1 if the head of household works in the service sector (trade, services, communications, finance) 0 if other conditions (not working, working in the extractive sector, working in the manufacturing sector)
Marital status	Single	The head of household has never been married or is divorced Single is the base variable	Nominal	1 if the head of household is single 0 if head of household is married
	Married	The head of household is married	Nominal	1 if the head of household is married 0 if head of household is single

Table 1b. Variables and Operational Definitions

Variable	Category	Operational Definition	Unit/Scale	Value Range
Household status	Number of families	Number of household members	Numeric	(Total family members)
	Children under five	Number of children under five in the household	Nominal	1 if there are children under five (age 0–59 months) in the household 0 if there are no children under five in the household
	National Health Insurance (NHI) ownership	Household head membership status of NHI	Ordinal	1 if household head is a member of NHI 0 if household head is not a member of NHI
	Private health insurance ownership	Household head membership status of private health insurance	Ordinal	1 if household head is a member of private health insurance 0 if household head is not a member of private health insurance
Insurance ownership	Insurance ownership	Household head membership status of any insurance	Nominal	1. No health insurance 2. NHI 3. Private health insurance 4. Both NHI and private health insurance
	Area of residence			
Area of residence	Rural	Household residence is in a rural area	Nominal	1 if the household is in a rural area 0 if the household is in an urban area
	Urban	Household residence is in an urban area	Nominal	1 if the household is in an urban area 0 if the household is in a rural area

health insurance, NHI only, only private health insurance, and ownership of both NHI and private health insurance). Area of Residence was classified as urban or rural (Table 1).

Multivariate analysis was performed after the logistic regression analysis to determine which variables significantly influenced the variable of private health insurance ownership. The logistic regression equation was used to estimate the probability of private health insurance ownership. Variables were selected by binary logistic analysis in advance of the logistic regression analysis, and it was used to select the correlated variable to the dependent variable (private health insurance ownership) with a significance level of 5%. The selected variables were then analyzed using logistic regression analysis. The coefficient in this analysis indicates the magnitude of the probability of a category, and a positive value indicates that the probability of a category is greater than that of the comparison category (the variable defined as a base). However, a negative coefficient means that the probability of the category is smaller than that of the comparison category. The results of the exponential estimated value of the regression coefficient (β_i) obtained the value of the odds ratio, with a significance level of 5%.

Results

The univariate analysis in this study consisted of descriptive responses to the variables. Household characteristics are shown in Table 2. Based on sex, the 2018-2020 NSS was dominated by males. Based on the head of the household’s type of work was dominated by work in the informal sector. The head of the household’s occupation category was dominated by the service sector. The mari-

tal status of the head of the household was dominated by married status. Urban areas dominated the location of the household residences.

An average of four members dominated the number of household members. The distribution of the ownership of the NHI was dominated by members of the NHI. Private health insurance ownership distribution was dominated by households without it. The status of insurance ownership distribution was dominated by only NHI ownership.

The logistic regression equation estimated the opportunity for private health insurance ownership for NHI members with specific characteristics according to the abovementioned variables. The coefficient sign indicates the magnitude of the probability of a category; a positive sign indicates that the probability of a category is greater than the comparison category, while a negative coefficient sign means that the probability of the category is smaller than the comparison category. The base variable was used as the comparison variable.

The equation in Table 3 showed that the intercept value = -25.4885 when all independent variables are 0, including the ownership of additional private health insurance for NHI members, women living in a village, were uneducated, did not work, had never been married, family members less than four, and no children under five. The accuracy of the logistic regression model in predicting empirical data was seen in the classification table output, which was shown in the overall percentage value of 18%, meaning that the variation in the rate of additional private health insurance ownership among NHI members was only 18%, as determined by the overall predictor. It means that 82% of the additional private health

Table 2. Characteristics Based on Number of the Household Heads and Members in 2018, 2019, and 2020

Variable	Category	2018			2019			2020		
		n	Mean/Median	%	n	Mean/Median	%	n	Mean/Median	%
Age (years)		70,101,253	48.09/47		71,437,667	48.38/48		72,791,519	48.72/48	
Sex of household's head	Male	59,466,983		84.83	60,394,034		84.54	61,278,834		84.18
	Female	10,634,270		15.17	11,043,633		15.46	11,512,685		15.82
Education	Uneducated	3,596,168		5.13	3,322,611		4.65	3,108,850		4.27
	Elementary school	31,047,973		44.29	31,133,056		43.58	30,679,215		42.15
	Junior high school	11,388,111		16.25	11,915,752		16.68	11,643,284		16.00
	Senior high school	17,480,847		24.94	17,851,343		24.96	19,833,711		27.25
	Higher education	6,588,154		9.40	7,234,905		10.13	7,526,459		10.34
Occupation	Unemployed	9,216,811		13.15	9,235,641		12.93	15,992,886		21.97
	Informal	34,651,721		49.43	34,900,111		48.85	28,336,169		38.93
	Formal	26,232,721		37.42	27,301,915		38.22	28,462,464		39.10
Type of occupation	Extractive	21,983,372		36.11	21,653,901		34.81	21,869,141		34.67
	Manufacturing	7,121,559		11.70	7,357,645		11.83	7,482,068		11.86
	Service	31,779,511		52.20	22,190,480		53.36	33,729,040		53.47
Marital status of household's head	Single	13,667,696		19.50	14,655,780		20.52	15,332,509		21.06
	Married	56,433,557		80.50	56,781,887		79.48	57,459,010		78.94
Number of family members		70,101,253	3.77 of 4		71,437,667	3.74/4		72,791,519	3.71	4
Number of children under five in the household		70,101,253	0.34		71,437,667	0.33		72,791,519	0.31	0
NHI ownership	Head of household is not a member of NHI	25,114,341		35.83	26,856,398		37.59	22,032,519		30.27
	Head of household is a member of NHI	44,986,912		64.17	44,581,269		62.41	50,759,000		69.73
Private health insurance ownership	Household does not have private health insurance	66,837,063		95.34	68,381,939		95.72	69,908,963		96.04
	Household has private health insurance	3,264,190		4.66	3,055,728		4.28	2,882,556		3.96
Insurance ownership	No health insurance	22,716,338		32.41	24,690,896		34.56	19,984,421		27.45
	NHI	44,120,725		62.94	43,691,043		61.16	49,924,542		68.59
	Private health insurance	2,398,003		3.42	2,165,502		3.03	2,048,098		2.81
	NHI and private health insurance	866,187		1.24	890,226		1.25	834,458		1.15
Area of household residence	Rural	31,747,219		45.29	31,414,505		43.97	32,019,313		43.99
	Urban	38,354,034		54.71	40,023,162		56.03	40,772,206		56.01

Note: NHI = National Health Insurance

insurance ownership rate in NHI member households was determined by factors other than the analyzed predictors. From Table 3, the odds ratio value was indicated by the magnitude of the Exp(B) named coefficient value, which can be explained as follows:

Age

Older heads of households tended to have private health insurance coverage 0.145 times less. Health quality declines with age.

Sex

The male head of household participants tended to have private health insurance coverage 2.3 times greater than female participants in 2018, 1.1 times greater than

females in 2019, and 2.6 times greater than females in 2020. Therefore, male heads of households tended to have insurance coverage. Overall, male private health insurance ownership was 2.03 times greater than that of females.

Education

In 2018, compared to uneducated heads of households, the participating heads of households with an elementary school education tended to have private health insurance coverage 4.2 times greater, and heads of households with a junior high school education tended to have private health insurance coverage 3.8 times greater. Heads of households with a senior high school education tended to have private health insurance coverage 9.5 ti-

Table 3. Logistics Regression Analysis Results

Logistic regression of private health insurance ownership	2018		2019		2020		all	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Age (years)	0.0538	0.0007	0.0305	0.0007	0.0145	0.0007	0.0203	0.0004
Age_sq (years^2)	-0.00058	7.33E-06	-0.00049	6.90E-06	-0.00045	7.51E-06	-0.00045	4.15E-06
Sex	Base: Female							
	0.2330	0.0041	0.1114	0.0038	0.2589	0.0042	0.2037	0.0023
Education	Base: Uneducated							
	0.4248	0.0126	0.6899	0.0154	0.1327	0.0167	0.4468	0.0084
	0.3848	0.0130	0.7977	0.0157	0.4374	0.0169	0.5540	0.0086
	0.9508	0.0126	1.2873	0.0154	0.8647	0.0166	1.0497	0.0084
	1.2775	0.0128	1.5881	0.0155	1.4064	0.0167	1.4437	0.0085
Economic status	1.3292	0.0018	1.3400	0.0018	1.3950	0.0019	1.3458	0.0011
Employment status	Base: Unemployed							
	0.4759	0.0055	0.4531	0.0055	0.8249	0.0061	0.5691	0.0033
	1.0486	0.0051	0.9925	0.0049	1.2925	0.0056	1.0997	0.0030
	-0.0040	0.0047	0.0739	0.0045	0.2780	0.0052	0.1051	0.0028
Marital status	Base: Single							
	0.6430	0.0064	0.4608	0.0057	0.7653	0.0058	0.6771	0.0034
Number of family members	Base: Household members ≤4							
	0.2644	0.0028	0.1985	0.0029	0.3084	0.0028	0.2839	0.0016
Number of children under five years old	Base: No children under five in the household							
	0.2620	0.0028	0.2637	0.0029	-0.0620	0.0026	0.1192	0.0015
Area of residence	Base: Rural area (village)							
	0.5448	0.0033	0.6835	0.0035	0.4499	0.0035	0.5636	0.0020

Note: All variables are significant with a p-value<0.001

mes greater. Overall, heads of households with higher education tended to have private health insurance coverage 1.3 times greater than uneducated heads of households.

In 2019, compared to uneducated heads of households, participating heads of households with an elementary school education tended to have private health insurance coverage 6.9 times greater, and heads of households with a junior high school education tended to have private health insurance coverage 7.9 times greater. Heads of households with a senior high school education tended to have private health insurance coverage 1.3 times greater. Overall, participating heads of households with higher education tended to have private health insurance coverage 1.6 times greater than the uneducated heads of households.

In 2020, compared to uneducated heads of households, participating heads of households with an elementary school education tended to have private health insurance coverage 1.3 times greater, and heads of households with a junior high school education tended to have private health insurance coverage 4.4 times greater.

Heads of households with a senior high school education tended to have private health insurance coverage 0.8647 times greater. Overall, heads of households with higher education tended to have private health insurance coverage 1.4 times greater than uneducated heads of households.

Over all three years, in comparison to uneducated heads of households, participating heads of households with an elementary school education tended to have private health insurance coverage 1.3 times greater, heads of households with a junior high school education tended to have private health insurance coverage 4.4 times greater, and heads of households with a senior high school education tended to have private health insurance coverage 8.6 times greater. Overall, heads of households with higher education tended to have private health insurance coverage 1.4 times greater than uneducated heads of households.

Economic Status

In 2018, concerning per capita expenditure, participant heads of households tended to have private health

insurance coverage 1.3 times greater; in 2019, heads of households tended to have private health insurance coverage 1.340 times greater; and in 2020, heads of households tended to have private health insurance coverage 1.345 times greater. Overall, from 2018–2020, heads of households tended to have private health insurance coverage 1.3 times greater concerning per capita expenditure.

Employment Status

In 2018, in comparison to unemployed heads of households, participating heads of households in the agriculture/mining sector tended to have private health insurance coverage 4.8 times greater, heads of households in the manufacturing sector tended to have private health insurance coverage 1.05 times greater, and heads of households in the service sector tended to have private health insurance coverage 0.0040 times less. In 2019, heads of households in the agriculture/mining sector tended to have private health insurance coverage 4.5 times greater than those who were unemployed, while heads of households in the manufacturing sector tended to have private health insurance coverage 9.9 times greater, and heads of households in the service sector tended to have private health insurance coverage 0.7 times less.

In 2020, heads of households in the agriculture/mining sector tended to have private health insurance coverage 8.2 times greater than those who were unemployed, while heads of households in the manufacturing sector tended to have private health insurance coverage 1.3 times greater, and heads of households in the service sector tended to have private health insurance coverage 2.8 times greater. Overall, from 2018–2020, household heads in the agriculture/mining sector tended to have private health insurance coverage 5.7 times greater than those who were unemployed, while heads of households in the manufacturing sector tended to have private health insurance coverage 1.1 times greater, and heads of households in the service sector tended to have private health insurance coverage 1.05 times greater. Hence, the results of this study indicated that working status greatly affected private health insurance coverage compared to unemployed people.

Marital Status

In 2018, heads of households who were single tended to have private health insurance coverage 6.4 times greater than their married counterparts. In 2019, heads of households tended to have private health insurance coverage 4.6 times greater than those who were single. In 2020, heads of households who were married tended to have private health insurance coverage 7.6 times greater than those who were single. Overall, from 2018–2020, heads of households who were married tended to have

private health insurance coverage 6.7 times greater than those who had never been married.

Household Status

In 2018, households with more than four family members tended to have private health insurance coverage 2.6 times greater than households with fewer than four family members. In 2019, households with more than four family members tended to have private health insurance coverage 1.9 times greater than households with fewer than four family members. In 2020, households with more than four family members tended to have private health insurance coverage 3.08 times greater than households with fewer than four family members. Overall, from 2018–2020, households with more than four family members tended to have private health insurance coverage 2.8 times greater than households with fewer than four. Hence, the results of this study indicated that households with fewer than four family members were less likely to have private health insurance.

In 2018, households with one child under five tended to have private health insurance coverage 2.6 times greater than households without children under five. In 2019, households with one child under five tended to have private health insurance coverage 2.6 times greater than households without a child under five. In 2020, households with one child under five tended to have private health insurance coverage 0.6 times less than households without children under five. Overall, from 2018–2020, households with one child under five tended to have private health insurance coverage 1.2 times greater than those households without children under five.

Area of Residence

In 2018, households in urban area tended to have private health insurance coverage 5.4 times greater than households in rural area. In 2019, households in urban area tended to have private health insurance coverage 6.8 times greater than those in rural area. In 2020, households in urban area tended to have private health insurance coverage 4.5 times greater than those in rural area. Overall, from 2018–2020, households in urban area tended to have private health insurance 5.6 times greater than households in rural area.

Discussion

This study implied that older individuals tended to have health insurance more than younger ones. This result was in line with a study by Shao, *et al.*,¹¹ stated that the older someone is, the more they will be aware of health insurance.^{11,12} People in the 40-44 and 45-49 age groups had an 11% and 8% higher likelihood of health insurance, respectively.¹¹

Heads of households with higher education tended to

have private health insurance coverage 1.4 times greater than uneducated heads of households. This finding showed that education plays an important role, as it could enlighten individuals about the importance of health insurance coverage.¹³ Education also helped individuals make informed choices about health issues, including purchasing health insurance to avoid huge health expenses when they were ill. People with higher education had a higher view of the need for health insurance to deal with unexpected health problems. In contrast, people with low education were unaware of the threat caused by unforeseen health problems.^{11,14}

The higher economic status (seen from the level of expenditure) of the household's head in this study tended to have private health insurance coverage 1.3 times greater. Accordingly, the results of this study indicated that the tendency of per capita spending was highly influential in having private health insurance guarantees. Income is an important determinant of both the demand for health services and the decision to have health insurance.⁸ Some studies have stated that the most critical factor affecting general insurance was income.^{11,14,15} Regarding occupation, the employed status significantly affected private health insurance guarantees compared to those unemployed. Participation in the formal sector's health insurance was dominated by workers in the public sector (civil servants and armed forces), while health insurance participation in the informal sector was dominated by farmers, fishermen, and the like.^{16,17} In terms of marital status, people who were single were less likely to have private health insurance ownership. The status of living together is likely to be greater than that of those who are divorced/dead.¹⁶ Married women were more likely to have private coverage than the singles in almost all income groups.^{11,12}

Households with one child under five tended to have private health insurance coverage 1.2 times greater than households without one. Thus, the results of this study indicated that households without a child under five were less likely to have private health insurance. A study in Bangladesh found that parents might have less capacity to pay premium health insurance than other family members.¹⁶ Health insurance schemes sometimes view women as wives or mothers, rather than as individuals or workers, even though each individual's right to social insurance is fundamental. If women's access to social or health insurance comes through their husbands, this can protect the family, not women's autonomy.⁸

In this study, households in urban area were likelier to have private health insurance coverage than those in rural ones. Hence, an individual residing in a village was less likely to have private health insurance. The reason of that informal sector workers in rural areas had a lower chance of having health insurance compared to those li-

ving in urban areas was that public health insurance companies were mostly found in urban areas, and these companies adjusted their health insurance products to meet the needs of urban people.¹⁷ The difficulty of access and the high cost of transportation also made health insurance less valuable because it was difficult to use; thus, informal sector workers in villages did not feel the need to have health insurance.¹⁸ In brief, rural people did not consider health insurance a need because the product design did not match them.

Conclusion

The results of this study show a relationship between age, sex, education, economic status, employment status, marital status, household status, and location of residence with private health insurance ownership. Particularly, most households in this study do not enroll in private health insurance. The government should understand this situation and find the best solution to strengthen the health insurance ecosystem in Indonesia. These results can be used to formulate a strategy for strengthening private health insurance ownership. The health economic sector should use this information to expand the target market for private health insurance.

Abbreviations

OOP: Out-of-Pocket; NHI: National Health Insurance; NSS: National Socioeconomic Surveys; SUSENAS: Survei Sosial Ekonomi Nasional; IDR: Indonesian Rupiah.

Ethics Approval and Consent to Participate

The Research and Community Engagement Ethical Committee, Faculty of Public Health, Universitas Indonesia, granted ethical approval, No. Ket-558/UN2.F10.D11/PPM.00.02/2022.

Competing Interest

The authors declare that there are no significant competing financial, professional, or personal interests that might have affected the performance.

Availability of Data and Materials

Since this study used secondary data, it can be accessed through Statistics Indonesia.

Authors' Contribution

ARH conceptualized and designed the study, collected data, and analyzed and interpreted the results. AB guided data analysis, review, and manuscript approval. CC provided the latest research literature, prepared draft manuscripts, and served as the corresponding author.

Acknowledgment

The authors thanked Rully Endepe Al Faizin as a statistical analysis mentor.

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