Does free health insurance matter to the poor? New evidence from recent data in Vietnam

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This study evaluates the impact of free health insurance targeting the poor on individuals' and households' healthcare utilisation and out-of-pocket expenditures in Vietnam. Using data from the 2018 Vietnam Household Living Standards Survey and the propensity score matching method to assess the causal effects of health insurance for the poor on health-related outcomes. While we demonstrate that free insurance increases outpatient and inpatient visits, the estimation results are heterogeneous. Specifically, health insurance for the poor benefits individuals living near the poverty line – typically poor Kinh people or poor individuals residing in urban areas. We find no evidence of its impact on the poorest, who are usually members of ethnic minority groups. The concentration of hospitals in major cities and urban areas may explain why the poorest do not benefit. Hence, in addition to providing free health insurance, policymakers should expand healthcare facilities in rural and remote areas and offer other forms of support to poor patients, such as covering travel and accommodation costs.

Keywords:
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the poor

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Introduction

Achieving universal health coverage (UHC), reducing financial risk and ensuring equal access to quality healthcare services are priorities for many countries, as outlined in the United Nations 2030 Global Sustainable Development Goals (Target 3.8: Achieve universal health coverage). Countries pursue UHC and uphold the principle of leaving no one behind by expanding health insurance coverage and introducing free public health insurance policies for poor and vulnerable groups. For example, the United

States has implemented Medicaid and the Children's Health Insurance Program (CHIP), providing free or low-cost health coverage to low-income children, pregnant women and other vulnerable populations (Brooks et al. 2022). Similarly, China introduced the New Cooperative Medical Scheme (NCMS) in 2003, which heavily subsidised public and non-mandatory insurance for rural families. By 2010, the programme had expanded coverage to 96% (836 million) of the rural population (Cheng et al. 2015). In 2008, India launched the Rashtriya Swasthya Bima Yojana, targeting 65 million low-income families, and over 41 million families were insured under this programme by 2016 (Karan et al. 2017).

Along with the rising trend in health insurance coverage across countries, a broad body of literature has evaluated the impact of public health insurance expansion, including policies targeting low-income and vulnerable populations (Brook et al. 1983, Jütting 2004, Raza et al. 2016). Understanding public health insurance beneficiaries' health-care-seeking practices is critical for policymakers to develop financially accessible healthcare policies. Some studies have demonstrated the positive impact of public health insurance (Anderson et al. 2012, Cheng et al. 2015, Jütting 2004, Kondo–Shigeoka 2013), while others have shown that health insurance has no significant effect on improving healthcare service utilisation (Gotsadze et al. 2015, Raza et al. 2016), reducing catastrophic health expenditure (Brugiavini–Pace 2016, Karan et al. 2017) or enhancing overall health outcomes (Brook et al. 1983, Newhouse 1993).

Notably, while most studies have endeavoured to understand the effects of health insurance on individuals' health and health-related practices (Brook et al. 1983, Newhouse 1993, Jütting 2004, Raza et al. 2016), few have investigated its impact on household outcomes (Aiyar 2021, Wirtz et al. 2012). One family member's health insurance status can not only influence the individual's health-related decisions but also affect other members of the household due to intrahousehold resource allocation (Becker 1965, 1974). Wirtz et al. (2012) demonstrates that the household members' health insurance status reduces Mexican households' out-of-pocket expenditures (OOPE). Aiyar (2021) found that UHC for children under the age of six in Vietnam reduces health spending and education for ineligible children.

Some studies have investigated the heterogeneous effects of health insurance. For example, Newhouse (1993) examined the effect of different insurance plans on individuals' healthcare use and health outcomes in the United States. The author found that individuals with more generous insurance plans took advantage of these plans and spent more healthcare services, particularly outpatient services. Similarly, in Mexico, Wirtz et al. (2012) found that the proportion of OOPE for medicines decreased by 1.7%, 1.4% and 0%, for households with social security, multiple insurances and the Seguro Popular insurance plan, respectively. Bagnoli (2019) demonstrated the heterogeneous effects of health insurance in different regions in Ghana, revealing that only regions with high-quality public healthcare experienced positive effects.

Vietnam is a lower-middle-income country that has remarkably expanded its health insurance coverage since 1992. By 2020, its social health insurance programme covered 90.85% of the Vietnamese population (Cuc 2021). According to the 2014 revised Vietnamese Health Insurance Law, social health insurance is a public, non-profit programme implemented and managed by the Vietnamese government. There are two main types of social health insurance in Vietnam. The first is compulsory social health insurance for all workers with labour contracts for three months or longer, retired people, children under age 6, poor and near-poor people, students, elderly people from age 80, soldiers, war veterans and others. The second is voluntary social health insurance for the self-employed, informal workers, workers' dependents, members of cooperatives, households with members not subject to compulsory health insurance and others.[1] The state budget fully subsidises some groups such as children under age 6, the poor, elderly people aged 80 and above, soldiers and war veterans and provides partial subsidies for students, near-poor people, households and others.

Despite the high level of social health insurance coverage, OOPE among Vietnamese citizens remains high. As of 2019, OOPE accounted for 42.95% of total health expenditure (World Bank 2022). Additionally, between 2010 and 2020, the average monthly health expenditure per household member increased at an annual rate of approximately 10%, which substantially outpaced Vietnam's average economic growth of around 6% during the same period (Nguyen et al. 2023, Tran 2022, Viet, 2017). Therefore, whether social health insurance efficiently provides access to healthcare services and reduces catastrophic health expenditures, particularly especially for the poor, remains questionable.

Some studies have investigated the impact of social health insurance on the poor in Vietnam. For example, Wagstaff (2010) employed three waves of the Vietnam Household Living Standards Survey (VHLSS) from 2004 to 2006 and triple-difference propensity score matching (PSM) to determine the difference in mean outcomes between treated and untreated groups and estimate the impact of the Health Care Fund for the Poor (HCFP), which came into effect in 2003. The author determined that although the HCFP had no impact on the use of services, it significantly contributed to reducing OOPE among poor people. Thanh–Lindholm (2012) examined the HCFP using double-difference PSM focused on elderly individuals. The findings revealed that the programme only increased healthcare utilisation at the commune level but not at higher levels. Moreover, it did not decrease households' OOPE with at least one elderly member. (Duc Thanh et al. 2021)

[1] Before 2014, the beneficiaries of the non-mandatory health insurance included the self-employed, informal workers, workers' dependents, members of cooperatives and households with members not subject to compulsory health insurance. Since 2014, to achieve UHC for all, the government made health insurance mandatory for almost everyone; however, because the government could only subsidise a small proportion of the premiums, the voluntary beneficiaries from before 2014 were allowed to opt out.

examined the effects of health insurance on OOPE for outpatient healthcare services among the near-poor, using primary data collected in Cao Lanh District, Dong Thap Province, Vietnam. Using the Heckman selection model to control for potential self-selection bias, the authors found that health insurance decreased OOPE by 21%.

To the best of our knowledge, most studies in Vietnam have focused on the effects of the HCFP implemented several years ago (Thanh–Lindholm 2012, Wagstaff 2010). Furthermore, this fund allowed provincial governments to enrol beneficiaries into free health insurance or directly finance healthcare costs for the poor. A notable difference has been found between poor people's healthcare-seeking practices under the HCFP and those under the universal free health insurance targeting the poor (FHIP). Since the work of Wagstaff (2010) and Thanh–Lindholm (2012), limited research has been conducted on the impact of the FHIP after free health insurance was fully extended to the poor nationwide in 2009, as mandated by the 2008 Health Insurance Law. In addition, healthcare costs have risen significantly since the HCFP's implementation, affecting insured individuals' healthcare utilisation.

This study bridges the gap in the existing literature on evaluating the impact of the FHIP. Using 2018 VHLSS data, we capture the FHIP's effect on the health-related practices and health expenditures of the poor, particularly in the context of significantly increased medical costs. In addition, this is one of few studies to consider the impact of health insurance on individual and household health utilisation practices. We also analyse the Vietnamese government's poverty classification data using PSM to account for unobserved heterogeneity in individual and household FHIP status. Specifically, we construct a model that we assume includes all variables that systematically affect poverty and FHIP status.

The most significant advantage of PSM is that it does not require a linear-form specification, as in linear regression. Specification errors could cause the variables included in the regression to be correlated with the error term, introducing an identification problem. In PSM, we assume that the variation in actual treatment status is idiosyncratic, given the propensity score, and exploit this variation to identify the causal effect of treatment status. This assumption is more likely to be satisfied when all factors that systematically influence treatment status are observed.

The modified poverty classification introduced in Vietnam in 2016, along with the covariates affecting treatment status, improved the quality of the estimates by minimising selection bias, which supports the identification of the PSM function. Additionally, greater variation in the covariates affecting treatment status enhances estimates' efficiency. Before 2016, the Vietnamese government primarily relied on income surveys conducted by local administrators to classify household poverty status (Circular 21/2012/TT-BLDTBXH, Guidelines on the process of reviewing poor households annually 2012). However, discrepancies often occurred between the income information collected by local administrators and households' self-reported income (Pedace 2000). This mismatch poses challenges for researchers using self-

reported household surveys, such as the 2018 VHLSS, particularly when administrative income data are unavailable.

In 2016, the Vietnamese government significantly revised the poverty classification and household income approximation guidelines (Circular 17/2016/TT-BLDTBXH, Guidelines on the process of reviewing poor and near-poor households annually following the multi-dimensional poverty line approach for the period 2016–2020, 2016). Based on these guidelines and using 2018 VHLSS data, we identified 40 variables that affect households' poverty status, reflecting the structural condition of residential buildings and household members' education, employment, consumption, land and durable assets, health-related and sanitary conditions and access to information (see Tables 1 and 2 for more details). Assuming that these 40 variables systematically affect household poverty status, we compare the outcomes between individuals and households with and without free health insurance.

Moreover, this study examines the heterogeneous effects of the FHIP on individuals and households with different propensity scores for being classified as poor by dividing the sample into sub-samples to determine whether the poorest households benefit from the policy. This enables us to identify the effects of the policy on more homogeneous households.

Our findings demonstrate that health insurance intended for the poor does not benefit the poorest citizens who are the target group of the insurance policy. We find that poor health insurance increases outpatient and inpatient visits of the poor Kinh group and poor people living in urban areas. However, we find no evidence of an impact of poor health insurance on inpatient and outpatient OOPE. These results align with previous studies in Vietnam (Thanh–Lindholm 2012, Wagstaff 2010) and other countries (Brook et al. 1983, Newhouse 1993, Karan et al. 2017, Raza et al. 2016). Our findings are informative to governments in designing public healthcare policies for the general public, particularly the poor.

The remainder of this paper is organised as follows. First, a brief overview of the FHIP programme in Vietnam is provided. Then, the data and methodology are presented, followed by a detailed discussion of the empirical results. Finally, the findings are discussed and conclusions are drawn.

Free health insurance for the poor in Vietnam

The Vietnamese government has prioritised financing for the poor to reduce their OOPE. In 1994, Vietnam issued a regulation stating that hungry households[2] and 30% of the poorest households were exempt from partial contributions to hospital

[2] Those with average per capita income equivalence to monthly rice were less than 13 kilograms for urban areas and less than 8 kilograms for rural areas in the period from 1993 to 1995, less than 13 kilograms for all areas from 1995 to 1997 and less than 13 kilograms – equivalent to 45,000 VND (1997 price) – for all areas from 1997 to 2000.

fees (Decree 95-CP on partial collection of hospital fees 1994). In 2002, through the Vietnam HCFP initiative, the government provided healthcare support for the poor and the near poor who lived in mountainous and disadvantaged areas. Financed by the state and local budget, each province enrolled the poor in free health insurance programmes or provided direct subsidies to finance their hospital healthcare costs. Following the 2014 revision of the Health Insurance Law 2008, households officially recognised as poor have been provided state-financed FHIP. Since then, the HCFP has been transitioning from direct reimbursement to providing free health insurance. The healthcare fund later included meal and commuting costs. Furthermore, since 2017, the fund was no longer a state fund but a charity fund.

A person must be a member of a household officially recognised as poor according to the government regulations and not subject to other social health insurance programmes to be provided with FHIP such as compulsory health insurance for labourers with contracts of at least three months, social health insurance for retired people, elderly people aged 80 and above and children under 6 years of age.

From 2011 to 2015, the income poverty line was the primary criterion for classifying a household as poor. Specifically, a household was considered poor if its per capita per monthly income was equal to or lower than 400,000 VND for rural areas and 500,000 VND for urban areas (Decision No. 09/2011/QD-TTg on the poverty and near-poverty line for the period 2011–2015, 2011).

From 2016 to 2021, the government also considered 10 basic social needs indicators for household poverty status classification in addition to income, covering adults' education, children's school attendance, access to health services, health insurance, quality of residential building, house area per capita, domestic water sources, type of toilet, use of telecommunication services and access to information. Specifically, a rural household is classified as poor if it meets one of the following two criteria, (1) per capita monthly income equal at or below 700,000 VND, and (2) per capita monthly income ranging from 700,000 VND to 1,000,000 VND and lacking at least three of the 10 basic social need indicators. Similarly, the two criteria for an urban household are (1) income per capita per month is equal to or below 900,000 VND, and (2) income per capita ranges from 900,000 VND to 1,300,000 VND and lacks at least three of the 10 basic social need indicators (Decision No. 59/2015/QD-TTg on issuing multi-dimensional poverty line for the period 2016–2020, 2015).

The FHIP covers 40% to 100% of eligible healthcare costs. Under the 2014 revised Health Insurance Law, individuals with free FHIP are eligible for 100% free healthcare if they comply with the primary health facility registration regulation, have referral certificates from doctors when transferring from lower to higher level hospitals and meet other specified conditions. Furthermore, patients without referral certificates from doctors to transfer from a designated primary health facility to a higher-level health facility are entitled to (i) 40% of inpatient costs at central hospitals,

(ii) 60% of inpatient costs from January 2015 to December 2020 and 100% of inpatient costs since January 2021 at provincial hospitals and (iii) 70% of inpatient and outpatient costs from January 2015 to December 2015 and 70% of inpatient and outpatient costs at district hospitals from January 2016 onwards. Notably, as per Ministry of Health guidelines, health insurance only covers the cost of healthcare services, medicine, medical equipment and other items included in the list approved by the ministry. Figures 1 and 2 respectively illustrate the rates of poor individuals with poor health insurance and the rates of poor individuals by province. We find that most poor people live in mountainous areas.

Figure 1

Rate of poor individuals with poor health insurance by province

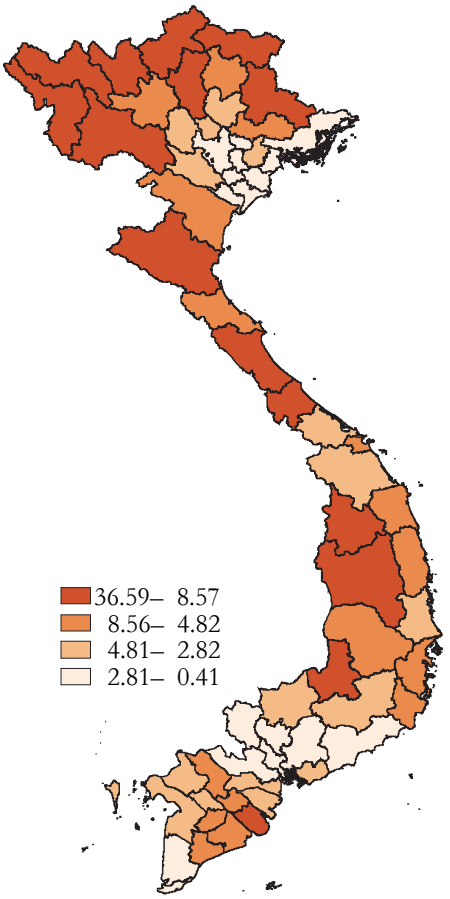
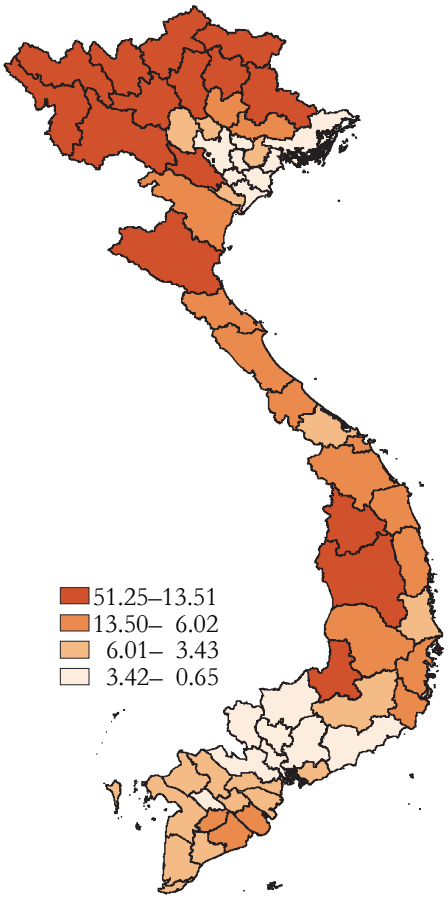


Figure 2

Rate of poor individuals by province



Notes Paracel and Spratly Islands are not included on the map because no data are available.

Table 1 highlights disparities in poverty and poor health insurance rates across different areas and ethnic groups. Rural areas exhibit a significantly higher poverty rate (91.7%) compared with urban areas (8.3%), indicating that poverty is predominantly a rural issue. Similarly, a larger proportion of people in rural areas (89.3%) have poor health insurance compared with those in urban areas (10.7%). Ethnically, the Kinh group faces a higher poverty rate (69.3%) than minority ethnic groups (30.7%) and also have a higher rate of poor health insurance (61.6% vs. 38.4%).

Table 1

Poverty and poor health insurance rates by residence area and ethnic group

(%)

Denomination	Rural	Urban	Kinh group	Minority ethnic group
Poverty rate	91.69	8.31	69.31	30.69
Percentage of people with poor health insurance	89.33	10.67	61.61	38.39

Methodology and data

Propensity score matching

Propensity score matching (PSM) assumes that all factors that systematically affect FHIP status are specified in the model of Angrist–Pischke (2009). The two related steps are outlined below.

First, we estimate the propensity score, $\mathfrak{p}(X_i) = E(T_i|X_i)$, using a parametric logit model, where T_i represents FHIP status, and equals 1 if individual i receives FHIP and 0 otherwise, and X_i is a vector of covariates affecting individual i's FHIP status. Notably, official poverty status is assigned at the household level. When a household is recognised as poor, all household members are also considered to be poor.

Second, we calculate the average treatment effect on the treated group (ATT) for the sample of individuals by matching the previously fitted values. The formula used is as follows:

$$E[H_{1i} - H_{0i}|T_i = 1] = E\{E[H_i|\mathfrak{p}(X_i), T_i = 1 - H_i|\mathfrak{p}(X_i), T_i = 0]|T_i = 1\}, \quad (1)$$

where H_i is individual i's healthcare service utilisation. We consider four outcomes, encompassing individual i's number of inpatient visits, number of outpatient visits, inpatient OOPE and outpatient OOPE over the past 12 months. Individual i has two potential outcomes, H_{0i} and H_{1i}, where H_{0i} is the outcome when individual i does not receive FHIP, and H_{1i} is the outcome when individual i receives FHIP.

For the sample of households, i denotes the household. T_i equals 1 if at least one member in household i receives FHIP and 0 otherwise, and the same healthcare utilisation outcomes are used.

To include household and individual poverty status heterogeneity in our considerations, we also estimate the propensity score of poor classification using a logit model. We then select a sub-sample of individuals or households with similar propensity scores and conduct PSM.

Data

We use the 2018 wave of VHLSS data, which was conducted by Vietnam's General Statistical Office (GSO). The first wave of VHLSS data were collected in 1993. The survey was conducted biennially from 2002 to 2010 and has been conducted annually since 2011. The GSO collects data on demographics, employment, income in odd-numbered years, education, health and healthcare (including insurance and health services utilisation), consumption expenditure, housing, electricity, water, sanitation facilities, durable goods, poverty status, household business and commune characteristics in even-numbered years (GSO 2019). In 2018, the survey covered approximately 46,000 households in more than 3,000 communes/wards.

From these data, we identify 40 covariates that affect treatment status. Our constructed covariates are based on the poverty classification guidelines outlined in circular 17/2016/TT-BLDTBXH and its 2018 revision, issued by the Ministry of Labour, Invalids and Social Affairs of Vietnam (see in Appendix Tables A1 and A2).

In Appendix Tables A1 and A2 provide descriptive statistics of the individuals and households related to the factors determining poverty status and health utilisation outcomes. We also conduct a t-test to examine the differences in the covariate means between individuals and households with and without free health insurance. The results are significant, indicating that the constructed set of variables can reliably predict individual and household FHIP status.

Empirical results

Generally, a higher propensity score for poor classification indicates a greater proportion of individuals and households provided with free health insurance. We also provide estimates at individual and household levels as robustness tests.

Table 2 presents the estimated impact of poor health insurance on healthcare utilisation and OOPE. We find that the FHIP increases the use of outpatient services; however, the result is only statistically significant at the 5% level for households but not for individuals. The estimation results also reveal that the FHIP increases individual and household inpatient visits, with statistically significant results for both. The estimates for outpatient and inpatient OOPE are positive but statistically insignificant, with the exception of household inpatient OOPE.

Table 2

Impact of health insurance for the poor on healthcare utilisation and OOPE

Variables	Difference between treated and control groups (ATT)	
	individuals	households
Outpatient visits	0.10	1.26**
	(0.1)	(0.63)
Inpatient visits	0.05**	0.25***
	(0.02)	(0.09)
Outpatient OOPE	26.58	65.16
	(52.21)	(313.83)
Inpatient OOPE	138.66	618.67*
	(115.82)	(332.48)

Notes: standard errors are in parentheses. ***p < 0.01; **p < 0.05; *p < 0.1.

We then divide our sample into four sub-samples based on propensity scores. Table 3 presents the estimation results at both individual and household levels. The results reveal that the FHIP negatively affects the target group.[3] At the individual level, for the sub-sample with the highest propensity score ranging from 0.8 to 0.999, FHIP reduces the outpatient and inpatient visits by 0.09 and 0.05, respectively. Furthermore, for the sub-sample with propensity scores between 0.5 and 0.6, FHIP increased the number of outpatient and inpatient visits by 0.48 and 0.32, respectively. The results are similar when analysed at the household level. The results indicate that the targeted group did not benefit from the policy; however, the group of relatively wealthier (not purposely targeted) people appear to benefit from the policy. Moreover, the positive impact of free health insurance on outpatient and inpatient visits across the overall sample seems to be significantly contaminated by the sub-sample of wealthier people.[4]

[3] The sub-sample with higher propensity scores should have higher standard errors; hence, estimates are often insignificant because the sample contains less poverty status variation. As a result, we consider the estimates' size rather than focusing solely on statistical significance.

[4] The results are presented in Appendix Table A3, dividing the sample into three subgroups based on the propensity scores for poverty. The results confirm that the health insurance policy for the poor primarily benefits non-poor individuals.

Table 3

Heterogeneity

Variables	Difference between treated and control groups (ATT)			
	0.8 ≤ ps < .999	0.7 ≤ ps < 0.8	0.6 ≤ ps <0.7	0.5 ≤ ps < 0.6
	Individuals			
Outpatient visits	−0.09	−0.56**	0.38*	0.48*
	(0.07)	(0.28)	(0.20)	(0.25)
Inpatient visits	−0.05*	−0.02	−0.02	0.32
	(0.03)	(0.06)	(0.10)	(0.25)
Outpatient OOPE	7.05	−118.24	−112.37	91.12
	(18.72)	(202.73)	(108.53)	(86.28)
Inpatient OOPE	−7.17	16.09	−11.39	142.88**
	(14.61)	(76.51)	(101.53)	(67.67)
	Households			
Outpatient visits	−0.47	0.53	1.66	2.78**
	(0.54)	(1.51)	(1.13)	(1.11)
Inpatient visits	−0.20	0.14	0.09	1.12
	(0.26)	(0.21)	(0.31)	(0.78)
Outpatient OOPE	45.67	−31.99	−400.39	327.77
	(178.43)	(790.78)	(409.48)	(237.11)
Inpatient OOPE	−80.70	113.69	122.67	272.91
	(174.30)	(344.94)	(327.34)	(311.44)

Notes: standard errors are in parentheses. ***p < 0.01; **p < 0.05; *p < 0.1.

We hypothesise that poor health insurance may help those near the poverty line but may not help those far from the poverty line or the poorest. This could be attributable to the poorest usually living in remote or mountainous areas without full health facilities as they reside far from such facilities, which makes accessing healthcare difficult, although they receive free health insurance from the government. To test this hypothesis, we divide the sample into urban versus rural sub-samples and Kinh group versus minority ethnic group sub-samples.

Table 4 presents the results for urban and rural areas, demonstrating that the magnitude of the coefficient for the impact of poor health insurance on healthcare utilisation (outpatient and inpatient visits) is larger for those in urban areas than in rural areas. The results are statistically significant for outpatient visits at the household level in rural areas and also statistically significant for individual inpatient visits in urban areas and at the household level in urban and rural areas. We find no significant impact of poor health insurance on outpatient and inpatient OOPE at individual and household levels.

Table 4

Urban versus rural areas

Variables	Difference between treated and control groups (ATT)			
	individuals		households	
	urban	rural	urban	rural
Outpatient visits	0.24	0.09	1.34	1.07**
	(0.35)	(0.11)	(1.16)	(0.49)
Inpatient visits	0.08**	0.03	0.44***	0.19*
	(0.04)	(0.03)	(0.13)	(0.10)
Outpatient OOPE	45.74	8.95	92.24	163.76
	(88.31)	(57.83)	(280.31)	(259.79)
Inpatient OOPE	50.24	111.79	157.03	519.99
	(105.47)	(135.04)	(274.25)	(458.56)

Notes: standard errors are in parentheses. ***p < 0.01; **p < 0.05; *p < 0.1.

Table 5 estimates the results for sub-samples of Kinh versus minority ethnic groups. Interestingly, the results are highly statistically significant for Kinh group for outpatient and inpatient visits at individual and household levels. Specifically, access to poor health insurance increases the respective number of individual outpatient and inpatient visits by 0.72 and 0.12 for the Kinh group. Conversely, the results are negative and statistically significant for the minority ethnic group in terms of individual outpatient visits; however, they are not statistically significant at the household level. We also find no evidence of the impact of poor health insurance on inpatient visits for the minority ethnic group at either individual or household levels. These findings suggest that the poor Kinh group benefits from poor health insurance, whereas the poor minority ethnic group does not. This demonstrates that the Kinh group has more economic advantages than the minority ethnic group. Furthermore, the Kinh group typically resides in plains, while the minority ethnic group often lives in remote and mountainous areas; therefore, the Kinh group has better access to healthcare facilities than minority ethnic groups.

Table 5 also presents estimates for outpatient and inpatient OOPE. The results are statistically insignificant, with the exception of outpatient OOPE for the Kinh group at the household level.

Table 5

Kinh versus minority ethnic groups

Variables	Difference between treated and control groups (ATT)			
	individuals		households	
	Kinh group	minority ethnic group	Kinh group	minority ethnic group
Outpatient visits	0.72***	−0.19**	2.23***	0.06
	(0.13)	(0.08)	(0.58)	(0.77)
Inpatient visits	0.13**	−0.02	0.48***	−0.06
	(0.05)	(0.02)	(0.14)	(0.1)
Outpatient OOPE	124.45	−35.28	603.45**	32.97
	(129.38)	(38.04)	(249.51)	(177.47)
Inpatient OOPE	385.89	0.22	1045.69	−57.23
	(258.85)	(13.03)	(700.31)	(231.78)

Notes: standard errors are in parentheses. ***p < 0.01; **p < 0.05; *p < 0.1.

Conclusion and discussion

Free or heavily subsidised public health insurance targeting poor and vulnerable populations is one of the efforts undertaken by governments worldwide to achieve UHC goals, including Vietnam, where financial support for healthcare for the poor was first introduced in the 1990s, followed by the HCFP in the 2000s. However, since 2009, when the 2008 Health Insurance Law came into effect, the Vietnamese government has provided 100% free health insurance for the poor. This study examines the heterogeneous effect of the FHIP on healthcare utilisation and OOPE at individual and household levels in Vietnam using data from the 2018 VHLSS. Considering the rising trend in medical costs over the past decade, we address potential selection bias using the PSM method to select a control group. We also perform regressions at individual and household levels as robustness test.

In 2016, a modified poverty classification system was implemented in Vietnam that incorporated social indicators, replacing the previous system based on income surveys conducted by local administrators. These social indicators include employment, income, education, health and healthcare, consumption expenditure, housing, electricity, water, sanitation facilities, durable goods, poverty status and household business. This modification supports our PSM function for evaluating the effect of FHIP.

Our results reveal heterogeneous effects of the FHIP on individual and household healthcare utilisation, depending on various propensities for poverty classification. Paradoxically, we demonstrate that the non-targeted group benefits more from the policy than the targeted group. In other words, the poorest people do not benefit from the FHIP, whereas those living near the poverty line benefit the most. We find

that minority ethnic groups – typically the poorest – do not benefit from the FHIP and the poor Kinh group does.

The empirical results align with previous studies. For example, in a randomized controlled trial, Brook et al. (1983) demonstrated weak health impacts of free health insurance on low-income groups. In addition, results from a RAND insurance experiment revealed that people with free insurance only consume slightly more healthcare services, and no statistically significant differences in health outcomes were evident between those with and without insurance (Newhouse 1993). In Vietnam, Wagstaff (2010) found that the HCFP reduced OOPE but did not affect healthcare services use. Similarly, Thanh–Lindholm (2012) found that the HCFP positively affected healthcare services use among households with at least one elderly person at the commune level but not at higher levels. In addition, the authors did not find any effects on reducing catastrophic expenditures.

Exploring the rationale behind these results requires more data, which is beyond the scope of this study. Nevertheless, we propose two potential reasons that the targeted group does not benefit from the FHIP. First, the place of residence might affect healthcare utilisation. Poor people often reside in remote and mountainous areas, whereas hospitals – particularly high-quality facilities – are concentrated in major cities. The best hospitals are located in the three municipal cities of Hanoi, Ho Chi Minh City and Hue. At the provincial level, major hospitals are generally situated in provincial capitals. Although these cities host top-tier medical facilities, they may not significantly affect healthcare access patterns among the poor, likely because such hospitals are largely inaccessible to them due to high travel costs, long distances and additional OOPE – such as meals and lodging for accompanying family members – which can further increase the financial burden on patients. Supporting this interpretation, our robustness test reveals that removing Hanoi, Ho Chi Minh City and Hue from the sample and rerunning the regressions in Table 2 does not change the results (results not reported). The balance of social health fund payments is often in surplus in poor provinces in Vietnam, whereas it is frequently in significant deficit in big cities. In other words, social health insurance may only benefit wealthier people (An 2013). Second, poor people generally belong to ethnic minority groups with low education levels. The majority of this population does not undergo regular health check-ups and only seek medical care for serious or terminal conditions (Khe 2024). Some even turn to shamans or fortune-tellers instead of health facilities or doctors (Tu–Cao 2024). Future studies should aim to better understand the impacts of social health insurance on different population groups and the rationale behind such impacts.

The findings from our study on FHIP suggest several policy implications to enhance its effectiveness, particularly for the poorest and ethnic minority groups. We demonstrate that the FHIP benefits those near the poverty line, often urban Kinh households, but fails to improve healthcare utilisation among the poorest (typically

rural ethnic minorities), which is likely due to geographic isolation and limited healthcare infrastructure. Therefore, policymakers should prioritise expanding healthcare facilities in remote areas, deploying mobile clinics and subsidising travel vand lodging costs to improve access. Additionally, tailored public health campaigns in local languages could address cultural barriers such as reliance on traditional healers while refining the multidimensional poverty classification could ensure better targeting of the most disadvantaged.

Notably, this study has limitations that temper its conclusions. Our reliance on 2018 VHLSS observational data and PSM assumes that all relevant factors affecting FHIP uptake are included, potentially overlooking unobserved variables such as cultural attitudes, which may introduce bias. The cross-sectional design also limits insights into long-term impacts, and the lack of health outcome data restricts understanding of FHIP's effect on well-being. Furthermore, the small sample size for certain sub-groups such as the urban poor may reduce statistical power, and the focus on Vietnam's context limits generalisability. Future research should incorporate longitudinal data, qualitative methods to explore barriers and health outcome measures to provide a more comprehensive evaluation of FHIP's effectiveness.

Acknowledgement

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Appendix

Table A1

Descriptive statistics of the individual sample

Variables	Full sample		With no HI		With HI		Difference in mean	
	mean	SD	mean	SD	mean	SD	diff.	SE
Criteria affecting poverty status								
Household size	4.44	1.68	4.41	1.65	4.86	2.06	−0.46	0.02
Households whose members are all sick or disabled	0.05	0.22	0.05	0.22	0.07	0.25	−0.02	0.00
Number of members aged < 15 or > 60 and members who cannot work due to sickness or disability	1.73	1.28	1.70	1.26	2.23	1.38	−0.54	0.01
Highest educational level of any household member								
Below higher secondary school	0.48	0.50	0.46	0.50	0.81	0.39	−0.35	0.00
Higher secondary school	0.24	0.42	0.24	0.43	0.14	0.35	0.10	0.00
Vocational education	0.07	0.25	0.07	0.26	0.02	0.14	0.05	0.00
College and higher	0.21	0.41	0.23	0.42	0.02	0.15	0.20	0.00
Non-agriculture job								
No one working in the non-agriculture sector	0.17	0.37	0.16	0.36	0.33	0.47	−0.17	0.00
At least one member working in a non-agricultural and non-public sector	0.72	0.45	0.72	0.45	0.66	0.47	0.06	0.00
At least one member working in the public sector	0.12	0.32	0.13	0.33	0.01	0.10	0.12	0.00
Number pensioner members								
No one	0.90	0.29	0.90	0.30	0.98	0.13	−0.09	0.00
One	0.07	0.25	0.07	0.26	0.01	0.12	0.06	0.00
Two or more	0.03	0.17	0.03	0.17	0.00	0.04	0.03	0.00
Materials of house's walls are permanent	0.95	0.22	0.96	0.19	0.81	0.39	0.15	0.00
Materials of house's pillars are permanent	0.94	0.24	0.95	0.22	0.76	0.42	0.19	0.00
House area per capita								
<8 m^2	0.07	0.25	0.06	0.23	0.22	0.41	−0.16	0.00
8–20 m^2	0.43	0.50	0.42	0.49	0.56	0.50	−0.14	0.00
20–30 m^2	0.24	0.43	0.25	0.43	0.14	0.35	0.11	0.00
30–40 m^2	0.12	0.32	0.12	0.33	0.04	0.20	0.08	0.00
>40 m^2	0.14	0.34	0.14	0.35	0.04	0.19	0.11	0.00

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Variables	Full sample		With no HI		With HI		Difference in mean	
	mean	SD	mean	SD	mean	SD	diff.	SE
Electric consumption								
<25 kWh	0.05	0.21	0.03	0.17	0.31	0.46	−0.28	0.00
25–49 kWh	0.06	0.24	0.05	0.22	0.26	0.44	−0.21	0.00
50–99 kWh	0.16	0.36	0.15	0.36	0.25	0.43	−0.10	0.00
100–149 kWh	0.19	0.39	0.20	0.40	0.10	0.30	0.10	0.00
≥150 kWh	0.54	0.50	0.57	0.49	0.08	0.27	0.49	0.00
Source of water								
Tap or rainwater	0.41	0.49	0.43	0.50	0.16	0.37	0.27	0.00
Drilled wells	0.22	0.41	0.22	0.42	0.13	0.33	0.09	0.00
Protected hand-dug wells and spring sources	0.31	0.46	0.30	0.46	0.46	0.50	−0.16	0.00
Other								
Toilet	2.00	1.47	1.89	1.39	3.61	1.69	−1.72	0.01
Flush to septic tank	0.57	0.50	0.59	0.49	0.21	0.41	0.38	0.00
Flush to other systems	0.22	0.42	0.23	0.42	0.14	0.35	0.09	0.00
Improved dug toilets with a vent	0.02	0.13	0.02	0.13	0.03	0.17	−0.01	0.00
Dug toilets with a toilet seat	0.03	0.18	0.03	0.17	0.08	0.27	−0.05	0.00
Other toilets	0.16	0.37	0.14	0.34	0.54	0.50	−0.41	0.00
Owning a colour television	0.91	0.28	0.93	0.25	0.64	0.48	0.29	0.00
Owning a music player	0.13	0.34	0.14	0.34	0.03	0.18	0.11	0.00
Owning a car	0.03	0.18	0.04	0.19	0.00	0.05	0.03	0.00
Owning a bike	0.03	0.18	0.04	0.19	0.00	0.05	0.03	0.00
Owning a refrigerator	0.78	0.42	0.81	0.39	0.23	0.42	0.59	0.00
Owning an air conditioner	0.23	0.42	0.25	0.43	0.01	0.10	0.24	0.00
Owning a washing machine/dryer	0.43	0.50	0.46	0.50	0.05	0.21	0.41	0.00
Owning a bathwater heater	0.32	0.47	0.34	0.47	0.03	0.17	0.31	0.00
Owning a microwave oven	0.09	0.28	0.09	0.29	0.00	0.04	0.09	0.00
Owning a motored ship/ boat/junk/outer part	0.02	0.13	0.02	0.13	0.01	0.07	0.01	0.00
Pond and garden area ≥ 300 m²	0.14	0.35	0.14	0.34	0.17	0.38	−0.04	0.00
Annual plants area ≥ 5,000 m²	0.16	0.36	0.15	0.35	0.33	0.47	−0.19	0.00

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(Continued.)

Variables	Full sample		With no HI		With HI		Difference in mean	
	mean	SD	mean	SD	mean	SD	diff.	SE
Perennial plants area								
<1,000 m²	0.84	0.37	0.84	0.37	0.85	0.36	−0.01	0.00
1,000–5,000 m²	0.07	0.26	0.07	0.26	0.08	0.27	0.00	0.00
>5,000 m²	0.09	0.28	0.09	0.28	0.07	0.26	0.01	0.00
Water surface area ≥ 5,000 m²	0.02	0.13	0.02	0.14	0.01	0.08	0.01	0.00
Production of cows/ buffaloes/horses for food (kg)	15.39	141.83	15.49	145.57	13.94	67.95	1.55	1.39
Production of pigs/ goats/sheep for food (kg)	189.64	2,977.41	195.47	3,016.76	105.71	2,336.88	89.76	29.27
Production of chicken/ ducks/muscovies/geese/ birds for food (kg)	66.66	2,604.44	69.13	2,690.55	31.10	464.17	38.03	25.60
Number of breeding cows/buffaloes	0.16	16.35	0.17	16.90	0.02	0.16	0.14	0.16
Number of breeding pigs	9.07	1,111.00	9.64	1,148.92	0.98	15.62	8.65	10.92
Other breeding animals (thousand VND)	111.19	4,648.44	113.69	4,797.13	75.15	1,174.91	38.54	45.69
Region								
Red River Delta	0.14	0.35	0.15	0.35	0.05	0.22	0.09	0.00
Hanoi, Hai Phong, HCM, Da Nang, Can Tho	0.12	0.33	0.13	0.33	0.04	0.19	0.09	0.00
Northern midland and mountain	0.20	0.40	0.18	0.39	0.42	0.49	−0.24	0.00
North central and central coast	0.20	0.40	0.20	0.40	0.20	0.40	0.00	0.00
Central highlands	0.08	0.27	0.07	0.26	0.13	0.34	−0.06	0.00
Southeast	0.08	0.27	0.08	0.28	0.02	0.16	0.06	0.00
Mekong River Delta	0.18	0.39	0.19	0.39	0.14	0.34	0.05	0.00
Urban	0.30	0.46	0.31	0.46	0.11	0.31	0.20	0.00
At least one member 15–30 years old has not graduated from lower secondary or is not attending school	0.11	0.32	0.10	0.30	0.26	0.44	−0.16	0.00
At least one member 5–15 years old is not attending school	0.03	0.17	0.03	0.16	0.10	0.30	−0.08	0.00
At least one member got severely ill but did not get checked in a health facility or by a doctor in the last 12 months	0.01	0.11	0.01	0.11	0.01	0.11	0.00	0.00
At least one member 6 years old or above does not have health insurance	0.34	0.47	0.29	0.46	1.00	0.03	−0.71	0.00
Owning no television, radio, computer or access to news from commune broadcasting	0.04	0.20	0.03	0.17	0.22	0.41	−0.19	0.00
Owning no telephone/ internet	0.05	0.22	0.04	0.19	0.21	0.41	−0.17	0.00

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Variables	Full sample		With no HI		With HI		Difference in mean	
	mean	SD	mean	SD	mean	SD	diff.	SE
Healthcare utilisation outcomes								
Outpatient visits	1.41	3.92	1.42	3.89	1.29	4.32	0.12	0.04
Inpatient visits	0.13	1.06	0.13	0.96	0.19	2.04	−0.06	0.01
Outpatient OOPE	505.89	3,142.47	522.15	3,162.08	271.75	2,834.96	250.40	30.88
Inpatient OOPE	176.73	4,044.00	173.57	3,290.33	222.24	9,796.39	−48.67	39.75
Observations	170,469		159,401		11,068			

Notes: authors' calculations based on 2018 Vietnam Household Living Standards Survey data. SE denotes standard error, SD denotes standard deviation, and diff. denotes the difference in the mean between the groups with and without free health insurance.

Table A2

Descriptive statistics for the household sample

Variables	Full sample		With no HI		With HI		Difference in mean	
	mean	SD	mean	SD	mean	SD	diff.	SE
Criteria affecting poverty status								
Household size	3.72	1.63	3.70	1.60	3.98	1.95	−0.28	0.03
Households whose members are all sick or disabled	0.11	0.31	0.11	0.31	0.15	0.35	−0.04	0.01
Number of members aged < 15 or > 60 and members who cannot work due to sickness or disability	1.42	1.16	1.38	1.15	1.86	1.25	−0.48	0.02
Highest educational level of any household member								
Below higher secondary school	0.52	0.50	0.50	0.50	0.83	0.38	−0.32	0.01
Higher secondary school	0.22	0.41	0.22	0.42	0.13	0.34	0.09	0.01
Vocational education	0.07	0.25	0.07	0.26	0.02	0.14	0.05	0.00
College and higher	0.19	0.39	0.20	0.40	0.03	0.16	0.18	0.01
Non-agriculture job								
No one working in the non-agriculture sector	0.22	0.41	0.21	0.41	0.36	0.48	−0.16	0.01
At least one member working in a non-agricultural and non-public sector	0.68	0.47	0.68	0.47	0.62	0.48	0.06	0.01
At least one member working in the public sector	0.10	0.31	0.11	0.31	0.01	0.11	0.10	0.01
Number pensioner members								
No one	0.90	0.30	0.89	0.31	0.98	0.14	−0.09	0.01
One	0.07	0.26	0.08	0.27	0.02	0.14	0.06	0.00
Two or more	0.03	0.17	0.03	0.17	0.00	0.05	0.03	0.00
Materials of house's walls are permanent	0.95	0.22	0.96	0.19	0.82	0.38	0.14	0.00
Materials of house's pillars are permanent	0.94	0.24	0.95	0.22	0.78	0.41	0.17	0.00

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(Continued.)

Variables	Full sample		With no HI		With HI		Difference in mean	
	mean	SD	mean	SD	mean	SD	diff.	SE
House area per capita								
<8 m²	0.05	0.22	0.04	0.20	0.15	0.36	−0.11	0.00
8–20 m²	0.36	0.48	0.35	0.48	0.51	0.50	−0.16	0.01
20–30 m²	0.25	0.43	0.25	0.43	0.18	0.39	0.07	0.01
30–40 m²	0.14	0.35	0.15	0.35	0.07	0.26	0.07	0.01
>40 m²	0.20	0.40	0.21	0.41	0.08	0.28	0.13	0.01
Electric consumption								
<25 kWh	0.05	0.22	0.03	0.17	0.29	0.45	−0.26	0.00
25–49 kWh	0.08	0.27	0.06	0.24	0.27	0.44	−0.20	0.00
50–99 kWh	0.18	0.38	0.17	0.38	0.25	0.44	−0.08	0.01
100–149 kWh	0.20	0.40	0.21	0.41	0.10	0.30	0.11	0.01
≥150 kWh	0.49	0.50	0.52	0.50	0.09	0.28	0.44	0.01
Source of water								
Tap or rainwater	0.42	0.49	0.44	0.50	0.20	0.40	0.24	0.01
Drilled wells	0.22	0.41	0.22	0.42	0.15	0.36	0.07	0.01
Protected hand-dug wells and spring sources	0.31	0.46	0.30	0.46	0.45	0.50	−0.15	0.01
Other								
Toilet	0.05	0.22	0.04	0.19	0.20	0.40	−0.16	0.00
Flush to septic tank	0.57	0.49	0.60	0.49	0.24	0.43	0.36	0.01
Flush to other systems	0.22	0.42	0.23	0.42	0.16	0.37	0.07	0.01
Improved dug toilets with a vent	0.02	0.13	0.02	0.12	0.03	0.17	−0.01	0.00
Dug toilets with a toilet seat	0.03	0.18	0.03	0.17	0.08	0.27	−0.05	0.00
Other toilets	0.15	0.36	0.13	0.33	0.49	0.50	−0.36	0.01
Owning a colour television	0.90	0.29	0.92	0.27	0.65	0.48	0.27	0.01
Owning a music player	0.12	0.33	0.13	0.34	0.04	0.19	0.09	0.01
Owning a car	0.03	0.17	0.03	0.17	0.00	0.05	0.03	0.00
Owning a bike	0.03	0.17	0.03	0.17	0.00	0.05	0.03	0.00
Owning a refrigerator	0.76	0.43	0.80	0.40	0.25	0.43	0.55	0.01
Owning an air conditioner	0.22	0.42	0.24	0.43	0.02	0.13	0.22	0.01
Owning a washing machine/dryer	0.41	0.49	0.43	0.50	0.06	0.23	0.38	0.01
Owning a bathwater heater	0.31	0.46	0.33	0.47	0.04	0.19	0.29	0.01
Owning a microwave oven	0.08	0.27	0.09	0.28	0.00	0.05	0.08	0.00
Owning a motored ship/ boat/junk/outer part	0.02	0.12	0.02	0.13	0.01	0.08	0.01	0.00
Pond and garden area ≥ 300 m²	0.13	0.34	0.13	0.34	0.16	0.36	−0.03	0.01
Annual plants area ≥ 5,000 m²	0.13	0.34	0.12	0.33	0.25	0.43	−0.12	0.01

(Table continues on the next page.)

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Variables	Full sample		With no HI		With HI		Difference in mean	
	mean	SD	mean	SD	mean	SD	diff.	SE
Perennial plants area								
<1,000 m²	0.85	0.35	0.85	0.36	0.87	0.33	−0.02	0.01
1,000–5,000 m²	0.07	0.26	0.07	0.26	0.07	0.26	0.00	0.00
>5,000 m²	0.08	0.27	0.08	0.27	0.06	0.23	0.02	0.00
Water surface area ≥ 5,000 m²	0.02	0.13	0.02	0.13	0.01	0.08	0.01	0.00
Production of cows/ buffaloes/horses for food (kg)	13.81	136.24	13.97	140.17	11.78	67.36	2.19	2.46
Production of pigs/ goats/sheep for food (kg)	163.89	2,481.18	170.55	2,527.75	77.86	1,770.85	92.69	44.89
Production of chicken/ ducks/muscovies/geese/ birds for food (kg)	59.10	2,353.61	61.44	2,439.97	28.89	437.70	32.55	42.58
Number of breeding cows/buffaloes	0.13	14.14	0.14	14.68	0.02	0.16	0.12	0.26
Number of breeding pigs	8.35	990.91	8.93	1,028.54	0.89	14.11	8.04	17.93
Other breeding animals (thousand VND)	108.48	4,528.42	111.54	4,688.92	68.95	1,181.52	42.60	81.92
Region								
Red River Delta	0.15	0.36	0.16	0.36	0.07	0.26	0.08	0.01
Hanoi, Hai Phong, HCM, Da Nang, Can Tho	0.12	0.33	0.13	0.33	0.05	0.21	0.08	0.01
Northern midland and mountain	0.18	0.38	0.17	0.37	0.35	0.48	−0.19	0.01
North central and central coast	0.20	0.40	0.20	0.40	0.22	0.41	−0.02	0.01
Central highlands	0.07	0.26	0.07	0.25	0.11	0.31	−0.04	0.00
Southeast	0.08	0.28	0.09	0.28	0.03	0.17	0.06	0.01
Mekong River Delta	0.19	0.39	0.19	0.39	0.16	0.37	0.02	0.01
Urban	0.30	0.46	0.31	0.46	0.12	0.32	0.19	0.01
At least one member 15–30 years old has not graduated from lower secondary or is not attending school	0.09	0.28	0.08	0.27	0.20	0.40	−0.12	0.01
At least one member 5–15 years old is not attending school	0.02	0.15	0.02	0.14	0.07	0.26	−0.05	0.00
At least one member got severely ill but did not get checked in a health facility or by a doctor in the last 12 months	0.01	0.10	0.01	0.10	0.01	0.11	0.00	0.00
At least one member 6 years old or above does not have health insurance	0.32	0.47	0.27	0.44	1.00	0.06	−0.73	0.01
Owning no television, radio, computer or access to news from commune broadcasting	0.04	0.20	0.03	0.17	0.19	0.40	−0.16	0.00
Owning no telephone/internet	0.07	0.25	0.05	0.23	0.24	0.42	−0.18	0.00

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(Continued.)

Variables	Full sample		With no HI		With HI		Difference in mean	
	mean	SD	mean	SD	mean	SD	diff.	SE
Healthcare utilisation outcomes								
Outpatient visits	5.25	9.05	5.25	8.99	5.16	9.78	0.09	0.16
Inpatient visits	0.50	2.13	0.48	1.93	0.75	3.82	−0.27	0.04
Outpatient OOPE	1,882.29	6,451.95	1,941.87	6,507.24	1,112.59	5,634.18	829.29	116.66
Inpatient OOPE	657.56	7,812.56	643.27	6,318.74	842.09	18,269.48	−198.82	141.34
Observations	45,816		42,524		3,292			

Note: see Table A1.

Table A3

Heterogeneity with three sub-samples

Variables	Difference between treated and control groups (ATT)		
	0.7 ≤ ps <0.999	0.5 ≤ ps < 0.7	0.001 ≤ ps <0.5
	Individuals		
Outpatient visits	−0.15*	0.25	0.57***
	(0.09)	(0.19)	(0.13)
Inpatient visits	−0.02	0.16	0.06***
	(0.03)	(0.13)	(0.02)
Outpatient OOPE	−24.19	−100.57	158.85
	(53.13)	(71.10)	(118.79)
Inpatient OOPE	−4.72	52.38	304.81
	(24.03)	(34.29)	(282.42)
	Households		
Outpatient visits	−0.61	1.25*	1.93***
	(0.92)	(0.68)	(0.55)
Inpatient visits	−0.18	0.63*	0.29***
	(0.17)	(0.37)	(0.06)
Outpatient OOPE	−96.40	−308.43	7.31
	(451.08)	(225.90)	(578.39)
Inpatient OOPE	−166.95	115.78	1,306.90*
	(211.42)	(195.23)	(723.98)

Notes: standard errors are in parentheses. ***p < 0.01; **p < 0.05; *p < 0.1.

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