

Regional inequalities of national health insurance enrollment in Indonesia in 2019

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ABSTRACT

Ensuring universal access to essential health services is a key policy goal, with efforts to minimize inequities being crucial. Even though the National Health Insurance (NHI) targets 95% enrollment coverage by the end of 2019, it only reached 85.3%. This study investigated regional inequalities in NHI enrollment across Indonesia. This cross-sectional study analyzed data from 47,644 respondents. Variables analyzed comprised NHI membership as the outcome and region as the exposure, with seven control variables: residence, age, gender, education, employment, marital status, and socioeconomic status. We employed binary logistic regression in the final analysis. The results showed that Indonesia's nationwide average NHI membership was 67.2%. In Sumatra, the likelihood of NHI membership was 50% less than in Papua (95%CI 0.42-0.60). Java and Bali regions had a 0.48 times lower likelihood of NHI membership than Papua (95%CI 0.40-0.58). Nusa Tenggara and Kalimantan regions had 0.56 and 0.44 times lower likelihoods, respectively, compared to Papua (95%CI 0.46-0.69; 95%CI 0.36-0.53). Maluku was 0.29 times less likely than Papua to be NHI members (95%CI 0.23-0.38). No significant differences were found between the Sulawesi and Papua regions. The study concluded that regional inequalities persist in Indonesia, with all areas except Sulawesi less likely than Papua to enroll in NHI. We need to start outreach projects in places like Sumatra, Java, and other islands where the number of NHI members is low. The Indonesian government needs to send mobile teams there to give people in remote and underdeveloped places direct access to NHI registration services.

Keywords:

inequalities, health insurance, National Health Insurance, health policy, big data, population survey, public health.

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INTRODUCTION

Universal health coverage ensures that everyone can access comprehensive, high-quality healthcare services without facing financial hardship. It includes essential health services such as promotion, prevention, treatment, rehabilitation, and palliative care.¹ In Indonesia, primary care is offered through community health centers (locally called Puskesmas), while hospitals handle referral services.

The availability of community health centers in Indonesia plays a crucial role in delivering health services and enhancing the overall health status of the community. Previous research has indicated a persistent disparity in the utilization of primary healthcare services within these centers, especially between rural and urban areas.² Furthermore, additional research suggests that various factors influence the utilization of primary health care, with one such factor being the public's perception of primary healthcare.³

Certain remote areas in Indonesia still lack hospitals, and the government constructs hospitals in regional areas with better transportation access.^{4,5} Several previous studies conducted in Indonesia have revealed disparities in hospital utilization. Various factors contribute to this issue, including residence status, marital status, education level, employment status, socioeconomic factors, ownership of health insurance, travel time, and transportation costs.⁶⁻⁸

Several studies have highlighted that community social factors can significantly impact health status, health service utilization, and health equities. These factors include education level, employment status, socioeconomic status, gender, race, and ethnicity.⁹⁻¹¹ Similarly, discrepancies in health service utilization are influenced by several factors, including limited human resources, inadequate

infrastructure, travel time to health services, transportation costs, and NHI membership.^{2,8,10} Health service disparities in Indonesia also stem from the decentralization policy, which results in varying economic capacities across regions. This variation affects the region's ability to provide essential human resources, infrastructure, and health services.¹²

In addressing these disparities, the Indonesian government introduced the NHI system, managed by the Health Insurance Administration Agency (HIAA). This program ensures universal access to health services for all Indonesians, with the Contribution Assistance Recipients (CAR) scheme assisting those categorized as poor and unable to afford insurance. Under this scheme, local governments cover the premium.^{13,14} Despite aiming for 95% membership coverage by 2019, the NHI achieved only 85.3%.¹⁵

Introducing compulsory NHI in Indonesia is expected to play a pivotal role in addressing health inequities within the country. Previous research indicates that individuals covered by NHI tend to utilize healthcare services more frequently and respond positively to the system.¹⁶ Understanding the impact of NHI membership on reducing healthcare utilization disparities is paramount, with a particular emphasis on examining regional differences across Indonesia. This study investigated regional inequalities in NHI enrollment across Indonesia.

METHODS

Study Design, Population, and Samples

The study used secondary data from an earlier investigation (Abilities and Willingness to Pay, Fee, and Participant Satisfaction in implementing NHI in Indonesia in 2019). The Ministry of Health

of the Republic of Indonesia conducted a nationwide survey.

The study's population was comprised of all Indonesian citizens. The study described 47,644 weighted respondents using stratification and multistage random sampling. The sample inclusion criteria were household members aged 18 and above, and the exclusion criteria included those who refused to participate, could not be located within three days, were seriously ill, or had mental disorders.

Samples for this study were selected using a multistage cluster sampling, involving the selection of several sub-districts in each region with proportional probability to size sampling. Two villages were chosen in each selected sub-district based on the number of households using the proportional probability to size method. One neighborhood in each town was selected through systematic random sampling with implicit stratification by the number of households to ensure representativeness. Ten households in each neighborhood were selected using systematic random sampling. The sample frame was organized based on the following categories: a list of sub-districts in each region, a list of villages in selected sub-districts, a list of neighborhoods in selected villages, and a list of households in established neighborhoods.¹⁷

The study was conducted nationally, with regions determined by the major islands in Indonesia. These islands include Sumatra, Java-Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua.¹⁸

Variables and Measurement

The outcome variable in this study was NHI membership. NHI membership refers to the respondent's involvement in the NHI, either as an individual member, a mandatory member (civil servant, police officer, or military personnel) covered by their employer, or as a recipient of

government donation assistance. NHI membership is categorized into two groups: members and non-members.

The region served as the exposure variable in this study, dividing the areas into seven categories: Sumatra, Java-Bali, Nusa Tenggara, Kalimantan, Sulawesi, Maluku, and Papua. Seven variables were used as control variables in the analysis: age group, gender, marital status, education level, employment status, socioeconomic status, and residence type (urban or rural).

Data Analysis

The study employed the Chi-Square test in the initial stage to compare regions and other bivariate variables. A collinearity test ensured no significant correlation between independent variables in the resulting regression model. The decision in the collinearity test uses tolerance values for all variables exceeding 0.10, and the variance inflation factor (VIF) values for all variables are less than 10.00 concurrently.

At the final stage, binary logistic regression was utilized. The test examined the multivariable relationship between all independent (control and exposure) variables and NHI membership. The Papua region is used in the final test as a rational reference for the easternmost region, which has the lowest public health status assessed. All analyses were performed using the IBM SPSS 26 program for statistical analysis.

Ethical Approval

The National Ethics Committee of the National Institute of Health Research and Development has granted the survey entitled "Abilities and Willingness to Pay, Fee, and Participant Satisfaction in the Implementation of NHI in Indonesia in 2019" (Number: LB.0201/2/KE.340/2019) ethical clearance. All respondents' identities were removed from the dataset, and participants provided written informed consent to participate in the survey.

RESULTS

Table 1 depicts the descriptive statistics for NHI membership in Indonesia. The nationwide average is 67.2%. The Sulawesi region exhibits the highest proportion of NHI members regionally. The Nusa Tenggara region has the highest proportion of rural areas. The age group of 18-64 years predominates across all regions. Regarding gender, males comprise

the majority of the population in most areas except Nusa Tenggara and Kalimantan.

Table 1 further reveals that Sumatra, Java-Bali, and Kalimantan are characterized by a high proportion of married or cohabiting individuals. Primary education is predominant across all regions, and the majority in each area are unemployed. Based on the wealth index, the poorest segment dominates in Nusa Tenggara and the Sulawesi regions.

Table 1. Descriptive statistics of regions and the characteristics of respondents (n=47,644)

Characteristics	Region							All (47,644)	p-value
	Sumatra (n=9,938)	Java-Bali (n=28,160)	Nusa Tenggara (n=1,973)	Kalimantan (n=2,912)	Sulawesi (n=3,380)	Maluku (n=477)	Papua (n=804)		
NHI membership									< 0.001
Non member	34.3%	33.7%	33.8%	35.2%	20.1%	43.8%	20.5%	32.8%	
Member	65.7%	66.3%	66.2%	64.8%	79.9%	56.2%	79.5%	67.2%	
Residence type									
Urban	23.4%	29.0%	19.0%	39.9%	23.1%	39.6%	26.7%	27.6%	
Rural	76.6%	71.0%	81.0%	60.1%	76.9%	60.4%	73.3%	72.4%	
Age group									< 0.001
≤ 17 years	32.8%	27.6%	34.4%	31.2%	31.0%	33.4%	35.8%	29.7%	
18-64 years	62.7%	65.4%	60.9%	63.9%	63.0%	63.3%	60.7%	64.3%	
≥ 65 years	4.5%	7.0%	4.7%	4.9%	6.0%	3.3%	3.5%	6.0%	
Gender									0.627
Male	50.7%	50.1%	50.0%	49.4%	50.4%	53.5%	51.5%	50.3%	
Female	49.3%	49.9%	50.0%	50.6%	49.6%	46.5%	48.5%	49.7%	
Marital status									< 0.001
Never married	47.0%	41.1%	50.0%	44.9%	48.3%	54.9%	50.6%	43.8%	
Married/Living with a partner	47.9%	52.4%	43.5%	50.0%	45.8%	42.5%	43.0%	50.2%	
Divorced/Widowed	5.1%	6.5%	6.4%	5.1%	6.0%	2.6%	6.3%	6.0%	
Education level									< 0.001
No education	17.1%	15.0%	19.0%	16.1%	14.7%	13.9%	21.1%	15.8%	
Primary	54.5%	57.9%	58.4%	57.2%	55.9%	51.5%	45.6%	56.7%	
Secondary	24.0%	21.8%	18.3%	22.6%	22.0%	28.6%	23.1%	22.3%	
Higher	4.4%	5.3%	4.3%	4.0%	7.4%	6.1%	10.1%	5.2%	
Employment status									< 0.001
Unemployed	58.3%	50.8%	50.2%	54.3%	57.5%	54.7%	60.2%	53.3%	
Employed	41.7%	49.2%	49.8%	45.7%	42.5%	45.3%	39.8%	46.7%	
Wealth status									< 0.001
Poorest	19.3%	17.6%	47.5%	15.6%	31.7%	15.4%	12.6%	20.0%	

Characteristics	Region							All (47,644)	p-value
	Sumatra (n=9,938)	Java-Bali (n=28,160)	Nusa Tenggara (n=1,973)	Kalimantan (n=2,912)	Sulawesi (n=3,380)	Maluku (n=477)	Papua (n=804)		
Poorer	22.2%	19.0%	17.5%	21.4%	23.5%	20.4%	10.6%	20.0%	
Middle	22.5%	19.9%	12.3%	22.4%	16.5%	19.3%	16.9%	20.0%	
Richer	20.9%	20.4%	13.5%	22.4%	14.3%	18.0%	25.2%	20.0%	
Richest	15.0%	23.0%	9.2%	18.1%	14.0%	26.9%	34.7%	20.0%	

The binary logistic regression results on NHI enrollment in Indonesia are presented in Table 2. Regionally, individuals in Sumatra are 0.50 times less likely than those in Papua to be NHI members (AOR 0.50; 95% CI 0.42-0.60). Those in the Java-Bali region are 0.48 times less likely than Papuans to be NHI members (AOR 0.48; 95% CI 0.40-0.58), and individuals in Nusa Tenggara are 0.562 times less likely than Papuans to be NHI members (AOR 0.56; 95% CI 0.46-0.69). Similarly, people in Kalimantan are 0.435 times less likely than Papuans to be NHI members (AOR 0.44; 95% CI 0.36-0.53).

Meanwhile, individuals in Maluku are 0.292 times less likely to be NHI members than Papuans (AOR 0.29; 95% CI 0.23-0.38). Additionally, the study found no significant differences between the Sulawesi and Papua regions. In descending order, the areas with the highest likelihood of individuals becoming NHI members are Papua, Sulawesi, Nusa Tenggara, Sumatra, Java-Bali, Kalimantan, and Maluku. Moreover, the study found four control variables related to NHI enrollment in Indonesia: Type of residence, age group, education level, and wealth status.

Table 2. The result of binary logistic regression of NHI membership in Indonesia (n=47,644)

Predictor	Member of NHI			
	Crude Odds Ratio	Adjusted Odds Ratio	95% CI	
			Lower Bound	Upper Bound
Region: Sumatra	0.49	0.50	0.42	0.60
Region: Java-Bali	0.51	0.48	0.40	0.58
Region: Nusa Tenggara	0.51	0.56	0.46	0.69
Region: Kalimantan	0.48	0.44	0.36	0.53
Region: Sulawesi	1.02	1.06	0.87	1.29
Region: Maluku	0.33	0.29	0.23	0.38
Region: Papua	-	-	-	-
Residence: Urban	1.78	1.69	1.61	1.77
Residence: Rural	-	-	-	-
Age group: ≤ 17	-	-	-	-
Age group: 18 - 64	1.46	1.21	1.12	1.31
Age group: ≥ 65	1.65	1.62	1.44	1.82
Education: No Education	-	-	-	-
Education: Primary	1.63	1.53	1.44	1.62
Education: Secondary	2.08	1.68	1.56	1.82
Education: Higher	3.40	2.48	2.20	2.80
Employment: Unemployed	-	-	-	-
Employment: Employed	1.22	1.02	0.97	1.08
Marital: Never married	-	-	-	-
Marital: Married	1.24	0.96	0.90	1.03
Marital: Divorced/Widowed	1.33	1.06	0.96	1.18
Wealth: Poorest	-	-	-	-
Wealth: Poorer	1.14	1.22	1.14	1.29
Wealth: Middle	1.11	1.17	1.10	1.24
Wealth: Richer	1.25	1.26	1.18	1.34
Wealth: Richest	1.41	1.29	1.21	1.38

AOR: Adjusted Odds Ratio; CI: confidence interval.

DISCUSSION

In early 2014, Indonesia implemented the NHI program, marking a significant breakthrough in the national health system, embracing social insurance and mandatory participation¹⁹. The key objective is to ensure comprehensive health insurance coverage for all Indonesians, promoting healthy, productive, and prosperous lives.²⁰ The HIAA oversees the NHI, governed by Law No. 40 of 2004. As of 2022, the NHI covers approximately 142 million individuals, constituting 52% of Indonesia's population. NHI participants are divided into two groups: CAR and non-CAR. CAR participants (98.6 million as of 2022) have their contributions fully subsidized by the government.²¹

Our study found that all regions, except Sulawesi, are less likely to join the NHI than the Papua region. Papua, situated on the western part of the island of New Guinea, is characterized by a mountainous landscape and encompasses 29 regencies/cities with a total population of 3,379,302 in 2019. As Indonesia's wealthiest province, Papua boasts vast natural resources.^{22,23} The Papua Provincial Government introduced the Papua Healthy Card (PHC), which was later integrated into the NHI for the Healthy Indonesia Card (NHI-KIS) in 2019 to address health issues. Additionally, Papua Province benefits from a special autonomy fund, enabling the local government to manage finances flexibly. This autonomy allows the provision of subsidies for NHI contributions to all residents, leading to consistent 100% membership coverage in NHI evaluations conducted by various institutions.²⁴

Regions such as Maluku, Kalimantan, Java-Bali, Sumatra, and Nusa Tenggara, which show lower NHI membership, are likely experiencing

inequalities in access to healthcare services. These areas may lack the necessary infrastructure, resources, or awareness to facilitate enrollment in the NHI program. The populations in these regions, particularly in Maluku and Kalimantan, are at a higher risk of being uninsured and, therefore, may be more vulnerable to healthcare costs. This lack of insurance coverage can worsen health outcomes, especially in underserved areas with high poverty rates.²⁵

People in areas with few NHI members may have trouble getting to registration centers and healthcare services because they are geographically isolated, have limited transportation options, or don't have enough medical facilities. In the meantime, economic reasons may be to blame for the lower number of NHI members in regions like Java-Bali and Sumatra. Many people can't afford their NHI premiums or are unaware of the program's benefits.²⁶

Papua's relatively higher membership could serve as a model for other regions. Examining Papua's policies and outreach strategies may offer insights into successful approaches for increasing NHI membership in different areas. The diversity of conditions across regions requires interventions tailored to local contexts.^{26,27} For instance, Maluku and Kalimantan may need more aggressive outreach, infrastructure development, and financial support programs. At the same time, regions such as Java-Bali and Sumatra could benefit from awareness campaigns and payment flexibility.

The government needs to fix the differences in NHI registration by sending more resources to places like Maluku and Kalimantan, which have the fewest members. Policymakers should ensure everyone has equal access to NHI

registration and services, putting marketing and infrastructure efforts at the top of the list. It appears that decentralized or region-specific health policies may also be needed to boost NHI participation rates in areas where national-level programs aren't working. Without targeted interventions, these differences could worsen health disparities between regions. People in Papua and Sulawesi are more likely to be NHI members, which means they have better access to healthcare services and may have better health outcomes than people in areas with lower membership rates.^{14,15,26}

Our findings show that four control variables are related to NHI enrollment in Indonesia: the type of residence, age group, education level, and wealth status. Residents in these locations may lack complete information about NHI benefits, leading to lower membership. This finding is consistent with research in several countries, indicating a significant relationship between residence location and health insurance participation.²⁸⁻³⁰ Meanwhile, older individuals exhibit a stronger desire for health insurance, emphasizing its role in ensuring the continuity of their health services.³¹

In addition, research in various developed and developing countries underscores a significant increase in the demand for health insurance ownership among those with higher education levels.^{19,32} Notably, despite lower socioeconomic development, including education, Sulawesi and Papua exhibit better NHI membership, attributed to local government policies on health financing.²⁴ Furthermore, while the wealthy people have a higher potential for membership in private insurance, this pattern does not hold in the context of social insurance ownership, where all residents have equal rights to participate.^{29,33} These findings align with other studies demonstrating that wealth status influences access and the likelihood of participation in health insurance more broadly.³⁴

Study Limitation

This study leverages big data for analysis, enabling the generalization of conclusions at the national level. However, it relies on secondary data, and the accepted variables are limited to those provided by the Republic of Indonesia's Ministry of Health. Certain variables influencing health insurance ownership, such as cognitive capacity, prior commercial insurance ownership, having children, and family size, could not be investigated.³⁵⁻³⁷

RECOMMENDATION

Based on the data, we suggest that the government focus on areas with the fewest NHI members to ensure equal access to health care. We also think that more people should know about and understand the benefits of NHI. This is especially important in rural and underdeveloped places where people may not know much about health insurance.

The government needs to improve the healthcare system to get more people to join NHI, especially when it's hard. Mobile clinics and enrollment teams should be sent to rural areas to reach out to remote towns and make it easy for people to sign up for and use NHI health services. Efforts should focus on making it easier to sign up for the NHI, especially for people who live in rural areas, by using digital options when you can and requiring less paperwork. Government-funded premiums or subsidies should be provided to low-income individuals residing in areas with low involvement.

Also, push regional governments to actively support NHI by giving local health departments more resources, cash, or incentives. Use regional statistics on health outcomes, socioeconomic factors, and access problems to develop policies that help non-Sulawesi regions deal with their problems.

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