# THE EFFECT OF PARTICIPATION IN JKN ON UNMET NEEDS FOR HEALTHCARE SERVICES

*Pengaruh Kepesertaan JKN terhadap* Unmet Needs *Pelayanan Kesehatan*

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## Abstract

**Background:** The National Health Insurance or *Jaminan Kesehatan Nasional* (JKN) program is one of the steps taken by the Indonesian government in developing Universal Health Coverage (UHC). However, increased participation in the National Health Insurance is not followed by an increase in met needs for healthcare services.
**Aims:** This study aimed to examine the effect of participation in the National Health Insurance on unmet needs for healthcare services in poor and non-poor population groups.
**Methods:** This study was conducted using data from the 2018 National Socio-Economic Survey/ *Survei Sosial Ekonomi Nasional (SUSENAS)* and Village Potential Survey/ *Survei Potensi Desa (PODES)*. Data were processed using binary logistic model analysis to identify the effect of participation in the National Health Insurance on the unmet needs for healthcare services.
**Results:** Participation in the National Health Insurance including beneficiary program for poor groups could reduce the risks of unmet needs for healthcare services by 7.7%, while non-beneficiary program could reduce the risks of unmet needs for health services for non-poor groups by 10.4%.
**Conclusion:** Both beneficiaries and non-beneficiaries affect the unmet needs for health services for both poor and non-poor groups. However, the non-beneficiary program is more elastic than beneficiary program to fulfill needs for both sample groups.

**Keywords**: healthcare services, national health insurance, logit, unmet need

## *Abstrak*

***Latar Belakang:*** *Program Jaminan Kesehatan Nasional (JKN) merupakan salah satu langkah pemerintah dalam membangun* Universal Health Coverage *(UHC). Namun, kepesertaan JKN yang meningkat tidak diikuti oleh peningkatan kebutuhan pelayanan kesehatan masyarakat yang terpenuhi.*
***Tujuan:*** *Penelitian ini bertujuan untuk menguji pengaruh kepesertaan JKN terhadap pemenuhan kebutuhan pelayanan kesehatan di kalangan masyarakat miskin dan tidak miskin.*
***Metode:*** *Penelitian ini diselenggarakan dengan menggunakan data dari Survei Sosial Ekonomi Nasional (SUSENAS)* and *Survei Potensi Desa (PODES) Tahun 2018. Data diolah menggunakan analisis model logistik biner untuk mengidentifikasi pengaruh kepesertaan JKN terhadap kebutuhan pelayanan kesehatan masyarakat.*
***Hasil:*** *Kepesertaan JKN, yakni program penerima bantuan iuran (PBI) di kalangan masyarakat miskin mampu menurunkan risiko kebutuhan pelayanan kesehatan yang tidak terpenuhi sebesar 7,7%, sedangkan kepesertaan yang bukan PBI mampu menurunkan risiko kebutuhan pelayanan kesehatan yang tak terpenuhi di kalangan masyarakat tidak miskin sebesar 10,4%.*
***Kesimpulan:*** *Kedua program PBI maupun bukan PBI berpengaruh negatif terhadap kebutuhan layanan yang tak terpenuhi di kalangan masyarakat miskin maupun tidak miskin. Namun, program bukan PBI lebih elastis dari pada program PBI untuk memenuhi kebutuhan layanan bagi dua kelompok sampel tersebut.*

***Kata kunci****: jaminan kesehatan nasional, layanan kesehatan, logit,* unmet need

## Introduction

Public health development has a crucial influence on human resource quality, economic growth, and poverty reduction (Grossman, 2017). Awareness of health promptly encourages governments worldwide to focus on improving public health. As evidenced by the declaration of the Sustainable Development Goals (SDGs), Universal Health Care (UHC) has become one of the joint targets of countries around the world by 2030 (United Nations, 2022).

Successful UHC in Indonesia relies on government budgetary support. Following Law no. 36/2009 on Health, Indonesian governments have allocated a minimum health budget of 5% of the state budget and 10% of the regional budget since 2016. The government allocates nearly 30% of the health budget annually to finance the National Health Insurance program/*program Jaminan Kesehatan Nasional (*JKN*)*. The annual increase in the health budget is in line with the annual increase in the number of insurance participants. Data from Social Security Agency for Health/ BPJS Kesehatan show that as of December 31, 2020, the number of JKN participants was 222.5 million, equivalent to 81.3% of the population in Indonesia (Figure 1). An annual increase in insurance membership is expected to encourage prosperity. However, this increase is not proportional to the increase in met healthcare service needs. An unmet need is an assessment method for measuring the equality of access to health services (Fjaer *et al.*, 2017; OECD, 2019).

An unmet need for health services occurs when an individual experiences health complaints that disrupt their daily activities, without seeking outpatient treatment (Kementerian PPN/ Bappenas, 2020). Based on Indonesian Statistics data in 2020, the level of unmet needs for healthcare services has increased over the last 3 (three) years (from 2018 to 2020) (Figure 1). The increase in unmet needs for health services indicates potential economic disruption due to public health problems, considering that delaying or

discontinuing treatment can harm the health status (Kim *et al.*, 2019; Lindström, Rosvall, and Lindström, 2020). In addition, neglecting primary health care can be detrimental in the long term or even lead to poorer health (WHO, 2017). Based on these problems, it is necessary to ascertain whether JKN, as a form of JKN program developed by the government, can reduce the unmet need for public health services.
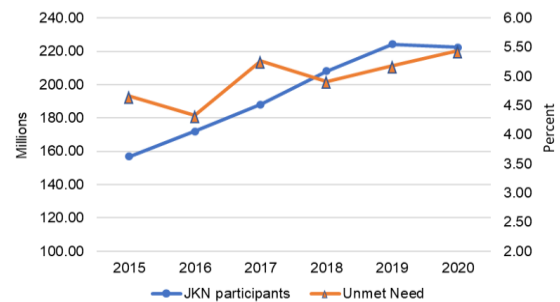


Figure 1. The trends of participation in the National Health Insurance and unmet needs for healthcare services from 2015 to 2020

Many challenges still occur in improving health conditions in Indonesia. As unmet needs for healthcare services are considered an essential indicator in the healthcare system, it is critical to identify barriers that may prevent people from accessing healthcare services. This study focused on unmet needs for health care services aimed at ensuring that society has access to health care facilities, regardless of differences in socioeconomic status. Therefore, it is important to identify the effect of National Health Insurance on unmet healthcare service needs in Indonesia.

This study adopted the utility function approach of Wellay to show one's behavior towards the utilization of health services (Wellay *et al.*, 2018). This approach argues that utility depends on health conditions and consumption of goods other than medical care. If a person has a health disorder, he/she will decide to seek medical treatment. Medical care is expected to improve health conditions with minimal treatment costs. Individuals can choose alternative health facilities such as modern health facilities, traditional health facilities,

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and self-medication. Each healthcare provider offers a specific cost for a certain healthcare service. The costs charged for these alternatives included medical expenses and other costs. Considering income, one might choose facilities that produce the highest utility at lower costs. Suppose we assume that an individual in illness *"i"* will maximize his utility *(U)* through medical care from health care provider *"j"* subject to budget constraints and the health production function. The utility function can be expressed as follows:

$$Max\ U_{ij} = U(H_{ij}, C_{ij}) + e_{ij} \qquad (1)$$

subject to:

$$m_i = P_{ij} + P_c C_{ij} \text{ (budget constraint)} \qquad (2)$$

$$H_{ij} = H_o + Q_{ij}(X, Z) \text{ (health production function)} \qquad (3)$$

where $H_{ij}$ is the individual's health status after medical treatment from a healthcare service provider $j$; $C_{ij}$ is the level of consumption of other goods and services after choosing provider $j$; $e_{ij}$ is a random error term; $m_i$ is total household income; $P_{ij}$ is the price of treatment from the healthcare service provider $j$ (including travel costs to the medical service and time); $P_c$ is the price of consumer goods; $H_o$ is the individual's initial health status; and the last element is $Q_{ij}$, the increase in the individual's health status after medical treatment from the healthcare service provider $j$.

The increase in individual health status $Q_{ij}$ varies according to the characteristics of the medical service provider. In addition, individual characteristics such as disease severity, education level, age, and gender can influence individual health status. Therefore, an increase in an individual's health status is a function of individual characteristics *(Z)* and the characteristics of medical service providers *(X)*. Therefore, individual *i* maximizes the unconditional utility function $(U^*)$ as follows:

$$U_j^* = \max(U_{i1}, U_{i2}, \ldots, U_{ij+1}) \qquad (4)$$

where $U_{ij}$ is the utility function of service provider *j=1, 2, ..., j+1*. Meanwhile, $U_j^*$ is the maximum utility that an individual deserves from the choice of medical service *j*. The

solution to equation (4) provides the healthcare alternative that yields the highest utility and is chosen by an individual. The probability of the chosen healthcare service can be interpreted as a demand function in the discrete-choice model. By normalizing $P_c$ to be equal to one and substituting equations (2) and (3) into equation (1), the equation yields the conditional utility function of medical service provider $j$ which can be written as

$$U_{ij} = U(H_o + Q_{ij}(X, Z), m_i - P_{ij}) + e_{ij} \qquad (5)$$

When the above utility function is quasi-linear on $H_{ij}$ and $C_{ij}$ with a component value greater than 0, the indirect utility function can be written as

$$V = V(P, H, Q(X, Z), m) + e \qquad (6)$$

Equation (6) is the reduced form of the indirect utility function of the selected healthcare service. Most studies use the above function to estimate the basic demand for healthcare functions. This implies that the demand for healthcare services depends on the cost of healthcare services, individual health status, improvement in health status after medical treatment, individual characteristics and characteristics of health/ medical service providers, and individual income.

## Method

This study used a binary logistic model analysis approach and the Stata 15 application to analyze the data. The binary logistic model analysis is feasible for examining the effect of participation in the National Health Insurance on the rates of unmet needs for healthcare services, considering that the dependent variable was logistically distributed and the independent variables consisted of discrete and continuous variables (Boateng and Abaye, 2019). The specifications of the dependent variable for unmet needs were determined by examining certain conditions. For example, if an individual experienced an unmet need for health services, he/she was given a code of 1, while a code of 0 was given to individuals who did not experience an unmet need. Therefore, the empirical model to test people's experiences, whether they

experienced unmet needs or not, was used in combination with a binary logit approach as follows:

$$n\left(\frac{P_i^{UN=1}}{P_i^{UN=0}}\right) = \beta_0 + \beta_1 X_i + \varepsilon_0 \qquad (10)$$

where $\left(\frac{P_i^{UN=1}}{P_i^{UN=0}}\right)$ represents the probability of an individual experiencing an unmet need for health services and of an individual not experiencing an unmet need, with several independent variables $(X_i)$ as control variables. The types of participation in the National Health Insurance were arranged as dummy variables and functioned as variables of interest. The interpretation of the binary logit regression model was not based on the model coefficient values, but was viewed from the marginal effect.

The analysis was carried out by separately estimating poor and non-poor samples, considering that the beneficiary program (*Penerima Bantuan Iuran*) was designed for poor and underprivileged groups. By contrast, the non-beneficiary program was intended for people who could pay healthcare costs on their own. The classification of the programs was also aligned with the Poverty Line by regency or city (in rupiah per capita per month) from the Indonesian Statistics.

This study used three representative national data sources: the 2018 National Socio-Economic Survey/ *Survei Sosial Ekonomi Nasional (SUSENAS),* the 2018 Village Potential Survey/ *Survei Potensi Desa (PODES),* and Publication Data from the Indonesian Statistics. Cross-sectional data from SUSENAS in March 2018 were used as the primary data source because they contained complete information regarding population social information, which was relatively universal. The 2018 PODES measured the supply side conditions of health services, such as the number of health facilities and independent clinics of doctors.

Two data sets were taken from the population per district/ city and Poverty Line data by district/ city (Rupiah per capita per month) published by the Indonesian Statistics on www.bps.go.id. The data were used to calculate the total ratio of the supply side of health services, and the Poverty Line data by district/ city (Rupiah per capita per month) were used to separate sample classifications: poor and non-poor groups.

The dependent variable in this study was unmet need for healthcare services. It was arranged with a dichotomous variable coded 1 when the person reported that he/she required examination or treatment but did not consult a doctor or did not seek treatment in the last month. Code 0 was assigned for the opposite response. The types of participation in the National Health Insurance (Beneficiaries/ *Penerima Bantuan Iuran (PBI)* and non-beneficiary programs/ *Non PBI*) used as a treatment were arranged with a dichotomous variable coded 1 when one participated in beneficiary programs. Finally, code 0 was assigned when the participant did not participate in the program.

The analysis used several individual characteristics and the characteristics of health service providers as independent and control variables. The independent variables in question consisted of several sociodemographic characteristics such as age, marital status, gender, area of residence, employment status, ownership of the Citizen Identification Number/ *Nomor Induk Kependudukan* (NIK), education level, average expenditure per capita per month, average out-of-pocket limit per capita per month for outpatients, possession of additional health insurance, and functional impairment. In addition, the analysis used several independent variables related to aspects of housing and one's asset ownership, as well as the supply side characteristics of health service providers as control variables. The supply side characteristics of health service providers included the ratio of hospitals, health centers/ *Pusat Kesehatan Masyarakat (Puskesmas)*, polyclinics, and doctors' independent clinics by district or city.

## Result and Discussion

From the SUSENAS data in March 2018, the number of individuals who experienced illness that disrupted their activities was 160,732, of whom 59,223

experienced unmet needs. Data were divided into two sample categories: poor and non-poor. The number of poor individuals who experienced illness and disrupted activities was 14,795 people, of whom 6,061 individuals (40.97%) faced unmet needs. The number of sick individuals in non-poor groups getting impacted by their disease was 145,937 people, and 53,162 individuals of them (36.43%) experienced unmet needs.

Table 1 shows the distribution of participation in the National Health Insurance based on the poor and non-poor groups and their experience in developing illnesses that interrupt their daily activities. The number of poor samples was 14,795 people, of which 6,920 individuals (46.77%) in the beneficiary program and 575 individuals (3.89%) in non-beneficiary program. The remaining as many as 7,300 people (49.34%) did not participate in the National Health Insurance. In addition, 2,707 individuals in the poor sample (18.3%) have additional insurance other than national health insurance. The data also show exclusion errors in participation in non-beneficiary programs, where poor individuals were misclassified as non-beneficiary participants.

Table 1 also provides information on the characteristics of insurance participation in the non-poor samples. The total number of non-poor samples was 145,937 individuals, with 53,011 individuals (36.32%) having the beneficiary membership for their National Health Insurance, while 26,110 individuals (17.89%) had non-beneficiary membership. The rest or 39,957 (43.07%) did not have the National Health Insurance. In addition, 24,606 individuals (16.86%) had additional insurance outside the national health insurance. Further results also indicate misclassifications in non-beneficiary programs. For instance, non-poor individuals were categorized as non-beneficiary program participants instead of beneficiary participants.

The logit analysis model was used to determine the effect of participation in National Health Insurance on unmet healthcare service needs in poor samples. As the initial step, the regression estimation

Table 1. Characteristics of National Health Insurance Participation

| Char | Poor Category | | | | Non-poor Category | | | |
|------|------|------|------|------|------|------|------|------|
| | Unmet Needs | | Total | | Unmet Needs | | Total | |
| | Yes | No | | | Yes | No | | |
| | Freq | Freq | Freq | % | Freq | Freq | Freq | % |
| Beneficiary program | | | | | | | | |
| 0: No | 3,419 | 4,456 | 7,875 | 53.23% | 34,370 | 58,556 | 92,926 | 63.68% |
| 1: Yes | 2,642 | 4,278 | 6,920 | 46.77% | 18,792 | 34,219 | 53,011 | 36.32% |
| | 6,061 | 8,734 | 14,795 | 100.00% | 53,162 | 92,775 | 145,937 | 100.00% |
| Non-beneficiary program | | | | | | | | |
| 0: No | 5,895 | 8,325 | 14,220 | 96.11% | 45,651 | 74,176 | 119,827 | 82.11% |
| 1: Yes | 166 | 409 | 575 | 3.89% | 7,511 | 18,599 | 26,110 | 17.89% |
| | 6,061 | 8,734 | 14,795 | 100.00% | 53,162 | 92,775 | 145,937 | 100.00% |
| Additional Insurance | | | | | | | | |
| 0: No | 5,079 | 7,009 | 12,088 | 81.70% | 44,657 | 76,674 | 121,331 | 83.14% |
| 1: Yes | 982 | 1,725 | 2,707 | 18.30% | 8,505 | 16,101 | 24,606 | 16.86% |
| | 6,061 | 8,734 | 14,795 | 100.00% | 53,162 | 92,775 | 145,937 | 100.00% |

Source: SUSENAS 2018 has been reprocessed

method, that is, ordinary least squares (OLS), was performed. The results of the OLS estimation were compared with the logit estimated results.

Table 2 presents the estimation results for the poor groups. The results show that the coefficient between the OLS method and the marginal effect of the logit method produces values that are relatively similar or not significantly different. The results of the F test on the OLS method show an F value of 0.000 (F<0.005) or significance at 5% alpha. This implies that the independent variables simultaneously affect the dependent variable.

Partial tests were performed to interpret the logit estimation results for each coefficient. The results show that the health insurance ownership coefficient is negative. The coefficient of the marginal effect of beneficiary ownership was -0.0768, indicating 7.68% lower probability of unmet needs for poor individuals with beneficiary membership than for those

without health insurance. The marginal effect coefficient of non-beneficiary program was -0.1449, indicating 14.49% lower probability of unmet needs for poor non-beneficiary participants than poor individuals who did not have health insurance. The coefficient resulting from the OLS method was not significantly different from that of the logit model; the coefficient of the beneficiary program variable was -0.0754, while the coefficient of the non-beneficiary variable was -0.1461.

Logit estimation on the supply-side variables of healthcare services demonstrates negative marginal effect coefficient values with significant directions at the 1%, 5%, and 10%. At a significance level of 1%, the effect of polyclinic availability on reducing unmet healthcare needs was higher than the availability of Puskesmas. This is indicated by the coefficient value of the polyclinic ratio,

Table 2. The Estimation Results for Poor Samples

| Variables | OLS | | Logit | | | |
|---|---|---|---|---|---|---|
| | Coef | Std Err | Coef | Std Err | MFX | Std Err |
| Beneficiary program | -0.0754*** | 0.0088 | -0.3197*** | 0.0373 | -0.0768*** | 0.0089 |
| Non-beneficiary program | -0.1461*** | 0.0214 | -0.6529*** | 0.0977 | -0.1449*** | 0.0193 |
| Additional Insurance | -0.1089 | 0.0811 | -0.4864 | 0.3675 | -0.1102 | 0.0767 |
| Log of Capita | -0.0279 | 0.0183 | -0.1199 | 0.0779 | -0.0289 | 0.0188 |
| Log of Out-Of-Pocket (OOP) Capita | -0.0015 | 0.0021 | -0.0065 | 0.0089 | -0.0016 | 0.0022 |
| Ratio of Hospitals | -0.0991** | 0.0456 | -0.4480** | 0.2011 | -0.1081** | 0.0485 |
| Puskesmas Ratio | -0.0102*** | 0.0016 | -0.0444*** | 0.0072 | -0.0107*** | 0.0017 |
| Ratio of Polyclinics | -0.0924*** | 0.0142 | -0.4086*** | 0.0633 | -0.0986*** | 0.0153 |
| Doctor's Independent Clinics Ratio | -0.0112 | 0.007 | -0.0511* | 0.031 | -0.0123* | 0.0075 |
| _Constant | 1.0184*** | 0.2325 | 2.2365** | 0.9922 | | |
| | | | | | | |
| Number of Observation | 14,795 | | 14,795 | | | |
| LR chi2 | | | 480.86 | | | |
| Prob > F / chi2 | 0 | | 0 | | | |
| R-squared | 0.0318 | | | | | |
| Adjusted R-squared | 0.0298 | | | | | |
| Pseudo R2 | | | 0.024 | | | |

***p < 0.01, **p < 0.05, *p < 0.1
The estimation results were controlled for covariates related to population, housing, and asset ownership.

Tabel 3. Estimation Results for Non-Poor Samples

| Variabel | OLS | | Logit | | | |
|---|---|---|---|---|---|---|
| | Coef | Std Err | Coef | Std Err | Mfx | Std Err |
| Beneficiary program | -0.0706*** | 0.0029 | -0.3079*** | 0.0127 | -0.0700*** | 0.0029 |
| Non-beneficiary program | -0.1037*** | 0.0038 | -0.4733*** | 0.0174 | -0.1037*** | 0.0036 |
| Additional Insurance | -0.0888*** | 0.0079 | -0.4195*** | 0.0372 | -0.0905*** | 0.0074 |
| Log of Capita | -0.0140*** | 0.0027 | -0.0653*** | 0.012 | -0.0151*** | 0.0028 |
| Log of Out-Of-Pocket (OOP) Capita | -0.0129*** | 0.0006 | -0.0567*** | 0.0027 | -0.0131*** | 0.0006 |
| Ratio of Hospitals | -0.0139 | 0.0139 | -0.0709 | 0.0624 | -0.0164 | 0.0144 |
| Ratio of Primary Healthcare Centers | 0.0026*** | 0.0006 | 0.0111*** | 0.0028 | 0.0026*** | 0.0007 |
| Ratio of Polyclinics | 0.0054 | 0.004 | 0.0234 | 0.0177 | 0.0054 | 0.0041 |
| Doctor's Independent Clinics Ratio | -0.0149*** | 0.0018 | -0.0682 | 0.0084 | -0.0157*** | 0.0019 |
| _Constant | 0.9098*** | 0.0366 | 1.8627*** | 0.163 | | |
| | | | | | | |
| Number of Observation | 145,937 | | 145,937 | | | |
| LR chi2 | | | 3,896.56 | | | |
| Prob > F / chi2 | 0 | | 0 | | | |
| R-squared | 0.0263 | | | | | |
| Adjusted R-squared | 0.0261 | | | | | |
| Pseudo R2 | | | 0.0204 | | | |

***p < 0.01, **p < 0.05, *p < 0.1
The estimation results were controlled for covariates related to population, housing, and asset ownership.

which is -0.0986, which is larger than the puskesmas of -0.0107. Similar results were found for the coefficients of the OLS method. On the other hand, the coefficients of the log capita and log capita OOP variables were negative but not significant.

The second analytical model was the logit analysis model, which determined the effect of participation in the National Health Insurance on unmet health service needs in non-poor groups. The estimation results of the OLS and logit test for the non-poor samples are shown in Table 3. The regression results of the non-poor samples show similar coefficient values between the OLS method and the marginal effect of the logit method. Most coefficients showed significant values at the 1%, 5%, and 10%. The results of the F test using the OLS method produced an F-value of 0.000 (F<0.005) or significance at 5% alpha, indicating that the independent variables simultaneously affect the dependent variable.

Partial tests were performed on each coefficient value to interpret the logit estimation results. The results show that the coefficient of the health insurance ownership is negative and significant. The coefficient of the marginal effect of beneficiary ownership for non-poor individuals was -0.0700, leading to 7% lower probability of unmet needs than non-poor individuals without health insurance. A higher value of the marginal effect coefficient (-0.1037) was found for the non-beneficiary program. This implies that the probability of non-poor individuals with non-beneficiary membership to experience unmet needs was 10.37% lower than non-poor individuals without health insurance. The coefficients of the OLS method were not significantly different from those of the logit model. The OLS estimation showed that the coefficients were -0.0706 for beneficiary membership and -0.1037 for non-beneficiary membership.

The logit estimation of supply side variables from health services shows that

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the marginal effect coefficient value from the logit method has various directions. The coefficient of the hospital ratio was negative but not significant, whereas the coefficient of the polyclinic ratio was positive but not significant. In addition, the coefficient of the primary healthcare center ratio shows a positive and significant direction with a value of 0.0026, while that of the doctors' independent clinics ratio was negative and significant, with a value of -0.0157. Similar results were also observed for the coefficients of the OLS method.

Identifying the effect of participation in National Health Insurance on unmet needs for health services can open doors for the government to improve National Health Insurance services. The estimation results indicate that national health insurance membership, both for beneficiary and non-beneficiary groups, generally has an impact on reducing unmet healthcare needs for both poor and non-poor communities. Connolly (2017), Otieno (2021), Basar (2021), and Choi *et al.,* (2020) support this study by stating that the probability of unmet needs for outpatient health services is lower in people with health insurance coverage or free registration for primary health services. In addition, Shrestha (2021) states that health insurance participation can increase the utilization of health services by both the poor and non-poor groups. However, the estimation tests show that the effect of non-beneficiary participation was more elastic in both poor and non-poor groups than beneficiary participation. This result can be interpreted as national health insurance membership being more utilized for outpatient care among non-poor communities than among poor communities. This statement is in line with Detollenaere *et al.,* (2017) who found that certain vulnerable groups face barriers in accessing healthcare services compared with wealthier individuals. Consistent with these findings, Basar (2021) also reported that one of the most common reasons for unmet healthcare needs is affordability of healthcare costs.

The importance of availability of healthcare facilities in meeting the healthcare needs of the community was also evidenced by this study. The estimation results show that the availability of healthcare facilities generally has an impact on reducing unmet healthcare needs in both poor and non-poor communities. This result is in line with research by Misnaniarti *et al.,* (2017) and Burger and Christian (2020), which states that the supply side of healthcare services is an important factor in facilitating community access to healthcare facilities.

Another issue that the government needs to address immediately is the problem of inclusion and exclusion errors among beneficiaries of the National Health Insurance assistance program. Government Regulation No. 101 of 2012 regarding Recipients of Health Insurance Contribution Assistance explains that the National Health Insurance premium assistance program is only given to the poor. Therefore, to ensure fairness in healthcare utilization by the community, the government needs to take immediate steps to improve the accuracy of targeting beneficiaries of National Health Insurance premium assistance.

**Conclusion**

This study determined the effect of participation in National Health Insurance programs on unmet healthcare service needs using SUSENAS and PODES 2018 data. In general, the estimation results show that National Health Insurance participation negatively affects the probability of unmet needs for healthcare services. For the poor groups, beneficiary participation influenced the probability of unmet needs up to 7.7% lower compared to those who did not have health insurance. In addition, non-beneficiary participation by non-poor groups gave 10.4% lower probability of the unmet needs for healthcare services than those without health insurance. The different economic conditions in both sample groups may contribute to a variety of marginal effect coefficient values based on logit estimates. This conclusion is also supported by the coefficients of the log variable per capita

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expenditure and the log variable OOP per capita. The results show that an increase in the log variable per capita expenditure and the log variable OOP per capita can significantly reduce the chance of unmet needs, especially in non-poor groups, but not significantly in poor groups.

## Abbreviations

Char: Characteristic; Coef: Coefficient; LR: Logit Regression; MFX: Marginal Effect; OECD: Organization for Economic Co-operation and Development; Std Err: Standard Error; WHO: World Health Organization.

## Declarations

### Ethics Approval and Consent Participant
This study used secondary data sourced from the Central Statistics Agency/ *Badan Pusat Statistik (BPS)* accessible to the public (SUSENAS)

### Conflict of Interest
The authors declare that there are no personal interests that can affect performance.

### Availability of Data and Materials
Research data and materials are available on http://silastik.bps.go.id/

### Authors' Contribution
FAF conceptualized the study, created the methodology, wrote the original draft, and edited the manuscript. IGDKW provided inputs to the manuscript and reviewed the manuscript.

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