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*Original Research Article*

# National Health Insurance Effects on Inpatient Utilization in Indonesia

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## ABSTRACT

**Introduction:** Disparities in geographic access, health facilities, human resources, health, and economic status of the community resulted in disparities in the utilization of inpatient health care. It is a challenge in achieving Universal Health Coverage (UHC) in Indonesia. The National Health Insurance Program (JKN) was an attempt by the Indonesian government to achieve UHC. Since it was first implemented in 2014, the membership of JKN includes 155.4 million people in 2015, rising to 171 million by 2016 from the total target of 254 million people in Indonesia to be achieved by 2019.
**Aims & Objectives:** This study aimed to analyze the effect of JKN on the utilization of inpatient care in government hospitals and private hospitals of the year before (2013) and one year after (2015) the National Health Insurance program (JKN) implemented.
**Materials & Methods:** This study uses a quantitative approach. Quantitative methods implemented through literature and statistical data analysis of Susenas (National Social Economic Survey) in 2013 and 2015.
**Results**: The study found that the program JKN increase the utilization of hospitalization both in the government and private hospitals. Number of percentages, delta values, and odds ratios illustrate that JKN program open wider access to the nationwide inpatient utilization. The increase in inpatient utilization can be influenced by several factors such as the increase in the number of health facilities collaborate with National Health Insurance Agency (BPJS), and the increasing number of JKN participants that got tuition assistance from the government for the poor and underprivileged citizens/Recipient Contribution (PBI). Although all the provinces in Indonesia increased in utilization, there are 17 provinces that are below the national average because of disparities in the availability of facilities and infrastructure, health human resources, and equity in participation of JKN.
**Conclusion**: JKN Program increases the utilization of inpatient care in government and private hospitals despite various disparities between provinces and regions of the major islands in Indonesia are still found.

***Keywords***: Inpatient Utilization, National Health Insurance (JKN), Disparity, Universal Health Coverage (UHC).

## INTRODUCTION

Along with efforts to achieve Universal Health Coverage (UHC), Indonesia faces challenges in guaranteeing equality of health services for the entire community. Economic development in recent decades is believed to reduce poverty and improve the middle class. But the rise in the middle class and reduced in the poverty rate still leaves a gap for economic growth that only benefited the richest which were 20% of the citizens. [1] Inequality is due to the undistributed of opportunities, jobs uneven, the high concentration of wealth and high society that are exacerbated by corruption and low economic resilience.

This condition leads to disparities in the field of health and the ability to access to health services. In response to this, the government in formulating policies and social security assistance is expected to overcome the existing imbalances.

In the field of health, social security is manifested in the form of JKN program. This is in accordance with the mandate of Law No. 20 of 2004 on National Social Security System and Law No. 24 of 2011 on Social Security Agency that all citizens are required to become participants of the national social security system in Indonesia. Since it first began on January 1, from 2014 through 2016, JKN program already includes as many as 171 million participants from the total target population of 254 million people of Indonesia. This covers approximately 67% of the target to be achieved in 2019. UHC policy in the field of health, especially in the provision of social security became an important instrument to reduce social inequalities. Gaps occur because of the inequality of opportunity that led to the child of the poor could not get a chance in accessing good health services and facilities, also a skilled health care professionals. [1] Poor people also face obstacles to obtaining a proper education to overcome social inequality.

Equitable health care concerns primarily on reducing the geographical disparity, health facilities, human resources, health, and economic ability, especially for the majority of poor people live in rural areas. In September 2015, the poor who live in rural areas amounted to 62.76% of all the poor people. Distribution of the population of poor is becoming a critical part in the provision of health care because although JKN increased amount of participation, equitable distribution of health facilities in rural areas is still difficult to be fulfilled. This condition can be an obstacle for poor people living in rural areas to gain access to health services. Similarly, the availability of health facilities is still a constraint. Village Potential Survey 2014 noted about 117 (1.65%) districts of the 7.074 districts in 9 provinces of 34 provinces in Indonesia still could not have Community Health Center (Puskesmas)/ sub health center. Those districts located in Aceh, South Sumatra, Banten, East Nusa Tenggara, North Kalimantan, North Sulawesi, Maluku, West Papua and Papua. [2]

Availability of health human resources that guarantee the equitable health services in Indonesia also remains a challenge. From 2.406 hospitals registered in 2014, there were 23.012 general practitioners or equal to ten general physicians per hospital. The number of general practitioners is still below the national target of 40 doctors per 100.000 populations. In 2014, the number of doctor ratios reached 16.18 per 100,000 populations. [3] Decentralization is expected to address the disparity in the health sector, although it still faces challenges due to differences in fiscal capacity, less inequality awareness and commitment of the head region, as well as a lack of understanding of local government in providing public services, including health. Various efforts in the provision of equitable health care for the entire population become a goal that is based on the principle of equity. Therefore, variety of health problems such as the level of morbidity arising from conditions related to socioeconomic backgrounds can be tackled effectively. Thus, social injustice in health care as the goal of achieving UHC can be avoided. Based on this background, this study aimed to analyze the effects of JKN against the utilizations of nationwide level for inpatient care either in government or private hospitals as an effort to see the progress in achieving the UHC 2019. [4]

## MATERIALS AND METHODS

This research was conducted with a quantitative approach through the analysis of statistical data from National Social and Economic Survey (Susenas) in 2013 (before JKN implemented) and 2015 (after JKN implemented). [5] Analysis related inpatient utilization patterns in this study involving hospitalization in government and private

hospitals. Analysis of utilization used the percentage of utilization per province, while a comparative analysis between regions in Indonesia conducted by divided object region into seven groups of large islands consist of Java, Bali, Sumatra, Nusa Tenggara, Kalimantan, Sulawesi, Maluku and Papua. Data analysis conducted by univariate and multivariate analysis of the data Susenas.

Susenasis a survey to gather information/ data in the areas of population, health, education, family planning, housing, as well as consumption and expenditure conducted by the Central Statistics Agency (BPS). The unit of analysis used in Susenas is the household. Susenas 2013 implemented in 2012 with the questionnaire and the number of samples Kor each quarter by 75.000 households. [5] Data retrieval survey was conducted in March, June, September, and December. Meanwhile Susenas implementation in 2015 was conducted in March and September include 300.000 households by the number of samples spread over 34 provinces and 511 districts/cities in Indonesia. The instrument used questionnaire consisted of two (2) types of questionnaires, Kor questionnaires and questionnaires for Consumption and Expenditure.

## RESULT

The study found that increasing percentage of program JKN in inpatient utilization at nationwide level from 2.30% in 2013 to 3.42% by 2015 with a significant increase (p = 0.0001). The increase in this percentage occurred in inpatient utilization both in the Government and Private Hospital in all provinces and islands areas in Indonesia (Figure 1 and Figure 2).

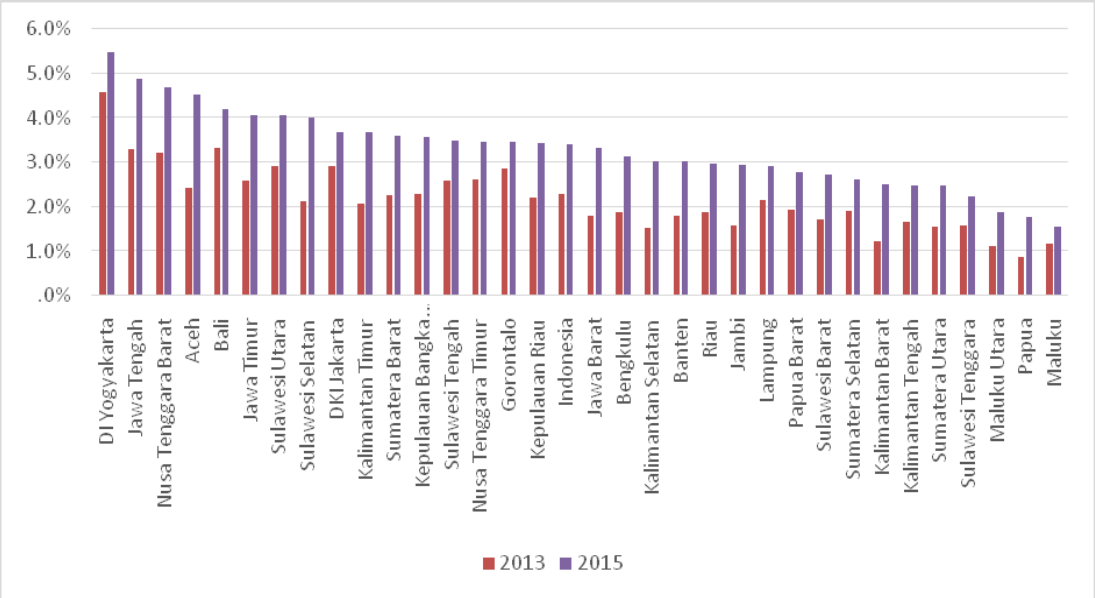


**Figure 1. Trends in Utilization of Inpatient per Province in Indonesia (2013-2015)**
Source: Data from Susenas 2013 and 2015

Graph inpatient utilization trends per province were processed from the data Susenas 2013 and 2015. Susenas data shows the percentage increase in utilization from 2013 until 2015. The province of Yogyakarta has a highest percentage of utilization of hospitalization in 2015 and Maluku as a province with the lowest percentage. From the total 34 provinces, there are 17 provinces with the percentage of inpatient utilization below the average national value, they are the provinces of West Java, Bengkulu, South Kalimantan, Banten, Riau, Jambi, Lampung, West Papua, West Sulawesi, South Sumatra, West Kalimantan, Borneo Central, North Sumatra, Southeast Sulawesi, North Maluku, Papua, and Maluku.

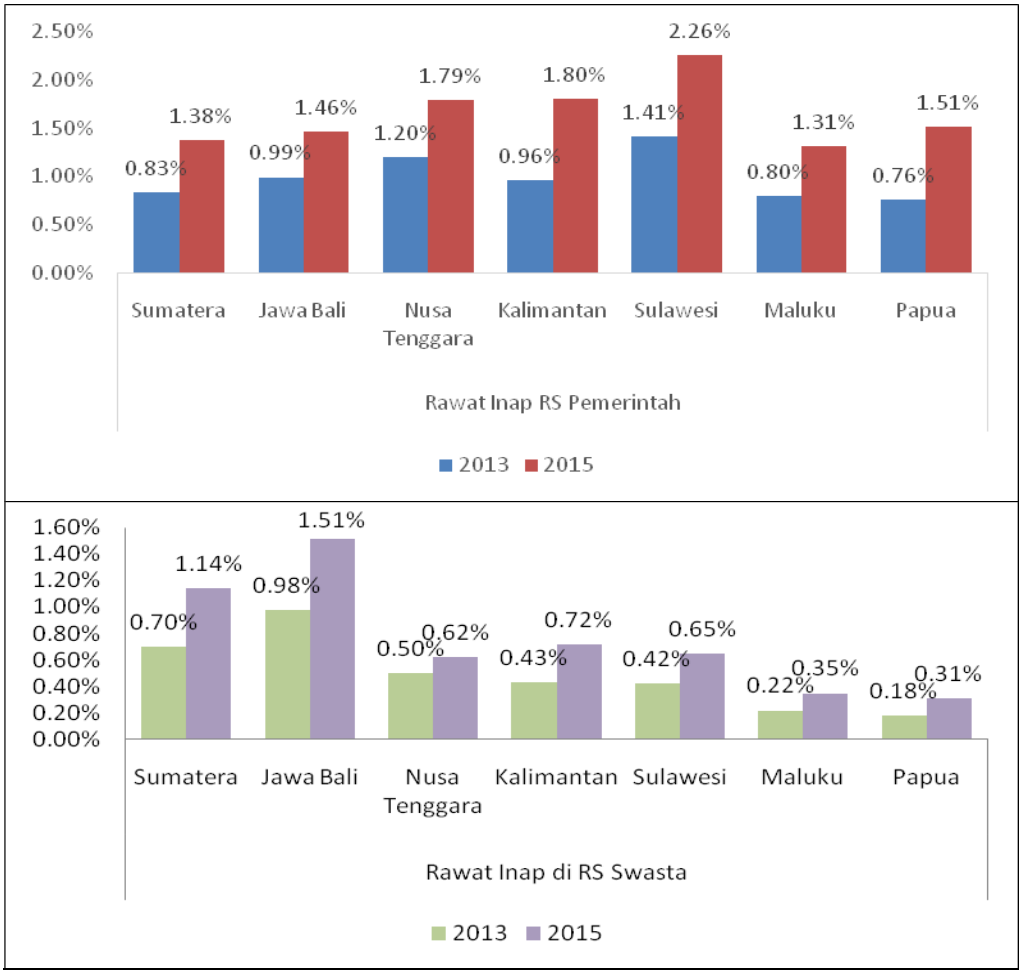


**Figure 2. Percentage of Inpatient utilization in Government and Private Hospitals based on Islands Region in Indonesia year 2013 and 2015**
(Susenas, 2013 and 2015)

The archipelago based review showed the highest percentage of utilization for inpatient care in public hospitals are in the Sulawesi island areas with a value of 2.26%, while the region with the lowest percentage of utilization are in the Maluku islands with a value of 1.31%. As for private hospitals, the highest percentage value is in Java Bali with a value of 1.51% and the lowest in Papua with the percentage of 0.31%.

**Table 1. Values Delta (Increase in Utilization Rate) per Islands Region in Indonesia year 2015-2013**

| Government Hospitals | | Private Hospitals | |
|---|---|---|---|
| Papua | 0.99 | Papua | 0.72 |
| Kalimantan | 0.88 | Kalimantan | 0.67 |
| Sumatera | 0.66 | Sumatera | 0.63 |
| Maluku | 0.64 | Maluku | 0.59 |
| Sulawesi | 0.60 | Sulawesi | 0.55 |
| Nusa Tenggara | 0.49 | Jawa Bali | 0.54 |
| Jawa Bali | 0.47 | Nusa Tenggara | 0.24 |

Source: Data from Susenas (2013 and 2015)

**Table 2. Odds Ratio Inpatient utilization in RS Government and Private Hospitals per Islands Region (2013 and 2015)**

| Government Hospitals | | Private Hospitals | |
|---|---|---|---|
| Variabel | Odds Ratio | Variabel | Odds Ratio |
| Sumatera | 1.079 | Sumatera | 4.113 |
| Jawa Bali | 1.160 | Jawa Bali | 4.956 |
| Nusa Tenggara | 1.520 | Nusa Tenggara | 2.968 |
| Kalimantan | 1.265 | Kalimantan | 2.049 |
| Sulawesi | 1.724 | Sulawesi | 2.595 |
| Maluku | 1.003 | Maluku | 1.254 |
| Papua (referensi) | | Papua (referensi) | |
| _cons | 0.003 | _cons | 0.001 |

Source: Data from Susenas (2013 and 2015)

Value figures illustrate the rate of utilization (increase in utilization rate) hospitalization in government and private hospitals in 2015 compare with 2013 in the islands area in Indonesia. Papua is a region with highest increase in utilization rate for hospitalization in both the government (delta 0.99) and private hospitals (delta 0.72). However, the lowest utilization in the government hospital (delta 0.47) contained

in the Java-Bali region and the lowest utilization numbers at private hospitals occurred in the area of Nusa Tenggara (delta 0.24). Delta value is obtained from the difference in numbers inpatient utilization in 2015 compared to 2013.

In addition, to determine the value of the probability of utilization, this study analyzes the odds ratio per region of inpatient utilization care in government and private hospitals, with reference to the island of Papua. Based on the value of the odds ratio per region, the results of this study showed that Sulawesi become the region with the highest probability of hospitalization in utilization at the government hospital in the amount of 1.724 compared with an odds ratio of Papua region. While in private hospital the odds ratio value inpatient utilization was highest in the region of Java Bali (4.956) compare to Papua region.

## DISCUSSION

The increase in percentage, delta values, and odds ratio shows that the JKN program has opened access of inpatient utilization in both the government and private hospitals nationwide. This condition is one of the effects of the implementation of the mandate of the Social Security Act and the Act of BPJS which states that all citizens shall be a participant of JKN program. The increase in this percentage also illustrates that health insurance is able to reduce the burden of the public in accessing health services. This is consistent with studies conducted in 48 countries in 2002-2004 involving 197.914 respondents resulted that the health insurance increases the chances of people to access health services for NCD (non-communicable diseases), especially for people who are disadvantaged in terms of social and economy, rural communities, and women. [6]

In 2014, the utilization rate/JKN utilization for inpatient services amounted to 3.99%. [7] This figure is much larger when compared with the utilization of health services in 2009 which showed the value of utilization for hospitalization by 1%. In addition to the utilization, the number of cases handled in hospital also increased from 31 million in 2014 to 46 million in 2015. While the number of users of Advanced Level Referral Health Facilities (FKRTL) rose from 9.1 million to 13.5 million from 2013 to 2015. [8-9]

Inpatient utilization continues to increase along with the increase in the number of participants and the increase in the number of health care facilities that become partners in the JKN program. Until October 2016, JKN participation of various segments increased. The increase in the number of participants is supported by contributions from government aid for the populations of poor and destitute who were included in a segment of participants Recipient Contribution (PBI). It becomes leverage the increase in participants JKN as showed by the number of participants from PBI segment that dominate the amount of participation with about 62.29% or 105.627.593 number of people. This amount comes from the transformation of the participants Citizen Health Insurance (Jamkesmas), Regional Health Insurance (Jamkesda), and additional data from the eligible citizens for assistance. The second segments were Participant of Workers Wage Recipients (PPU) with about 23.74% or 40.260.548 people. While the participants of the segment Non Wage Receiver Workers (PBPU) has a percentage of 10.99% compare to the total participants JKN or as many as 18.642.251 people. The lowest segment of participants came from Non Employees (BP) participants with a number about 5.043.618 people or only 2.97%.

In addition to the membership, the number of health facilities is also a factor contributing to increased utilization. BPJS data shows that the number of Primary Health Facilities (FKTP) rise from 12.993 in 2013 to 19.969 in 2015, and until April 2016 have reached to 20.095 facilities. Moreover, the Advanced Level Referral Health Facilities (FKRTL) has grown from 1.877 hospitals, 1.910 pharmacies and 927

opticals. FKRTL amount is not limited to government-owned facilities but also includes 901 private hospitals who have worked together with BPJS. Number of private hospitals already covers 48% of the total FKRTL which have become partners in the JKN program. Despite an increase in the percentage of people throughout the province in Indonesia, there is still a wide gap in utilization of hospitalization in 17 provinces out of 34 provinces in Indonesia. The results of this study indicate DI Yogyakarta province has the highest percentage of hospitalization and Maluku as a province with the lowest percentage of hospitalization in 2015. Meanwhile, increased in utilization is highest in Aceh province and the South Sulawesi and Maluku province is an area with lowest increased in utilization.

Regional disparities in utilization indicate that JKN had a varied impact on decentralization. This is consistent with research at the world level which indicates that there is a relationship between decentralization and health care disparities. Countries such as Chile and Columbia are examples of countries that can expand access to health services with a decentralized system. [10] Similar results were also found in Canada that showed decentralized improve public access to services of general practitioners, specialists and hospital services. [11] However, decentralization in Switzerland does not ensure equity of access is the better because of differences in cantonal policies. Therefore, decentralization needs to be balanced with policies and subsidies from the central supports. [12] In Indonesia support from central government is given in the form of subsidies tuition for PBI participants.

Several factors such as differences in the availability of health infrastructure, health human resources, financial capability, and regional health insurance have led to the disparity between regions in Indonesia. In terms of facilities and infrastructure, Indonesia still faces challenges in meeting the needs of health infrastructure. [12] For many developing countries such as Indonesia, limited health facilities were caused due to constraints in limited access to health services. [13] In addition to limited access, the availability of health services and resources is also very decisive. [14] This is in line with the results of the evaluation from Ministry of National Development Planning (Bappenas) showed that the value of utilization is affected by factors relating to the availability of facilities and infrastructure for the JKN participants. [7] For example, the number of hospitals in Indonesia has increased from year to year, but the equal distribution of these facilities remains a challenge. A survey conducted by the Ministry of Health in 2015 showed that in terms of the availability of beds, there are 13 of the 33 provinces in Indonesia with the ratio of beds per 1000 population below 1 i.e. in West Nusa Tenggara, Lampung, West Java, West Sulawesi, Kalimantan Central, Central Sulawesi, Banten, East Nusa Tenggara, Riau, Jambi, South Sumatra, East Java and Papua. In addition to meeting the needs of the number of available beds, improving health services also need to consider the quality of existing services with the revitalization of the health system in the utilization of bed. [15] Equity of quality health facilities is also necessary to ensure access to health services, as well as the results of research in West Sumatra finds that the equalization ratio of health workers and health facilities should be taken seriously as an effort in achieving UHC in the province of West Sumatra. [16] In this case, the responsibility on fulfilling health facilities needs were given to local government as stipulated in Law No. 23 Year 2014 on Regional Government and Law No. 44 of 2009 about Hospitals. These responsibilities imposed on local government because local government knows better the level of the needs.

Differences in utilization per province are related to inter-provincial disparity conditions, for example in the geographical access to health facilities.

Studies conducted by the National Team to Accelerate Poverty (TNP2K) in 2011 showed that the rate of utilization of health services in the former Jamkesmas was low due to geographical access to health facilities not supported by adequate transportation facilities. [17] In terms of distance to health facilities also showed that although the average distance to a health facility in Indonesia is only 5 km, but in provinces such as West Papua, Papua and Maluku average time distance is still quite distant.

**a. Availability of Health Professional Constraints**

Availability of health workers is supporting health services so that the shortage of health professionals in Indonesia is very crucial. As research on the Linga (Riau Islands) found that in order to improve the effectiveness of health services, especially the referral system, availability of general practitioners and specialists is crucial. [18] Other research in Natuna Islands found that the role of local government is very important in equity and distribution of health personnel. [19] Application of this political commitment has been evident in some countries such as China, Costa Rica, Cuba, Kerala, and Sri Lanka. [20] In overcoming disparities of health professionals, the Indonesian government take the initiative in the form of special incentives to specialists started in early 2017 and the program Compulsory Labour for Specialist Physician stipulated in Presidential Decree (Surpres) No. 4 Year 2017 concerning Compulsory Work of Medical Specialist. This work is done in order to empower specialists in an effort to equitable health care and meeting the needs of health services to the community. According to this regulation, the participants of Compulsory Work of Specialist Doctors placed on: a. Hospitals at remote area, border and small island; b. Referral hospital in regions; or c. Referral hospital in the province, in the entire territory of Indonesia. Referred hospital includes the facilities owned by Central Government or Local Government. In adition, in the early stages of the implementation of the program, a priority for graduate education primarily focused on the profession of obstetric and gynecology, pediatricians, surgeons, internists, anesthesia and intensive therapy specialist.

**b. Expansion of JKN Membership Constraints**

Challenges in the expansion of the coverage also affect the utilization of inpatient care in a number of provinces in Indonesia. There are 10 provinces with the largest population that has not yet covered it whole population into JKN program, those provinces are West Java, East Java, Central Java, North Sumaera, Banten, South Sumatra, South Sulawesi, Riau, Lampung and West Kalimantan. The total population of non JKN member in those 10 provinces reached the number about 90 million people. [7] The main cause of this participation problem due to unregistered citizen that mainly from informal workers, integration of Jamkesda that is not yet finished, as well as accuration of population and employment data synchronization constraints facing the government today. [17] Results of research for informal sector workers (truck drivers) in Semarang found that despite having the Ability to Pay but willingness to Pay in JKN program is relatively low. In addition to the foregoing, the socialization program in the target communities, especially grassroots groups is not optimal, service procedures are still complicated to coordinate that has not been well established between the organizer and the relevant agencies such as the Department, Local Government, and health facilities that provide services. [21]

The increase in utilization, in addition to impact on the opening of access also deals with financing the JKN program. Data by groups of participants between PBPU and Non PBPU, it is known that there are differences in the financial burden of health insurance that is disproportionate to

the number of participants and the existing license fee revenue. The number of participants in the group PBPU when compared with non-PBPU group was 10% versus 90% or 14.96 million compared to 141.83 million participants. Revenue contribution from PBPU group contributed only 11% of total revenue (5.9 trillion) compare to the non PBPU that contributed as much as 89% (48.1 trillion rupiah). However, the burden of health care financing illustrates PBPU groups absorb the cost of 29% of total expenditure or of 16.678 trillion rupiah compared to the non PBPU with the absorption of costs by 71% or equal to 40.405 trillion rupiah. This imbalance occurred because the group PBPU generally dominated by those who have a high risk of sickness, especially chronic pain and catastrophic sickness. [9] This is where the function of mutual cooperation is realized, healthy participants (Non PBPU) helps the sick (PBPU).

In terms of utilization, JKN program were used by both PBI participants and non PBI. However, the utilization of non PBI participants is higher compared to patients PBI. Increases in CBGs (Case Based Groups) Non PBI participants reached 58.16% from 2014 (22.817.363) to 2015 (36.088.022), while the increase in claims CBGs PBI participants reached only 23.91% from 8.18 million cases in 2014 to 10.76 million cases in 2015 (BPJS in Pardede, 2016). Participants of non PBI also dominates claims for services in FKRTL with a 56.88% rise from 2014 (6.208.519) to 2015 (9.740.034). The increase in service users from PBI group only reached 28.59% of the 2.9 million people in 2014 to 3.78 million in 2015. This brings the total claims cost of treatment of participants Non PBI cost is much higher compared with PBI participants. It can be traced further in the use and distribution of the card. PBI participants who have not received a card, and participants who did not understand the use of the card will be one of the causes PBI participants utilization is low.

Data from BPJS in Pardede (2016) showed that the actual proportion of health care costs in 2015 BPJS dominated by services for catastrophic illness. Catastrophic costs reached 23.90% of the actual cost of health care. As many as 1.3 million people or 0.8% of participants JKN got catastrophic care with the most cost spent on heart disease and diseases Chronic Renal Failure (Hemodialysis). From 2015, catastrophic care costs for hospitalization in heart disease is the biggest expenditure which is then followed by the service charge expenditure of cancer, stroke, renal failure, Thalassemia, Cirrhosis, Hepatitis, leukemia and hemophilia. The high cost of catastrophic care covered by BPJS becomes a financial burden of BPJS. The high cost of catastrophic care needs to be balanced with promotion and preventive measures, thereby reducing the cost burden of financial claims against the state. The findings in health insurance in the Philippines indicated that efforts to control the cost of health insurance claim are needed to avoid a high burden for state finances. [22] However, it is recognized that the condition of the high cost of catastrophic claims in Indonesia as a positive side of social security system that does not recognize the adverse selection guarantees like those in private insurance. This means that these guarantees able to protect all people in all health conditions. [23] Health insurance, especially for people who face catastrophic illnesses is needed and generally require high financing. This is in line with the results of research in South Korea that found the disease burden on society because of catastrophic health costs is very high. Thus, a family with this catastrophic disease burden must reduce all the needs for other living expenses. [24] While the case in China showed spending on physical health reduces productivity in the production of resources and reduces the costs of other basic needs of life. [25] Without the assurance to the public to finance catastrophic illness, the risk of health costs will be very high and not affordable. Evidence in Vietnam showed

that social security be a buffer against income loss due to health care costs due to catastrophic illness. [26] However, a study conducted in South Korea showed that the policy of health insurance for catastrophic illness costs is even more positive impact on the rich than the poor. This is because the proportion of the costs incurred for the treatment of catastrophic equally between the rich and the poor will be more damaging to the poor due to their inability to pay. So the health insurance policy should seek to really protect the poor from the burden of the cost of this kind, which in turn can trigger further poverty.[27] For that guarantee a thorough urgently needed because of the poor spending out of pocket although little can be a heavy burden.

## CONCLUSION

The study found that an increase in the percentage of utilization of inpatient nationally significant before the implementation of JKN in 2013 and one year after the implementation of JKN in 2015. In addition, the delta value describes the utilization rate is highest in Papua region in both the government and private hospital. While the value of the odds ratio represents the probability of utilization in government hospitals is highest in the region of Sulawesi, and for the private hospitals are highest in the islands of Java and Bali. The increase in percentage, utilization rate, and the odds ratio indicates that JKN program open access of inpatient utilization in both the government and private hospitals nationwide. Despite the national trend of increasing utilization, there is still a disparity in health services between islands and between provinces in Indonesia. Disparities in health care are related to the availability of facilities and infrastructure, health human resources, and equity of participation of JKN program.

### *Recommendation*

Even with the JKN have increased utilization, but equity in accessibility JKN participants should consider the following matters: a group of participants and the trend participants who use health services, as well as the types of claims filed. Inadequate number of participants of the group PBPU shows that to achieve UHC still open to embrace the potential of this group by increasing the dissemination and promotion of preventive efforts on the risk of severe illness. In addition, the trend of the current participants showed that patients PBI lower utilization compared with patients with non PBI. This shows that the public accessibility of participants PBI is lower and thus requires more attention, especially for patients PBI is a participant of the poor who live in rural areas. Whereas, in the case of a service charge claims known of the financing trends catastrophic illness costs were very high compared to the cost of other services, it is necessary for preventive promotive steps in overcoming the adverse claim this catastrophic costs. In addition, up to the challenge disparities are also required to strengthen health services in primary health care facilities. Provision of facilities and infrastructure, human resources, and equity participation in primary health care facilities in JKN era are absolutely necessary. To carry out this effort, BPJS as executor of JKN needs the support from the central government and local governments to UHC objectives can be achieved in accordance with the expected target in the coming 2019.

### Authors' Contribution

The first authors had made substantial contributions to conception, design, collection of data, analysis and interpretation of the data; drafting the article, revising it critically for important intellectual content; and final approval of the version to be published. The second, third, fourth and fifth author had given substantial advice to the first author in developing concept, methodology, collection of data, and discussion of the content.

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