**THE IMPACT OF *JAMKESMAS* ON HEALTHCARE UTILIZATION IN EASTERN REGIONS OF INDONESIA: A PROPENSITY SCORE MATCHING METHOD**

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***Abstract:*** *Underutilization of health care for the poor is one critical problem in Indonesia. Out of pocket share is dominant on overall health financing. Therefore, it is plausible that low demand of modern healthcare services mainly relates to financial aspect. In 2008, the government of Indonesia has introduced health insurance schemes for the poor to help them overcome the problem of medical costs barrier called Jamkesmas (Social Health Insurance). This paper examines the impact evaluation of Jamkesmas to health care utilization in Eastern Indonesia. Data are drawn from Indonesia Family Life Survey East (IFLS-East) that held in 2012. This data only covers the eastern regions of In­donesia that widely known has relatively lower performance in development and infrastructure. Moreover, this study employs Propensity Score Matching (PSM) approach to analyse the data. The results show that average treatment effect for treated group are positive for outpatient utilization. In addition, availability of the healthcare facility variables, travelling time and distance to district capital are factors that determine Jamkemas coverage in Eastern Indonesia.*

***Keywords****: social health insurance, healthcare utilization, impact evaluation*

***JEL Classification****:*I13, I15, H43

# **INTRODUCTION**

Underutilization of health care for the poor is one critical problem in Indonesia. According to Somanathan (2008), out of pocket share during 1995 to 2004 was between 60-70 percent on over­all health financing. Therefore, it is plausible that low demand of modern healthcare services mainly relates to financial aspect (Somanathan 2008, p. 1). Hence, Government of Indonesia (GoI) tries to reform social safety nets in order to protect the most vulnerable family in the hard­ship situation, i.e. economics crises in 1997 and 2008. GoI has introduced various health insur­ance schemes for the poor to help them overcome the problem of medical costs barrier.

Health insurance in Indonesia had been gone through several evolutions. It started with Dana *Sehat* in 1969, *Jaminan Pemeliharaan Kesehatan Masyarakat* (JPKM) in 1992, and Health Card in 1994. After that, it was followed by Social Safety Nets or *Jaring Pengaman Sosial* (JPS) which was introduced to mitigate the impact of Asian Financial Crisis in 1997-1998. Then, the GoI initiated *Asuransi Kesehatan untuk Masyarakat Miskin* (*Askeskin*) in 2005-2007, and finally it is re­placed by *Jaminan Kesehatan Masyarakat* (*Jamkesmas*)[[1]](#footnote-1) in 2008 (Vidyatama et al. 2014).  *Jamkesmas* is a social assistance for healthcare that is provided for the poor and those who can­not afford the healthcare fee. GoI has allocated around 500 million USD or around 20 percent of all social assistance budget to funding *Jamkesmas program.* In addition, Ministry of Health appointed to implement this program starting from 2008 until early 2014. Currently, BPJS (Social Security Agency) program substitutes *Jamkesmas* with broader coverage, i.e. not only for the poor. However, the lesson from *Jamkesmas* implementation remains relevant and valuable for policy analysis.

There have been many studies evaluating health insurance program in Indonesia. The lat­est study by Vidyatama et al. (2014) finds that health insurance owner eight percent more likely using healthcare service when falling sick and it becomes five percent if people who are not sick are included in the estimation. Other study tries to contrast the effect of *Askeskin* and non-*Askeskin* (Aji et al. 2013). Their research find­ing supports the argument of financial barrier; both types of health insurance program can de­crease out of pocket payment. Distance and loca­tion factors also have a significant influence on healthcare utilisation, especially for rural com­munity. In contrast, people living in urban com­munity are less sensitive to distance, but rela­tively more sensitive to medical fee (Erlyana et al. 2011).

In brief, contributions of this paper have three points. First, this paper gives more attention to eastern region of Indonesia than try to get na­tional level studies. Most previous studies on the health insurance impact evaluation in Indonesia have a limitation on capturing geographical as­pect and eastern Indonesia focus. Nevertheless, this region is relatively lacking in many social development indicators as compared to the west­ern regions. Furthermore, Indonesia Statistic Of­fice reported that 70 percent of underdeveloped districts are located in eastern Indonesia. It hopes give more understanding of *Jamkesmas* im­plementation than get only general idea of na­tional level.

Second, this study also includes more vari­ables such as travel time, distance and availability of service variables. Unlike other datasets such as SUSENAS and RISKESDAS used by Vidayatama et.al (2014), and Sparrow et.al (2013), IFLS-East has a possibility to merge between individual and household information with community or vil­lage data. IFLS-East data is the newest IFLS since the previous IFLS, IFLS 4 taken in 2007. Thus, this paper expect more update information as com­pared with other paper using previous IFLS data like IFLS 3 (Erlyana et al. 2011) or IFLS 1 and IFLS 2 (Hidayat et al. 2010).

This paper aims to analyse the impact of *Jamkesmas* on healthcare utilization in eastern part of Indonesia. With this objective, the study attempts to answer two research questions: (1) Does *Jamkesmas* significantly help the poor household to increase their health care utilization when falling ill? (2) Is there any difference of household choice preference between the public and the private health services given variables in the model?

The following part of this essay briefly describes Indonesian health insurance from reform from 1998 (after economic crisis) with Social Safety Net (SSN) until recent implementation of Social Secu­rity Agency (BPJS). Section 3 outlines some char­acteristics of data we use in this research. Empiri­cal challenge and methodology to deal with those challenges will be discussed in section 4. Section 5 discusses the result of this study and discussion. A final section highlights what this paper main finding and policy implication that we can make given the result from this paper.

# **Reform in Indonesian Social Insurance**

Recently the Government of Indonesia (GoI) has set an ambition to have every citizen covered by insurance. GoI initiated Social Security Agency or *Badan Penyelenggara Jaminan Sosial* (BPJS) in 2014. It is a part of the implementation of Na­tional Social Security System Law 2004 no. 40 and Social Security Agency Law 2011 no. 24. The law is introduced as a response of a rigid limitation in the insurance coverage that could only reach people with formal employment status. These insurances include *Aspen*, *Askes*, *Jamsostek* and *Asabri*. Hence, the ultimate goal of BPJS is to ex­pand the coverage and improve the service to its beneficiaries.

Before *Jamkesmas* is implemented, Indone­sia has a long experience in providing insurance to its citizens, see Figure 1. In 1998 Indonesia in­troduced *Jaring Pengaman Sosial* or Social Safety Net as a response of economic crisis. The inten­tion of this program is to protect the poor from economic turbulence during this Asian Financial Crisis 1997-1998. Shrinking indicators, like a mas­sive decline of unemployment rate, high inflation and socio-politic crisis, make the poor more vul­nerable. As part of JPS, a health card program is introduced to poor households to waive the fee to access the public healthcare provider, i.e. Public Health Centre (Puskesmas) and public hospital.

In 2005 GoI attempted to reform the social health insurance with broader beneficiaries. The government introduced *Askeskin* (health insur­ance for the poor) with the goal to expand the coverage to the informal sector workers that had not been covered by the existing insurances. Af­terwards, GoI appointed Ministry of Health to manage the financial aspect of *Askeskin* because there had been many requests for evaluation and improvement. Then, it was renamed to *Jamkesmas* in 2008. In this program, the near poor group was included as eligible recipient. Furthermore, to standardize with the establish­ment of National Social Assistance, GoI incorpo­rated *Jamkemas* under National Health Insurance (JKN); *Jamkesmas* is managed by BPJS. With this merger, all *Jamkesmas’s* members automatically become member of National Health Insurance Program under BPJS.

According to Harimurti et.al. (2013), there are several changes in *Jamkesmas* compared to *Askeskin*. First, the insurance fee is higher, it in­creases between IDR 5,000 to IDR 6,500 per individ­ual per month. Second, *Jamkesmas* only gives the limited basic package with some specific exclu­sions of benefit and no cost-sharing. However, the member may get an extended package as add-in. Another benefit of *Jamkesmas* is that the medicine is covered with prescribed evidence.  *Jamkesmas* holders can exercise the insurance in Puskesmas, Public Hospital and some registered private hospital (Harimurti et.al 2013, p.14).

**Figure 1. Evolution of health insurance in Indonesia**



Source: Author’s Estimation based on Vidyatama et.al. (2014)

According to World Bank background pa­per (World Bank 2012), the official number of *Jamkesmas* recipients in 2010 approximately 74.6 million people. In term of budget, the average cost of health services utilized per card is Rp6,250, while the administrative cost itself is Rp9,362 (US$ 0.9). Moreover, this report also shows that *Jamkesmas* successfully cover around 41 percent of poor household. To manage the im­plementation, Ministry of Health works together with public hospitals and local health centers as service providers and fee claims. BPJS regulates the eligibility and targeting. PT Askes handles the card production and distribution. Ministry of Fi­nance is responsible for financing the disburse­ment. Local government also has a role to dis­tribute *Jamkesmas* cards, provide sufficient so­cialization and undertake monitoring and evalu­ation.

# **Data**

This paper utilizes the IFLS-East 2012 (Sikoki et al. 2013), which is the first survey that specifically covers the eastern provinces of Indo­nesia that have never been surveyed by 4 previ­ous IFLS. It covers the information in individual, household and community level. There are seven provinces surveyed: Kalimantan Timur, Nusa Tenggara Timur, Maluku, Maluku Utara, Papua, Papua Barat, and Sulawesi Tenggara. Moreover, IFLS-East data involves 99 villages consisting of 3,159 and 2,547 households. Within these house­holds, 10,887 individuals are interviewed (Sa­triawan et al. 2014). The richness of information presented in this data set supports the analysis, thus leading to better estimates in explaining the independent variables. IFLS-East data is accessi­ble at this URL <http://surveymeter.org/research/3/iflseast>.

This study exercises some dependent varia­bles, including outpatient variables for total, public health centres and private health services. This paper also tries to capture the impact of *Jamkesmas* on inpatient utilization. Similar to outpatient outcome, it also classifies both public and private. Using the household expenditure dataset from IFLS, this paper constructs the out of pocket variables and the catastrophic health ex­penditure incident if the health expenditure of the household exceeds 15% of its total.

# **RESEARCH METHOD**

The fundamental interest of this program evaluation study is to investigate the real impact of *Jamkesmas* on the main outcome. However, we face some empirical challenges in the data. First, it is required to estimate the outcomes that capture the “true” difference between the impact of *Jamkesmas* to the treated group and the un­treated group. This cannot be done by simply es­timating the outcome, like the outpatient and in­patient service utilization or health expenditure variable of people with and without *Jamkesmas*. That naive approach is not sufficient to capture the causal effect relationship between program and outcomes. Hence, the main challenge for this impact evaluation study is to get the counterfac­tual group in the data. Each household needs to get match comparison with other household with same characteristic before get the program.

Second, the allocation of *Jamkesmas* is based on the eligibility determined by Indonesian Ministry of Health, and certainly it is not selected randomly.  *Jamkesmas* is only provided for the poor and the non-poor. Hence, measuring the outcome with simple Ordinary Least Square could produce a bias estimation. This is because there is also a possibility that some poor and near poor households who are eligible, but they do not receive the benefit of *Jamkesmas*. These eligible households have a tendency to have less utilization, even if they hold a health insurance. If the randomness of data is satisfied, we could make an estimation with other estimation model, such as randomized selection, regression discon­tinuity and difference-in-difference. However, since the randomness is not satisfied, the IFLS-East dataset is a cross-sectional data. Lastly, we as­sumed that the eligibility of *Jamkesmas* are ob­servable in variables contained in IFLS-East da­taset.

In this non-ideal condition, there is one method that can solve the counterfactual group problem. It is by looking the counterfactual group within dataset that has a similar or exact charac­teristic of the treated group, except the fact that they get the insurance. This can be done by using the exact match Propensity Score Matching (PSM).According to Rosenbaum & Rubin (1983), propensity score which is also known as balanc­ing score, represent the conditional probability of observation that will be given a treatment based on the definite pre-treatment specification. Fur­thermore, the fundamental reason of PSM is the absence of experimental framework of program and allocation of program in non-random setting. Then, the difference of treatment group and con­trol group is not only in their status in program as a receiver, but also on the other characteristics that might impact on the outcome. This bias can be avoided if we can get the corresponding simi­lar households or individuals. After estimating the outcome of both groups, we then compare those outcomes. The average difference outcome of treated and untreated groups allows us to get impact of the program on beneficiaries.

PSM approach has tree steps in order to get the average impact of the treatment. First, we need to estimate the probability of households in datasets who are receiving *Jamkesmas*. This is based on several selected control variables, which are ob­servable. In this step, we can utilize Logit or Pro­bit estimation. Both estimates only have minor dif­ference, and the selection is based on the re­searcher’s adjustment. In this study, the Logit method is used. The next step is to limit our anal­ysis only for households that have a range of common supports. Then, after obtaining the range of common support for each treatment group, we pair them with the untreated house­hold having the same or the closest balancing score. Finally, in the last step we produce the av­erage treatment effect on the treated group (ATT) by acquiring the average difference of expected outcome (outpatient, inpatient, health spending) from people with and without *Jamkesmas*.

Based on  *Jamkesmas*  and datasets charac­teristics, this research prefer to use PSMmodel that also used by Sparrow et al. (2013) and Pra­dhan et al. (2004) for *Askeskin* and Health Card program, respectively. As an extension of their work, this paper is to add more specific infor­mation data on the community infrastructure, travel time or distance, and availability of healthcare facility characteristic both public and private healthcare provider. The matching model using Logit estimation is shown as follow:

(1)

Equation (1) is the matching model, where *Yi* is an outcome of household probability that is cov­ered by *Jamkesmas (Pr (Yi=1))* i.e *Y*=1 if yes and *Y*=0 if no.

In this logit estimation (equation 1) there are some variables that are included in the control variables. The variables in the category αind repre­sent factors attached to person in demographic categories such as age, sex, years of education, education level, marital status, while the category αhh represents the household level characteristics, such as education of household head, whether of household head is female and household ex­penditure (food, non-food and medical expendi­ture). Variables in the category αfas include the availability of the supply sides, such as the avail­ability of health centre facilities, tools availability and number of staff. The category αcomm com­prises of community characteristics, such as geo­graphical and infrastructure variables. This re­search also gives more attention in this aspect as the sample relatively lacks in infrastructure. Furthermore, self-reported illness is not included in these covariates. It is because the inclusion of self-reported illness could lead us to a selection bias because the probability for people who are sick and actively looking for *Jamkesmas* is rela­tively high. This is also related that rich people has more tendency to report their illness rather than the poor.

This research employs the five nearest-neighbours matching approach to match the treated group with the control group. The matching is based on the propensity score. After this process, the difference between those two groups is possible to calculate. To estimate the average impact of a treatment for a household that get *Jamkesmas* in notation 𝛽𝑝𝑠𝑚, we deter­mine the disparity between the expected outcome of the treatment group and the expected outcome of the non-treated group as mentioned earlier. In mathematical notation, this can be expressed as follow (see Sparrow et.al 2013):

𝛽𝑝𝑠𝑚=𝐸 (𝑦𝑖𝐴=1, S=1) −𝐸 (𝑊𝑖𝑦𝑖𝐴=0, S=1) (2)

In equation (2), (𝑦𝑖𝐴=1, S=1) is the expected outcome of household groups who receive *Jamkesmas* (A=1) and having a common support (S=1) as conditional requirement. Then, *E* (𝑊𝑖𝑦𝑖𝐴=0, =1) shows the potential outcome of ‘arti­ficial’ control groups based on the propensity score that do not have *Jamkesmas* (A=0) and have common support (S=1). We denote the weight estimated balancing score.

# **RESULT AND DISCUSSION**

##  ***Jamkesmas* Coverage**

Table 3 shows the experiment result of *Jamkesmas* coverage that has been classified into rural and urban groups, quartiles as well as gen­der. It is to be noted that this table is in individual level. Even though the allocation might not be entirely received by the targeted groups, quartile 1 and quartile 2 still have the highest percentage of people holding the insurance, i.e. 52.61 percent and 43.21 percent, respectively. This pattern indi­cates that *Jamkesmas* has reached the target that is the poor and the near poor group. However, there is an indication that *Jamkesmas* is utilized by unintended groups, i.e. quartile 3 and quartile 4. This means that there is leakage of *Jamkesmas* allocation in eastern region of Indonesia. This finding is similar with a study done by Sparrow et al. (2013) and Vidyatama et.al (2014) in the na­tional level case. In addition, more people in the rural area take the benefit of *Jamkesmas* rather than the urban counterparts. Around 44.71 per­cent of people in the rural area who receive *Jamkesmas*, while only 22.86 percent of urban people who receive *Jamkesmas*. Another finding is that there is no significant difference of allocation for male or female groups. They are equally likely to receive *Jamkesmas*.

**Table 4 Targeting of *Jamkesmas* coverage in 2012**



Source: Author’s calculation based on IFLS-East 2012

**Table 5. Utilization and health spending for household with or without  *Jamkesmas*  holder**

|  |  |  |  |
| --- | --- | --- | --- |
|   | Household with no  *Jamkesmas*  holder | Household with  *Jamkesmas*  holder | Total |
| Outpatient  | 0.163 | 0.176 | 0.168 |
| Public | 0.086 | 0.122 | 0.101 |
| Private | 0.068 | 0.050 | 0.061 |
| Inpatient  | 0.044 | 0.035 | 0.040 |
| Public | 0.037 | 0.034 | 0.036 |
| Private | 0.015 | 0.007 | 0.012 |
| Out of pocket health expenditure (%) | 1.539 | 0.861 | 1.267 |
| Catastrophic health spending (more than 15% of total expenditure) (%) | 0.020 | 0.007 | 0.015 |

Source: Author’s calculation based on IFLS-East 2012

Table 5 exhibits a naïve comparison be­tween household with and without *Jamkesmas* with regards to the utilization of healthcare ser­vice, out of pocket expenditure and catastrophic health incidence. This table is based on the household level data.  *Jamkesmas’s* holder has a slightly higher average of visitation than house­hold with no *Jamkesmas*. The value of 0.176 means that 17.6% percent of household with  *Jamkesmas*  is reported to access modern healthcare (either public or private) in the past 4 weeks. The difference gets bigger in public healthcare provider, which is 0.122 for *Jamkesmas* holder and only 0.086 for non- *Jamkesmas* household. This pattern differs from the case of outpatient private healthcare; the av­erage number of people go to private healthcare provider is larger for non- *Jamkesmas* household. In terms of spending, out of pocket health ex­penditure for non-*Jamkesmas* household is rela­tively higher, and that is almost double. Similarly, catastrophic health incidence spending is also higher for non- *Jamkesmas* household, though the value is very small. In general, it can be inferred that with this naïve analysis the utilization of healthcare is higher for the *Jamkesmas* holder and they pay less health spending.

In Propensity Score Matching analysis, there are two properties that must be satisfied. First, there should be enough common support in balancing the treated and the untreated group. Second, the balancing properties are satisfied. Es­timation on the propensity score shown in the table 10 on the appendix consists of 54 propensity score estimated for each variable. Using Logit estimation, the probability of household getting *Jamkesmas* coverage is calculated.

Some variables show a positive coefficient, which means that it has higher probability to re­ceive *Jamkesmas*. For example, Unconditional Cash Transfer (BBM BLT) is introduced as the compensation of subsidy cut on fuel; this might be the same eligibility requirement between *Jamkesmas* and BLT. Other variables that also indicate a positive coefficient are the size of household, the accessibility to clean water, the accessibility to piped water, the private clinic’s accessibility to water, and the residency of household in rural area Unexpected positive sign appears from group that has far proximity with hospital. This means that the longer travel time might positively correlates with the probability to get *Jamkesmas*. There are also positive sign vari­ables, although they are not statistically signifi­cant, that are interesting to note. There are private clinics that provide health check-up examination services. Many villages have public transport fa­cilities, and their main road is made from asphalt. We expect that improving availability and infra­structure might broaden the allocation of *Jamkesmas*.

In contrast, there are variables that can sig­nificantly reduce the probability of *Jamkesmas* coverage. Variables, like Askes, *Jamsostek* and company insurance, have a negative sign and they are significant. This shows that households having other kind of insurance are less likely to receive *Jamkesmas*. Moreover, variables related to household assets, such asthe size of house (m2) and the vehicle ownership also reduce the proba­bility of *Jamkesmas* coverage. This is desirable be­cause the richer households should have less probability to be covered by *Jamkesmas*. Interestingly, if one of the household members working in the government office, their propen­sity score is significantly lower. This could be be­cause they are automatically covered by *Askes*. Moreover, the variable of the distance of village capital to district capital in kilometres has a neg­ative value. This result is expected. Other dis­tance and travel time related variables also have a negative sign, but not significant.

The availability of private clinics is deter­mined by many variables. It is predicted that these variables have a positive sign. The accessi­bility of clean water is positive and significant. However, there is a variable that has a negative sign, i.e. the availability of dental service in pri­vate clinic.

In the first property of balancing common sup­port, PSM analysis does not obtain lack of com­mon support. Table 11 in the appendices reveals range of common support based on the number of observation whether it is off support or on support. In this table there are 36 out of 1953 are off support. It means 36 observation of treated group does not have match comparison group and dropped as a consequences. Meanwhile in the Figure 2 Distribution of the propensity score for treatment and control group, it shows the overlap pattern and also present how each group of treated are compared with some group of con­trol (untreated). Furthermore in this matching step, 5 Nearest Neighborhood matching tech­nique is employed.

In the balancing properties in table 12 in the Appendices, we can see that there are some vari­ables do not satisfy balancing property. It means some of the differences between treated and con­trol groups are large in those variables indicated by t-test show significant result. The author try to make some changes in the covariates by make some interaction variable but the significant fea­ture in the t-test are unchanged. As a conse­quence, we need to get the new set of covariates that satisfied balancing properties. Due to the time constraint, author will limit the analysis here and will update with the newest balanced set of controls.

## **Impact of *Jamkesmas* on healthcare utilization and healthcare expenditure**

Table 6 shows the result of the estimated impact of *Jamkesmas* on healthcare utilization using Propensity Score Matching method. In gen­eral, *Jamkesmas’* holders has a higher probability of using modern healthcare outpatient service than those without *Jamkesmas*. For total level, there is 2.9 percent of difference between the treated groups with the controlled groups. The probability of *Jamkesmas’* holders using public healthcare facility is slightly higher, that is 3.6 percent difference. Hence, this shows how *Jamkesmas* could significantly impact the outpa­tient service usage.

As we can see in table 6, outcome of inpa­tient service utilization affected only in total level. The coefficient means that *Jamkesmas’s* holder has a bigger probability with around 1.3 higher, but it is not statistically significant for public and pri­vate categories. Decomposition in the quartile groups shows no considerable difference. It is expected that the two lowest quartiles get the most of impact. However, the result does not meet this expectation. Moreover, the out of pocket health expenditure has a negative differ­ence, although it is not statistically significant across the groups. Similar average treatment ef­fect pattern also happens for the catastrophic health spending incidence. This finding is similar with the result from Suryanto et.al (2013) using previous IFLS 3, IFLS 4, Susenas 2009 and 2010 that health cost assistance to the poor has no sig­nificant influence on reducing catastrophic health expenditure. The one reason to explain is because the informal sector and who poor reducing their health related expenses and decide to use tradi­tional or even inappropriate method.

**Table 6. Estimated impact of *Jamkesmas* on healthcare utilization and health expenditure (PSM)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Outpatient | Inpatient | Out of pocket expenditure | Catastrophic health spending (more than 15% of total expenditure) |
| VARIABLES | All | Public | Private | All | Public | Private |
| Total | 0.0290\* | 0.0359\*\*\* | -0.0053 | 0.0127\* | 0.0103 | 0.0036 | -0.0395 | 0.0000 |
|  | 0.0154 | 0.0130 | 0.0103 | 0.0076 | 0.0085 | 0.0044 | 0.2416 | 0.0090 |
| Quartile 1 | 0.0217 | 0.0177 | 0.0008 | -0.0031 | -0.0042 | 0.0043 | -0.2009 | 0.0083 |
|  | 0.02748 | 0.02306 | 0.01779 | 0.01279 | 0.01376 | 0.00429 | 0.33174 | 0.00583 |
| Quartile 2  | 0.0039 | 0.0067 | -0.0041 | 0.0274 | 0.0301\* | -0.0001 | -0.1645 | -0.0156 |
|  | 0.0318 | 0.0266 | 0.0220 | 0.0137 | 0.0173 | 0.0061 | 0.3936 | 0.0173 |
| Quartile 3  | 0.0505 | 0.0545\*\* | 0.0105 | 0.0038 | 0.0029 | -0.0014 | -0.1454 | 0.0063 |
|  | 0.0318 | 0.0277 | 0.0208 | 0.0173 | 0.0207 | 0.0114 | 0.5257 | 0.0213 |
| Quartile 4  | 0.0647 | 0.0251 | 0.0310 | 0.0338 | 0.0258 | 0.0080 | 0.8784 | 0.0253 |
|  | 0.0400 | 0.0339 | 0.0297 | 0.0259 | 0.0269 | 0.0108 | 0.7853 | 0.0245 |
| Rural  | 0.0298\* | 0.0183 | 0.0119 | 0.0139\* | 0.0133 | 0.0024 | -0.1030 | -0.0024 |
|  | 0.0173 | 0.0144 | 0.0115 | 0.0079 | 0.0088 | 0.0029 | 0.2691 | 0.0085 |
| Urban | 0.0221 | 0.0576\*\* | -0.0272 | 0.0130 | 0.0136 | 0.0033 | -0.2923 | -0.0034 |
|  | 0.0290 | 0.0286 | 0.0183 | 0.0200 | 0.0221 | 0.0131 | 0.4442 | 0.0181 |
| Robust standard errors in parentheses |
| \*\*\* p<0.01, \*\* p<0.05, \*p<0.1 |

Source: Author’s calculation based on IFLS-East 2012

# Furthermore, the rural households who receive *Jamkesmas* have a higher probability to use the healthcare service in total level, both outpatient and inpatient service. However, this finding is different with the urban household receive *Jamkesmas.* The impact only occurs in the public outpatient service, but it has a bigger magnitude with 5.6 percent ATT.

# **CONCLUSION**

The aim of this study is to investigate the impact of *Jamkesmas* on health care utilization of in eastern Indonesia using IFLS-east data. The prior knowledge of about eastern Indonesia is they are relatively less developed than western part of Indonesia. Thus, they need more attention given their lack of infrastructure and health facil­ities and staff. We expect that *Jamkesmas* could re­duce those barrier to access health services, with better targeting with better impact.

Moreover, allocation of *Jamkesmas* is more likely goes to quantile 1 and 2 of income group. It reflects that *Jamkesmas* program that are received by people tar­geted as eligibility criteria that *Jamkesmas* for the poor and near poor. However, there is still some leakage with people in quartile 3 and 4 still get this health insurance. In addition, propensity score evaluation shows that people with longer distance and travelling time between village cap­ital and district capital and health facilities like Puskesmas and private health provider has a less probability to get covered by *Jamkesmas*. In con­trast with distance, if the availability of the Public Health Centre in that village is better, the higher probability of household participates in *Jamkesmas* program.

As a main purpose of this study, results show that in general utilization in general In gen­eral, *Jamkesmas’s* holder has a bigger probability to utilize in healthcare service especially for pub­lic health center but only in outpatient. Inpatient is not statistically significant impacted by *Jamkesmas* in public or private groups but in total level. Furthermore, *Jamkesmas* has no sig­nificant impact on health spending both out of pocket expenditure and the probability of cata­strophic health spending incidence.

Within those findings, however, we need to note some point that some factors might affect utilization of *Jamkesmas* which are not captured in the model. For example, the shock of when people is get chronic illness which will increase possibility for household to looking for  *Jamkesmas*  after get chronic condition. This study finds distance and travelling time variables are significant variables to reduce *Jamkesmas* coverage in Eastern re­gion of Indonesia. Thus, improving more infra­structure or provision of transportation will help household participation in health insurance and health care utilization to get less time in travel­ling.

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# **APPENDICES**

Table 7. Utilization of outpatient and Inpatient at public and private health facility,

IFLS East 2012

|  |  |  |
| --- | --- | --- |
|   | Outpatient | Inpatient |
|   | All | Public | Private | All | Public | Private |
| Quartile 1 (poor­est)  | 0.137 | 0.090 | 0.041 | 0.023 | 0.023 | 0.003 |
|  Quartile 2 | 0.170 | 0.108 | 0.061 | 0.038 | 0.038 | 0.006 |
|  Quartile 3 | 0.180 | 0.106 | 0.056 | 0.042 | 0.034 | 0.014 |
|  Quartile 4 (richest)  | 0.191 | 0.089 | 0.098 | 0.068 | 0.052 | 0.029 |
| Urban  | 0.170 | 0.106 | 0.055 | 0.062 | 0.049 | 0.022 |
| Rural | 0.165 | 0.094 | 0.064 | 0.025 | 0.025 | 0.004 |
| Male | 0.139 | 0.084 | 0.047 | 0.035 | 0.029 | 0.010 |
| Female  | 0.194 | 0.113 | 0.074 | 0.046 | 0.041 | 0.013 |
| Non-Papua Island | 0.167 | 0.094 | 0.063 | 0.036 | 0.03 | 0.012 |
| Papua Island | 0.166 | 0.114 | 0.052 | 0.055 | 0.053 | 0.011 |
| Total | 0.167 | 0.099 | 0.061 | 0.040 | 0.035 | 0.012 |

Source: Author’s estimation based on IFLS-East 2012

Table 8. Distribution of out of pocket health expenditure, non-food spending shareand incidence of cat­astrophic spendingoccurence (percentages)

|  |  |  |  |
| --- | --- | --- | --- |
|   | Out of pocket expenditure | Share of non-food spending | Catastrophic health spending (more than 15% of total expenditure)  |
| Quartile 1 (poor­est)  | 0.807 | 33.171 | 0.005 |
|  Quartile 2 | 1.208 | 38.100 | 0.015 |
|  Quartile 3 | 1.350 | 40.913 | 0.016 |
|  Quartile 4 (richest)  | 1.945 | 46.421 | 0.026 |
| Urban  | 1.837 | 47.403 | 0.024 |
| Rural | 0.844 | 32.848 | 0.008 |
| Male | 1.297 | 38.803 | 0.016 |
| Female  | 1.227 | 39.114 | 0.013 |
| Non-Papua Island | 1.242 | 39.844 | 0.012 |
| Papua Island | 1.328 | 35.927 | 0.023 |
| Total | 1.261 | 38.962 | 0.015 |

Source: Author’s estimation based on IFLS-East 2012

Table 9 Health expenditure regression, 2012, Ordinary Least Square

|  |  |  |
| --- | --- | --- |
| VARIABLES | Coefficient | Standard Error |
|  *JAMKESMAS*  | -339.617 | (3,324.383) |
| ASKES | 9,486.302 | (6,865.709) |
| JAMSOSTEK | -10,329.332 | (8,109.217) |
| Company insurance | 799.733 | (8,378.626) |
| Company clinic | -368.546 | (7,594.197) |
| Private Insurance | 17,963.538 | (18,190.075) |
| Unconditional Cash Transfer (BBMBLT) | -5,251.233\* | (2,147.330) |
| Female household head | -9,737.538+ | (5,203.506) |
| Household head education | 24.536 | (691.828) |
| Household size  | -4,677.177\*\* | (1,367.664) |
| Share under 6 female | -18,317.522 | (16,172.800) |
| Share under 6 male | -6,671.307 | (13,702.742) |
| Share 6 to 17male | -10,869.672 | (11,613.777) |
| Share 18 to 60 female | 6,338.932 | (18,026.549) |
| Share 60 up female | -16,677.414 | (11,078.186) |
| Share 60 up male | -5,552.574 | (15,899.435) |
| Owned House | -5,484.773 | (5,955.024) |
| House size (m2)  | 90.276+ | (49.385) |
| Own water access  | -842.489 | (3,132.538) |
| Own vehicle  | 1,593.262 | (6,333.295) |
| Own piped water | -9,784.529 | (6,973.282) |
| Self employed | 9,808.427\* | (4,991.176) |
| Self Employed with permanent workers | 4,161.914 | (16,331.479) |
| Self Employed with permanent workers | 6,710.701 | (6,209.129) |
| Working part-time  | 5,266.362 | (5,049.198) |
| Government official | -915.305 | (6,811.227) |
| Casual worker in agriculture | -3,825.328 | (4,564.503) |
| Casual worker non in agriculture | -7,978.930 | (7,309.612) |
| Puskesmas has a water access | 6,487.737 | (5,506.652) |
| Puskesmas offer check-up/health examination | 6,404.672 | (4,008.677) |
| Puskesmas offer inpatient service | -3,947.382 | (4,974.984) |
| Puskesmas offer dental service | -3,719.917 | (6,357.939) |
| Puskesmas has a pharmacy | 5,957.999+ | (3,070.323) |
| Private clinic has an electricity | 7,731.782\* | (3,715.223) |
| Private clinic has an access to water | -756.747 | (6,328.137) |
| Private clinic provides an inpatient services | -10,592.019 | (17,199.239) |
| Private clinic provides dental services | 17,211.214+ | (10,207.628) |
| Private clinic has more than 1 medical staff | 19,429.780 | (19,735.290) |
| Private clinic’s medical staff number  | 6,933.733 | (13,742.041) |
| Private clinic provide check-up/health examination ser­vices | -14,558.457\* | (6,050.481) |
| Village has public transport facilities | 4,328.199 | (3,890.562) |
| Village main road from asphalt | -1,000.469 | (2,721.279) |
| Distance of district capital from village office (km) | 30.379 | (33.255) |
| Distance of bus station from village office (km) | 47.645 | (77.010) |
| Travel time to nearest PUSKESMAS from village office (hours) | -20,912.816\*\* | (6,869.707) |
| Travel time to nearest private clinic from village office (hours) | 14,211.392\*\* | (5,373.004) |
| Travel time to nearest traditional clinic from village office (hours) | -18,367.031 | (29,020.811) |
| Travel time to nearest hospital from village office (hours) | 917.153 | (646.347) |
| rural | -14,109.628+ | (7,360.844) |
| Constant | 15,267.004 | (14,286.709) |
| Observations | 2,009 |  |
| R-squared | 0.122 |   |
| Robust standard errors in parentheses |  |  |
| \*\* p<0.01, \* p<0.05, + p<0.1 |   |   |

Table 10 Propensity score function, probability of  *JAMKESMAS*  coverage (logit estimates)

|  |  |  |  |
| --- | --- | --- | --- |
| VARIABLES | Coefficient | Standard Error | P>|z| |
| ASKES | -0.8039761\*\*\* | 0.250713 | 0.001 |
| JAMSOSTEK | -0.6501821\*\* | 0.2969173 | 0.029 |
| Company insurance | -1.140431\* | 0.6489512 | 0.079 |
| Company clinic | -0.1234484 | 0.5685474 | 0.828 |
| Private Insurance | -1.020746 | 0.7798305 | 0.191 |
| Unconditional Cash Transfer (BBMBLT) | 0.9906677\*\*\* | 0.1352175 | 0 |
| Female household head | -0.0704081 | 0.1917069 | 0.713 |
| Household head education | -0.0012435 | 0.0158683 | 0.938 |
| Household size  | 0.2013327\*\*\* | 0.0348588 | 0 |
| Share under 6 female | -0.7868103 | 0.5262906 | 0.135 |
| Share under 6 male | -0.2807972 | 0.5155342 | 0.586 |
| Share 6 to 17male | 0.6789076 | 0.418534 | 0.105 |
| Share 18 to 60 female | 0.1915376 | 0.3982037 | 0.631 |
| Share 60 up female | 1.020724 | 0.4501642 | 0.023 |
| Share 60 up male | -0.3541693 | 0.5264139 | 0.501 |
| Owned House | 0.1857353 | 0.1565389 | 0.235 |
| House size (m2)  | -0.003937\*\*\* | 0.0015075 | 0.009 |
| Own water access  | 0.256806\*\* | 0.1448193 | 0.076 |
| Own vehicle  | -0.0985058\*\* | 0.1461105 | 0.5 |
| Own piped water | 0.3635692\* | 0.2124169 | 0.087 |
| Self employed | 0.2033447 | 0.1463234 | 0.165 |
| Self Employed with permanent workers | 0.2259828 | 0.5190333 | 0.663 |
| Self Employed with permanent workers | -0.0912295 | 0.1488595 | 0.54 |
| Working part-time  | 0.0218014 | 0.1466572 | 0.882 |
| Government official | -0.3719803\* | 0.2193433 | 0.09 |
| Casual worker in agriculture | -0.1483717 | 0.3833932 | 0.699 |
| Casual worker non in agriculture | -0.0438928 | 0.3062193 | 0.886 |
| Puskesmas has a water access | -0.1455417 | 0.1941079 | 0.453 |
| Puskesmas offer check-up/health examination | 0.5217562 | 0.188935 | 0.006 |
| Puskesmas offer inpatient service | 0.2094606 | 0.1876386 | 0.264 |
| Puskesmas offer dental service | -0.2494966 | 0.2128469 | 0.241 |
| Puskesmas has a pharmacy | -0.4318904 | 0.2567635 | 0.093 |
| Private clinic has an electricity | 0.2716368 | 0.3095453 | 0.38 |
| Private clinic has an access to water | 0.4141801\*\* | 0.2117421 | 0.05 |
| Private clinic provides an inpatient services | -0.7895023 | 0.6733281 | 0.241 |
| Private clinic provides dental services | -2.863848\*\*\* | 0.6773531 | 0 |
| Private clinic has more than 1 medical staff | -0.0716691 | 0.5759863 | 0.901 |
| Private clinic’s medical staff number  | -0.7292938 | 0.4800033 | 0.129 |
| Private clinic provide check-up/health examination ser­vices | 0.817454 | 0.302973 | 0.007 |
| Village has public transport facilities | 0.4014857 | 0.2259131 | 0.076 |
| Village main road from asphalt | 0.2893342 | 0.2040933 | 0.156 |
| Distance of district capital from village office (km) | -0.0023017\* | 0.0012272 | 0.061 |
| Distance of bus station from village office (km) | -0.0012068 | 0.0038828 | 0.756 |
| Travel time to nearest PUSKESMAS from village office (hours) | -0.4524845 | 0.5309834 | 0.394 |
| Travel time to nearest private clinic from village office (hours) | -0.1529145 | 0.484605 | 0.752 |
| Travel time to nearest traditional clinic from village office (hours) | -0.5236731 | 0.9445133 | 0.579 |
| Travel time to nearest hospital from village office (hours) | 0.1859342\*\*\* | 0.0477327 | 0 |
| rural | 1.021743\*\*\* | 0.2392876 | 0 |
| Kalimantan Timur | -1.393772\*\*\* | 0.3369993 | 0 |
| Sulawesi Tenggara | -1.053196\*\*\* | 0.2440458 | 0 |
| Maluku | -1.330475\*\*\* | 0.317391 | 0 |
| Maluku Utara | -1.978016\*\*\* | 0.2771026 | 0 |
| Papua Barat | -0.3076135 | 0.2586118 | 0.234 |
| Papua | 0.0107798 | 0.2345287 | 0.963 |
| Constant  | -1.249778 | 0.7074271 | 0.077 |
| Number of obs = 1953 |  |  |  |
|  LR chi2(54) = 678.37 |  |  |  |
| Prob> chi2 = 0.0000 |  |  |  |
| Log likelihood = -948.49491  |  |  |  |
|  Pseudo R2 = 0.2634 |   |   |   |

Source: Author’s estimation based on IFLS-East 2012

Table 8 Impact of *Jamkesmas*  on Health Care Utilization (OLS)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | outpatient | outpublic | outprivate | inpatient | inpublic | inprivate | wmedical | ch\_oop10 | ch\_oop15 |
| Quartile 1 (poor­est)  | 0.027 | 0.024 | -0.004 | -0.001 | -0.003 | 0.004 | -0.119 | 0.001 | 0.007 |
|  | (0.028) | (0.025) | (0.014) | (0.011) | (0.012) | (0.003) | (0.219) | (0.014) | (0.005) |
|  |  |  |  |  |  |  |  |  |  |
| Quartile 2 | -0.003 | -0.012 | -0.005 | 0.012 | 0.002 | 0.010 | -0.144 | -0.009 | -0.017 |
|  | (0.034) | (0.031) | (0.018) | (0.014) | (0.016) | (0.010) | (0.348) | (0.016) | (0.015) |
|  |  |  |  |  |  |  |  |  |  |
| Quartile 3  | 0.024 | 0.046 | -0.000 | 0.013 | 0.031 | -0.008 | -0.622\* | -0.032\* | -0.013 |
|  | (0.034) | (0.034) | (0.016) | (0.015) | (0.025) | (0.008) | (0.312) | (0.016) | (0.012) |
|  |  |  |  |  |  |  |  |  |  |
| Quartile 4 (Rich­est)  | 0.067 | 0.058 | 0.002 | 0.038 | 0.043 | -0.019 | 0.502 | 0.037 | 0.011 |
|  | (0.046) | (0.037) | (0.033) | (0.033) | (0.032) | (0.015) | (0.752) | (0.040) | (0.030) |
|  |  |  |  |  |  |  |  |  |  |
| Rural | 0.029 | 0.016 | 0.013 | 0.016\* | 0.013+ | 0.003+ | 0.000 | -0.002 | -0.001 |
|  | (0.020) | (0.016) | (0.012) | (0.006) | (0.008) | (0.002) | (0.178) | (0.009) | (0.007) |
|  |  |  |  |  |  |  |  |  |  |
| Urban | 0.007 | 0.027 | -0.017 | 0.014 | 0.021 | -0.004 | -0.227 | -0.004 | -0.009 |
|  | (0.030) | (0.031) | (0.020) | (0.024) | (0.027) | (0.013) | (0.521) | (0.027) | (0.023) |
|  |  |  |  |  |  |  |  |  |  |
| Papua  | 0.071\* | 0.059\* | 0.023 | 0.019 | 0.046+ | -0.011 | -0.218 | -0.003 | -0.023 |
|  | (0.034) | (0.028) | (0.025) | (0.021) | (0.028) | (0.008) | (0.541) | (0.030) | (0.022) |
|  |  |  |  |  |  |  |  |  |  |
| Non Papua  | 0.018 | 0.009 | 0.002 | 0.010 | 0.003 | 0.004 | -0.057 | -0.000 | 0.000 |
|   | (0.019) | (0.018) | (0.011) | (0.010) | (0.010) | (0.006) | (0.240) | (0.013) | (0.010) |
| Total | 0.028+ | 0.028+ | -0.004 | 0.015+ | 0.015 | 0.001 | -0.234 | -0.013 | -0.010 |
|  | (0.017) | (0.015) | (0.010) | (0.008) | (0.010) | (0.004) | (0.200) | (0.011) | (0.008) |

Source: Author’s estimation based on IFLS-East 2012

Table 10 Descriptive Statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variables | Observation  | mean | Standar Deviation  | min | max |
| Outpatient total | 2,411 | 0.167 | 0.243 | 0 | 1 |
| Outpatient public | 2,401 | 0.0987 | 0.200 | 0 | 1 |
| Outpatient private | 2,401 | 0.0628 | 0.165 | 0 | 1 |
| Inpatient total | 2,411 | 0.0386 | 0.119 | 0 | 1 |
| Inpatient public | 2,357 | 0.0355 | 0.125 | 0 | 1 |
| Inpatient private | 2,357 | 0.0110 | 0.0743 | 0 | 1 |
| Out of pocket health expenditure Share | 2,411 | 1.291 | 3.550 | 0 | 73.67 |
| Catastrophic health spending 10% | 2,411 | 0.0282 | 0.166 | 0 | 1 |
| Catastrophic health spending 15% | 2,411 | 0.0137 | 0.116 | 0 | 1 |
| illness | 2,411 | 0.725 | 0.296 | 0 | 1 |
|  *JAMKESMAS*  | 2,411 | 0.361 | 0.480 | 0 | 1 |
| ASKES | 2,411 | 0.129 | 0.335 | 0 | 1 |
| JAMSOSTEK | 2,411 | 0.0568 | 0.232 | 0 | 1 |
| Company insurance | 2,411 | 0.0187 | 0.135 | 0 | 1 |
| Private insurance  | 2,411 | 0.0149 | 0.121 | 0 | 1 |
| Company clinic | 2,411 | 0.0137 | 0.116 | 0 | 1 |
| Household head female  | 2,411 | 0.161 | 0.367 | 0 | 1 |
| HH head education | 2,411 | 7.737 | 4.569 | 0 | 18 |
| Household size  | 2,411 | 4.288 | 2.057 | 1 | 16 |
| Share under 6 female | 2,411 | 0.0668 | 0.119 | 0 | 0.667 |
| Share under 6 male | 2,411 | 0.0705 | 0.122 | 0 | 0.600 |
| Share 6 to 17 female | 2,411 | 0.117 | 0.161 | 0 | 1 |
| Share 6 to 17 male | 2,411 | 0.119 | 0.155 | 0 | 1 |
| Share 18 to 60 female | 2,411 | 0.290 | 0.186 | 0 | 1 |
| Share 18 to 60male | 2,411 | 0.261 | 0.205 | 0 | 1 |
| Share 60 up female | 2,411 | 0.0465 | 0.151 | 0 | 1 |
| Share 60 up male | 2,411 | 0.0392 | 0.119 | 0 | 1 |
| Household own BBM BLT card | 2,400 | 0.229 | 0.420 | 0 | 1 |
| Owns house  | 2,411 | 0.763 | 0.425 | 0 | 1 |
| House size (m2)  | 2,410 | 62.25 | 49.92 | 4 | 800 |
| Owns water access | 2,411 | 0.307 | 0.461 | 0 | 1 |
| Household has a vehicle  | 2,411 | 0.316 | 0.465 | 0 | 1 |
| self employed | 2,411 | 0.287 | 0.453 | 0 | 1 |
| Working Part Time | 2,411 | 0.484 | 0.500 | 0 | 1 |
| Self-employed with permanent workers | 2,411 | 0.0153 | 0.123 | 0 | 1 |
| Government Official | 2,411 | 0.155 | 0.362 | 0 | 1 |
| Private Worker | 2,411 | 0.202 | 0.402 | 0 | 1 |
| Unpaid family worker | 2,411 | 0.388 | 0.487 | 0 | 1 |
| Casual worker in agriculture | 2,411 | 0.0207 | 0.143 | 0 | 1 |
| Casual worker not in agriculture | 2,411 | 0.0377 | 0.191 | 0 | 1 |
| Puskesmas has an electricity | 2,411 | 0.847 | 0.360 | 0 | 1 |
| Puskesmas has a water access | 2,411 | 0.320 | 0.467 | 0 | 1 |
| Puskesmas has a pharmacy | 2,411 | 0.895 | 0.306 | 0 | 1 |
| Puskesmas offer inpatient service | 2,384 | 0.305 | 0.461 | 0 | 1 |
| Puskesmas offer inpatient service other than birth | 2,384 | 0.263 | 0.441 | 0 | 1 |
| Puskesmas offer check-up/health examination | 2,384 | 0.570 | 0.495 | 0 | 1 |
| Puskesmas offer dental service | 2,384 | 0.613 | 0.487 | 0 | 1 |
| Private clinic has an electricity | 2,411 | 0.858 | 0.349 | 0 | 1 |
| Private clinic has an access to water | 2,411 | 0.226 | 0.419 | 0 | 1 |
| Private clinic provides an inpatient services | 2,276 | 0.0277 | 0.164 | 0 | 1 |
| Private clinic provide check-up/health examina­tion services | 2,276 | 0.0558 | 0.230 | 0 | 1 |
| Private clinic provides dental services | 2,276 | 0.0264 | 0.160 | 0 | 1 |
| Private clinic has more than 1 medical staff | 2,411 | 0.0788 | 0.269 | 0 | 1 |
| Private clinic's number of medical staff | 2,411 | 1.102 | 0.432 | 1 | 4 |
| Village has public transport facilities | 2,411 | 0.809 | 0.393 | 0 | 1 |
| Village main road from asphalt | 2,411 | 0.687 | 0.464 | 0 | 1 |
| Distance of bus station from village office (km) | 2,323 | 9.728 | 26.69 | 0.01000 | 200 |
| Distance of district capital from village office (km) | 2,213 | 56.03 | 83.42 | 0.500 | 450 |
| Travel time to nearest PUSKESMAS from village office (hours) | 2,411 | 0.450 | 1.898 | 0 | 16 |
| Travel time to nearest private clinic from village office (hours) | 2,411 | 0.254 | 0.801 | 0 | 6 |
| Travel time to nearest traditional clinic from vil­lage office (hours) | 2,411 | 0.0813 | 0.0752 | 0 | 0.500 |
| Travel time to nearest Hospital from village office (hours) | 2,411 | 0.697 | 2.828 | 0 | 24 |
| Travel time to nearest POSYANDU from village office (hours) | 2,411 | 0.118 | 0.345 | 0 | 3 |
| rural | 2,411 | 0.706 | 0.456 | 0 | 1 |
| HH size square | 2,411 | 22.62 | 22.43 | 1 | 256 |
| Papua | 2,411 | 0.285 | 0.451 | 0 | 1 |

Source: Author’s estimation based on IFLS-East 2012

Table 11 Common support by number of observations using 5 nearest neighborhood

|  |  |
| --- | --- |
| Treatment Assign­ment  | Common Support |
| Off support | On Support | Total |
| Untreated | 0 | 1229 | 1229 |
| Treated | 36 | 688 | 724 |
| Total | 36 | 1917 | 1953 |

Figure 2 Distribution of the propensity score for treatment and control group using five nearest neighbourhood



Source: Author’s estimation based on IFLS-East 2012

Table 12 Balancing properties of the matched samples using 5 nearest neighborhood

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Unmatched | Treatment | Bias | t-test | V\_e[T]/V\_e[C] |
|  | Matched | Treatment | Control | % bias | Reduct %|bias| | t | p>t |
| ASKES | Unmatched | 0.06215 | 0.18308 | -37.5 |  | -7.58 | 0 | 0.38\*\* |
|  | Matched | 0.06541 | 0.05581 | 3 | 92.1 | 0.75 | 0.456 | 1.2 |
| JAMSOSTEK | Unmatched | 0.03315 | 0.08706 | -22.8 |  | -4.62 | 0 | 0.41\*\* |
|  | Matched | 0.03488 | 0.04273 | -3.3 | 85.4 | -0.75 | 0.451 | 0.82 |
| Company insurance | Unmatched | 0.00414 | 0.03255 | -21.3 |  | -4.15 | 0 | 0.13\*\* |
|  | Matched | 0.00436 | 0.00552 | -0.9 | 95.9 | -0.31 | 0.759 | 0.78\* |
| Company clinic | Unmatched | 0.00829 | 0.02116 | -10.7 |  | -2.17 | 0.031 | 0.40\*\* |
|  | Matched | 0.00872 | 0.00581 | 2.4 | 77.4 | 0.63 | 0.526 | 1.49\* |
| Private insurance | Unmatched | 0.00276 | 0.02766 | -20.4 |  | -3.97 | 0 | 0.10\*\* |
|  | Matched | 0.00291 | 0.00465 | -1.4 | 93 | -0.53 | 0.598 | 0.64\* |
| Unconditional Cash Transfer (BBMBLT) | Unmatched | 0.14917 | 0.16029 | -3.1 |  | -0.65 | 0.513 | 0.94 |
|  | Matched | 0.15262 | 0.1532 | -0.2 | 94.8 | -0.03 | 0.976 | 1 |
| Female household head | Unmatched | 7.0359 | 8.5248 | -33.5 |  | -7.02 | 0 | 0.74\* |
|  | Matched | 7.0959 | 7.093 | 0.1 | 99.8 | 0.01 | 0.99 | 0.89 |
| Household head educa­tion | Unmatched | 4.6878 | 4.1676 | 25.2 |  | 5.41 | 0 | 1.08 |
|  | Matched | 4.5974 | 4.4544 | 6.9 | 72.5 | 1.26 | 0.209 | 0.9 |
| Household size | Unmatched | 0.06516 | 0.06661 | -1.2 |  | -0.26 | 0.796 | 0.81 |
|  | Matched | 0.06485 | 0.0621 | 2.3 | -90 | 0.45 | 0.656 | 0.94 |
| Share under6female | Unmatched | 0.07192 | 0.0724 | -0.4 |  | -0.08 | 0.933 | 0.89 |
|  | Matched | 0.07173 | 0.07363 | -1.6 | -294.1 | -0.29 | 0.769 | 0.96 |
| Share under6male | Unmatched | 0.1314 | 0.11267 | 11.6 |  | 2.47 | 0.014 | 1 |
|  | Matched | 0.13085 | 0.11297 | 11 | 4.5 | 2.13 | 0.034 | 1.25 |
| Share 6to17female | Unmatched | 0.13496 | 0.1082 | 17.3 |  | 3.72 | 0 | 1.12 |
|  | Matched | 0.13182 | 0.13491 | -2 | 88.5 | -0.35 | 0.724 | 0.93 |
| Share 6to17male | Unmatched | 0.26636 | 0.2973 | -17.9 |  | -3.74 | 0 | 0.71\* |
|  | Matched | 0.27021 | 0.26832 | 1.1 | 93.9 | 0.21 | 0.833 | 0.85 |
| Share 18to60female | Unmatched | 0.05554 | 0.03612 | 13.3 |  | 2.9 | 0.004 | 1.47\* |
|  | Matched | 0.0544 | 0.05847 | -2.8 | 79.1 | -0.46 | 0.649 | 0.86 |
| Share 60upfemale | Unmatched | 0.04246 | 0.03652 | 5 |  | 1.07 | 0.285 | 1.03 |
|  | Matched | 0.0425 | 0.05068 | -6.9 | -37.7 | -1.18 | 0.239 | 0.81 |
| Share 60upmale | Unmatched | 0.81768 | 0.71359 | 24.7 |  | 5.18 | 0 | 0.70\* |
|  | Matched | 0.80959 | 0.8125 | -0.7 | 97.2 | -0.14 | 0.891 | 1.02 |
| Owned house | Unmatched | 55.021 | 68.533 | -27.7 |  | -5.62 | 0 | 0.40\*\* |
|  | Matched | 55.83 | 55.465 | 0.7 | 97.3 | 0.18 | 0.854 | 1.18 |
| Size of house (M2) | Unmatched | 0.34116 | 0.28478 | 12.2 |  | 2.62 | 0.009 | 1.14 |
|  | Matched | 0.33866 | 0.34419 | -1.2 | 90.2 | -0.22 | 0.829 | 1 |
| Own water access | Unmatched | 0.28591 | 0.38405 | -20.9 |  | -4.42 | 0 | 0.86 |
|  | Matched | 0.2907 | 0.29157 | -0.2 | 99.1 | -0.04 | 0.972 | 1 |
| House hold has a vehicle | Unmatched | 0.31354 | 0.25386 | 13.3 |  | 2.85 | 0.004 | 1.15 |
|  | Matched | 0.31686 | 0.31919 | -0.5 | 96.1 | -0.09 | 0.926 | 0.99 |
| self employed | Unmatched | 0.56215 | 0.42718 | 27.2 |  | 5.81 | 0 | 0.97 |
|  | Matched | 0.54651 | 0.54273 | 0.8 | 97.2 | 0.14 | 0.888 | 0.99 |
| Working Part Time | Unmatched | 0.00967 | 0.02116 | -9.3 |  | -1.9 | 0.057 | 0.46\*\* |
|  | Matched | 0.01017 | 0.01395 | -3.1 | 67.1 | -0.64 | 0.521 | 0.74\* |
| Self-employed with per­manent workers | Unmatched | 0.10221 | 0.20423 | -28.6 |  | -5.9 | 0 | 0.57\* |
|  | Matched | 0.10756 | 0.09099 | 4.6 | 83.8 | 1.03 | 0.304 | 1.24 |
| Government Official | Unmatched | 0.19751 | 0.2441 | -11.2 |  | -2.38 | 0.018 | 0.85 |
|  | Matched | 0.20058 | 0.20581 | -1.3 | 88.8 | -0.24 | 0.81 | 0.97 |
| Private Worker | Unmatched | 0.4779 | 0.34093 | 28.1 |  | 6.04 | 0 | 1.06 |
|  | Matched | 0.4593 | 0.43779 | 4.4 | 84.3 | 0.8 | 0.423 | 0.98 |
| Unpaid family worker | Unmatched | 0.0221 | 0.02034 | 1.2 |  | 0.26 | 0.794 | 1.09 |
|  | Matched | 0.0218 | 0.0218 | 0 | 100 | 0 | 1 | 1 |
| Casual worker in agricul­ture | Unmatched | 0.04144 | 0.03173 | 5.2 |  | 1.12 | 0.262 | 1.30\* |
|  | Matched | 0.0436 | 0.05174 | -4.3 | 16.1 | -0.71 | 0.479 | 0.85 |
| Casual worker not in agri­culture | Unmatched | 0.8895 | 0.90724 | -5.9 |  | -1.27 | 0.206 | 1.15 |
|  | Matched | 0.89099 | 0.92762 | -12.1 | -106.5 | -2.37 | 0.018 | 1.36\* |
| Puskesmas has an elec­tricity | Unmatched | 0.22928 | 0.41904 | -41.4 |  | -8.66 | 0 | 0.69\* |
|  | Matched | 0.23983 | 0.22791 | 2.6 | 93.7 | 0.52 | 0.602 | 1.06 |
| Puskesmas has a water access | Unmatched | 0.8453 | 0.91456 | -21.4 |  | -4.73 | 0 | 1.66\* |
|  | Matched | 0.85029 | 0.83983 | 3.2 | 84.9 | 0.54 | 0.592 | 0.98 |
| Puskesmas has a phar­macy | Unmatched | 0.43232 | 0.26444 | 35.8 |  | 7.75 | 0 | 1.23 |
|  | Matched | 0.41424 | 0.44244 | -6 | 83.2 | -1.06 | 0.291 | 0.98 |
| Puskesmas offer inpatient service | Unmatched | 0.33149 | 0.22295 | 24.4 |  | 5.3 | 0 | 1.27\* |
|  | Matched | 0.32122 | 0.31366 | 1.7 | 93 | 0.3 | 0.764 | 1.02 |
| Puskesmas offer inpatient service other than birth | Unmatched | 0.58149 | 0.60862 | -5.5 |  | -1.18 | 0.238 | 1.04 |
|  | Matched | 0.57994 | 0.55727 | 4.6 | 16.4 | 0.85 | 0.396 | 0.99 |
| Puskesmas offer check-up/health examination | Unmatched | 0.6105 | 0.65419 | -9.1 |  | -1.94 | 0.052 | 1.05 |
|  | Matched | 0.60174 | 0.5936 | 1.7 | 81.4 | 0.31 | 0.758 | 1.01 |
| Puskesmas offer dental service | Unmatched | 0.90746 | 0.93653 | -10.9 |  | -2.37 | 0.018 | 1.40\* |
|  | Matched | 0.90988 | 0.91628 | -2.4 | 78 | -0.42 | 0.674 | 1.04 |
| Private clinic has an elec­tricity | Unmatched | 0.16022 | 0.29455 | -32.5 |  | -6.74 | 0 | 0.65\* |
|  | Matched | 0.1657 | 0.15203 | 3.3 | 89.8 | 0.69 | 0.489 | 1.09 |
| Private clinic has an access to water | Unmatched | 0.00552 | 0.04638 | -25.9 |  | -5.04 | 0 | 0.18\*\* |
|  | Matched | 0.00581 | 0.00436 | 0.9 | 96.4 | 0.38 | 0.705 | 1.34\* |
| Private clinic provides an inpatient services | Unmatched | 0.08011 | 0.0537 | 10.6 |  | 2.31 | 0.021 | 1.45\* |
|  | Matched | 0.0843 | 0.06105 | 9.3 | 11.9 | 1.66 | 0.097 | 1.24 |
| Private clinic provide check-up/health exami­nation services | Unmatched | 0.00691 | 0.04394 | -23.7 |  | -4.64 | 0 | 0.22\*\* |
|  | Matched | 0.00727 | 0.00698 | 0.2 | 99.2 | 0.06 | 0.949 | 1.04 |
| Private clinic provides dental services | Unmatched | 0.01796 | 0.13588 | -45.4 |  | -8.87 | 0 | 0.19\*\* |
|  | Matched | 0.0189 | 0.02267 | -1.5 | 96.8 | -0.49 | 0.624 | 0.83 |
| Private clinic has more than 1 medical staff | Unmatched | 1.0166 | 1.1798 | -39.2 |  | -7.61 | 0 | 0.13\*\* |
|  | Matched | 1.0174 | 1.0227 | -1.3 | 96.8 | -0.54 | 0.587 | 1.18 |
| Private clinic’s medical staff number | Unmatched | 0.88398 | 0.80716 | 21.4 |  | 4.44 | 0 | 0.69\* |
|  | Matched | 0.87936 | 0.86744 | 3.3 | 84.5 | 0.66 | 0.507 | 0.93 |
| Village has public transport facilities | Unmatched | 0.73757 | 0.74044 | -0.7 |  | -0.14 | 0.889 | 1.03 |
|  | Matched | 0.73401 | 0.74128 | -1.7 | -153.2 | -0.31 | 0.76 | 1 |
| Village main road from asphalt | Unmatched | 10.58 | 10.986 | -1.4 |  | -0.3 | 0.763 | 0.76\* |
|  | Matched | 10.845 | 11.625 | -2.8 | -91.9 | -0.52 | 0.6 | 0.92 |
| Distance of bus station from village office (km) | Unmatched | 51.431 | 58.606 | -8.8 |  | -1.8 | 0.072 | 0.47\*\* |
|  | Matched | 51.517 | 49.744 | 2.2 | 75.3 | 0.49 | 0.622 | 0.96 |
| Distance of district capital from village office (km) | Unmatched | 0.16867 | 0.33233 | -21.2 |  | -4.31 | 0 | 0.45\*\* |
|  | Matched | 0.17265 | 0.18242 | -1.3 | 94 | -0.29 | 0.775 | 0.86 |
| Travel time to nearest PUSKESMAS from village office (hours) | Unmatched | 0.16664 | 0.27796 | -14.4 |  | -2.93 | 0.003 | 0.43\*\* |
|  | Matched | 0.16771 | 0.18823 | -2.7 | 81.6 | -0.59 | 0.555 | 0.87 |
| Travel time to nearest pri­vate clinic from village office (hours) | Unmatched | 0.0788 | 0.09231 | -17.8 |  | -3.69 | 0 | 0.64\* |
|  | Matched | 0.07863 | 0.07695 | 2.2 | 87.5 | 0.47 | 0.642 | 1.08 |
| Travel time to nearest tra­ditional clinic from village office (hours) | Unmatched | 0.87396 | 0.81623 | 1.9 |  | 0.4 | 0.692 | 0.63\* |
|  | Matched | 0.87936 | 1.0341 | -5.1 | -168 | -1.02 | 0.306 | 0.87 |
| Travel time to nearest Hospital from village of­fice (hours) | Unmatched | 0.06209 | 0.14582 | -25.3 |  | -4.94 | 0 | 0.14\*\* |
|  | Matched | 0.06347 | 0.06841 | -1.5 | 94.1 | -0.57 | 0.566 | 1.32\* |
| Travel time to nearest PO­SYANDU from village office (hours) | Unmatched | 0.83149 | 0.59072 | 55.1 |  | 11.37 | 0 | 0.49\*\* |
|  | Matched | 0.82267 | 0.81105 | 2.7 | 95.2 | 0.56 | 0.577 | 0.91 |
|  |  |  |  |  |  |  |  |  |
| Kalimantan Timur | Unmatched | 0.03867 | 0.18552 | -47.8 |  | -9.49 | 0 | 0.30\*\* |
|  | Matched | 0.0407 | 0.03924 | 0.5 | 99 | 0.14 | 0.891 | 1.04 |
| Sulawesi Tenggara | Unmatched | 0.14641 | 0.16599 | -5.4 |  | -1.14 | 0.253 | 0.9 |
|  | Matched | 0.15262 | 0.1314 | 5.8 | -8.4 | 1.13 | 0.26 | 1.14 |
| Maluku | Unmatched | 0.12845 | 0.17331 | -12.6 |  | -2.64 | 0.008 | 0.75\* |
|  | Matched | 0.13517 | 0.11424 | 5.9 | 53.3 | 1.17 | 0.24 | 1.12 |
| Maluku Utara | Unmatched | 0.06906 | 0.1546 | -27.4 |  | -5.6 | 0 | 0.44\*\* |
|  | Matched | 0.07267 | 0.06831 | 1.4 | 94.9 | 0.32 | 0.752 | 1.08 |
| Papua Barat | Unmatched | 0.16575 | 0.11229 | 15.5 |  | 3.38 | 0.001 | 1.43\* |
|  | Matched | 0.17151 | 0.19157 | -5.8 | 62.5 | -0.96 | 0.335 | 0.91 |
| Papua | Unmatched | 0.16851 | 0.12205 | 13.2 |  | 2.87 | 0.004 | 1.30\* |
|  | Matched | 0.17151 | 0.1561 | 4.4 | 66.8 | 0.77 | 0.44 | 1.07 |

Source: Author’s estimation based on IFLS-East 2012

1. To avoid any confusion, there is also JAMKESDA which is a similar insurance but the regulation and coverage are under district or city local government responsibility. [↑](#footnote-ref-1)