



ACHIEVING UNIVERSAL HEALTH COVERAGE IN INDONESIA:

Evidence to Inform the JKN Health Insurance Program

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한국국제협력단(KOICA)

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J-PAL(Abdul Latif Jammel Poverty Action Lab)
Southeast Asia

Motivated by the importance of including non-poor informal workers into Indonesia's national health insurance scheme (JKN Mandiri), the Social Security Agency for Health (BPJS Kesehatan) and the National Development Planning Agency (Bappenas) collaborated with the Abdul Latif Jameel Poverty Action Lab South East Asia (J-PAL SEA) to design a pilot aimed at understanding which policy levers can be used to increase the take-up and retention of the program. This report covers the findings from a Randomized Control Trial (RCT) conducted in Medan, North Sumatra and Bandung, West Java.

This study based on RCT was supported by KOICA(Korea International Cooperation Agency)

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1. EXECUTIVE SUMMARY

Motivated by the importance of including non-poor informal workers into Indonesia's national health insurance scheme (JKN Mandiri), the Social Security Agency for Health (BPJS Kesehatan) and the National Development Planning Agency (Bappenas) collaborated with the Abdul Latif Jameel Poverty Action Lab South East Asia (J-PAL SEA) to design a pilot aimed at understanding which policy levers can be used to increase the take-up and retention of the program.

This report covers the findings from a Randomized Control Trial (RCT) conducted in Medan, North Sumatra and Bandung, West Java in 2015. The RCT tested the following three interventions:

- 1) Subsidies for the JKN Mandiri premium (Medan and Bandung);
- 2) Assisted registration at home as opposed to standard registration at BPJS Kesehatan office (Medan and Bandung);
- 3) Information on the financial implications of health insurance (Medan), on the waiting period from registration to actual enrollment (Bandung), and on the possibility of future requirement of JKN membership for accessing administrative documents (Bandung).

For each of the interventions, we study three sets of outcomes. First, we study the effect of the treatments on enrollment. Second, we test whether the characteristics of the households who enroll are affected. Third, we analyze households' premium payment behavior.

The main findings from the study are as follows:

- 1) Subsidies were successful at increasing take-up. As far as the characteristics of the households who enrolled under different treatment arms are concerned,

higher subsidies brought in families with better self-reported health and less likely to have prior inpatient history. There were no significant differences along other characteristics.

- 2) Offering onsite registration significantly increased both the probability that the household expressed intention to enroll and, to a lower extent, actual take-up. Among those who expressed willingness to enroll in the onsite registration treatment, many were not successful due to administrative barriers such as not having an updated Family Card. This suggests that administrative barriers may be an important factor hampering enrollment. The results show no evidence that onsite registration treatment attracted different types of households.
- 3) Neither the information on financial illustration, potential consequences of not-signing up, nor waiting period information increased actual take-up. There are no clear effects on selection of the information treatments.

The analysis presented in the report uses data collected through a baseline survey and administrative data on enrollment, claims and payments from BPJS. The administrative data is important to obtain accurate enrollment status of everyone in the study, including the respondents assigned as control group, health care service utilization and payments. The analysis uses an administrative dataset that the research team obtained from BPJS Kesehatan in May 2017, which covers utilization data until March 2017.

2. BACKGROUND: THE JKN–MANDIRI PROGRAM

In January 2014 the Government of Indonesia (GoI) introduced a national health insurance scheme, Jaminan Kesehatan Nasional (JKN), with the objective of reaching universal coverage by 2019. JKN is a contributory system in which individuals' contributions are determined jointly by income and employment status. The GoI covers the insurance premiums for those who fall within the bottom 40 percent of Indonesia's income distribution. Formal workers' premiums are deducted from payroll and covered jointly by employees and employers. Non-poor informal workers are mandated to individually register for JKN and make monthly payments autonomously, but the mandate is not currently enforced.

The greatest challenges faced by the GoI in achieving universal health coverage are limited financial resources available for social security and the presence of a large informal sector. In fact, enrollment and retention of non-poor informal workers are especially problematic: not only they have to cover their own premium but they also cannot be easily targeted by enforcement measures. However, beyond the fact that it is a government mandate, it is important to ensure coverage for this population because of equity considerations and to ensure the financial sustainability of the entire system.

Over the past two years we have collaborated with the GoI, namely the Social Security Agency (BPJS Kesehatan) and the National Planning Agency (Bappenas) to develop and evaluate potential policy interventions to address these challenges. This study tests these interventions by using a randomized control trial, which allows to estimate the causal effect of these interventions on the outcomes of interest.

3. RESEARCH QUESTIONS

The pilot aims to answer three key questions:

- . • What kind of incentives attract people in the informal and non-poor category to sign up?
- . • Are health and demographic characteristics different for people who sign up because of different interventions?
- . • How do different incentive levers influence retention?

4. STUDY DESIGN

4.1. PRECEDING PRE-PILOT DESIGN

The study was conducted in two locations. The first location was Medan, North Sumatera, where the study took place in February–March 2015. The second location was Bandung, West Java, where the study took place in November 2015–January 2016. In addition, the main study was preceded by a pilot aimed at developing logistical arrangements and understanding the potential for different types of interventions conducted in Gresik, East Java, in November 2014.

The Gresik pilot was conducted in seven randomly selected villages of Sidayu Sub-district, Gresik. Four villages were assigned to village level interventions and three to household level interventions. In the three villages assigned to the household level interventions, we listed 1,043 families, 285 (27%) of which were uninsured informal workers.

At the village level, we implemented the following treatments:

- Cadre variation . we recruited a local person to act as focal point to encourage villagers to sign up to JKN Mandiri.
- Registration drive variation. we opened a registration booth in the village.
- Information variation. we held a village-level socialization campaign to encourage registration, varying the main message to be either that JKN Mandiri is mandatory or that it is available for all citizens.

At the household level, we implemented the following treatments:

- Premium subsidy variation. we offered a zero subsidy, a buy-one-get-one-free subsidy, or a full subsidy. The subsidy offers were valid for six months.

- Subsidy deadline variation. when offered a subsidy, households needed to register to JKN Mandiri within either ten business days or six months.

The pilot in Gresik resulted in very low take-up. No households signed up as a result of the registration drive, and only four households took advantage of the subsidy offer. To understand why take up was so low, we conducted qualitative interviews after the end of the pilot. The reasons for low take up that were reported included the financial burden of registering all family members, the hassle of having to go to the BPJS Office in the district capital to register, and the presence of administrative requirements such as having a bank account. Moreover, information campaigns held at village level failed to deliver the message to most villagers.

As a result, for the main study, we decided to focus on the household level interventions, which appeared to have more potential to impact enrollment. In addition, we moved to an urban location, since supply side readiness issues potentially hampered demand in a rural setting and we wanted to abstract from these considerations.

4.2. TREATMENTS DESIGN

The treatments in Medan and Bandung were defined at the household level and varied in four ways:

1. Subsidy variation

Households were randomly assigned to different subsidy treatments:

- a. No-subsidy (Medan and Bandung) . households in this treatment group did not receive a subsidy and were required to pay the premium on their own.
- b. Half-subsidy (Medan and Bandung) . households in this treatment group were offered a 50% subsidy through a “buy-one-get-one-free” scheme for a year. We covered the premium for half of the household members.

- c. Full Subsidy (Medan and Bandung). households in this treatment group were offered a full subsidy for all household members.
- d. No inpatient claim payback bonus(Bandung). households in this treatment group had to cover their own premium, but were reimbursed half of the total premiums paid if they did not submit an inpatient claim in the first year since enrollment.

The subsidy treatment aimed to understand the effect of prices on demand and on the pool of individuals who sign up. This is important for two reasons: first, if lowering the price means that healthier people register for insurance, a lower price could actually reduce the government's total net cost. Second, if certain groups are especially price sensitive (e.g. poorer households), changing the level of the premium may increase coverage of individuals in these groups.

2. Registration Location

Households were randomly selected to be offered the possibility to complete the registration process online on the official BPJS website with the assistance of the study enumerator. The enumerators had laptops connected to the internet that they used to access the official BPJS website. The remaining households were assigned to enrollment following the status quo, which required them to go to the BPJS Kesehatan office to enroll. The registration treatment was tested in both Medan and Bandung.

The idea of this treatment was to test how reducing hassle costs such as long queues at BPJS Kesehatan office and difficulties in understanding the forms affected enrollment and enrollees' characteristics.

3. Information

Households were randomly assigned to different information treatments:

a. Financial illustration (Medan)

Randomly selected households received information on the health care costs that a household would face in case one of their members had a heart attack, whereas the other households received basic information.

b. Waiting period (Bandung)

Starting from June 2015, BPJS introduced a two-week delay between enrollment and date of first payment, which effectively meant that individuals who signed up had to wait for two weeks before being able to access the healthcare system using JKN. All families received basic information on JKN, while half of the families received additional information on the 14-day waiting period.

c. Mandatory BPJS (Bandung)

Half of the families received additional information about the possibility of future requirement of JKN membership for accessing administrative documents. The treatment resulted from the discussions within the GoI on the possibility of creating new rules requiring enrollment in BPJS as a condition to obtain documents such as driving licenses, passports, etc.

The information treatments wanted to test whether lack of awareness to specific aspects of the program was hindering enrollment.

In total, by crossing all of the above treatment variations to each other, there are 28 variations of treatments implemented in the Medan pilot and 32 variations of treatments implemented in the Bandung pilot. Given the sample size, there is not enough power to distinguish across all different sub-groups, but only across treatments. The analysis therefore focuses on across-treatments comparisons.

Table 1 and 2 recap the design in Medan and Bandung, respectively.

Table 1. Treatment Design Recap in Medan

Information treatment	Registration treatment	Subsidy Treatment						
		0-subsidy	Buy-1-get-1-free		Subsidy	Full Subsidy		
		No-deadline	1-week deadline	2-week deadline	Choice deadline	1-week deadline	2-week deadline	Choice deadline
Basic information	On-site registration	Group 1	Group 5	Group 9	Group 13	Group 17	Group 21	Group 25
	Standard registration	Group 2	Group 6	Group 10	Group 14	Group 18	Group 22	Group 26
Additional information	On-site registration	Group 3	Group 7	Group 11	Group 15	Group 19	Group 23	Group 27
	Standard registration	Group 4	Group 8	Group 12	Group 16	Group 20	Group 24	Group 28

Table 2. Treatment Design Recap in Bandung

Mandate	Waiting period	Subsidy Treatment							
		0-subsidy		Buy-1-get-1-free		Full Subsidy		No-Inpatient Bonus	
		Standard Reg	Onsite Reg	Standard Reg	Onsite Reg	Standard Reg	Onsite Reg	Standard Reg	Onsite Reg
No mandate	No waiting period	Group 1	Group 5	Group 9	Group 13	Group 17	Group 21	Group 25	Group 29
	Waiting period	Group 2	Group 6	Group 10	Group 14	Group 18	Group 22	Group 26	Group 30
Mandate	No waiting period	Group 3	Group 7	Group 11	Group 15	Group 19	Group 23	Group 27	Group 31
	Waiting period	Group 4	Group 8	Group 12	Group 16	Group 20	Group 24	Group 28	Group 32

5. PILOT AREA PROFILE: LOCATION AND DEMOGRAPHICS

5.1. Location

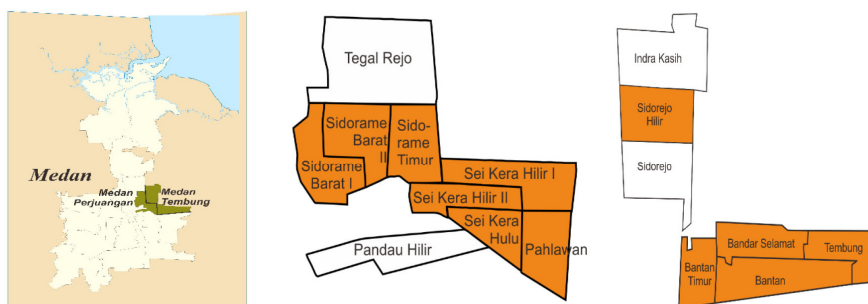
We implemented the RCT in 12 villages/*kelurahan* from two sub-districts in Medan and 32 villages/*kelurahan* from eight sub-districts in Bandung. The locations were chosen in collaboration with Bappenas and BPJS Kesehatan. We decided to run the study in one on-Java and one off-Java location to improve representativeness. We also decided to conduct the study in areas which showed high levels of health service supply readiness, since the lack of health service options was one of the reasons for low take-up in Gresik.

Medan was the first location to be selected. Medan is the most populous city in Sumatra and has relatively high health service providers' readiness. We selected the Medan Perjuangan and Medan Tembung sub-districts since they had the highest concentration of non-poor informal households. Within the two sub-districts, we eliminated the *kelurahan* (villages) where a lot of transient migrants (e.g. university students) resided because it would be difficult to establish whether they met our target population criteria. We selected a total of 12 *kelurahan* (villages) as pilot locations. The listing procedure randomly selected which *lingkungan* (sub-village) to survey.

After the study in Medan was completed, we considered Bandung, Makassar, and Surabaya as possible locations to hold the second half of the study. Makassar would have represented the Eastern part of Indonesia but was not a good fit for our study as they had already achieved universal coverage thanks to a local insurance program. The choice between Bandung and Surabaya was based on the results from field visits aimed at understanding the local health insurance system, gauging support from local BPJS offices and the health service supply readiness of the area. Based on these considerations and in particular the fact that Surabaya had an extensive local

insurance scheme covering treatment for chronic diseases of all near poor people in the city, we decided in favor of Bandung.

Figure 1. Selected Medan Pilot Location



Left: Location of selected sub-districts within Medan;

Middle: Location of selected villages within Medan Perjuangan sub-district;

Right: Location of selected villages within Medan Tembung sub-district

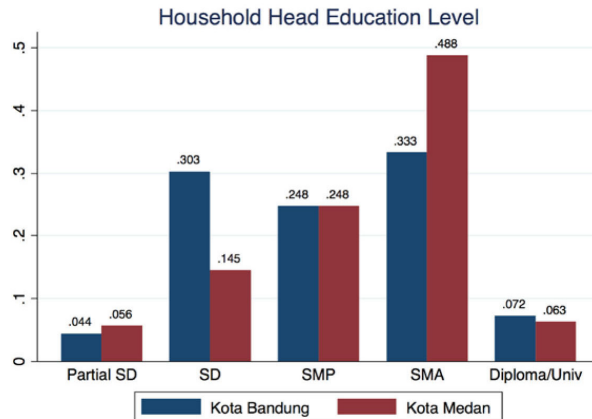
As in Medan, we excluded all sub-districts with universities to avoid areas with a high fraction of temporary residents. We also excluded sub-districts close to big factories, business districts or malls. The remaining eight sub-districts for our study were Bandung Kulon, Babakan Ciparay, Bojongloa Kaler, Mandalajati, Ujungberung, Cinambo, Rancasari, and Gedebage. From each sub-district, we randomly selected 4 *kelurahan* (villages) for a total of 32 *kelurahan* (villages). During the survey, we randomly selected the sub-villages to be surveyed and then proceeded to list of households residing in the area.

5.2. Demographic Profile

The criteria to be included in the baseline were that the family reported not having health insurance and not having a Kartu Perlindungan Sosial (KPS).¹⁾ We used this information to proxy for our target population of non-poor informal workers. In

1) This card identifies the recipient of social protection programs.

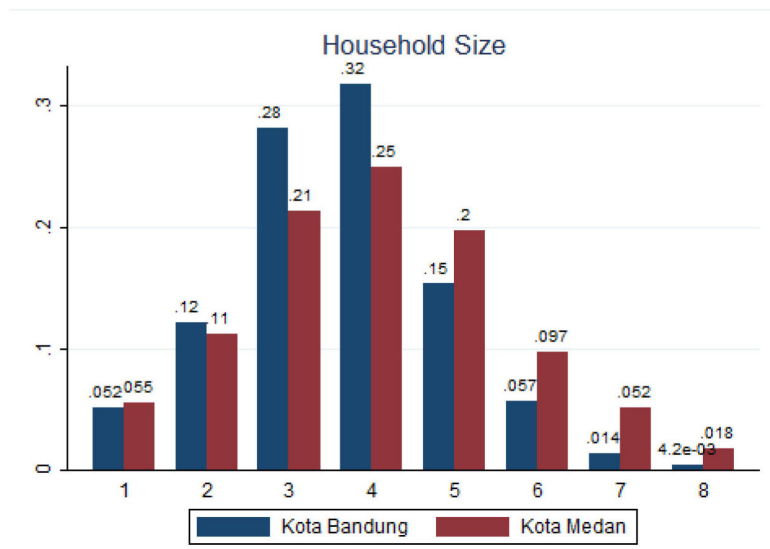
Figure 3. Education Profile of Household Head



5.2.2 Household Size

The average household size was slightly lower in Bandung than in Medan. In fact, the average family size was four people in Medan and 3.66 people in Bandung.

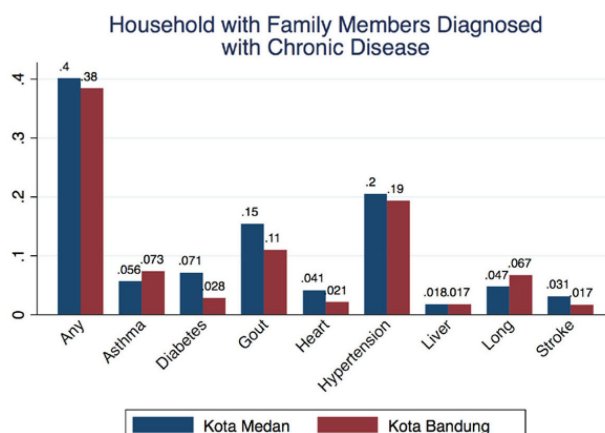
Figure 4. Household Size



5.2.3. Health Condition and Service Utilization

The survey asked if any family member had ever been diagnosed by an official health worker with a chronic disease such as diabetes, heart diseases, stroke, gout, chronic lung diseases, hypertension, liver, or asthma. 43% of the households in Bandung reported having a family member suffering from a chronic disease. In Medan, the most prevalent chronic conditions among our respondents were gout (15%) and hypertension (20%). These rates are comparable with our survey in Bandung (11% for gout and 19% for hypertension), as well as Riskesdas 2013 (24.7%², and 26.5%³, respectively). Figure 5 below shows the distribution of chronic diseases reported for both Medan and Bandung.

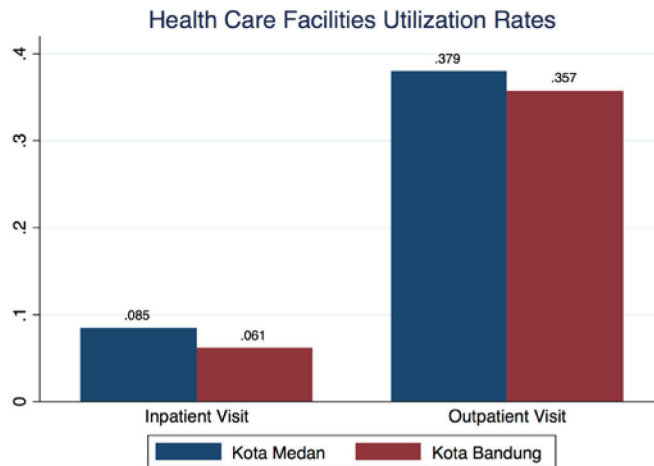
Figure 5. Household with Family Members Diagnosed with Chronic Diseases



Furthermore, our survey asked respondents whether any of their family members had received outpatient care in the previous four weeks or inpatient care in the previous 12 months. As shown in Figure 6, the outpatient utilization rate was 37.9% and the inpatient utilization rate was 8.5% In Medan. Similar rates (35.7% and 6.1% respectively) were reported in Bandung and in Susenas 2014 (36.13% for outpatient and 8.20% for inpatient).

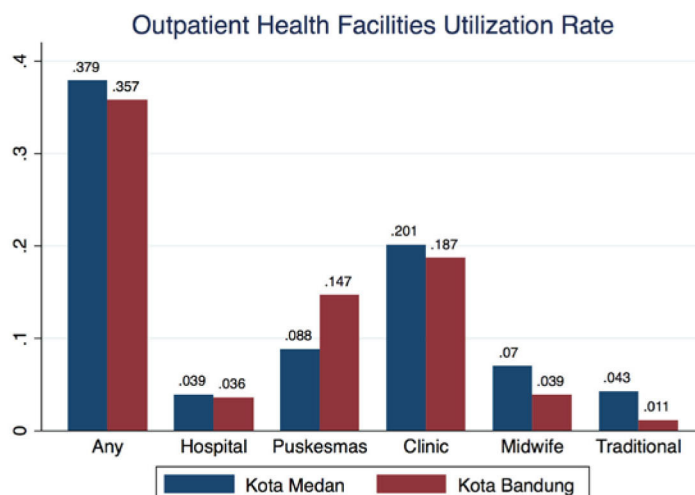
-
- 2) Riskesdas hypertension prevalence is from measurement by a health worker. Prevalence from history of diagnosis alone is lower at 9%.
 - 3) Riskesdas grouped arthritis, rheumatism, and gout together and their prevalence rate is based on diagnosis history by a health worker or reported symptoms. The prevalence rate based on history of diagnosis alone is 11.9%.

Figure 6. Health Care Facilities Utilization Rates



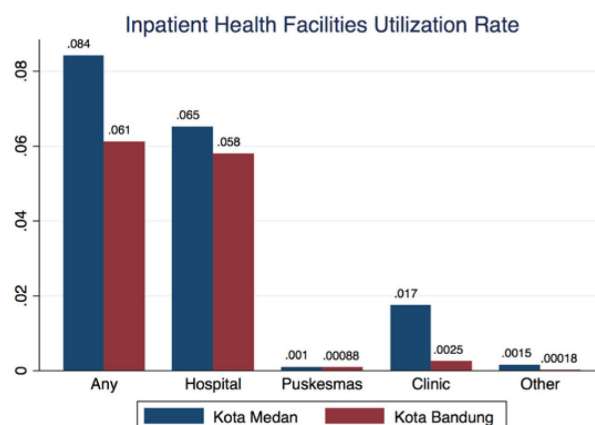
Our survey asked respondents what health care facilities they used for outpatient care. The most frequented health facility for outpatient care was the same for both pilot locations: a health clinic. Moreover, more people in Medan went to traditional healers for outpatient care than in Bandung. The distribution of outpatient health care facilities used is shown in Figure 7.

Figure 7. Outpatient Health Care Facilities Utilization Rates



As for inpatient care, the proportion that went to a hospital was higher in Medan than in Bandung. The utilization rate for clinics was also higher in Medan than in Bandung. The distribution of inpatient health care facilities used is shown in Figure 8.

Figure 8. Inpatient Health Care Facilities Utilization Rates



A comparison with the hospital utilization rate of JKN Mandiri members revealed that our baseline respondents' hospital utilization rates were lower than those of the enrolled members, both for inpatient and outpatient care.⁴⁾ The hospital inpatient rate for enrolled JKN Mandiri members was 13.6%, while for our baseline respondents it was 6.5% in Medan and 5.8% in Bandung. The hospital outpatient rates were 13.4% for enrolled members and 3.9% for Medan baseline respondents and 3.6% for Bandung baseline respondents.

5.2.4. JKN Mandiri Program Awareness

Our survey asked respondents if they had heard about the JKN Mandiri program. We also asked a follow-up question to check whether they correctly understood that the program is intended to cover every Indonesian citizens regardless their economic background. As Figure 9 shows, a large majority (89.8% in Medan and 95.7% in

4) The BPJS dataset includes JKN Mandiri members as of September 2014. The database includes 2,144 members from 1,319 families in the 12 villages selected for the pilot.

Bandung) of respondents were aware of the program. Further, a majority of the respondents also understood that the program covers every citizen. Overall, the awareness and the comprehension of the program was higher in Bandung than in Medan. This is probably due to the timing of the study in the two locations and the continued advertisement by BPJS and government.

Figure 9. JKN Mandiri Program Awareness

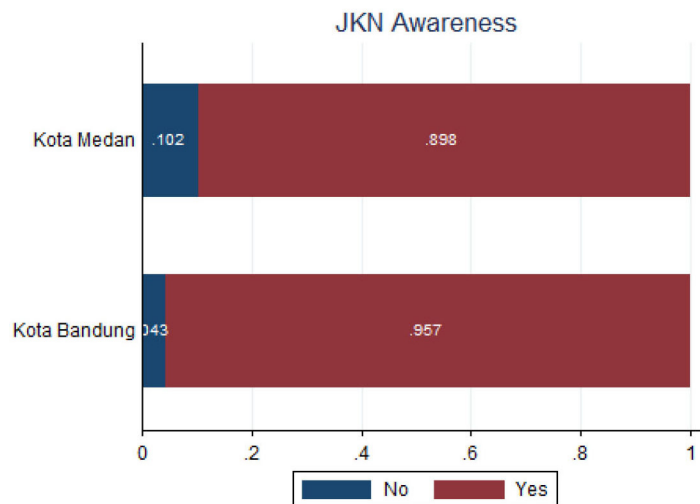
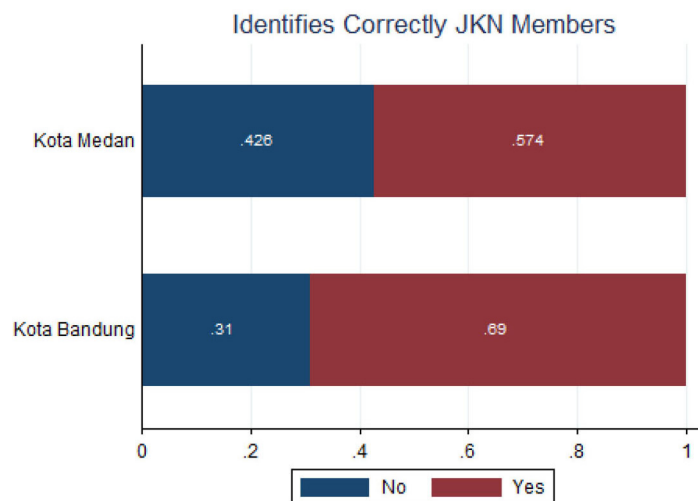


Figure 10. JKN Mandiri Program Understanding



We also broke down the above awareness level according to health status and education level (see Table 3). JKN Mandiri awareness was similar across different health status in both locations.

Table 3. JKN Mandiri Program Awareness Across

Onsite Reg	Medan	Bandung
Have heard of JKN	90%	96%
Family had outpatient treatment	89%	96%
Family did not have outpatient treatment	91%	95%
Family had inpatient treatment	90%	97%
Family did not have inpatient treatment	87%	95%
HH head went to high school	93%	99%
HH head less than high school	85%	94%

6. IMPLEMENTATION PROCESS AND CHALLENGES

We partnered with SurveyMeter, a survey company with a strong reputation in conducting high-quality data collection in Indonesia to implement the survey and interventions. The entire process was completed in approximately one month in Medan and three months in Bandung. On average, each household visit took approximately one to one-and-a-half hours. This duration includes the total time spent for screening to select household in our target group, for conducting the survey, and implementing the interventions.

6.1. Listing Process and Baseline

There were two main challenges in the listing process. First, we were only able to list 44% of the total households in the area. As often happens in urban areas, many households did not consent to participate in the survey. A second challenge was screening households to select our target population (uninsured, part of informal sector, and non-poor). Respondents were often not aware of their health insurance status and we needed to probe extensively to ensure that the sampled households did not have health insurance. Moreover, in Medan the local government's health insurance scheme (Jamkesda), was also being redistributed at the time of the pilot and had not been socialized widely yet. This increased the possibility of inclusion error.

6.2. Administrative Barriers: the Issue of Family Card

Three documents are needed to register for JKN Mandiri: an updated Family Card (or Kartu Keluarga /KK), the ID card of the family member who is doing the

registration, and color photographs of each household member. Households are also required to fill in a registration form. While there is a requirement to register all family members listed in the Family Card, households are allowed to not register members who are not part of the nuclear family (father, mother and children).

In Medan, problems with the Family Card (Kartu Keluarga or KK) were the most frequent barrier to successful registration. In particular, as Table 4 shows, in Medan, 77% of unsuccessful registration of those who had expressed intention to enroll during the at-home online registration were due to problems with the Family Card. In Bandung, the fraction of unsuccessful registration caused by family-card related issues was lower at about 58%, probably due to the more efficient administrative system.

Table 4. Reasons from Unsuccessful Registration

Reason for Unsuccessful Registration	Medan	Bandung
Internet connection issues	4%	11%
BPJS website cannot be accessed	1%	4%
Family-card related issues	77%	58%
Family card is already registered in JKN	8%	3%
No photographs	5%	6%
Other issues	6%	18%
Family card issue/HH members mismatch	42%	29%
Financial constraint	33%	20%
Not authorized by HH head	8%	11%
Not interested/not sure to register	8%	9%
Rejected to be Surveyed in Second Visit	8%	*
Need to discuss with other HH members	*	34%
Want to register directly to BPJS office	*	9%

Another barrier to successful registration were that households thought that they were incapable to pay the premiums once the subsidy offer ended. Moreover, household member who was present during the interview said that he/she needed to discuss the offer with other household members. Some households stated that they wanted to register directly to BPJS office.

6.3. Rejection to Enroll: Belief Towards Health Insurance

Some of the households who were in the no subsidy and on-site registration group but refused the registration offer were revisited by the research team for a qualitative interview. Problems with the family card were reported as one of the main reasons for refusing registration. Moreover, registration was refused because of the household's beliefs toward insurance. For example, the enumerators reported that some households refused to enroll because of religious reasons, i.e. they were being advised against BPJS or JKN Mandiri program by their religious leader.

This was likely the result of a controversy on whether JKN was to be considered forbidden to Muslims or not. In November 2015, the Indonesian Council of Ulema (MUI) said on its website that the JKN program was forbidden (*haram*) to Muslims because it contained elements of uncertainty (*gharar*), gambling (*maisir*), and usury (*riba*).⁵⁾ However, the claim that JKN was *haram* was later denied by the senior cleric of MUI.⁶⁾ BPJS Kesehatan, MUI, the GoI, the National Social Insurance Board (DJSN), and the Financial Service Authority (OJK) also stated that the word *haram* was never used.⁷⁾

5) See <http://jakartaglobe.beritasatu.com/news/mui-declares-national-health-insurance-program-haram/> (accessed in November 15, 2015).

6) See <http://www.thejakartapost.com/news/2015/07/31/national-scene-mui-denies-issuing-edict-against-bpjs.html#sthash.9NTuaUQe.dpuf> (accessed in November 15, 2015).

7) See <http://bpjs-kesehatan.go.id/bpjs/index.php/post/read/2015/358/The-Meeting-Result-Among-BPJS#358> (accessed in November 15, 2015).

7. ANALYSIS

The analysis presented in this report is based both on data collected in the baseline survey and on administrative data available from BPJS. The survey data was collected during the implementation of the study, while the administrative data was obtained in three extracts in April 2015 (after the conclusion of the study in Kota Medan), in April 2016 (after the conclusion of study in both sites) and, finally, in April 2017 (to collect information a year out).

We match study participants to the BPJS database using a uniquely identifiable number attached to each Indonesian resident (Nomor Induk Kependudukan or NIK). The IT department of BPJS first linked NIKs to BPJS membership number. The BPJS membership numbers were then used to extract information on membership, claims and payments for all the identified BPJS membership numbers. The membership data reports, for each individual, date of enrollment, membership type, membership class and district of residence. The claims data reports all claims submitted by individuals in public clinics and hospitals. The hospital claim data report start and end date, diagnosis, reimbursement value and facility where the claim was made. The clinic claim data report the same information with the exception of the reimbursement value, since they are paid based on capitation. The payment data report each calendar month for which a premium was paid and amount paid.

The administrative data recorded enrollment status, healthcare service utilization and payments. The data on healthcare service utilization ends in July 2016. This is a result of the fact that it takes time for hospitals, clinics, and family doctors to submit their claims to BPJS and for BPJS to verify the claims.

The results presented here on enrollment and selection uses the survey data and the administrative up to the most recent extract.

Estimating Equations

This study is Randomized Control Trial. We can estimate the causal effect of a specific treatment by regressing the outcome of interest on a dummy which equals 1 if the household was assigned to the treatment. Since the randomization ensures that the treatment and the control group are statistically equivalent, the difference between the two groups is the effect of the policy. This is exactly what the coefficient on the treatment dummy gives us. When multiple treatment dummies are included in the regression, the coefficient gives the effect of one specific treatment arm keeping other treatments constant.

We estimate the effect on enrollment using the following regressions:

$$\begin{aligned} ENROLL_i = & \alpha + \beta HALFSUBDITY_i + \beta FULLSUBDITY_i + \beta BONUSSUBDITY_i + \beta ONSITE_i \\ & + \beta EXTRAINFO_i + \beta_3 WAITINGINFO_i + \beta_4 MANDATEINFO_i + \delta OLD_r \\ & + \delta BANDUNG_i + \epsilon_i \end{aligned}$$

Where $ENROLL_i$ is a dummy equal to 1 household i enrolled. We additionally control for a dummy for the randomization procedure and a site dummy to allow for potential differences across sites. Robust standard errors are used throughout.

To understand whether different treatments attract different types of households, we test whether baseline characteristics of enrollees are different across treatments. We restrict the sample to enrolled households and estimate:

$$\begin{aligned} y_i = & \alpha + \beta HALFSUBDITY_i + \beta FULLSUBDITY_i + \beta BONUSSUBDITY_i + \beta ONSITE_i \\ & + \beta EXTRAINFO_i + \beta_3 WAITINGINFO_i + \beta_4 MANDATEINFO_i + \delta OLD_r \\ & + \delta BANDUNG_i + \epsilon_i \end{aligned}$$

Where y_i is characteristic y for household i . Robust standard errors are used throughout.

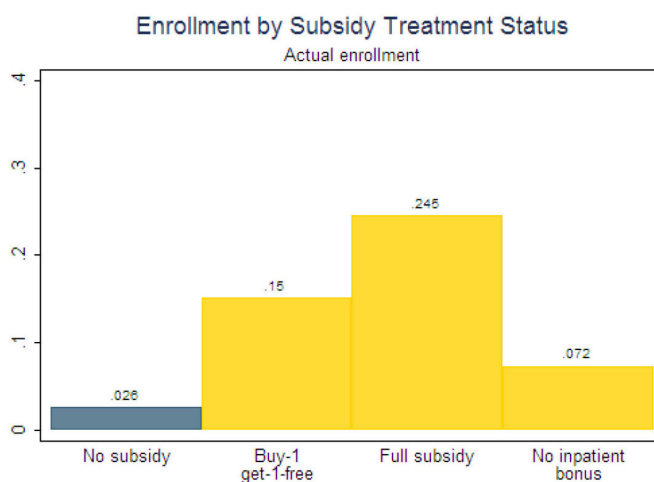
7.1. Enrollment: What Incentives Attract People to Sign Up?

Overall, we find that lowering the price of insurance and decreasing hassle costs both increase enrollment. The information treatments had no effect. For each treatment variation, the figures below show the mean enrollment in the control group and the sum of this mean and the treatment effect for each of the treatment groups. The colors of the bars of the different treatment arms vary depending on whether the difference across treatment means is statistically significant and at what level (yellow for significance at the 1% level, orange for significance at the 5% level and khaki for significance at the 10% level).

Subsidy Voucher Offer

Offering a subsidy significantly increased program enrollment. Figure 11 shows the effect of this treatment on enrollment.

Figure 11. Enrollment Level by Subsidy Voucher Offer

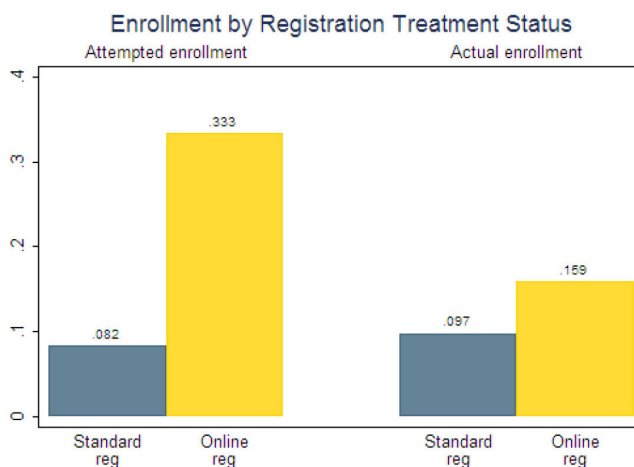


Across respondents in Medan and Bandung, the enrollment rate within 6 weeks from offer is 2.6% in the control group, 15% in buy-1-get-1 free group, 24.5% in the full subsidy group, and 7.2% in the no-inpatient claim bonus. The coefficients are statistically significant at 1% level for all sub-treatments.

Registration Treatment

The onsite registration treatment was successful at increasing enrollment. However, many households who expressed intention to enroll in the online registration treatment were not successful, which is why for this treatment we look both at actual and attempted enrollment. Actual enrollment refers to respondents who successfully registered as JKN Mandiri members within six weeks from the offer date. Attempted enrollment also includes respondents who either accepted our facilitators' offer to sign up for JKN using BPJS Kesehatan's online registration as recorded in our survey and respondents who visited our assistant at the BPJS office (both Medan and Bandung) and tried to register in person but were not successful. As Figure 12 shows, 33.3% of the households who received the offer to register on-site attempted to enroll but only 15.9% were able to register successfully.

Figure 12. Enrollment Level by Registration Treatment



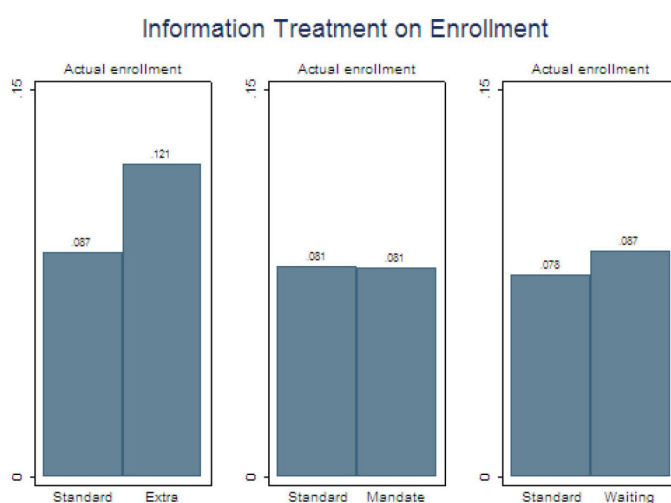
Interestingly, for the households that were required to go to the BPJS office to enroll, the difference between attempted enrollment and actual enrollment is negligible. One explanation for why the conversion from attempted to actual enrollment of the on-site registration treatment was much lower than that of the standard registration treatment is that the online system is less flexible. In particular, some of the

requirements got waived when households were registering at the BPJS office but could not be waived online. Moreover it is possible that households which registered under the status quo had more time to prepare the required registration documents (either one or two weeks), whereas households in the onsite registration treatment only had two days.

Information Treatment

None of the information treatments were effective at increasing enrollment.

Figure 13. Enrollment Level by Information Treatment Status



Financial Illustration Information Treatment

Providing information on the financial costs incurred without health insurance did not affect program enrollment. Figure 13 shows the effect of the treatment on actual enrollment. 12.1% of the sampled household who were given additional information are enrolled, while 8.7% of sampled household with basic information on JKN Mandiri did so. While there is a slight difference between the two groups, it is not statistically significant.

Mandate Information Treatment

Providing information on the possibility of mandate enforcement did not increase take-up. Figure 13 shows the effect of the treatment on actual enrollment. Approximately eight percent of sampled household are enrolled either with additional information on mandate period or not. The difference is not statistically significant.

Waiting Period Information Treatment

Providing information on the new 14-day waiting period did not increase enrollment as shown in Figure 13. There is a slight difference between the two groups, and it is not statistically significant: 8.7% of sampled household given additional information on waiting period enrolled, while 7.8% of sampled household in the control group did.

7.2. Selection: How Do Demographic Characteristics and Health-seeking Behaviors Differ for People Who Sign Up Under Different Treatments?

The next question we seek to answer is whether different treatments attract people with different health and demographic characteristics. This is important because in the long run BPJS Kesehatan's financial sustainability will depend on the inclusion of enough healthy people to offset the cost incurred by the sick members.

Our analysis focuses on health and demographic characteristics. The demographic characteristics we look at are household size, education attainment of the household head, and the presence of household members over 60. The health characteristics we analyze are self-reported health and prior health care service utilization. This is measured in our baseline survey by asking if any of the family members had received inpatient care in the past one year or outpatient care in the four weeks prior to the

survey. Using administrative claims data, we also analyzed households' actual health-seeking behavior: whether they submitted an inpatient/outpatient claims at BPJS partner hospitals and how many times they visited the hospitals.

Similarly as with enrollment, the graphs show the means of the specific outcome being analyzed for households in the control group and the sum of the mean and the treatment effect for the other columns. The sample is restricted to households who enrolled within six weeks from offer date. The color of the bars of the different treatments arms varies depending on whether the difference across treatment means is statistically significant and at what level (yellow for significance at the 1% level, orange for significance at the 5% level and khaki for significance at the 10% level).

7.2.1. Treatment Selection of Self-Reported Health

Self-reported health was measured in the baseline by asking individuals to rate their health from 1 (very healthy) to 4 (very unhealthy). To interpret the figures below, note that the higher the vertical axis, the worse the self-reported health. The difference in the self-reported health level by subsidy treatment status is shown in Figure 14. Households enrolled under the full subsidy treatment had better self-report health (significant at 1% level). While the self-reported health of the buy-one-get-one-free subsidy group and the no-inpatient bonus group are also lower than that of the control group, the difference is not significant. Figure 15 shows on-site registration attracted households with lower self-reported health (significant at 5% level). Information treatments do not differentially attract individuals with better or worse self-reported health.

Figure 14. Subsidy Treatment Selection on Self-Report Health Condition

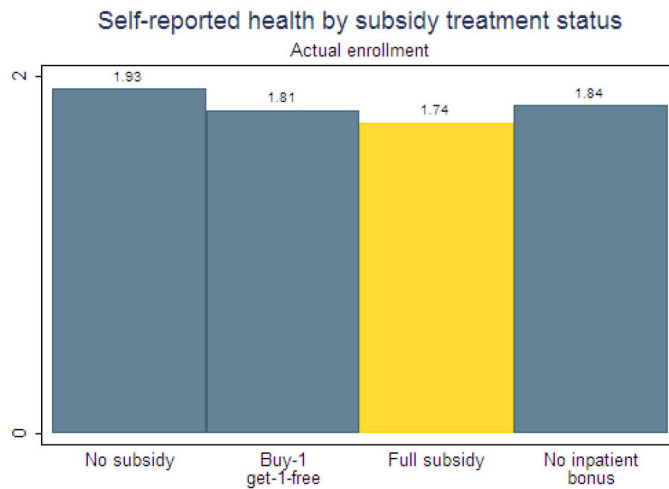
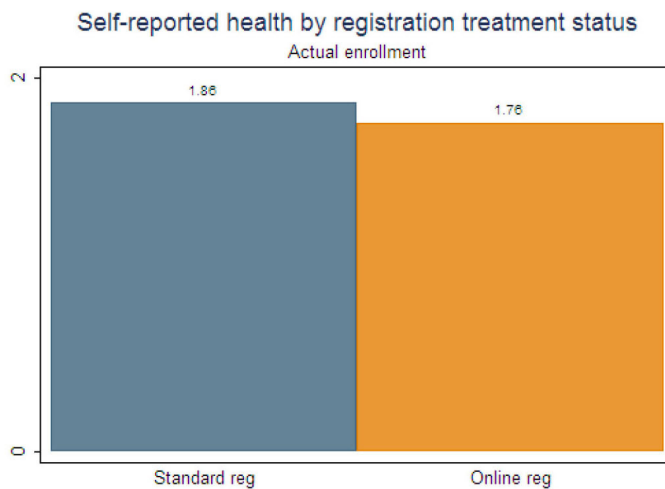


Figure 15. Registration Treatment Selection on Self-Report Health Condition

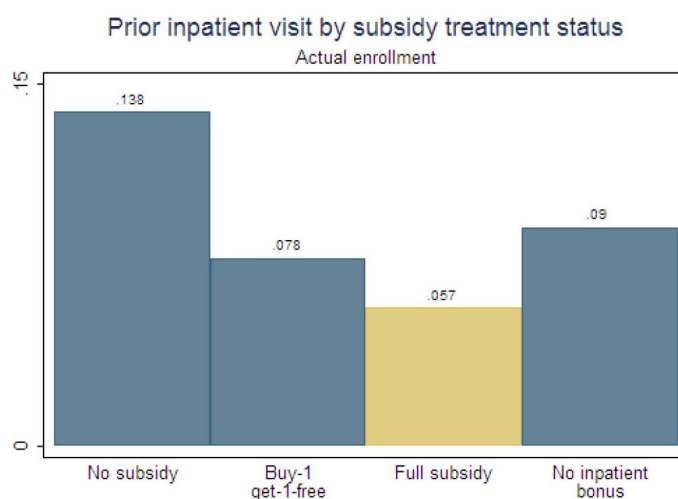


7.2.2. Treatment Selection of Household's Previous Health Care Service Utilization

Households who enrolled under different subsidy treatments had similar prevalence of any chronic diseases. For prior healthcare utilization, households enrolling with full subsidy are less likely to have had an inpatient visit in the past year than those

in the control group and the difference is significant at 10% level (Figure 16). While the likelihood of the buy-1-get-1 free or the no-inpatient bonus group to have had an inpatient visit are also lower than the control group, they are not significantly different. There is no significant difference on the outpatient visit history across subsidy groups.

Figure 16. Subsidy Treatment Selection on Inpatient Health Care Service Utilization Level



Households who enrolled under the on-site registration treatment had higher rate of prior inpatient visits compared to the control group. Meanwhile, the rate is lower for households enrolled after receiving JKN financial illustration. Both differences are statistically significant at 10%. On the other hand, the information on mandate and waiting period have no effect on inpatient visit history. Neither the onsite registration treatment nor any of the information treatments have a statistically significant effect on outpatient visit history.

7.2.3. Treatment Selection on Demographics : Household Head's Education, Elderly Presence, and Household Size

Education and presence of family members over 60 were not a dimension along which we had differential selection by subsidy or registration treatments. However,

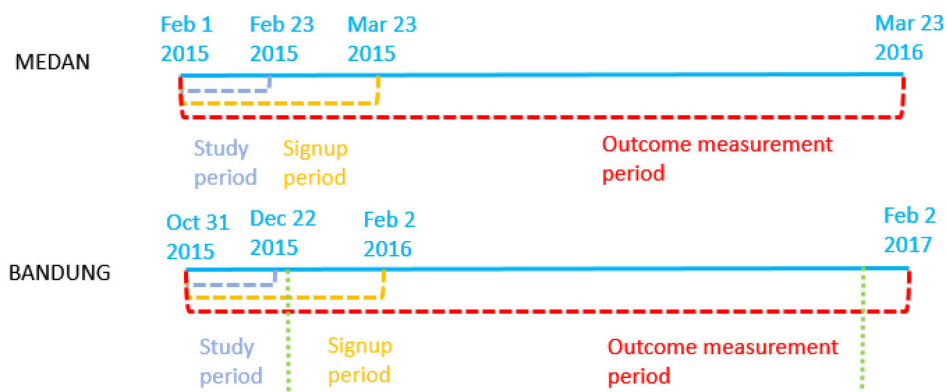
households who received extra information and mandate information were more likely to have elderly members compared to the control group and the difference is statistically significant at 10%. The waiting period information did not differentially affect enrollment of households with elderly family members.

Regarding the household size, we observed that the full subsidy treatment attracted households with more members (3.95 members) compared to the control group (3.48 members, significant at 1%). The mandate information appears to have attracted slightly smaller households, and the effect is significant at 10%. The size of households who enrolled under the treatment groups are not significantly different than the control.

7.2.4. Treatment Selection on Health-Seeking Behavior: Hospital Inpatient and Outpatient Care

In this section, we use health care utilization data from BPJS Kesehatan to track households' health care utilization for one year after their enrollment. We track the outcomes of our respondents from Medan until March 23rd, 2016, and until Feb 2nd, 2017 for our respondents from Bandung (Figure). We study three different outcomes: inpatient care, outpatient care, and any visit for inpatient care and outpatient care. These are all defined as average claims by month in which the premium was paid.

Figure 17. Outcome measurement period for Medan and Bandung respondents



Generally, we do not observe any statistically significant difference with the control group for any of the treatments on likelihood to submit inpatient claims, outpatient claims, and any claims. Households who enrolled under the full subsidy visited a health facility for outpatient care less frequently than the control group (significant at 10% level, Figure 18). Of all the different subsidy, registration, and information treatments, the full subsidy treatment is the only treatment to have significantly different selection on outpatient visit. For total number of inpatient visits, households enrolled with on-site treatment visited the health facility slightly more frequently (significant at 5%, Figure 19).

Figure 18.

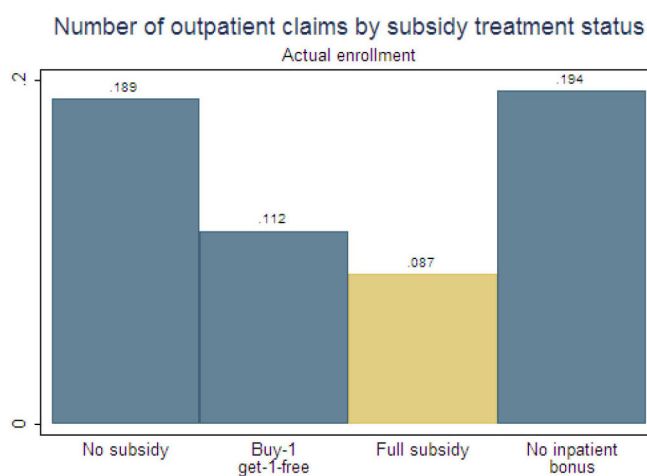
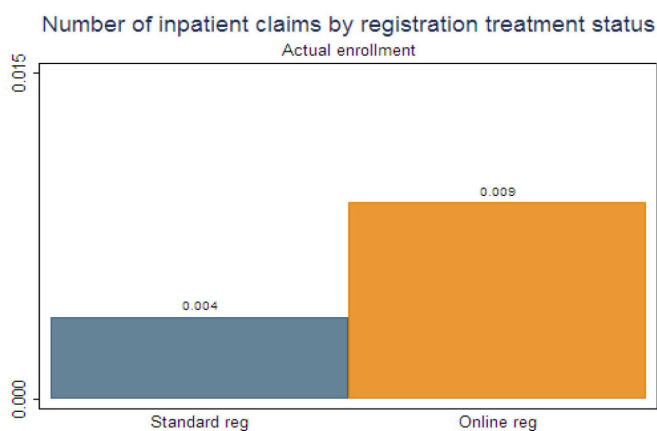


Figure 19 Inpatient visit



7.3. Payment: How Do the Payment Behaviors Differ for People Who Sign Up Under Different Treatments?

We use BPJS Kesehatan's administrative data to track households' premium payment behavior. With the dataset that we have, we can track the payment for the first 12 months after we offered the subsidy vouchers, as well as for 3 months after the subsidy ends. Premium payment behavior during the first-12 month is only relevant for households who have to cover their own premiums, i.e. households in the no subsidy group or households in the buy-one-get-one-free group. For households belonging to the latter group, we focus on payment behavior for premiums that the household was supposed to cover autonomously.

From our analysis, the likelihood that households enrolled under on-site registration were paying for all self-sponsored members for 12 months were lower by 11.2 pp compared to the control group. For households enrolled with no-inpatient bonus offers, they paid for all self-sponsored members for 6.95 months, which is higher compared to the control group at 4.55 months. Nevertheless, payment compliance remained low overall, with very low proportion of households paying the premium for all members for 15 months.

7.4. Cost-Effectiveness Analysis

To fully evaluate the interventions, it is important to understand their cost-effectiveness. Table 5 shows per household revenues and costs accrued by the government in the first 13 months since treatment across the different treatment groups (standard deviations are in brackets). All amounts are in IDRm.

The first column shows the average per-household premium that is paid by enrollees. A four member household enrolled for a year in a class III membership should pay IDR 1,224,000. The fact that actual premiums paid are much lower demonstrates that

households in the control group stop paying and drop coverage soon after enrollment. Similarly, although to a less extent, there is some degree of lapsing in the self-sponsored members of the half-subsidy group. Of course, almost no revenues are made off the full subsidy group, since the government is covering the premium for these households.

The average value of claims in the control group is IDR 666,000. This value is higher in the half subsidy group and comparable in the full subsidy group. Moreover, households in the subsidy groups are also more likely to visit a clinic. At first glance, this may appear to contradict the results on self-reported health that were discussed above. However, while households who sign up under the subsidy groups may indeed be healthier, they also keep health insurance coverage much longer and therefore, receive more healthcare.

Overall, all the subsidy treatment groups induce a loss to the government. The half subsidy and full subsidy groups are actually more expensive than offering no subsidy, as households in the control group do not stay enrolled but also submit fewer claims.

Table 5. Cost-Effectiveness Simulation

	Average premiums paid by enrollees (1)	Average premiums paid by government (3)	Average value of claims, winsorized (4)	Average number of clinic claims (5)	Total cost of subsidy (6)	Revenues- cost (7)
No subsidy	0,415 [.463]	0,000 [.]	0,666 [2,592]	1,714 [4,599]	0,000 [.]	-0,251 [2,534]
Half subsidy	0,310 [.446]	0,446 [.283]	1,045 [2,724]	2,693 [9,298]	0,446 [.283]	-0,735 [2,606]
Full subsidy	0,007 [.08]	1,044 [.411]	0,762 [2,357]	2,622 [4,813]	1,044 [.411]	-0,755 [2,355]

8. RESULT DISSEMINATION AND POLICY INFLUENCE

The research team's close collaboration with BPJS Kesehatan, the National Planning Agency (Bappenas), and TNP2K has been key to generate and disseminate evidence from the research. Meeting notes by J-PAL SEA show how individual officials within Bappenas have fully supported the endeavor throughout the process, providing constructive inputs, connecting with experts and stakeholders, providing letters of support, assigning staff to participate and support coordination with BPJS Kesehatan, and even co-hosting a workshop to disseminate findings to a targeted audience, which included over 50 policymakers from government agencies such as BPJS, the Ministry of Health (MOH), the Ministry of Social Affairs (MOSA), and TNP2K; other donor institutions such as Australia's DFAT and GIZ; and researchers from local think tanks. The event was titled "The JKN Health Insurance Program: Expansion of Informal Sector Participation" and also served as a medium to discuss the implications of these findings for upcoming policy decisions about the program.

In addition to this workshop, the research team has also conducted several meetings and presentations to share these findings in more detail, specifically with the Head of Bappenas directly, the Director of BPJS Kesehatan, the Executive Secretary of TNP2K, and Bappenas' Social Protection Directorate, among others. A member of the research team is embedded at BPJS Kesehatan, and through this position he was able to also provided input on the design of a potential cadre incentive program that was being considered, drawing from implementation lessons from an earlier logistic pilot in Gresik.

A number of other research institutes have aimed to generate evidence on this topic, but none have tested different interventions aimed at increasing enrollment and none have employed a randomized evaluation to illustrate so strongly whether these interventions have any impact.

While other factors may have come into play, the timing of the evidence-sharing vis a vis the policy decision indicates that KOICA's support for J-PAL SEA to produce rigorous evidence and perform outreach may have resulted in evidence informing policy debates. The rigor and simplicity involved in evaluation have made communicating and digesting these findings much easier. Furthermore, J-PAL SEA's close coordination with policy actors have helped make the study highly policy-relevant and applicable

9. CONCLUSION

The study shows that there is potential to increase enrollment in the JKN Mandiri program using targeted interventions. Buy-1-get-1-free, no-inpatient bonus, and the full subsidy treatments increased enrollment. In addition, online registration increased both the number of household that expressed intention to enroll and who managed to enroll. Instead, providing information was not successful at increasing enrollment.

Households that enroll under the full subsidy group and onsite registration appear to be healthier according to the self-reported health measure. Moreover, there is some evidence that both households who enroll under a full subsidy and under the no-inpatient bonus in Bandung, and under buy-1-get-1-free subsidy and full subsidy in Medan, were less likely to have an elderly family member compared to the control group. Additionally, the full subsidy treatment is the only treatment to have significantly different selection on outpatient visit. For total number of inpatient visits, households enrolled with on-site treatment visited the health facility slightly more frequently.

Overall, we found that the government will bear a loss in both no-subsidy scheme and half-subsidy scheme in cost-effectiveness analysis. However, the government would increase the enrollment rate.

10. APPENDIX

Appendix 1. Enrollment Effects by Treatment Types in Medan

	Subsidy Treatment				Registration Treatment		Waiting Period Treatment		Mandate Treatment	
	No-subsidy	Buy-1--get-1 free	Full subsidy	No-inpatient bonus	Standard	Online	Standard	14-day	No Treatment	Mandate Info
Assigned Treatment	2785	1157	568	1149	2840	2819	2833	2826	2850	2809
Actual Enrollment	47	118	116	61	115	227	158	184	181	161
Actual Enrollment (%)	1,7%	10,2%	20,4%	5,3%	4,0%	8,1%	5,6%	6,5%	6,4%	5,7%

Note: attempted and actual enrollment rates excludes sample who are assigned the combination of no subsidy and standard registration. BPJS administrative data is needed to obtain true enrollment rates.

Appendix 2: Enrollment Effects by Treatment Types in Bandung

	Subsidy treatment			Registration treatment		Information Treatment	
	No-subsidy	Buy-1--get-1 free	Full subsidy	Standard	Onsite via website	Standard	Additional information
Assigned Treatment	650	672	648				
Attempted enrollment*	139	120	303				
	20%	17%	46%				
Actual enrollment*	14	66	126				
	1%	8%	19%				

Notes: attempted and actual enrollment rates excludes sample who are assigned the combination of no subsidy and standard registration. BPJS administrative data is needed to obtain true enrollment rates.

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