

The effect of Jaminan Kesehatan Nasional (JKN) coverage on paying out-of-pocket for family planning services in Indonesia

ABSTRACT

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While Indonesia's national health insurance scheme—known as Jaminan Kesehatan Nasional (JKN)—was implemented in 2014, the modern contraceptive prevalence rate for all women has dropped in the last 13 years to 42.6% in 2020, and the total fertility rate has been stagnant for the last 20 years, measuring 2.4 in 2017. This study explores how JKN influences out-of-pocket payments for short- and long-term family planning (FP) methods from public and private midwives, primary health centers (PHCs), and hospitals. Using data from the 2017 Indonesia Demographic and Health Survey, we found that compared to uninsured women, JKN members experience significant cost savings for short-acting methods at public PHCs (-26%), for long-acting, reversible contraception at public hospitals (-26%), and for short-acting methods at private midwives (-0.5%). This points to a different type of challenge in Indonesia, one that may be less around financing and supply-side issues and more around increasing the demand for modern contraceptive methods, especially for target populations. JKN seems to be having an impact on specific types of FP services and providers but is certainly not a magic bullet for all the FP issues in Indonesia. With a more dynamic approach that increases JKN coverage, while also addressing these very real supply and demand-side issues, universal access to affordable FP is within sight in Indonesia.

The effect of Jaminan Kesehatan Nasional (JKN) coverage on paying out-of-pocket for family planning services in Indonesia

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ThinkWell produced this working paper under the Strategic Purchasing for Primary Health Care (SP4PHC) grant from the Bill & Melinda Gates Foundation. ThinkWell is implementing the SP4PHC project in partnership with government agencies and local research institutions in five countries.

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Recommended citation: Adani, Nadhila, Prastuti Soewondo, Nirwan Maulana, Anooj Pattnaik, and Trihono. 2022. *"The effect of Jaminan Kesehatan Nasional (JKN) coverage on paying out-of-pocket for family planning services in Indonesia."* Pre-print. Jakarta: ThinkWell.

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Introduction

Affordable access to family planning (FP) services is not only an essential part of universal health coverage (UHC), a key to economic growth and one of the Sustainable Development Goals (SDGs), but it also empowers women to have more control over their reproductive wellbeing and futures (Canning and Schultz, 2012; Prata *et al.*, 2017; Nations, 2020). The government of Indonesia (Gol) is trying to ensure this universal access through their national health insurance (NHI) scheme, *Jaminan Kesehatan Nasional* (JKN), to address stagnating FP trends in the country. While the modern contraceptive prevalence rate (mCPR) for all women increased from 48.3% in 1994 to 54.2% in 2007, it has dropped in the last 13 years to 42.6% in 2020 (Family Planning 2020, 2020). Similarly, the total fertility rate (TFR) decreased dramatically from 5.6 in 1967 to 2.6 births per woman three decades later in 1997, but then leveled off for the last 20 years, measuring 2.4 in 2017 (BKKBN *et al.*, 2018).

The National Population and Family Planning Board (BKKBN), launched in 1970, was the driving force behind the initial dramatic reduction in the TFR in Indonesia, as it was responsible for designing FP programs, allocating funds, and monitoring implementation. The success of BKKBN in reducing the TFR can largely be attributed to strong leadership and public finance support, along with strong social/religious support, which changed social norms, promoted delayed marriage, and improved family welfare (Chandani, O'Hanlon and Zellner, 2006). Due to the decline in donor funding for FP in Indonesia in the mid-1980s, the government shifted the burden of public funds by introducing privatization policies. These began with the launch of the *KB Mandiri* program, which targeted couples who could afford FP services to become self-sufficient, thus paying out-of-pocket (OOP) in private or public clinics (Chernichovsky D; Pardoko H; De Leeuw D; Rahardjo P; Lerman C, 1991). There has been a shift of responsibilities around FP from the national to the local government since the Gol decentralized its health authority in 2004, which has had mixed results due to the different priorities and capacities at the district level (Putjuk, 2014).

In 2014, to decrease OOPs and extend coverage to a wide range of services (including FP), the Gol established *Jaminan Kesehatan Nasional* (JKN), which is operated by the Social Insurance Administrator for Health (BPJS-K). BKKBN and BPJS-K now work in tandem to ensure affordable and convenient access to a range of contraceptive methods. BKKBN's role is to guarantee the availability of contraceptives at all types of facilities contracted with BPJS-K, while BPJS-K covers FP services from contracted public and private health facilities (Hadriah, 2017; Nasution, Mahendradhata and Trisnantoro, 2019). Public and private primary health care (PHC) facilities, as well as individual

doctors are able to directly contract with BPJS-K, while private midwives must network with those entities to be contracted. As of 2020, out of 17,621 health facilities in the BKKBN registry, only 11,617 have contracted with BPJS (66%), 16% are private, and 50% are public. Services such as FP counseling, as well as short-acting contraceptives like condoms and oral contraceptive pills (OCPs), are paid via capitation to PHC facilities, while three-month injectables and long-acting reversible contraceptive (LARC) methods like implants and intrauterine device (IUD) insertion are paid via fee-for-service, and sterilization procedures via case-based payments (Hadriah, 2017). The popular one-month injectables are not covered by JKN, as it is not BKKBN's priority to supply this short-term method to reduce the risk of discontinuation. Health facilities that are registered through BKKBN and contracted with BPJS-K can provide FP services for free to JKN members.

Yet, the implementation of JKN has not had the expected effect on the mCPR. While the use of LARCs has increased among insured women, FP utilization has not significantly increased and the mCPR remains counterintuitively higher among uninsured women (Ross, Fagan, and Dutta, 2018). Moreover, our calculation using the 2017 Indonesia Demographic and Health Survey (IDHS) found that 76% of women of reproductive age still pay OOP for FP; of these women, 46.0% are uninsured, 46.5% are JKN members, 7.5% have other insurance. One explanation is that private midwives are the major source of contraceptive services (41% of all FP service provision), especially the most popular three-month injectable, yet these midwives often do not contract with JKN (Nurjasmı, 2020; Wilopo *et al.*, 2020). Moreover, in the rapidly growing private sector in Indonesia, private hospitals have been contracting with JKN while private PHC facilities have not been joining JKN at the same rate (BPJSK, 2020). These developments likely have contributed to women paying OOP for mainly short-term methods, even as JKN coverage extends to over 84% of the population, because their preferred provider is not covered by JKN (Teplitskaya, Ross, and Dutta, 2018).

Among other studies on the effect of JKN on FP access and utilization, one found that JKN coverage may be more important for accessing FP services for the insured poor versus the insured non-poor (Ross, Fagan, and Dutta, 2018). Another found that more uninsured women than insured women used the popular methods of injectables and OCPs (Nurjasmı, 2020). There have also been a few studies examining the effect of JKN coverage on OOP payments in general, especially for the poor, with mixed results (Nugraheni and Hartono, 2017; Tarigan, 2017). However, we found little evidence about how expanding JKN coverage is affecting how much Indonesians pay OOP for FP services, specifically. This study explores this question from an equity perspective, analyzing how JKN

influences OOP payments for short- and long-term FP methods from public and private midwives, PHCs, and hospitals.

Methods

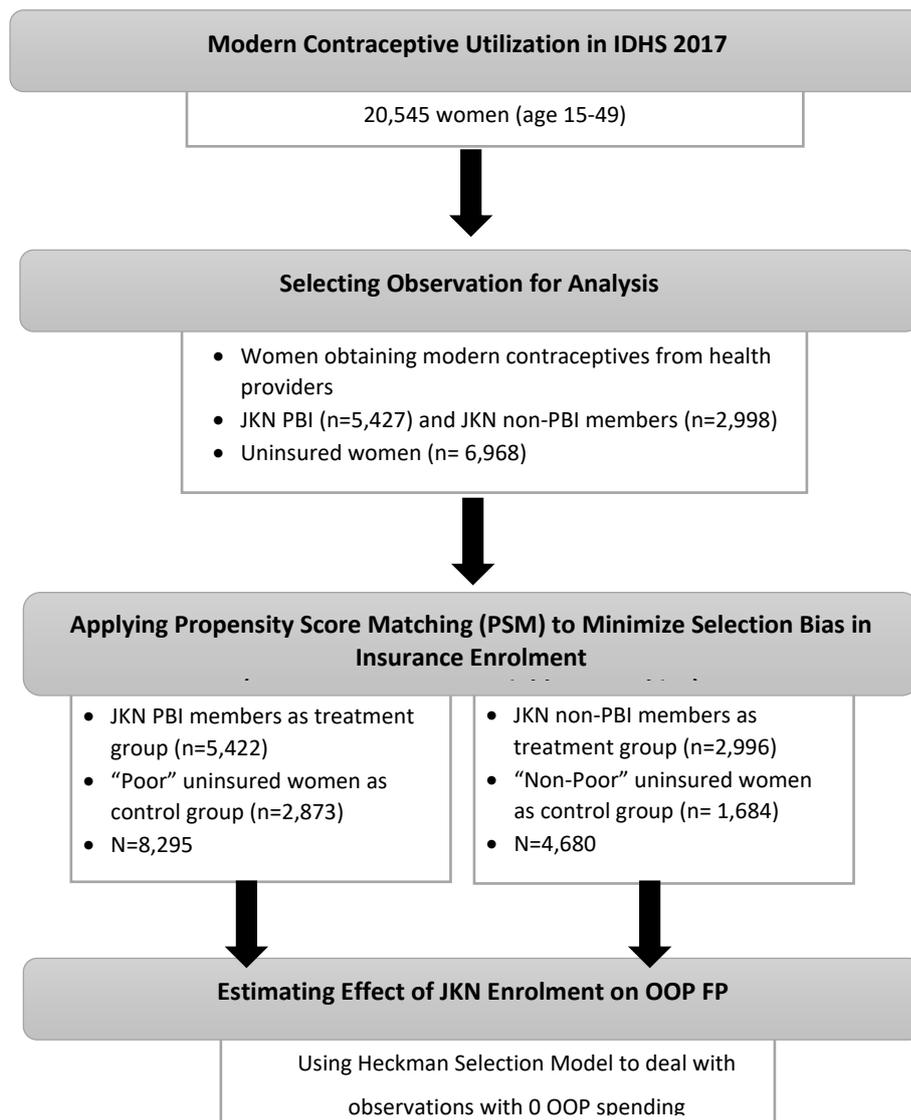
DATA

This study uses cross-sectional data from the 2017 IDHS. This IDHS was implemented by Indonesia's Bureau of Statistics (BPS) in collaboration with BKKBN and the Ministry of Health (MOH). The survey, conducted about every five years, provides a comprehensive overview of basic demographic and health indicators, such as fertility, FP, and maternal, newborn, and child health (MNCH). The 2017 IDHS surveyed 35,681 women of reproductive age (15-49 years) using a two-stage stratified sampling and is representative at the national level, and for urban and rural areas at the provincial level.

IDHS is not the only data source for FP utilization In Indonesia. The National Socio-Economic Survey (SUSENAS) also gives information about FP utilization by type and provider, as well as data about whether individuals paid OOP when obtaining health services. However, IDHS gives a better estimate of OOP payments when accessing contraceptive methods. The OOP indicator in the IDHS reflects the amount of OOP paid for the current contraceptive the individual used, while SUSENAS asks the amount of OOP an individual paid for FP services in the last year. IDHS also provides more explanatory variables that likely are related to FP utilization, such as reasons for using contraception and knowledge about contraceptives. This information is vital to use as control variables in the regression analysis to minimize omitted variable bias.

Our unit of analysis is JKN members and uninsured women obtaining modern contraceptive methods from health facilities ([Figure 1](#)). We exclude women obtaining contraceptive devices from drugstores and convenience stores because these are not included in the JKN benefits package. In total, our observations consist of 5,427 JKN PBI members, 2,998 JKN non-PBI members, and 6,968 uninsured women. The PBI group consists of poor members whose premiums are subsidized by the national or local government. The non-PBI group consists of members whose premiums are not subsidized. However, our final observation for the estimation is reduced to 5,422 and 2,996 for PBI and non-PBI respectively, as well as 4,557 uninsured group after performing propensity score matching (PSM). We used Stata 16 special edition to conduct the data analysis.

Figure 1. Estimation Steps



Source: Author's illustration

Measures

OUTCOME VARIABLES

OOP spending for contraceptive methods, which the 2017 IDHS defines as costs paid in cash to obtain the current contraceptive, including service fees. This variable is adjusted in real terms using the ratio of the 2017 national average poverty line over the province's poverty line, which allows comparability across regions. However, we found unreasonably low values in the variable, probably caused by data entry errors and respondents' recall bias. We decided that responses below RP 10,000 (US\$0.70) are recoded as 0 because this is a typical tariff for outpatient care at public PHC

facilities. There are around 0.2% of total observations with the OOP below this threshold. We explored different thresholds, but the results did not change significantly.

EXPLANATORY VARIABLES AND COVARIATES

Insurance type categorized as: (1) uninsured women, (2) JKN PBI members, and (3) JKN non-PBI members. We compare JKN members – PBI and non-PBI – with uninsured women to assess the effectiveness of JKN in reducing OOP for modern contraceptives. This assessment will be disaggregated by type of contraceptive and provider. This is important since demand is different across these variables and JKN payment mechanisms work differently for each contraceptive method and provider.

To select control variables, we referred to the literature that explores the relationship between insurance and FP, as well as other maternal health services (Bonfrer, Van de Poel, and Van Doorslaer, 2014; Nababan *et al.*, 2017; Anindya *et al.*, 2020). Characteristics of individuals and households are included in the regression model, specifically, age, marital status, occupation, years of education, number of living children, as well as an asset-based wealth index. We also control for behavioral factors associated with contraceptive decisions. These variables are (1) whether women have knowledge about FP, such as method type and side effects, (2) reasons for using contraceptives – limiting or spacing, and (3) who made the decision to use contraception – man/ husband, woman/wife, or both. Lastly, spatial heterogeneity is controlled using residency (urban or rural) and region of residence (34 provinces). **Table 1** provides a list of the covariates.

Table 1. Descriptive Statistics

Variables	Model					
	JKN Model (n=12,975)		JKN PBI Model (n=8,295)		JKN non-PBI Model (n=4,680)	
	Frequency	% of total observations	Frequency	% of total observations	Frequency	% of total observations
Dependent variables						
Real OOP for modern contraceptives	12,975	100%	8,295	100%	4,680	100%
Real OOP for modern contraceptives>0	9,502	73%	5,818	70%	3,684	79%
Independent variables						
Insurance Status						
Uninsured	4,557	35%				
JKN	8,418	65%				
Poor uninsured			2,873	35%		
PBI			5,422	65%		
Non-poor uninsured					1,684	36%
Non-PBI					2,996	64%

Variables	Model					
	JKN Model (n=12,975)		JKN PBI Model (n=8,295)		JKN non-PBI Model (n=4,680)	
	Frequency	% of total observations	Frequency	% of total observations	Frequency	% of total observations
Provider						
Public hospital	911	7%	554	7%	357	8%
Private hospital	564	4%	217	3%	347	7%
Public PHC	3,037	23%	2,280	27%	757	16%
Private PHC	830	6%	389	5%	441	9%
Public midwives	1,592	12%	1,160	14%	432	9%
Private midwives	6,041	47%	3,696	45%	2,345	50%
Contraceptive						
Condom or pill	1,260	10%	889	11%	371	8%
Injection 1-month	1,184	9%	507	6%	677	14%
Injection 3-month	6,707	52%	4,655	56%	2,052	44%
Implant/Norplant	1,343	10%	973	12%	370	8%
IUD	1,359	10%	672	8%	687	15%
Sterilization	1,120	9%	598	7%	522	11%
Age 15-49 years	12,975	100%	8,295	100%	4,680	100%
Marital status:						
Single/was married	94	1%	53	1%	41	1%
Married	12,880	99%	8,242	99%	4,638	99%
Occupation:						
Unemployed	5,231	40%	3,457	42%	1,774	38%
Professional/technical/managerial	721	6%	180	2%	541	12%
Clerical	347	3%	76	1%	271	6%
Sales	2,304	18%	1,460	18%	844	18%
Agricultural – self-employed	2,021	16%	1,690	20%	331	7%
Industrial worker	1,259	10%	752	9%	507	11%
Services	1,092	8%	680	8%	412	9%
Women's years of education	12,975	100%	8,295	100%	4,680	100%
Number of living children	12,975	100%	8,295	100%	4,680	100%
Obtain information/knowledge about FP in the last six months from various sources:						
No	3,199	25%	2,295	28%	904	19%
Yes	9,776	75%	6,000	72%	3,776	81%
Who made decision to use FP:						
Man/Husband/joint/other	8,351	64%	5,279	64%	3,072	66%
Woman/Wife	4,623	36%	3,016	36%	1,607	34%
Reasons for using FP:						
Limiting fertility (Ref.)	8,210	63%	5,226	63%	2,984	64%
Spacing fertility	4,766	37%	3,070	37%	1,696	36%
Wealth index (Asset-based):						
Poorest	2,428	19%	2,246	27%	182	4%

Variables	Model					
	JKN Model (n=12,975)		JKN PBI Model (n=8,295)		JKN non-PBI Model (n=4,680)	
	Frequency	% of total observations	Frequency	% of total observations	Frequency	% of total observations
Poorer	2,814	22%	2,271	27%	543	12%
Middle	2,865	22%	1,909	23%	956	20%
Richer	2,699	21%	1,321	16%	1,378	29%
Richest	2,170	17%	549	7%	1,621	35%
Location:						
Rural	6,938	53%	5,061	61%	1,877	40%
Urban	6,037	47%	3,235	39%	2,802	60%

Source: Indonesia Demographic and Health Survey, 2017

Statistical Analysis

This study uses descriptive statistics and econometrics modelling to estimate the effect of JKN membership on OOP spending for modern contraceptives. The estimation steps are depicted in **Figure 1**. First, we used PSM to address the selection bias (endogeneity) of JKN PBI and JKN non-PBI enrollment. There might be unobservable characteristics causing these enrollments rather than their being randomly distributed (Waters, 1999). PSM aims to find control groups among uninsured observations having similar characteristics to JKN members. The uninsured groups whose characteristics matched with PBI groups are categorized as uninsured poor, while the uninsured that matched with non-PBI groups are categorized as uninsured non-poor.

The matching process is based on the probability (propensity score) of enrollment in JKN PBI and JKN non-PBI given a set of observable covariates, which is predicted using a logit model. We use the one-to-one nearest neighbor (NN) matching method, which is the most common method in the literature (Wirtz *et al.*, 2012). In this case, the treatment group and control group will be paired once they have the closest propensity score. We also performed balance diagnostic tests to examine the pairing quality using the command *pstest* in Stata. We found that the PSM satisfies the balancing property. First, almost all covariates are significant before matching and subsequently become insignificant. Second, our standardized bias (% bias) is below 20, which is the threshold for sufficient balance (Rosenbaum and Rubin, 1985; Yang and Dalton, 2012). Third, our Rubin's B for JKN PBI and JKN non-PBI matching are 1.3 and 17.0, respectively. The threshold for balance is less than 25. Fourth, our Rubin's R for these matching are 1.03 and 0.94, respectively. The threshold ranged from 0.5 to 2.0. Lastly, control groups for JKN PBI and JKN non-PBI are mutually exclusive. This is important because if the balancing property is not satisfied, there is a chance that some

observations will appear in both control groups. [Table A](#) in the annex shows the results of these tests.

The final step is estimating the effect of JKN membership on OOP payments for modern contraceptives. Like any typical health spending data, OOP payments for modern contraceptives contain zero values. In this case, a traditional Ordinary Least Squares (OLS) model will produce inconsistent parameter estimates (Cameron AC, 2009). We utilize a maximum-likelihood Heckman Selection Model to solve the limited dependent variable issue (Heckman, 1979). This method is more suitable when the choice to spend/consume is strongly influenced by the amount spent or price (AM, 2000). It is most likely applicable in the case of contraceptive use, that the price/tariff of contraceptive commodities has a significant influence on the decision to use.

Descriptive Statistics

Our findings show that among modern contraceptive women users, 42% are uninsured, 32% are JKN PBI (subsidized) members, 19% are JKN non-PBI (unsubsidized) members, and 7% use other insurance. The most popular contraceptive methods among JKN PBI members and JKN non-PBI members are the three-month injection and oral contraceptive pills (OCPs), accounting for more than half of total use. These methods are mostly obtained from private midwives (41% among PBI members and 46% among non-PBI members). For long-acting methods, PBI members largely rely on public PHCs (42%) and public hospitals (30%), while the non-PBI members use mostly public and private hospitals.

About 24% of women obtain FP services without paying OOP; most of these women (64%) are JKN members. The remaining 76% of women pay OOP to obtain contraceptives; 65% of PBI members, and 77% of non-PBI members pay OOP for contraceptives. Those PBI members incurring OOP pay RP 92,297 (US\$6.52) on average annually, while non-PBI members pay RP 299,927 (US\$21.20) annually on average. Still, these amounts are drastically lower compared to the OOP borne by private and mixed insurance holders (RP 626,105 or US\$44.22). Still, JKN-PBI members are better off compared to the uninsured, who bear RP 197,278 (US\$13.93) on average annually.

Among PBI members who accessed FP services that should have been free, only 35% received these services free of charge. Among this 35%, 43% use short-acting methods (mostly three-month injectables), and 57% use long-acting methods (mostly implants). Both methods are obtained mostly

from public PHCs, 67% and 53% respectively. In contrast, among the 65% of PBI members who had to pay to access these services, 86% use short-acting (mostly three-month injectables), and 14% use long-acting (mostly implants). The short-acting methods are obtained mostly from private midwives' practices (64%). While for the long-acting method, it is dominated by private midwives' practices and public PHC 29%, and 27%, respectively.

Among non-PBI members, 23% accessed the service for free. Among this 23%, 34% use short-acting (3-month injectables), 64% use long-acting (IUD and sterilization). Public PHC (39%) and private midwives' practices (27%) are the main sources to obtain free short-acting methods, while long-acting method mostly came from public hospital (37%) and public PHC (34%). In contrast, among the 77% that had to pay for these services, 72% use short-acting (mostly three-month injectables), and 28% use long-acting (mostly IUD). Short acting methods are obtained from private midwives (71%), and long-acting methods are mostly obtained from private hospitals (31%) and private midwives (27%).

Results

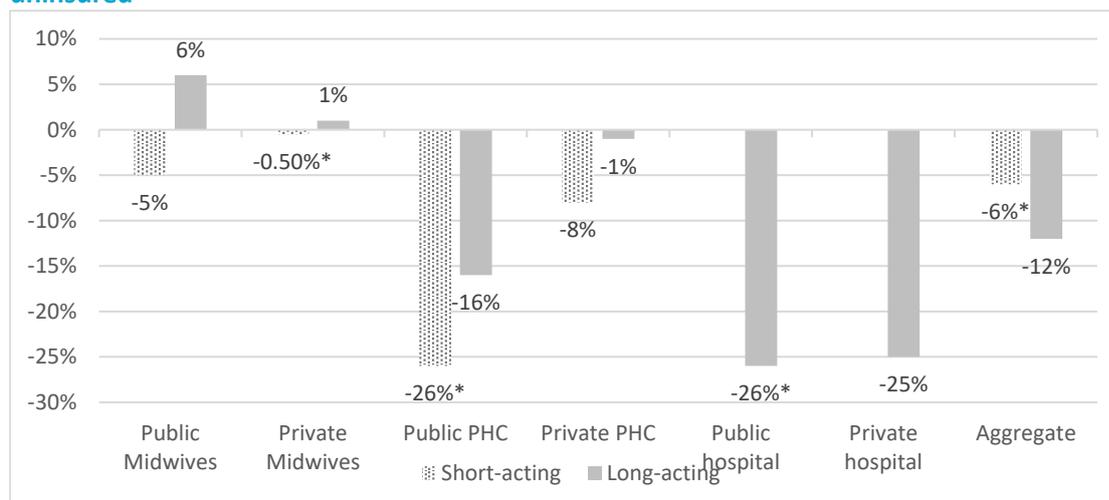
There are three segments of observations to be estimated: the JKN, JKN PBI, and JKN non-PBI. For the JKN segment, the observations consist of all JKN members in the matched sample with the uninsured women from the PSM results. The PBI segment is for JKN PBI members who match the uninsured poor, while the non-PBI segment is for JKN non-PBI members who match the uninsured non-poor. Within each segment, we separate the regression by type of contraceptive — short-acting or long-acting. Hospitals are excluded in the short-acting regression model, as a JKN claim for these methods can only be made at the PHC level. [Table B](#) and [C](#) in the annex show the regression output of the selection model and outcome model for each segment. The model's output is difficult to interpret directly because it uses a logarithmic function as the regression model is non-linear, therefore we use the margin command in Stata to obtain the marginal effect of predictors that is referred to throughout this paper. The selection model explains the probability of paying OOP, and the outcome model shows the average OOP payments.

JKN SEGMENT

From the selection model, we found that JKN members have a significantly lower probability of incurring OOP costs when obtaining any type of modern contraceptive (short- or long-acting) compared to uninsured women. Broken down by source of provider, JKN members (both PBI and non-PBI) have the highest probability of not paying OOP at public PHC facilities for short-acting

methods and at public hospitals for LARCs. **Figure 2** depicts the results of the unconditional marginal effect. If the bar is downward and has an asterisk, it means that JKN is statistically significant in lowering OOP compared to the uninsured. A downward bar without an asterisk means that the association is insignificant, but that JKN *potentially* lowers OOP below that incurred by the uninsured. Our outcome model found, on average, JKN members (whether PBI or non-PBI) experience significant cost savings for short-acting methods at public PHCs (-26%), for LARCs at public hospitals (-26%), and for short-acting methods at private midwives (-0.5%) equivalent to RP 61,000 (US\$7.50) per person. While this seems small, it is equal to the JKN tariff for four three-month injectable services at a PHC. This reduction effect is significant at the national level because use of private midwife clinics is 66% among JKN members who pay OOP for short-acting methods. At the aggregate level across all providers, the cost-savings are significant only for short-acting methods at -6%.

Figure 2. The effect of JKN membership on OOP payments for FP methods, compared to the uninsured



Source: Indonesia Demographic and Health Survey, 2017

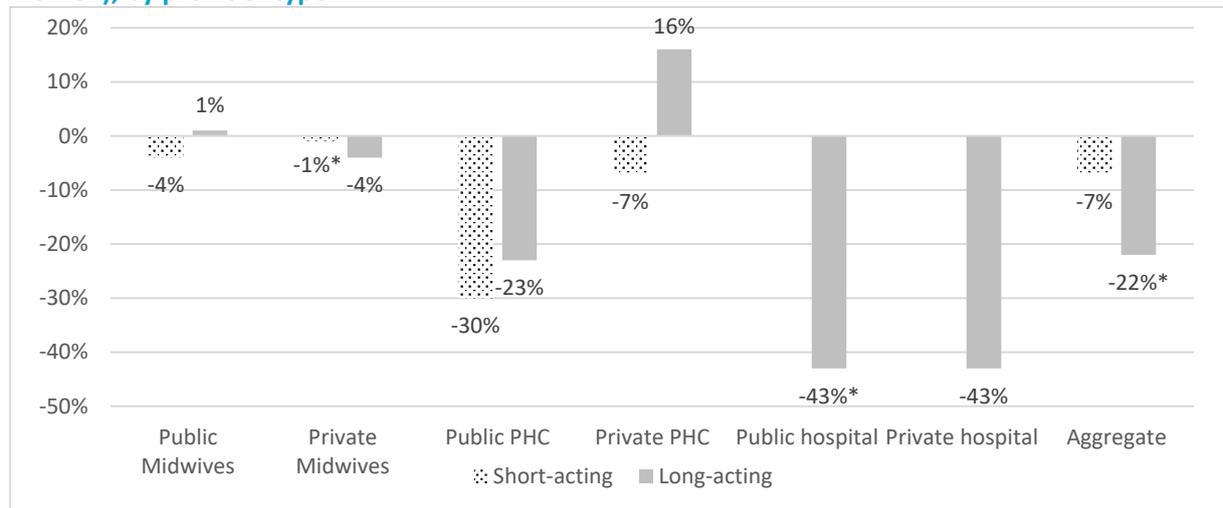
Note: Asterisks indicate statistically significant figures at the 10% level; others are not significant.

JKN PBI SEGMENT

PBI members have a lower probability to pay OOP for short-acting (-6.0%) and long-acting methods (-8.4%) when compared to uninsured poor women. The probability of PBI members not paying OOP at public PHC facilities for short-acting methods and for LARCs at public hospitals are 45% and 80%, respectively. **Figure 3** explores this relationship for the PBI group only. In this model, JKN PBI members have significantly lower OOP spending for short-acting contraceptives compared to poor uninsured women at private midwives (-1%) or equivalent to RP 107,000 (US\$7.50) per person. This amount is equal to the JKN tariff for insertion of an IUD or implants at PHCs. The reduction effect is

significant at the aggregate level because use of private midwife clinics is 64% among PBI members who pay OOP for short-acting methods JKN PBI is statistically significant in reducing OOP for LARCs, by 22% compared to poor uninsured women, the reduction effect is significant only at public hospitals (43%).

Figure 3. Effect of JKN PBI coverage on OOP paid for FP methods (compared to poor uninsured women), by provider type



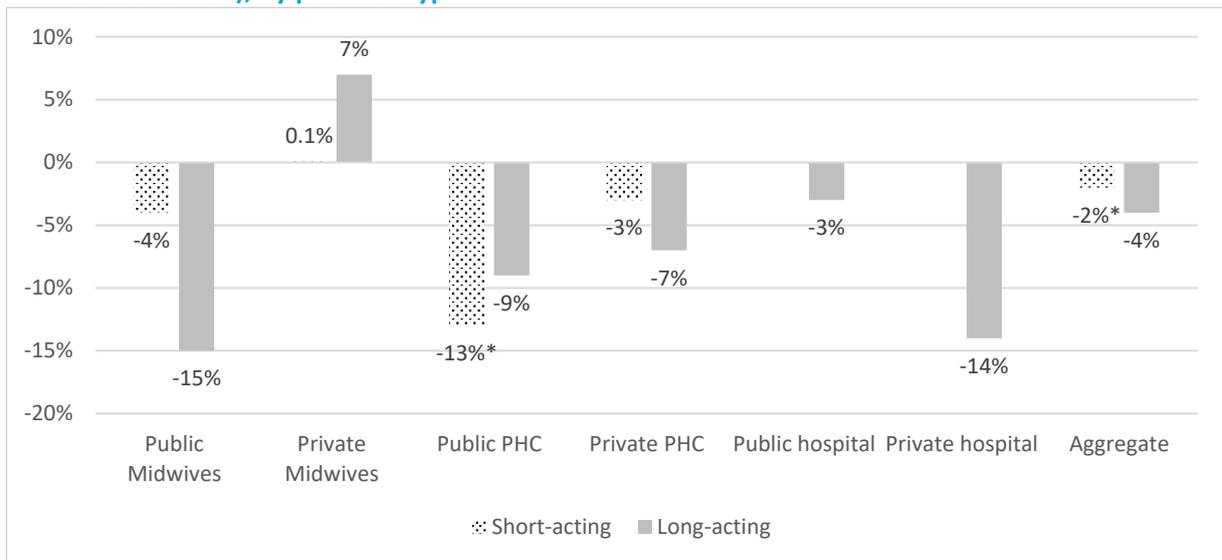
Source: Indonesia Demographic and Health Survey, 2017

Note: Asterisks indicate statistically significant figures at the 10% level; others are not significant.

JKN NON-PBI SEGMENT

Women who are covered by JKN but not in the PBI group also had a lower probability to pay OOP than uninsured non-poor women for short-acting (-2.0%) and long-acting (-3.0%) methods, though this difference was smaller but still significant. The probabilities of not paying OOP is 33% for short-term methods at public PHC facilities and 52% for LARCs at public hospitals. [Figure 4](#) shows that JKN is statistically significant in reducing OOP for short-acting contraceptives by 2% compared to non-poor uninsured women. However, it is only significant at public PHCs (-13%), and not at any other provider type. We did not see significant associations between JKN enrolment and OOP savings by type of facility, even though some facilities may potentially lower OOP. For example, OOP at public providers should be significantly lower since they are mostly contracted with BPJS-K.

Figure 4. Effect of JKN non-PBI coverage on OOP paid for FP methods (compared to non-poor uninsured women), by provider type



Source: Indonesia Demographic and Health Survey, 2017

Note: Asterisks indicate statistically significant figures at the 10% level; others are not significant.

Discussion

This study found that JKN only reduces OOP costs for short-acting FP methods (-6% compared to uninsured). Interestingly, when we disaggregate between PBI and non-PBI (poor vs non-poor JKN members), PBI members pay less OOP for long-acting methods (-22% compared to poor uninsured), in contrast with non-PBI members who pay less OOP for short-acting methods (-2% compared to non-poor uninsured). We found that private midwives may play a role in reducing OOP among PBI members, but cost-saving is relatively small because only a limited number of private midwives have joined the JKN network.

We expected public PHC facilities to be significant in reducing OOP payments for PBI members. Since most PHC facilities are enrolled in JKN, they could act as gatekeepers and are more available in rural areas than private PHC facilities. However, we did not observe a statistically significant difference in OOP savings between the insured and uninsured poor for both short- and long-acting methods at public PHC facilities. This is likely because the uninsured poor are entitled to free health services, including FP, at public PHC facilities if they prove their eligibility by presenting a letter from their district government stating their poor status. In contrast, public PHC facilities significantly reduce OOP costs for short-acting methods among non-PBI members likely because the non-poor uninsured are not eligible for free health services with a government letter. In general, we do not see significant OOP savings in many facilities for non-PBI populations because non-PBI members tend to

not use their JKN membership, preferring to pay. This is confirmed from 2018 claim data and BKKBN data, which showed that 54% of non-PBI members do not use their JKN for FP services.

Our analysis also led to some interesting findings on the factors influencing OOP costs besides JKN enrollment. More-educated and wealthier women spend more OOP for both short-acting and long-acting methods, which could be associated with their awareness of family planning benefits. This higher OOP cost might also be related to their preference for higher quality services than what JKN covers, such as visiting an obstetrician and using ultrasound sonography to perform IUD insertion or removal. Furthermore, spending OOP for short-acting methods decreases with a woman's age, and it increases for long-acting methods. Perhaps as women reach their desired family size, they are more motivated and willing to pay for long-acting methods.

Most Indonesian women, especially the poor, use short-term methods (mainly 3-month injectables) for their contraceptive needs. Nearly half of all women access these methods from private midwives, who largely are not contracted with JKN. Thus, these women had to pay OOP for their preferred contraceptive method from their preferred FP provider. This suggests that if the Government of Indonesia wants to reduce OOP spent on FP, they should do their utmost to attract and contract private midwives to join the national health insurance scheme. This is no easy task, however, as private midwives face several barriers to joining JKN, including low payment rates and high administrative roadblocks (Wilopo *et al.*, 2020). For example, it would be easier if BPJS allows private midwives to directly contract with them rather than contracting through public or private PHC facilities. Enrolling other private providers, such as private PHC facilities for short-term methods and private hospitals for long-term methods, would also help reduce the OOP burden, as this study showed there is no statistically significant difference in OOP spending between the insured and uninsured accessing services at those facilities.

There are also challenges around readiness and quality among public facilities across Indonesia. First, the capacity of health workers to provide long-acting and permanent contraceptives are limited, the proportion of doctors who have been given trainings decreased from 87% in 2017 to 86.7% in 2021 (BKKBN, 2021). Similarly, midwives' trainings also decreased from 86.2% to 85.2% in the same period. Second, facility capacity is often inadequate, especially the medical equipment needed to conduct the service (Ardiana, Ekoriano and Fathonah, 2019). Lastly, public facilities have shown high stockout rates for contraceptives, especially short-acting methods. This may be because of inaccurate forecasting, geographic obstacles, and limited physical infrastructure, such as inadequate

warehouses (Ardiana, Ekoriano and Fathonah, 2019). Moreover, BKKBN's health facilities' database is not well integrated with the JKN's health facilities' database, and therefore facilities can be registered in the JKN network but not in the BKKBN system, and vice versa. In this case, BKKBN will not supply the commodities to those health facilities. Thus, JKN members would have to pay OOP for these FP methods.

Improving public sector readiness and increasing free access to contraceptive methods in the private sector would undoubtedly reduce financial barriers and improve accessibility to FP in Indonesia. However, this likely will not wholly address the stagnant modern contraceptive prevalence rate since JKN's implementation. The percentage of women whose demand is satisfied with a modern contraceptive method is actually high in Indonesia, registering at 81.0% in 2020, and has been high for the last decade (Family Planning 2020, 2020). In comparison, demand satisfied in neighboring countries like the Philippines and Vietnam is only 57.8% and 79.3% in 2020, respectively (Track 20, 2020). This points to a different type of challenge in Indonesia, one that may be less around financing and supply-side issues and more around increasing the demand for modern contraceptive methods, especially for target populations. For instance, there has been a declining trend in demand (from 46.6% in 2012 to 45.5% in 2017) for contraceptives among married women who completed secondary education, and 39.6% in 2012 to 19.4% in 2017 for unmarried women.

This study is not without limitations. First, we used JKN enrolment data instead of JKN utilization specific to FP services, as the latter data was not available. This would alter the estimation since those enrolled do not necessarily use their benefits to obtain family planning services. Second, there can be omitted variable bias that is relevant to Indonesia, such as region and ethnicity. Lastly, although the study uses PSM to reduce selection bias, it is a cross-sectional study, and thus we could not infer causality. Ideally, the study should utilize longitudinal data that tracks the same individuals prior to JKN implementation and after implementation. Such data are not currently available, thus we were not able to obtain the control and treatment groups needed to infer causality.

We do not find statistically significant evidence that JKN is reducing OOP for all types of contraceptives and in all health facilities. If the Gol wants to successfully address the financial barriers to family planning access, they should simultaneously address the real concerns around supply-side readiness of public providers and declining trends in demand for FP. For instance, young, unmarried couples face barriers accessing FP services, as it requires personal identification documents for verification prior to obtaining the service. Additionally, generating demand among

married couples and those with more than two children (often found in more rural areas) is key to improve FP trends. To strengthen supply-side readiness, the government needs to take steps to attract and contract with the preferred FP providers of women in their country, especially private midwives. JKN could it easier for these critical providers to join the network by enabling them to directly contract and increasing payment rates. Providing trainings to doctors and midwives and investing in proper equipment to conduct the service at public PHC facilities could further strengthen supply-side readiness.

In its young age, JKN seems to be having an impact on specific types of FP services and providers but is certainly not a magic bullet for all the family planning issues in Indonesia. With a more dynamic approach that spreads JKN coverage while also addressing these very real supply and demand-side issues, universal access to affordable FP is within sight in Indonesia.

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Annex

Table A. Test of balancing property of the propensity score

Independent Variables	JKN PBI - Poor Uninsured					JKN Non-PBI - Non-Poor Uninsured				
	Mean		% Bias	Reduction % Bias	p> t	Mean		% Bias	Reduction % Bias	p> t
	Treated	Control				Treated	Control			
Wealth index - Reference: Poorest										
Poorest										
Unmatched	0,26	0,24	5,3		0,01	0,11	0,24	-		0,00
Matched	0,26	0,26	0,9	82,6	0,64	0,11	0,11	33,10	94,80	0,43
Middle										
Unmatched	0,19	0,23	-8,3		0,00	0,19	0,23	-8,90		0,00
Matched	0,19	0,19	-0,6	93,2	0,77	0,19	0,19	0,30	96,30	0,89
Richer										
Unmatched	0,12	0,19	-19,1		0,00	0,28	0,19	20,80		0,00
Matched	0,12	0,13	-1,1	94,2	0,54	0,28	0,28	-0,40	98,10	0,89
Richest										
Unmatched	0,05	0,11	-21,4		0,00	0,37	0,11	63,90		0,00
Matched	0,05	0,05	1,4	93,5	0,37	0,37	0,38	-2,70	95,80	0,39
Age										
Unmatched	34,93	34,04	11,5		0,00	35,6	34	20,50		0,00
Matched	34,93	34,91	0,3	97,5	0,88	35,6	35,4	2,60	87,30	0,31
Years of education										
Unmatched	7,96	8,59	-16,1		0,00	11,79	8,59	81,50		0,00
Matched	7,96	7,87	2,4	85,4	0,20	11,79	11,72	1,90	97,70	0,49
Occupation - Reference: Unemployed										
Professional/technical/managerial										
Unmatched	0,03	0,03	-1,3		0,49	0,17	0,03	48,60		0,00
Matched	0,03	0,02	2	-55,5	0,27	0,17	0,17	0,00	100,00	1
Clerical										
Unmatched	0,01	0,01	2,8		0,14	0,09	0,01	36,00		0,00
Matched	0,01	0,01	1,5	45,9	0,45	0,09	0,10	-6,00	83,30	0,09
Sales										
Unmatched	0,17	0,21	-11,1		0,00	0,18	0,21	-8,60		0,00
Matched	0,17	0,16	2,5	77,2	0,17	0,18	0,16	4,40	49,00	0,08
Agricultural - self employed										
Unmatched	0,24	0,19	12,6		0,00	0,06	0,19	-		0,00
Matched	0,24	0,24	-0,1	98,9	0,95	0,06	0,06	41,40	94,90	0,27
Industrial worker										
Unmatched	0,07	0,07	1,4		0,47	0,08	0,07	3,60		0,11
Matched	0,07	0,08	-0,4	68,4	0,82	0,08	0,07	3,30	7,10	0,20
Services										
Unmatched	0,08	0,07	3,9		0,04	0,08	0,07	4,10		0,06
Matched	0,08	0,08	1,2	70,3	0,56	0,08	0,07	3,10	25,10	0,24
Region - Reference: Sumatera										
Jawa-Banten										
Unmatched	0,35	0,38	-6,9		0,00	0,36	0,38	-3,90		0,08
Matched	0,35	0,37	-3,3	52,4	0,09	0,36	0,42	-	-195,00	0,00
Bali-NT										
Unmatched	0,11	0,08	9,1		0,00	0,06	0,08	-7,00		0,00
Matched	0,11	0,10	1,8	79,8	0,37	0,06	0,05	4,20	39,40	0,07
Kalimantan										
Unmatched	0,06	0,11	-19,7		0,00	0,11	0,11	0,10		0,97
Matched	0,06	0,06	-0,6	96,8	0,71	0,11	0,11	0,60	-593,40	0,80
Sulawesi										
Unmatched	0,19	0,11	22		0,00	0,14	0,11	9,60		0,00
Matched	0,19	0,18	1,7	92,5	0,44	0,14	0,11	8,70	8,80	1
Maluku-Papua										
Unmatched	0,07	0,07	-0,1		0,94	0,06	0,07	-2,30		0,31
Matched	0,07	0,06	3,4	-2393,9	0,07	0,06	0,06	1,00	58,60	0,70

Residency - Reference: Rural										
Urban										
Unmatched	0,38	0,41	-5,1		0,01	0,65	0,41	51,10		0,00
Matched	0,38	0,38	-0,7	85,5	0,70	0,65	0,66	-2,60	94,90	0,31

Source: Author's calculation, based on data from Indonesia Demographic and Health Survey, 2017

Table B. Estimated coefficients of Heckman selection model for short-acting method

Explanatory Variables	JKN Segment		JKN PBI Segment		JKN Non-PBI Segment	
	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)
JKN Status:						
Uninsured (Ref.)						
JKN	-0.759*** (0.103)	-0.0449* (0.0237)				
PBI			-0.890*** (-7.82)	-0.0168 (-0.70)		
Non-PBI					-0.351* (-2.21)	-0.129* (-2.44)
Provider:						
Public PHC (Ref.)						
Private PHC	0.360** (0.149)	0.00523 (0.0523)	0.622** (2.95)	-0.0195 (-0.44)	0.149 (0.73)	0.0565 (0.85)
Public Midwives	0.788*** (0.120)	0.0527** (0.0244)	0.685*** (6.47)	0.0454 (1.70)	1.075*** (4.71)	0.0577 (1.58)
Private Midwives	1.012*** (0.158)	0.0573*** (0.0183)	0.963*** (6.02)	0.0632** (2.75)	1.243*** (6.04)	0.0490 (1.52)
JKN Status#Provider:						
Uninsured#Public PHC (Ref.)						
JKN#Private PHC	0.405* (0.219)	0.0299 (0.0546)				
JKN#Public Midwives	0.424*** (0.152)	0.0435 (0.0296)				
JKN#Private Midwives	0.722*** (0.129)	0.0247 (0.0236)				
NonPBI#Private PHC			0.462 (1.50)	-0.0186 (-0.36)		
PBI#Public Midwives			0.585*** (3.32)	0.0243 (0.77)		
PBI#Private Midwives			0.818*** (6.20)	-0.0244 (-0.88)		
NonPBI#Private PHC					0.247 (0.69)	0.121 (1.89)
NonPBI#Public Midwives					-0.0278 (-0.10)	0.119 (1.94)
NonPBI#Private Midwives					0.344 (1.80)	0.144* (2.48)
Contraceptive device:						
Condom and Pill (Ref.)						
Injection 1 month	2.529*** (0.130)	0.555*** (0.0402)	2.944*** (11.58)	0.556*** (11.83)	2.102*** (15.98)	0.548*** (16.04)
Injection 3 month	1.880*** (0.104)	0.542*** (0.0359)	2.085*** (21.07)	0.532*** (13.91)	1.485*** (7.87)	0.556*** (15.17)
Age	-0.0144** (0.00625)	-0.00354*** (0.000861)	-0.0113* (-2.02)	-0.00341*** (-4.62)	-0.0246* (-2.05)	-0.00331* (-2.19)
Marital status:						
Single/was married (Ref.)						
Married	0.514*** (0.132)	0.000660 (0.0736)	0.0763 (0.26)	-0.0312 (-0.28)	1.125** (2.69)	0.0856* (2.16)
Occupation:						
Unemployed (Ref.)						

Explanatory Variables	JKN Segment		JKN PBI Segment		JKN Non-PBI Segment	
	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)
Professional/technical/managerial	0.00608 (0.141)	-0.00120 (0.0151)	0.0835 (0.46)	0.0641 (1.87)	0.0584 (0.34)	-0.0163 (-0.90)
Clerical	0.156 (0.253)	-0.00985 (0.0198)	0.249 (0.88)	-0.0620 (-1.17)	0.00912 (0.03)	-0.0000352 (-0.00)
Sales	0.0695 (0.0768)	0.00728 (0.00949)	0.130 (1.12)	0.00240 (0.15)	-0.0207 (-0.25)	0.0243* (1.99)
Agricultural - self employed	0.0814 (0.0629)	0.00461 (0.0167)	0.135 (1.87)	0.000111 (0.01)	-0.167 (-1.55)	0.00396 (0.16)
Industrial worker	-0.0257 (0.0697)	-0.0119 (0.0220)	0.0713 (1.00)	-0.00844 (-0.35)	-0.225 (-1.77)	-0.0230 (-0.97)
Services	0.0559 (0.101)	-0.00905 (0.0122)	0.0614 (0.51)	-0.00816 (-0.58)	0.0306 (0.21)	-0.0104 (-0.59)
Years of Education	0.0160* (0.00940)	0.00531*** (0.00175)	0.0103 (0.97)	0.00556* (2.56)	0.00925 (0.62)	0.00422* (2.44)
Number of Living Children	-0.0111 (0.0307)	0.00664* (0.00396)	-0.0258 (-0.78)	0.00911* (2.20)	0.0359 (0.64)	-0.0000760 (-0.01)
Obtain information/knowledge about FP:						
No (Ref.)						
Yes	-0.0332 (0.0539)	0.0102 (0.00935)	-0.0397 (-1.09)	0.00282 (0.22)	-0.0106 (-0.07)	0.0231* (2.30)
FP Decision:						
Husband/joint/other (Ref.)						
Women	-5.29e-05 (0.0791)	-0.0149* (0.00838)	-0.0332 (-0.44)	-0.00702 (-0.91)	0.0580 (0.44)	-0.0290* (-2.05)
FP Reason:						
Limiting fertility (Ref.)						
Spacing fertility	-0.0810 (0.0697)	-0.0104 (0.00915)	-0.0624 (-1.11)	-0.00599 (-0.48)	-0.140 (-0.92)	-0.0191 (-0.99)
Wealth index (Asset-based)						
Poorest (Ref.)						
Poorer	-0.0897 (0.0649)	0.0132* (0.00674)	-0.139* (-2.03)	0.0144* (2.43)	0.0944 (0.50)	0.0199 (0.81)
Middle	-0.117 (0.0737)	0.000393 (0.0130)	-0.0933 (-1.15)	0.00662 (0.71)	-0.227 (-1.79)	-0.00576 (-0.19)
Richer	-0.0950 (0.0771)	0.0228 (0.0139)	-0.0671 (-0.75)	0.00654 (0.35)	-0.208 (-1.54)	0.0331 (1.50)
Richest	-0.0295 (0.0921)	0.0580*** (0.0158)	-0.180 (-1.08)	0.0399 (1.96)	-0.173 (-1.14)	0.0513* (2.02)
Location:						
Rural (Ref.)						
Urban	-0.0630 (0.0557)	-0.00537 (0.0170)	-0.148* (-2.15)	-0.00961 (-0.52)	0.103 (1.32)	-0.0119 (-0.67)
Province fixed effect						
Constant	-0.959*** (0.327)	9.269*** (0.108)	-0.610 (-1.66)	9.292*** (65.49)	-1.110 (-1.91)	9.214*** (95.99)
Athrho		-0.00480 (0.0132)		0.00552 (0.48)		-0.0775* (-2.52)
Lnsigma		-1.359*** (0.0686)		-1.386*** (-14.93)		-1.344*** (-22.80)
Observations		8,462		5,646		2,816

Source: Author's calculation, based on data from Indonesia Demographic and Health Survey, 2017

t-statistics in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Clustered standard errors at province level

Note: We use margins command in Stata 16 to obtain average marginal effect.

Table C. Estimated coefficients of Heckman selection model for Long-acting method

Explanatory Variables	JKN Segment		JKN PBI Segment		JKN Non-PBI Segment	
	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)
JKN Status:						
Uninsured (Ref.)						
JKN	-0.275** (0.129)	-0.150 (0.253)				
PBI			-0.420** (-2.61)	-0.847* (-2.51)		
Non-PBI					-0.0617 (-0.37)	0.326 (1.11)
Provider:						
Public Hospital (Ref.)			1.205*** (5.62)	0.242 (0.72)	1.261*** (4.87)	0.776** (2.63)
Private Hospital	1.185*** (0.146)	0.546** (0.276)	-0.198 (-0.82)	-1.174*** (-4.28)	-0.200 (-0.89)	-1.050*** (-3.62)
Public PHC	-0.238 (0.223)	-1.017*** (0.243)	1.205*** (5.00)	0.242 (0.96)	1.261*** (3.34)	0.776** (0.98)
Private PHC	0.819*** (0.179)	0.285 (0.244)	0.830*** (5.00)	0.248 (0.96)	0.878*** (3.34)	0.322 (0.98)
Public Midwives	0.534* (0.318)	-0.289 (0.308)	0.437 (1.25)	-0.434 (-1.09)	2.240*** (3.66)	-0.331 (-1.57)
Private Midwives	1.263*** (0.189)	-0.204 (0.271)	1.468*** (5.36)	-0.336 (-1.05)	1.142*** (3.79)	-0.154 (-0.53)
JKN Status # Provider:						
Uninsured#Public Hospital (Ref.)						
JKN#Private Hospital	-0.266 (0.188)	-0.147 (0.270)				
JKN#Public PHC	0.127 (0.167)	0.225 (0.300)				
JKN#Private PHC	0.296 (0.204)	-0.00299 (0.289)				
JKN#Public Midwives	0.391* (0.208)	0.0204 (0.348)				
PBI#Private Hospital			-0.475* (-2.46)	0.699 (1.82)		
PBI#Public PHC			0.204 (0.82)	0.985* (2.05)		
PBI#Private PHC			0.789* (2.50)	0.495 (1.60)		
PBI#Public Midwives			0.462 (1.79)	0.571 (1.34)		
NonPBI#Private Hospital			0.308 (1.37)	0.758* (2.13)		
NonPBI#Public PHC					-0.286 (-0.96)	-0.746* (-2.19)
PBI#Private Midwives					-0.0193 (-0.13)	-0.462 (-1.44)
NonPBI#Private PHC					-0.0734 (-0.22)	s (-0.96)
NonPBI#Public Midwives					-0.970 (-1.61)	-0.186 (-0.61)
NonPBI#Private Midwives					0.270 (0.88)	-0.238 (-0.64)
Contraceptive device:						
Implants/norplant (Ref.)						
IUD	-0.0528 (0.0936)	0.371*** (0.0791)	-0.227 (-1.78)	0.278 (1.69)	0.272* (2.23)	0.476*** (7.65)
Sterilization	-0.0173 (0.124)	1.795*** (0.152)	0.00215 (0.02)	1.729*** (6.94)	0.0850 (0.47)	1.861*** (14.09)
Age	-0.0528 (0.0936)	0.371*** (0.0791)	-0.00151 (-0.26)	-0.0204** (-3.05)	0.0109 (1.17)	-0.00352 (-0.50)

Explanatory Variables	JKN Segment		JKN PBI Segment		JKN Non-PBI Segment	
	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)	Selection Model OOP FP>0	Outcome Model Ln(OOP FP)
Marital status:						
Single/was married (Ref.)	0.00436 (0.00478)	-0.0118*** (0.00411)	0.308 (0.93)	0.240 (0.70)	-0.225 (-0.49)	-0.202 (-0.72)
Occupation:						
Unemployed (Ref.)						
Professional/technical/managerial	0.0624 (0.255)	-0.0517 (0.338)	0.0526 (0.20)	-0.0153 (-0.06)	-0.0232 (-0.12)	-0.0470 (-0.56)
Clerical	-2.25e-05 (0.120)	0.0118 (0.0687)	0.362 (1.32)	-0.00514 (-0.03)	0.470* (2.02)	0.112 (0.93)
Sales	0.470** (0.213)	0.123 (0.104)	0.325** (3.23)	-0.0263 (-0.17)	0.159 (1.29)	0.0860 (1.30)
Agricultural - self employed	0.228** (0.0892)	-0.00569 (0.0954)	0.255 (1.87)	-0.0530 (-0.54)	0.206 (1.09)	-0.399 (-1.48)
Industrial worker	0.180 (0.114)	-0.208 (0.154)	-0.190 (-1.69)	0.429 (1.56)	0.0252 (0.19)	-0.0654 (-0.74)
Services	-0.0881 (0.0797)	0.175 (0.125)	0.179 (1.27)	-0.0464 (-0.31)	-0.0919 (-0.53)	-0.120 (-0.86)
Years of Education	0.0131* (0.00760)	0.0105** (0.00511)	0.0193 (1.64)	0.00659 (1.82)	-0.00934 (-0.57)	0.0156 (1.45)
Number of Living Children	-0.00615 (0.0248)	-0.0197 (0.0427)	0.0217 (0.74)	-0.0320 (-0.42)	-0.0366 (-1.20)	-0.00261 (-0.09)
Obtain information/knowledge about FP:						
No (Ref.)						
Yes	0.0142 (0.0643)	-0.133 (0.110)	0.00567 (0.06)	-0.127 (-0.94)	0.0387 (0.39)	-0.160* (-2.02)
FP Decision:						
Husband/joint/other (Ref.)						
Women	-0.158* (0.0886)	-0.139*** (0.0538)	-0.174* (-2.11)	-0.214** (-3.01)	-0.178 (-1.47)	-0.00796 (-0.11)
FP Reason:						
Limiting fertility (Ref.)						
Spacing fertility	0.178*** (0.0640)	-0.127** (0.0507)	0.252** (3.17)	-0.224** (-2.59)	0.0657 (0.48)	-0.0365 (-0.54)
Wealth index (Asset-based)						
Poorest (Ref.)						
Poorer	-0.000119 (0.0947)	-0.241* (0.139)	-0.0160 (-0.16)	-0.276 (-1.91)	0.00847 (0.03)	0.191 (0.65)
Middle	0.0713 (0.116)	-0.0556 (0.125)	0.122 (1.08)	-0.0324 (-0.25)	-0.131 (-0.47)	0.111 (0.34)
Richer	0.100 (0.112)	0.0359 (0.143)	0.0452 (0.35)	0.0282 (0.22)	-0.0234 (-0.09)	0.102 (0.30)
Richest	0.496** (0.211)	0.298*** (0.110)	0.361 (1.06)	0.429*** (3.71)	0.364 (1.31)	0.270 (0.83)
Location:						
Rural (Ref.)						
Urban	-0.0192 (0.0696)	-0.142** (0.0720)	0.0360 (0.48)	-0.0815 (-0.66)	-0.0578 (-0.49)	-0.104 (-1.22)
Province fixed effect						
Constant	-1.123*** (0.361)	13.04*** (0.410)	-1.258** (-2.82)	-0.760 (-1.36)	13.37*** (31.38)	12.50*** (23.45)
Athrho		-0.0236 (0.0215)		-0.0318 (-1.02)		0.0385 (0.52)
Lnsigma		-0.0422 (0.0440)		-0.0150 (-0.37)		-0.132** (-3.02)
Observations		3,678		2,127		1,551

Source: Author's calculation, based on data from Indonesia Demographic and Health Survey, 2017

t-statistics in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Clustered standard errors at province level

Note: We use margins command in Stata 16 to obtain average marginal effect.