

Has Indonesia's National Health Insurance Scheme Improved Access to Maternal and Newborn Health Services?

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Background

Access to Maternal and Newborn Health Services and Health Financing Schemes

Jampersal to JKN. Over the past several decades, the Government of Indonesia has expanded access to maternal and newborn health (MNH) services through several key policies and programs. Beginning with the Safe Motherhood Initiative in the late 1980s, the Government of Indonesia focused on increasing access to essential MNH services in rural areas by expanding access to midwives, such as through the village midwife (*bidan di desa*) program. From January 2011 through January 2014, the Government of Indonesia implemented the first iteration of the *Jaminan Persalinan* program, or Jampersal, to provide antenatal, delivery, and postnatal care for uninsured women and their newborns, along with referrals for complications and childcare for newborns younger than 28 days old (Table 1) (Achadi et al., 2014; Koblinsky and Qomariyah, 2014). The program was discontinued upon the introduction of national health insurance, *Jaminan Kesehatan Nasional* (JKN), in 2014. The Jampersal program was noted for its impact on improving delivery coverage in areas with low institutional delivery coverage; its effect was minimal in urban areas that provided easy access to health facilities, such as Depok municipality, as demonstrated by a 2014 study (Achadi et al., 2014). In this study, mothers in Garut district, which had low institutional delivery coverage, were 2.4 times as likely to experience institutional deliveries following Jampersal, whereas no significant effect was seen among mothers in Depok.

Table 1: Summary of MNH Services Covered Under Jampersal and JKN (2011–Present)

Jampersal I (2011–2013)	JKN (2014–present)	Jampersal II (2017–present)
Population: Uninsured women	Population: JKN-insured women	Population: Uninsured, poor women
<ul style="list-style-type: none"> Services at primary care facilities: <ul style="list-style-type: none"> Antenatal care (4 visits) Vaginal delivery Postnatal care (4 visits) Neonatal health services Transportation to referral facility Referral services for maternal and neonatal complications at secondary and tertiary hospitals: <ul style="list-style-type: none"> Antenatal care (high-risk pregnancy) Normal delivery Complicated delivery/Caesarean section Postnatal care (high-risk pregnancy) Inpatient services for sick newborns 	<ul style="list-style-type: none"> Services at primary care facilities: <ul style="list-style-type: none"> Antenatal care Vaginal delivery Postnatal care Neonatal health services Transportation to referral facility Referral services for maternal and neonatal complications at secondary and tertiary hospitals: <ul style="list-style-type: none"> Vaginal delivery Caesarean section Reproductive infections Antepartum care Postpartum care Neonatal health services 	<ul style="list-style-type: none"> Services at primary health facilities: <ul style="list-style-type: none"> Delivery services Neonatal health services Transportation to referral facility Referral services for maternal and neonatal complications at secondary and tertiary hospitals: <ul style="list-style-type: none"> Delivery services Antenatal care Postpartum services Costs associated with birth waiting homes, including rent, food, and support from human resources

Sources: Authors; Permenkes 61/2017 (2017); Koblinsky & Qomariyah (2014); Achadi et al. (2014).

In Garut, Jampersal significantly improved institutional deliveries among women with the least education, women from the lowest wealth quintile, and rural women (ibid.). The experience of Jampersal in its first iteration suggests that a supply-side initiative aimed at reducing financial barriers to accessing maternal and newborn care could have an impact on related service utilization. The current policy question under consideration is whether demand-side programs such as health insurance can maintain and/or improve upon MNH progress, and whether critical gaps in policymaking persist.

Restart of Jampersal. With the launch of JKN in January 2014, national health insurance absorbed the responsibility of covering MNH services for all JKN-insured women (Table 1). Uninsured women—those not covered by JKN or local government health insurance (Jamkesda) schemes—no longer benefited from a specific MNH financing scheme. In this context, Jampersal was restarted in 2017 with Ministry of Health (MOH) regulation (*permenkes*) 61/2017 (MOH, 2017). Since 2017, Jampersal has been funded by budgetary transfers to local government through the Deconcentration Fund (*Dana Alokasi Khusus*, or DAK). Though the revised Jampersal guidelines vary by district, Jampersal in its second iteration generally covers delivery services for uninsured poor women who are eligible to receive class III inpatient accommodation, similar to the benefits of JKN’s subsidized segment *penerima bantuan iuran* (PBI). Jampersal also covers several ancillary costs, such as the expenses associated with pregnant women waiting at maternity/birth homes (Bahasa acronym RTK). The RTK are intended for use by pregnant women who reside in areas far from health facilities or midwives that want to be located close to a health facility before entering labor. Under *permenkes* 61/2017 guidelines, Jampersal only covers antenatal and postnatal care services for women with high-risk pregnancies, complications, or emergencies, though these guidelines vary by district.

Facility-based births. Evidence from Indonesia Demographic and Health Surveys (IDHS) suggests that use of MNH services continues to improve. The percentage of deliveries in health facilities significantly increased, from 46% in 2007 to 63% in 2012. The most recent IDHS indicates that the percentage of facility-based deliveries is much higher at urban health facilities than their rural counterparts, at 91% and 68%, respectively. Similarly, the proportion of births attended by skilled health personnel increased from 73% in 2007 to 83% in 2012. IDHS 2017 indicates that the prevalence of skilled birth attendance further increased to 86% in rural areas and 96% in urban areas.

Supply-side financing. Health financing schemes have an important influence on MNH, but availability of critical services requires additional government spending on public health. Through initiatives such as the U.S. Agency for International Development (USAID)-supported Expanding Maternal and Neonatal Survival (EMAS) program that began in September 2011, Indonesia has focused on improving access to basic emergency obstetric and neonatal care (Bahasa acronym PONEK) and comprehensive emergency obstetric and neonatal care (Bahasa acronym PONEK), as well as improving referral systems. The EMAS program worked with 150 hospitals and over 300 primary healthcare centers (*puskesmas*) in six high-population, high-MNH-burden provinces. Estimates for 2014 indicate that 476 out of 771 public hospitals provided PONEK in Indonesia, 2,855 PONEK facilities were functioning, and 67.8% of districts met the World Health Organization target of a minimum of four health centers with PONEK care per district (MOH, 2015). However, issues remained, such as low availability of drugs for obstetric and neonatal care at PONEK facilities, with more than 80% of PONEK facilities providing less than 40% of essential drugs (ibid.).

Remaining Maternal and Newborn Health Challenges

Continuing high mortality rates. Indonesia’s maternal mortality rate remains higher than that of most other countries in Asia. IDHS results show that the maternal mortality ratio (MMR) estimate was 359 maternal deaths per 100,000 live births between 2008 and 2012 (uncertainty range: 239–478), which is higher than other estimates reported for a proximate year (Table 2). At first glance this estimate seems to indicate an increase in maternal mortality from the 2007 IDHS MMR of 228 (uncertainty range: 132–323), but the overlapping uncertainty ranges between the two estimates

Table 2: Recent Maternal Mortality Ratio (MMR) Estimates in Indonesia

Survey or Estimation Source	Year	Method Used to Obtain Estimate	MMR Estimate [Range of Uncertainty]
Indonesia Population Census	2009-2010	Direct estimate via data on pregnancy-related deaths	263 [222-430]
Institute for Health Metrics (IHME)	2011	Regression model	245 [189-311]
Maternal Mortality Estimation Interagency Group	2011	Regression model	220 [130-250]
IDHS	2012	Direct sisterhood	359 [239-478]

Source: National Research Council (2013)

reveal that it is better understood as stalled progress on reducing MMR. In addition, several limitations have been noted with regard to IDHS results; as a result, these should be interpreted with caution.¹ Evidence also indicates that the civil registration and vital statistics systems in Indonesia are weak; to compensate for this, other data sources such as population censuses, household sample surveys, and demographic surveillance in sentinel sites are used as alternative methods to generate estimates on vital statistics (National Research Council, 2013).

Table 2 indicates that Indonesia did not meet its Millennium Development Goals target of 102 maternal deaths per 100,000 live births. In the Sustainable Development Goals era, achieving the international target of 70 maternal deaths per 100,000 live births by 2030 requires, on average, a 7.5% annual rate of reduction between 2015 and 2030. Indonesia will require an even faster rate of reduction to meet its Sustainable Development Goal 3 (health) maternal mortality target, when this is set. Although child mortality has steadily declined in Indonesia, progress on reducing neonatal mortality has stalled at the level of 19 deaths per 1,000 live births. Neonatal deaths are a growing proportion of all child deaths, currently comprising an estimated 50% of all child deaths under five years of age (UNICEF, n.d.).

Role of midwives. Indonesian women have become heavily reliant on midwives for delivery services following the expansion of the village midwife program. Indonesian National Socioeconomic Survey (Susenas) data indicate that the most common birth assistant is the midwife, with midwives assisting 64% of births in both 2011 and 2016. However, several sources have noted low health worker competency, particularly among midwives, which may be related to stagnated maternal and neonatal outcomes in Indonesia (Box 1). Although the Indonesian Midwives Association has established competence standards for midwives, it does not have a system in place to ensure quality of midwife education pre-certification (Indonesian Academy of Sciences, 2018). Under JKN, insured mothers also face challenges in accessing MNH care through midwives. Currently, the national health insurance agency (*Badan Pelaksana Jaminan Sosial-Kesehatan*, or BPJS-K) does not directly contract with private midwives because they do not typically offer the full spectrum of primary healthcare services at their clinics. To receive payment for services covered by JKN, midwives must be contracted through a *puskesmas* or hospital; evidence indicates that these facilities are hindered by a shortage of midwives (Anderson et al., 2014; Women Research Institute, 2015). However, data from the Ministry of Health indicate that an estimated 163,541 midwives are currently working in Indonesia, with many leading their own clinics. Because these individual practitioners do not typically employ electronic record-keeping, BPJS-K's ability to directly contract with midwives and monitor their care standards is compromised.

Box 1. Key Challenges Surrounding MNH Care Provided by Midwives

1. Midwives often offer delivery services in the home (as opposed to health facilities).
2. No standardized pre-service midwifery training exists in Indonesia; as a result, midwives' skillsets vary widely. Midwives are often unable to provide emergency stabilization and lack knowledge regarding when to refer mothers to PONEK facilities.
3. Lack of feasibility for BPJS-K to directly contract with midwives has led to midwife shortages in both *puskesmas* and hospitals.

Source: Indonesian Academy of Sciences, 2018; Indonesia Health Sector Review, 2017; Anderson et al., 2014.

Referral for MNH. Challenges surrounding the healthcare referral system, particularly between primary healthcare facilities and hospitals, contribute to plateaued MNH outcomes (Indonesian Academy of Sciences, 2018). Pre-established systems for efficient referrals are limited and multiple transfers are common. Referral procedures, which are unclear, are hindered by inadequate training for healthcare providers to understand when to refer patients to PONEK facilities (ibid). This is particularly problematic for JKN-insured mothers, who cannot directly access hospital care unless referred by a *puskesmas* via a referral letter (Mahendradhata et al., 2017). In addition, the lack of an integrated information system between primary health services under the Directorate of Primary Health Services (*Direktorat Pelayanan Kesehatan Primer*) and hospitals under the Directorate of Referral Services (*Direktorat Pelayanan Kesehatan Rujukan*) impedes effective referrals (Indonesian Academy of Sciences, 2018; Mahendradhata et al., 2017; Yuniar and Widyawati, 2014).

Organization of emergency obstetric and neonatal care. Before JKN, the Ministry of Health's strategic plan specified that districts were to have a minimum of four PONEK facilities and one PONEK facility by 2014 (MOH, 2015). The ministry's Directorate of Referral Health Services conducted standardization of PONEK for hospitals in collaboration with several professional organizations, including IBI, the Organization of Indonesian Obstetrics and Gynecology

¹ Several limitations influence IDHS measurement of MMR: 1) IDHS only documents information from surviving mothers ages 15-49 and does not contain information on maternal or child outcomes for women who have died. 2) IDHS employs the "direct sisterhood" method to derive MMR, which is limited in its ability to provide subnational estimates due to small sample size of maternal deaths and generates a large sampling error as a result. 3) Differences between IDHS surveys exist; for example, IDHS 2007 interviewed ever-married women ages 15-49, whereas IDHS 2012 interviewed all women ages 15-49.

Physicians, and the Indonesian Pediatric Society (ibid). Following JKN implementation, the policies and standards for these facilities have become less clear, as monitoring takes place at the district level using local guidelines. As a result, it is likely that significant variation exists in quality of healthcare services in PONED and PONEK facilities across Indonesia.

Study Objectives and Research Questions

This analysis was conducted as part of the Comprehensive JKN Assessment, led by the USAID-funded Health Policy Plus (HP+) project in collaboration with Indonesia's National Team for the Acceleration of Poverty Reduction (TNP2K). The assessment examined various questions related to JKN's financial sustainability, influence on healthcare access and equity of utilization, and impact on the private health sector.

Given the stagnation in MNH outcomes and challenges surrounding quality of MNH care in Indonesia, this analysis focused on how access to MNH services has changed since the implementation of JKN. We address this through several perspectives: (1) understanding the patient's perspective and whether access to skilled birth attendance and facility-based deliveries has improved since JKN; (2) examining the influence of JKN in improving capacity of private hospitals to provide MNH services; and (3) analyzing whether JKN's hospital expenditure on MNH services is equitable across geographies. Specifically, the following research questions were addressed:

1. How has access to MNH services changed in Indonesia since JKN implementation?
2. What factors are associated with whether a pregnant woman utilizes skilled birth attendance (SBA)?
3. Did capacity investment in equipment and staffing needed for MNH services increase in BPJS-K-contracted hospitals versus private hospitals not contracted with BPJS-K between 2013 and 2016?
4. Did the volume of MNH services increase in BPJS-K-contracted hospitals versus private hospitals not contracted with BPJS-K between 2013 and 2016?
5. Did the volume of neonatal intensive care units (NICU) and maternity ward admissions increase in BPJS-K-contracted hospitals versus private hospitals not contracted with BPJS-K between 2013 and 2016?
6. Is JKN hospital expenditure on MNH services equitable by island grouping?

Table 3: Summary of Datasets and Key MNH Measures

Dataset	Years	Key MNH Measures
Susenas	2011–2016	<ul style="list-style-type: none"> • Skilled birth attendance (through obstetrician/doctor, midwife, nurse, or other health worker)
	2015–2016	<ul style="list-style-type: none"> • Location of delivery
HP+/TNP2K Private Hospital Survey	2013, 2016	<ul style="list-style-type: none"> • Capacity investment and staffing, including: <ul style="list-style-type: none"> • Number of obstetrics clinics and maternity wards • Number of incubators • OB/GYN staffing adjustments • Number of admissions to maternity wards and NICUs • Volume of maternal and neonatal emergency care services offered: <ul style="list-style-type: none"> • Antenatal care • Obstetric care • Caesarean section • Postnatal care
BPJS-K hospital-based spending: Indonesia Case-Based Groups (INA-CBGs)	2014–2016	<ul style="list-style-type: none"> • JKN expenditure on MNH services at hospitals, which includes: <ul style="list-style-type: none"> • Deliveries: <ul style="list-style-type: none"> • Normal vaginal deliveries • Caesarean sections • Neonatal health diagnoses: <ul style="list-style-type: none"> • Neonatal congenital infections • Perinatal infections • Other female maternal health conditions: <ul style="list-style-type: none"> • Treatment for false labor • Fallopian tube procedures • Antepartum disorders • Postpartum conditions

Methodology and Data Sources

Data sources. We used Susenas datasets to examine skilled birth attendance for 2011–2016 and location of delivery for years of data available (2015 and 2016). We examined data on skilled birth attendance by island grouping,² insurance status (uninsured versus insured), and socioeconomic status (poor, near-poor, middle, and rich). Per capita consumption expenditure was used as a proxy for an individual’s socioeconomic status. For each survey year, the poor included individuals whose per capita expenditure was below the provincial poverty line for that year. The near-poor included individuals whose per capita expenditure was above the provincial poverty line, but below the 40th percentile of consumption expenditure. The middle group included individuals whose per capita expenditure was above the 40th percentile but below the 80th percentile of consumption expenditure. Lastly, the rich group contained individuals whose per capita expenditure was classified as the top 20th percentile of per capita expenditure.

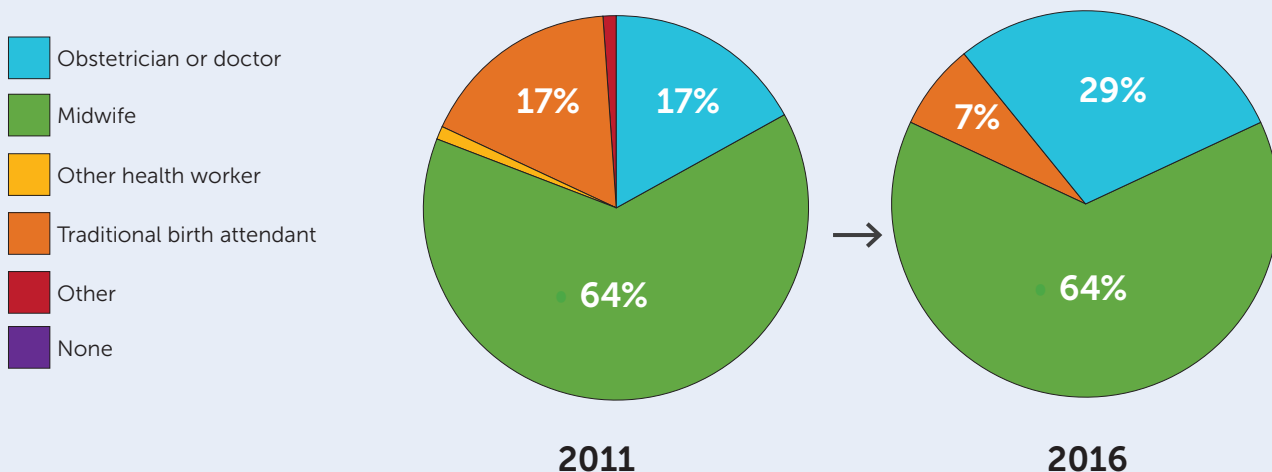
Statistical analysis of association of factors with MNH. We conducted logistic regression analysis using Susenas data to understand the factors that influenced skilled birth attendance among all mothers—particularly poor mothers—in 2016. We also used data from a survey of private hospitals that was conducted as part of the Comprehensive JKN Assessment to examine changes in MNH capacity investment and admissions, and volume of MNH services in BPJS-K-contracted hospitals versus hospitals not contracted with BPJS-K. The survey assessed JKN’s impact on private hospitals by sampling an estimated 5% of registered private hospitals in the country, including 61 BPJS-K-contracted facilities and 12 hospitals not contracted with BPJS-K, across 11 provinces. More information on data collection, sampling, and methodology can be found in an associated report (Ross et al., 2018). Lastly, we used data on spending by Indonesia Case-Based Groups (INA-CBGs)³ from BPJS-K to examine specific JKN expenditure on MNH services at the hospital level. INA-CBG MNH services were divided into three categories: deliveries, neonatal health diagnoses, and other maternal health conditions (Table 3). As access to JKN-related service utilization data is very limited at the primary healthcare level, which receives capitation payments, our spending analysis focused on MNH services at the hospital level.

Results

How has access to MNH services changed in Indonesia since JKN?

The most common birth attendants remain midwives, though a shift toward obstetricians and doctors, away from traditional birth attendants, has occurred. Between 2011 and 2016, the proportion of mothers who sought delivery services through midwives did not change (64%) (Figure 1). However, the proportion of mothers who used traditional birth attendants decreased, from 17% in 2011 to 7% in 2016, while use of doctors to assist birth increased, from 17% in 2011 to 29% in 2016. This shift indicates that JKN is contributing to improved access to skilled health professionals.

Figure 1. Sources of Birth Assistance in 2011 and 2016

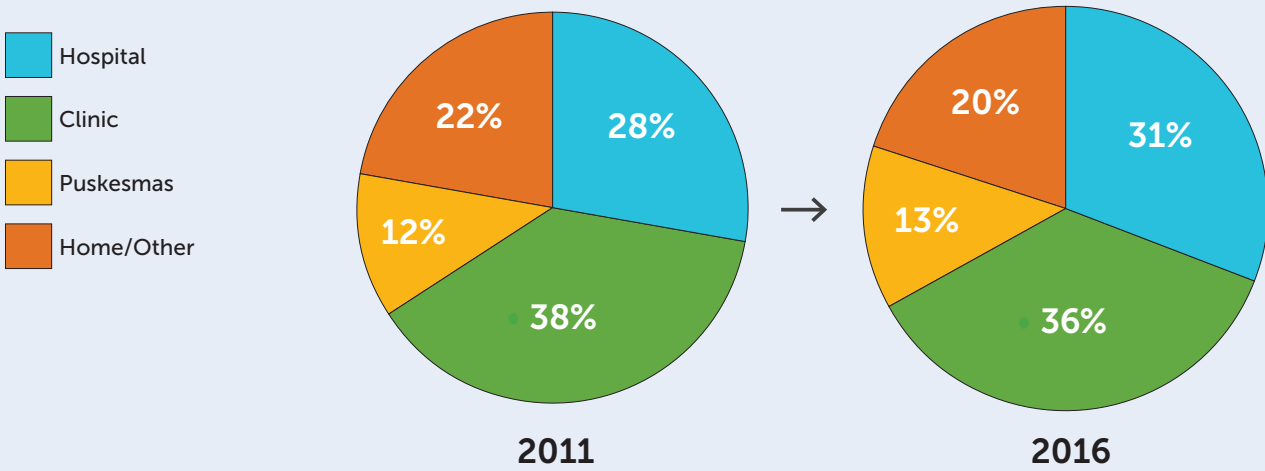


² Java island group: DKI Jakarta, Banten, Bali, Central Java, DI Yogyakarta, East Java, and West Java province; Sumatra island group: Aceh, Bangka Belitung Islands, Bengkulu, Jambi, Lampung, North Sumatra, Riau, Riau Islands, South Sumatra, and West Sumatra province; Kalimantan island group: Central Kalimantan, East Kalimantan, North Kalimantan, South Kalimantan, and West Kalimantan province; Sulawesi island group: Central Sulawesi, Gorontalo, North Sulawesi, South Sulawesi, Southeast Sulawesi, and West Sulawesi province; and Eastern Indonesia: East Nusa Tenggara, Maluku, North Maluku, Papua, West Nusa Tenggara, and West Papua province.

³ Reimbursement of hospital services is based on diagnosis-related groups, or INA-CBGs. The current INA-CBG classification establishes tariffs for 262 inpatient and 289 outpatient diagnoses or services. Tariff rates further vary for both types of services based on hospital level and by five JKN-defined regions. For inpatient care, tariffs also vary according to three classes of care (wards) and three levels of severity of the diagnosis. Therefore, between 2014 and 2016, there were, in total, 47,160 inpatient tariffs and 5,780 outpatient tariffs.

Growth in facility-based deliveries has been greater for JKN-insured compared to uninsured mothers. In just one year of JKN implementation, use of delivery services at hospitals increased (from 28% in 2015 to 31% in 2016) and use of delivery services at home/other decreased by 10% (Figure 2). In addition, the proportion of births at medical facilities was significantly higher among JKN-insured mothers than their uninsured counterparts, and increased at a faster rate (Figure 3).

Figure 2. Proportion of Deliveries by Location



Prevalence of SBA has improved for vulnerable groups since JKN, though inequities persist. In 2013, SBA use was higher among the uninsured compared to the insured. This trend reversed following JKN implementation (Figure 4). Skilled birth attendance prevalence is highest among the insured rich, with 99% having used skilled birth attendants in 2016, compared to 85% among the insured poor. Although prevalence is converging among the insured near-poor, middle, and rich, a large gap of 14 percentage points between the poor and rich remains as of 2016 (Figure 5).

Inequities in SBA by geography also persist. SBA prevalence is converging between all island groups, with the exception of Eastern Indonesia. Prevalence of SBA increased at the greatest rate (28%) in Eastern Indonesia between 2011 and 2016, however, this indicator still remained lowest in this predominantly rural island group compared to other island groups (Figure 6). Studies have highlighted the poor quality of healthcare by village midwives and other trained health personnel in rural Indonesia, including in Eastern Indonesia (Indonesian Academy of Sciences, 2018; Ngana et al., 2012; Titaley et al., 2011). Mothers in Eastern Indonesia also face the longest travel times to *puskesmas* and hospitals compared to other island groups (Mahendradhata et al, 2017). According to MOH data from 2016, Eastern Indonesia also has the lowest number of general practitioners and medical specialists in relation to its population, which exacerbates the supply-side barriers already faced by these mothers. These issues, in addition to others explored in the logistic regression analysis results below, may help to explain why use of skilled birth attendance is lowest in Eastern Indonesia.

Figure 3. Proportion of deliveries at health facilities by insurance status

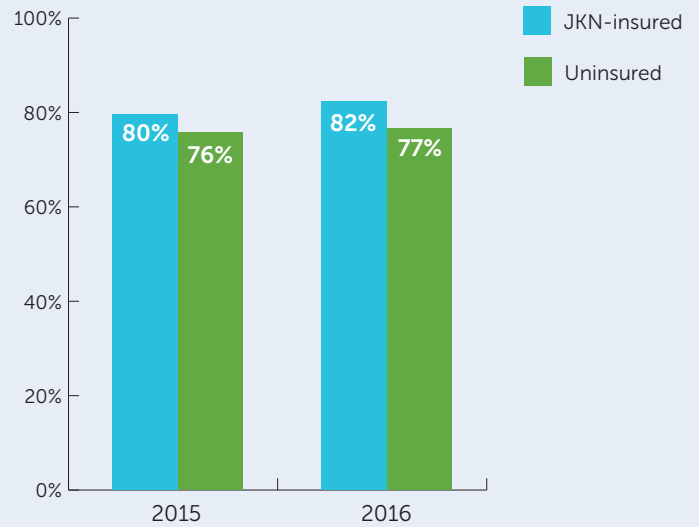


Figure 4. Skilled birth attendance nationwide, by insurance status

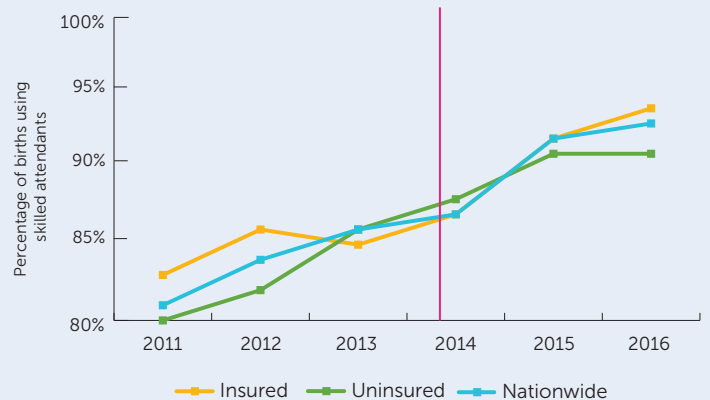


Figure 5. Skilled birth attendance by SES among insured

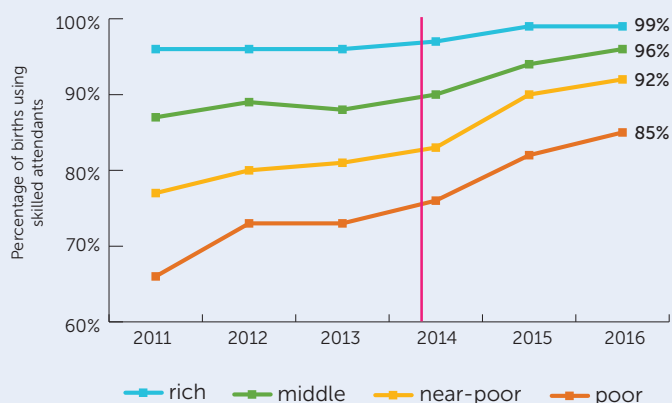
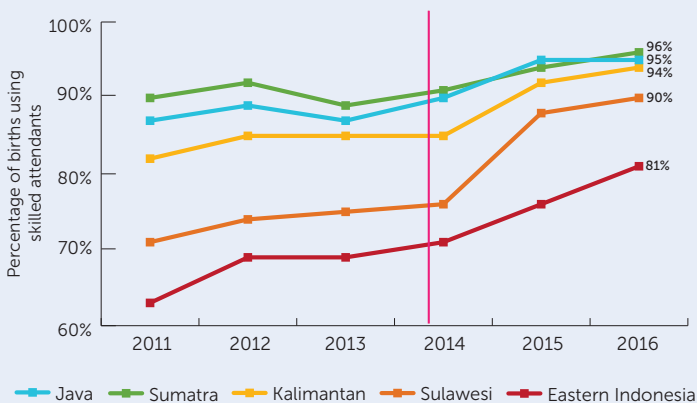


Figure 6. Skilled birth attendance by island grouping, among insured



What factors are associated with whether a pregnant woman utilizes skilled birth attendance?

JKN is associated with significantly increased access to SBA for poor pregnant women. Table 4 shows results of the logistic regression exploring factors associated with whether a woman uses SBA. In the Susenas sample of all mothers, those with JKN insurance experienced 30% greater odds of using SBA compared to the uninsured, though this effect was not statistically significant. However, *among poor mothers only*, JKN significantly increased odds of seeking SBA by 60%, compared to those with no insurance (Table 4).

Education and supply-side factors also influence use of SBA. The most significant factor to influence likelihood of SBA is the mother’s level of education: those who attended college or higher education experienced over 20 times the odds of using SBA compared to those with no education. Even attending primary school has a significant influence on improving likelihood of using SBA—pregnant women who were educated at the primary level experienced 2.7 times the odds of using SBA compared to those with no education. Supply-side factors, most notably the ratio of *puskesmas* per 1,000 people, was also significantly

Table 4: Factors that Influenced SBA in 2016

Factor	All Mothers Odds Ratios [uncertainty interval]	Poor Mothers Only Odds Ratios [uncertainty interval]
Island (Ref: Java)		
Sumatra	1.1 [0.9-1.3]	0.8 [0.6-1.1]
Kalimantan	0.9 [0.7-1.1]	0.6 [0.4-1.0]
Sulawesi	0.7** [0.6-0.9]	0.6** [0.4-0.9]
Eastern Indonesia	0.6** [0.5-0.7]	0.5** [0.3-0.7]
Age (Ref: 26-35 years)		
15-25 years	0.7** [0.6-0.8]	0.8 [0.6-1.0]
36-42 years	1.0 [0.9-1.3]	0.9 [0.7-1.3]
42-49 years	0.5** [0.4-0.6]	0.4** [0.3-0.6]
Residence (Ref: rural)		
Urban	0.5** [0.4-0.6]	0.4** [0.3-0.6]
SES (Ref: rich)		
Middle	0.5* [0.3-0.9]	---
Near-poor	0.4** [0.2-0.6]	---
Poor	0.2** [0.1-0.4]	---
Education (Ref: no education)		
Primary	2.7** [2.0-3.5]	3.4** [2.2-5.5]
Junior high school	6.1** [4.4-8.3]	7.1** [4.1-12.2]
Senior high school	11.0** [8.0-15.0]	10.9** [6.3-18.9]
College or higher	20.1** [13.7-29.5]	13.7** [5.7-32.6]
Employment (Ref: not employed)		
Employed	0.9* [0.8-1.0]	0.8* [0.6-1.0]
Health insurance (Ref: no insurance)		
JKN	1.3 [0.6-2.8]	1.6** [1.3-2.0]
Ratio of hospitals per 1,000 (Ref: high)		
Medium	1.3** [1.1-1.6]	1.8** [1.3-2.4]
Low	0.8* [0.7-1.0]	1.0 [0.8-1.3]
Ratio of puskesmas per 1,000 (Ref: high)		
Medium	2.4** [2.1-2.8]	2.2** [1.7-2.9]
Low	3.8** [3.1-4.8]	2.9** [1.9-4.5]

*Indicates statistical significance; p<0.05

**Indicates statistical significance; p<0.01

associated with use of SBA. Data from the MOH indicate that although Java has the largest number of *puskesmas* of all island groups, when compared to population, the ratio of *puskesmas* per 1,000 people is lowest in Java (0.03 *puskesmas* per 1,000 people) and highest in Eastern Indonesia (0.10 *puskesmas* per 1,000 people). Pregnant women residing in provinces with a low or medium ratio of *puskesmas* to population experienced higher odds of using SBA (3.8 times and 2.4 times, respectively), compared to those residing in provinces with a high ratio of *puskesmas* to population. This finding is consistent with our results by geography which show that pregnant women in Eastern Indonesia experienced significantly lower odds of SBA compared to those residing in Java (Table 4).

Did capacity investment in equipment and staffing needed for MNH services increase in BPJS-K-contracted private hospitals versus private hospitals not contracted with BPJS-K between 2013 and 2016?

MNH capacity and staffing investments significantly increased in BPJS-K-contracted private hospitals from 2013 to 2016, but no significant increases were seen in hospitals not contracted with BPJS-K. Between 2013 and 2016, BPJS-K-contracted private hospitals significantly increased their investment in incubators,

with an average increase from 2.6 to 3.3 incubators per hospital (Table 5). In addition, BPJS-K-contracted private hospitals significantly increased their human resources for MNH services—the average number of Obstetrics and Gynecology (OB/GYN) permanent staff increased from 3.7 in 2013 to 4.7 in 2016, though the majority of this increase consisted of contracted, as opposed to permanent, staff. The average number of obstetrics clinics remained nearly the same from 2013 to 2016 in BPJS-K-contracted hospitals, whereas they decreased from 2.1 to 1.1 in hospitals not contracted with BPJS-K, though these changes were not statistically significant.

The majority of private hospitals reported having hospital clinical protocols in place on management of labor and delivery complications. Most private hospitals that were interviewed as part of the HP+/TNP2K Private Hospital Survey reported having hospital clinical protocols in place on management of labor and delivery complications (Box 2). A greater proportion of BPJS-K-contracted hospitals indicated that staffing procedures for such protocols has changed since JKN, though further research is needed to understand whether this has led to improvements in quality of care, particularly in BPJS-K-contracted hospitals.

Did the volume of MNH services increase in BPJS-K-contracted hospitals versus private hospitals not contracted with BPJS-K from 2013 to 2016?

The volume of all MNH services increased in BPJS-K-contracted private hospitals, whereas the volume of antenatal care services and Caesarean section (C-section) procedures decreased at private hospitals not contracted with BPJS-K. BPJS-K-contracted private hospitals experienced the greatest increase in use of C-section services compared to other MNH services; annual volume of C-section procedures increased by 49% from 2013 to 2016 (Figure 7). By contrast, use of C-section services declined at private hospitals not contracted with BPJS-K from 2013 to 2016 (Figure 8). The increased volume of C-section services at BPJS-K-contracted private hospitals indicates that JKN may be increasing access to this procedure by alleviating financial barriers to access. However, JKN may also be incentivizing BPJS-K-contracted providers to administer a greater number of C-sections to seek higher claims revenue for this particular service. Available data does not indicate which trend is dominant. Additional trends related to JKN hospital expenditure on C-sections and other MNH services are explored in Figures 11 through 15 below.

Table 5: MNH Capacity Investment and Staffing in Private Hospitals

Capacity Investment Category and Staffing	BPJS-K-contracted		Non-BPJS-K-contracted	
	2013	2016	2013	2016
Average number of obstetrics clinics	1.5	1.6	2.1	1.1
Average number of maternity wards	1.5	2.0	3.5	4.5
Average number of incubators	2.6**	3.3**	2.5	3.2
OB/GYN permanent and contract staff	3.7*	4.7*	1.5	2.3

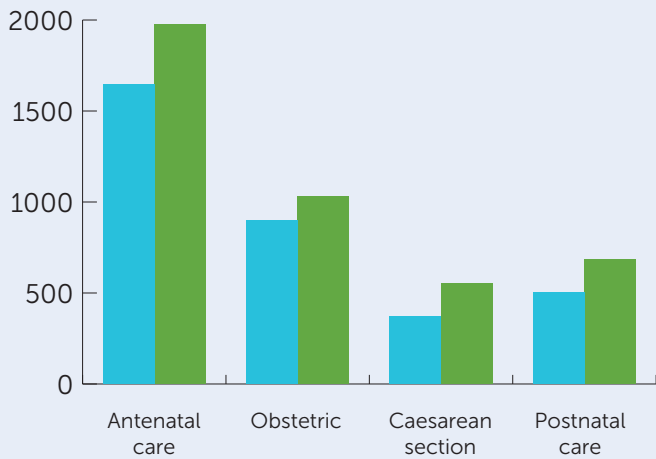
Source: HP+/TNP2K Private Hospital Survey, 2018

* $p < 0.05$; ** $p < 0.01$; asterisks indicate t-tests between years 2013 and 2016.

Box 2. Private Provider Perceptions: Labor and Delivery Clinical Guidelines

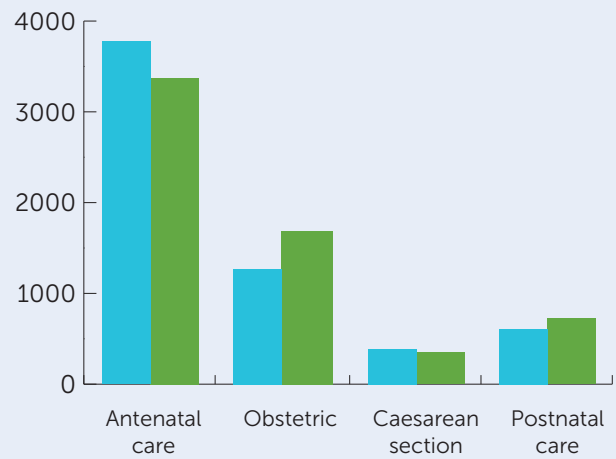
- 97% of BPJS-K-contracted hospitals had hospital clinical protocols in place on management of labor and delivery complications (compared to 92% of hospitals not contracted with BPJS-K).
- 48% of BPJS-K-contracted hospitals indicated that staffing procedures for the management of labor and delivery complications has changed since JKN (compared to 36% of hospitals not contracted with BPJS-K).

Figure 7. Average annual volume of MNH services in BPJS-K-contracted private hospitals



Source: HP+/TNP2K Private Hospital Survey, 2018

Figure 8. Average annual volume of MNH services in non-BPJS-K-contracted private hospitals



Did the volume of NICU and maternity ward admissions increase in BPJS-K-contracted private hospitals versus private hospitals not contracted with BPJS-K from 2013 to 2016?

Admissions to NICUs decreased at both BPJS-K-contracted hospitals and private hospitals not contracted with BPJS-K. Admissions to maternity wards increased in BPJS-K-contracted hospitals only. Following JKN implementation, the average number of NICU admissions decreased at private hospitals not contracted with BPJS-K to levels similar to those seen in BPJS-K-contracted hospitals (Figure 9). Although use of NICU services at type C private hospitals has decreased at BPJS-K-contracted hospitals and those not contracted with BPJS-K, use of NICU services at type B private hospitals increased at BPJS-K-contracted hospitals. By contrast, average admissions for maternity-related services increased from 2013 to 2016 at type B and type C BPJS-K-contracted hospitals and decreased in type D BPJS-K-contracted hospitals (Figure 10).

Figure 9. Average number of admissions: neonatal intensive care unit

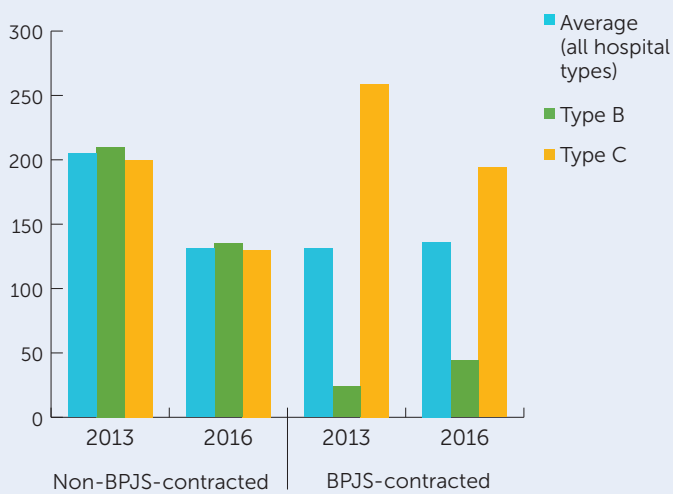
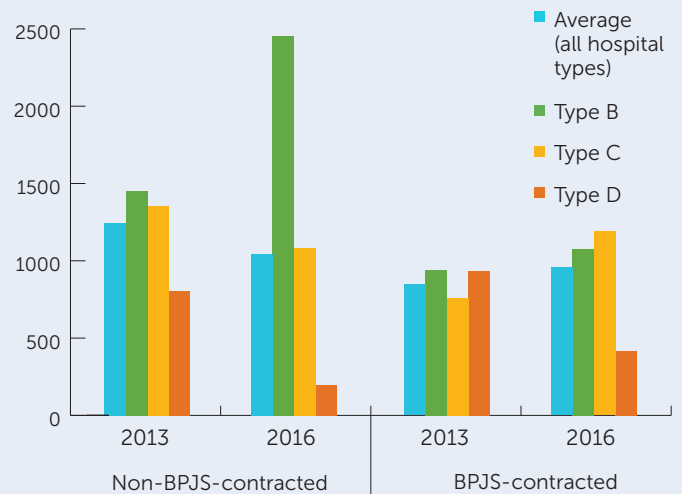


Figure 10. Average number of admissions: maternity services



Source: HP+/TNP2K Private Hospital Survey, 2018

Is JKN hospital expenditure on MNH services equitable by island grouping?

JKN hospital expenditure increased for all MNH services from 2014 to 2015, with the largest increases seen in delivery expenditure. JKN hospital expenditure on MNH services is highest for deliveries, constituting an average 74% of all JKN hospital-level MNH service expenditure from 2014 to 2016. JKN's hospital-level expenditure on deliveries notably increased by 31.5% from 2.48 trillion Indonesian rupiah (IDR) (US\$175.8 million) in 2014 to 3.26 trillion IDR (US\$231.1 million) in 2015, though it decreased slightly in 2016 (Figure 11). Increases in JKN hospital expenditure, while delayed, also occurred for neonatal health services after 2015.

C-section costs as a percentage of total JKN hospital-level delivery costs have increased in all island groups.

C-section costs account for 81% of JKN's total hospital-based delivery costs in Sumatra and 73% of JKN's total hospital-based delivery costs in Java. C-section costs were lowest in Eastern Indonesia in 2014 and 2015, though these costs increased at the greatest rate (by 15%) between 2015 and 2016 (see Figure 12). While these findings may indicate improved access to C-sections for mothers in Eastern Indonesia, they may also reflect hospital provider response to BPJS-K's reimbursements for C-sections.

Figure 11. JKN Hospital Expenditure on MNH Services, 2014-2016

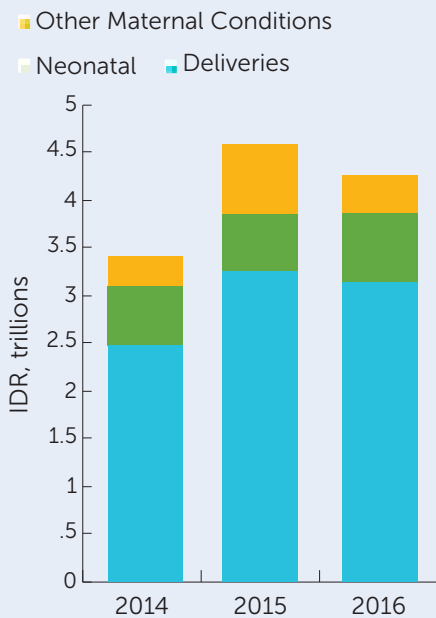
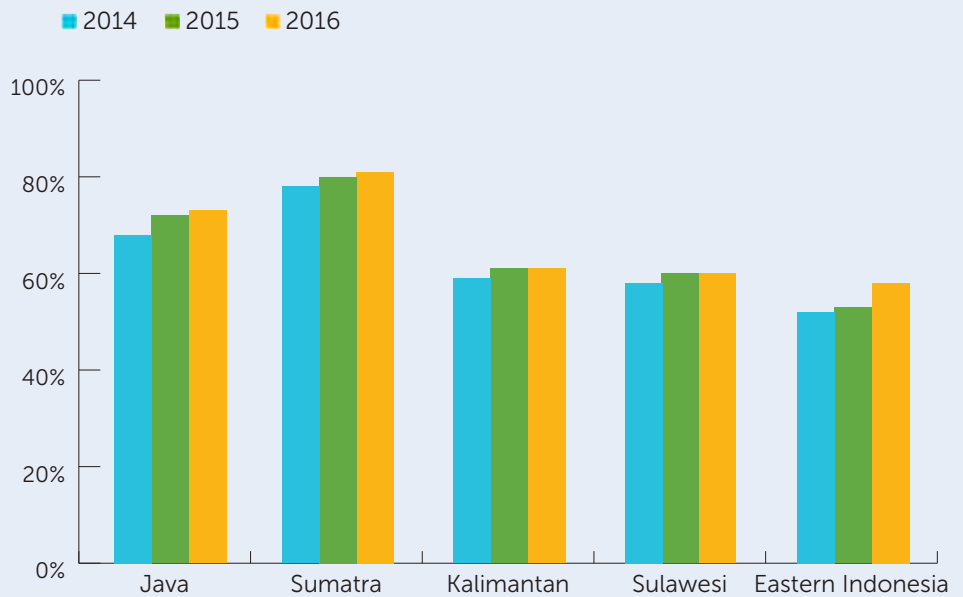


Figure 12. C-section costs as a proportion of JKN's total hospital-level delivery costs



Source: BPJS-K, authors' calculations

JKN hospital expenditure on MNH services is not equitable across island groups. All JKN expenditure on delivery costs in hospitals were classified as inpatient care. Our analysis of the share of total JKN hospital expenditure on deliveries by island group, compared to the share of births by island group, reveals that costs are not equitably distributed (Figure 13). Sulawesi accounts for 7.4% of all births in Indonesia, yet its share of delivery costs at the hospital level was 28% more than its share of births in 2016. In contrast, the ratio of share of JKN hospital expenditure on delivery services to share of births in Eastern Indonesia decreased from 2014 to 2016; by 2016, share of spending was 8% lower than the share of births in that island grouping. Although JKN expenditure on deliveries in Java was disproportionately low in 2014 given the number of births, the trend from 2014 to 2016 indicates improvement in the ratio; by 2016, Java's share of spending was only 3% below its share of births.

JKN hospital expenditure on neonatal health services in Eastern Indonesia is also becoming increasingly disproportionate to the island group's share of births: by 2016, share of hospital spending on neonatal health services was 36% lower than its share of births (Figure 14). JKN hospital expenditure is also disproportionately low compared to share of births in Kalimantan and Sulawesi, though the trend from 2014 to 2016 in these island groups shows improvement.

Finally, JKN's hospital expenditure on other maternal health conditions is higher than the proportion of reproductive-aged women in Kalimantan, Sulawesi, and Eastern Indonesia (Figure 15). Other maternal health conditions under

INA-CBGs include services such as treatment for false labor, fallopian tube procedures, and services for antepartum and postpartum conditions.

Conclusions and Recommendations

To our knowledge, no studies have yet analyzed JKN's influence on access to MNH services in Indonesia, and our analysis adds to the limited published literature. Most notably, our analysis has revealed that JKN insurance significantly influences poor mothers' use of SBA. Although JKN has improved access to MNH services and increased its hospital expenditure on MNH, inequities still persist, particularly between the poor and rich, and in Eastern Indonesia compared to other island groups. JKN may be alleviating the financial burden pregnant women from certain socioeconomic groups face when using MNH services, however, several supply-side issues persist that may not be completely resolved by scale-up of national health insurance alone. Particularly for mothers in more rural island groups, supply-side issues such as poor quality of healthcare, long travel times to health facilities, and ineffective referral systems may contribute to the inequities that persist.

To improve MNH access in Indonesia, policymakers and health systems decision makers should consider the following recommendations:

- Improve coordination between the MOH directorates of Primary Health Services and Referral Health Services, and clarify PONEK/ PONEK eligibility criteria for facilities and related guidelines under JKN
- Ensure necessary monitoring systems are established to assess whether JKN-contracted health providers are adequately trained to provide quality care and respond to maternal and neonatal complications, especially those requiring urgent care
- Continue to target vulnerable pregnant women by expanding the JKN PBI segment and ensure adequate coordination between JKN and Jampersal to cover remaining uninsured poor mothers

Figure 13. Share of spending for deliveries at the hospital level under JKN, compared to share of births, by island group

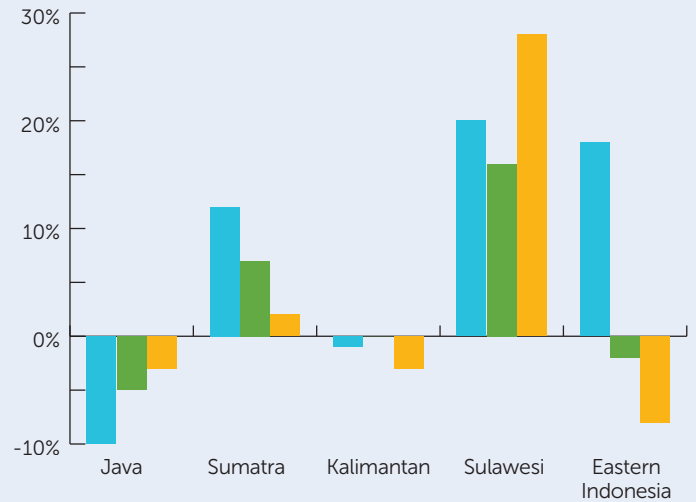


Figure 14. Share of spending on neonatal health services at hospital level under JKN, compared to share of births, by island group

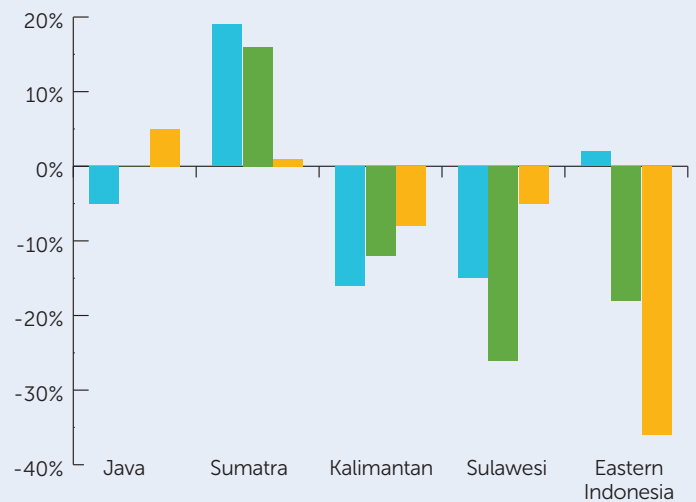
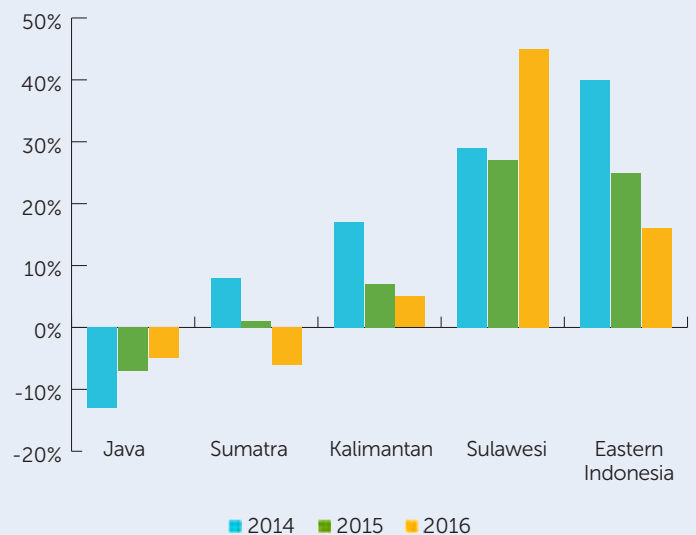


Figure 15. Share of spending on other maternal health conditions under JKN at hospital level compared to share of women of reproductive age, by island group



Source: BPJS-K, authors' calculations

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