

The Effect of Indonesia's National Health Insurance Scheme on Illness-Related Worker Absenteeism

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Background

In 2014, the government of Indonesia integrated multiple social health insurance programs into a single national insurance scheme, *Jaminan Kesehatan Nasional* (JKN). The government has since worked to expand JKN enrollment with an original aim to achieve universal health insurance coverage by 2019. Under this expansion of health services, increased access to and use of preventive and curative care for both acute and chronic illnesses is expected to improve population health, which in turn could positively impact economic productivity by reducing the time missed from work due to illness (Ahoobim et al., 2012; Davis et al., 2005). Recent research in Indonesia has found that the economic cost of illness-related productivity losses totaled 6.5 percent of the national gross domestic product (GDP) in 2015, and that 95-percent achievement of JKN coverage by 2019 would more than double the Indonesian economic output and value-added GDP (Dartanto et al., 2016; Rasmussen et al., 2016).

While literature on the associations among health insurance, worker absenteeism, and worker productivity is scarce in Southeast Asia, evidence from the United States indicates that expanded health benefits are associated with enhanced worker productivity and reduced absenteeism, as well as reduced likelihood and duration of days missed from work due to illness (ERBI, 2000; Lofland and Fick, 2006). Under this hypothesized relationship, the increased use of preventive and curative care via expanded health insurance coverage leads to improved health status, which in turn is associated with fewer days missed from work, shorter duration of illness-related absence, and improved worker productivity. However, the relationships among insurance coverage and labor force health in Indonesia are complex. For instance, insurance coverage may increase the likelihood that scheme members have the financial resiliency to miss work for seeking illness-related care, rest, and recovery, which would contradict the assumed reduced absenteeism effect.

This analysis, conducted by the U.S. Agency for International Development (USAID)-funded Health Policy Plus (HP+) project with support from Indonesia's National Team for the Acceleration of Poverty Reduction (TNP2K), seeks to better understand the pathways through which JKN is affecting the health of workers and productivity in Indonesia's labor market, and contributes to the literature on the impact of scaled-up national health insurance on Indonesia's economy. Results of this study can be used to better refine understanding of the impact of JKN coverage and underscore the case for government support, and inform labor market and social policies at the intersection of health, workforce, and economic development.

Methods and Data

Data for the study come from Indonesia's 2015 national socioeconomic survey (*Susenas*). Propensity score matching and a hurdle-model regression framework were employed to estimate the effect of JKN on the incidence and duration of illness-related worker absenteeism. Outcomes of interest included (1) whether individuals experienced a health complaint that caused disruption of work, school, or daily activities during the past month, and if so, (2) the duration of disruption, measured in days as a proxy for length of absenteeism. Our analysis focused on two groups of individuals: a JKN treatment group (individuals with self-reported social health insurance) and a comparison group (individuals without



health insurance); respondents with self-reported private or company-provided health insurance were excluded from analysis. The analysis was restricted to individuals ages 10 years and older (per the 2015 *Susenas* instrument age restriction for employment questions) who were employed during the past week, yielding a study sample of 512,069 eligible individuals (286,477 with JKN and 225,592 without).

Because *Susenas* data are observational and JKN insurance status is not randomly assigned, propensity score matching was used to identify a matched treatment and comparison sample from the eligible study population to ensure that similar individuals were compared when analyzing illness-related worker absenteeism. In this study, the propensity score—the likelihood of having JKN insurance—was estimated using a logit regression. A one-to-one nearest neighbor within caliper (0.25SD) algorithm was used to match, without replacement, uninsured individuals with insured individuals based on their predicted probability of having JKN insurance. The resulting matched sample used for analysis included a comparison group of 188,195 individuals matched to a treatment group of 188,195 individuals; the matched sample includes 72.3 percent of all eligible individuals (64.6% of those with JKN insurance and 82.1% of those without).

A hurdle regression model was applied to the matched analytical sample to reflect the two-stage decision-making process underlying the incidence and duration of illness-related worker absenteeism. The hurdle framework combines a probit model to estimate the probability of missing work due to illness over the past month (incidence) with a zero-truncated negative binomial model to estimate the number of work days missed among workers with illness-related absenteeism (duration). All models controlled for individual and household demographic characteristics, region and urban/rural location of residence, household consumption group, employment sector and type, and illness severity. Sample weights were applied to both descriptive and inferential analyses, and estimates were corrected for clustering at the district/town level.



Characteristics of the Study Sample

Select characteristics of the matched study sample are presented in Table 1. Slightly less than half of study participants had JKN insurance (47.9%). Compared to those without insurance, insured participants were significantly more likely to miss work due to illness during the past month (15.1% vs. 13.6%), had longer average absences (5.5 days vs. 5.4 days), and were more likely to report severe illness (21.7% vs. 19.3%). Most workers were employed in the agricultural sector (34.5%), followed by the trade/hotel/restaurant industry (20.8%), and the service industry (17.1%). Nearly 40 percent of workers described themselves as laborers, 20 percent were self-employed, and less than three percent were permanent or salaried employees.

While some significant differences in covariates remain in the study sample, matching improved balance on nearly all variables and categories. For example, a 92 percent overall bias reduction was achieved in relationship to household head categories, and treatment and comparison arms were balanced on monthly per capita consumption expenditures.

Table 1. Characteristics of the Study Sample

Characteristic	Matched Sample (Number = 376,390)				Sig. Diff.
	No Insurance (N = 188,195)		JKN Insurance (n = 188,195)		
	Number	Percent	Number	Percent	
JKN health insurance		52.1		47.9	
Missed work due to illness	25,928	13.6	29,002	15.1	***
Duration of absence (days)	25,928	5.4 (5.5)	29,002	5.5 (6.0)	*
Severe illness	5,227	19.3	6,438	21.7	***
Female	72,453	37.0	73,323	37.5	
Age (years)		39.8 (13.7)		39.7 (14.3)	
Employment sector					
Agriculture	83,474	34.8	81,684	34.1	
Manufacturing/industry	13,673	11.2	14,048	12.0	
Construction	11,146	7.2	10,990	7.0	
Trade/hotel/restaurant	36,099	20.9	34,386	20.6	
Services	28,081	17.3	31,249	16.9	
Other	15,722	8.6	15,838	9.4	**
Employment type					
Self-employed	43,125	20.5	41,640	19.9	
Temporary/non-salaried	30,907	13.7	30,157	13.1	
Permanent/salaried	5,525	2.9	5,174	2.7	
Laborers	56,158	37.8	60,398	39.3	
Freelance workers	17,935	11.4	17,410	11.7	
Family/unpaid workers	34,545	13.8	33,416	13.3	
Rural	113,585	52.2	112,285	51.2	
Region					
Java	57,545	56.5	55,230	55.6	
Sumatra	59,202	23.5	56,800	21.7	
Bali and Nusa Tenggara	13,133	5.0	16,149	5.9	
Kalimantan	19,975	6.2	18,013	6.3	
Sulawesi	23,453	6.1	26,120	7.6	*
Maluku and Papua	14,887	2.7	15,883	2.8	
Household consumption group					
Rich	37,863	22.4	39,566	23.8	*
Middle	83,125	44.1	78,704	41.2	***
Near-poor	47,543	24.7	48,498	24.8	
Poor	19,664	8.9	21,427	10.1	***

Notes: Unweighted counts, weighted percentages and means. Standard deviation in parentheses for continuous variables. Chi-squared tests used for categorical variables and linear regression tests used for continuous variables to determine significant differences between JKN treatment and comparison groups. While the treatment and comparison study arms are not balanced on consumption group, they are balanced on the distribution of monthly per capita consumption expenditure. Household consumption groups include poor (below national poverty line), near-poor (poverty line to <40% consumption distribution), middle (40% to below 80% consumption distribution), and rich (80% to 100% consumption distribution).

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

Factors that Influence Incidence and Duration of Illness-Related Worker Absenteeism

Hurdle model results are presented in Table 2. The first panel presents results from the probit model estimating the probability of illness-related absence from work; the second panel presents results from the zero-truncated negative binomial model estimating the number of days missed from work among study participants who had an illness-related absence.

Table 2. Factors that Influence Incidence and Duration of Illness-Related Worker Absenteeism

Factor	Probability of Absence (Percentage Points) (Number = 376,390)		Duration of Absence (Number of Days) (Number = 54,930)	
	ME	95% CI	ME	95% CI
JKN health insurance	1.6***	[1.1, 2.1]	-0.1	[-0.2, 0.1]
Severe illness			4.1***	[4.0, 4.3]
Female	2.6***	[1.9, 3.3]	-0.2	[-0.5, 0.1]
Age (years)	-0.1*	[-0.2, 0.0]	0.1***	[0.0, 0.1]
Employment sector (Ref: agriculture)				
Manufacturing/industry	0.6	[-0.5, 1.6]	0.1	[-0.2, 0.3]
Construction	0.0	[-0.9, 0.8]	0.5***	[0.3, 0.8]
Trade/hotel/restaurant	0.6	[0.0, 1.2]	-0.1	[-0.3, 0.1]
Services	0.6	[0.0, 1.3]	0.1	[-0.2, 0.3]
Other	-0.1	[-0.8, 0.6]	0.2	[-0.1, 0.4]
Employment type (Ref: self-employed)				
Temporary/non-salaried	-0.1	[-0.7, 0.5]	-0.1	[-0.3, 0.1]
Permanent/salaried	-0.9	[-1.8, 0.0]	0.1	[-0.3, 0.5]
Laborers	-0.4	[-1.0, 0.1]	-0.6***	[-0.8, -0.4]
Freelance workers	0.3	[-0.3, 1.0]	-0.2	[-0.4, 0.0]
Family/unpaid workers	-0.2	[-0.9, 0.5]	0.0	[-0.2, 0.2]
Rural	0.9*	[0.1, 1.6]	0.2*	[0.0, 0.4]
Region (Ref: Java)				
Sumatra	-1.1*	[-2.2, -0.1]	-0.1	[-0.3, 0.2]
Bali and Nusa Tenggara	5.2***	[3.5, 6.8]	0.1	[-0.3, 0.4]
Kalimantan	-1.2	[-2.8, 0.4]	-0.3*	[-0.6, 0.0]
Sulawesi	0.9	[-0.4, 2.1]	0.4**	[0.1, 0.6]
Maluku and Papua	-5.9***	[-7.8, -4.0]	0.5*	[0.1, 0.9]
Household consumption group (Ref: Rich)				
Middle	-0.7*	[-1.2, -0.1]	0.0	[-0.1, 0.2]
Near-poor	-2.0***	[-2.7, -1.3]	0.2	[0.0, 0.4]
Poor	-3.3***	[-4.3, -2.3]	0.2	[-0.1, 0.4]

Notes: Unweighted counts and weighted marginal effects (ME) and 95% Confidence Intervals (CI) presented. Results from probit model predicting probability of missing work due to illness in past month presented as marginal effects (percentage points); results from zero-truncated negative binomial (ZTNB) model predicting number of days missed from work due to illness among individuals who had illness-related absenteeism presented as marginal effects (number of days). In addition to covariates presented in Table 2, both probit and ZTNB models control for age-squared, relationship to household head, marital status, education, household size, and household head characteristics (sex, age, and education). Estimates corrected for clustering at the district/town level.

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

JKN insurance status. Study results indicate that individuals with JKN health insurance are nearly 12 percent—or 1.6 percentage points—more likely than those without health insurance to miss work due to illness (15.2% with JKN vs. 13.6% without JKN, $p < 0.001$). However, there is no difference in the number of days missed from work by insurance status (4.8 days with JKN vs. 4.9 days without JKN).

Employment sector and type. No statistically significant effect of employment sector or employment type on the probability of illness-related worker absenteeism was found. While the minimal effects of employment sector and type on duration of absence are statistically significant, they are of such low magnitude that they are not policy-relevant. For example, workers in the construction sector miss half a day more on average than workers in the agricultural sector ($p < 0.001$), and laborers miss 0.6 fewer days on average than self-employed workers ($p < 0.001$).

Household consumption group. Workers from rich households had the highest probability of illness-related absence from work, while those from the poorest households had the lowest probability of absence. Compared to the richest consumption group, the middle consumption group was 5.1 percent less likely (0.7 percentage points, $p < 0.05$), the near-poor were 13.7 percent less likely (2.0 percentage points, $p < 0.001$), and the poor were 21.2 percent less likely (3.3 percentage points, $p < 0.001$) to miss work. No differences were found in absence duration based on household consumption group among those who missed work.

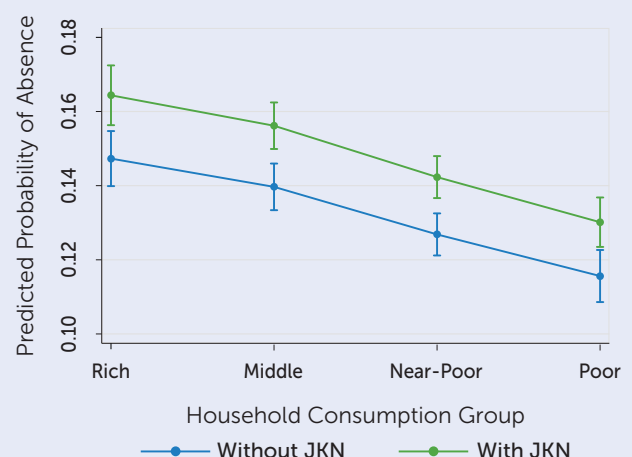
Urban/rural location and region. While the effects of living in a rural area on incidence and duration of illness-related work absence were statistically significant, the magnitude of the effects were small and unlikely to be policy-relevant. Individuals living in rural areas had a 14.7 percent probability of missing work due to illness, compared to 13.9 percent in urban areas (0.9 percentage point difference, $p < 0.05$), and the average absence duration was slightly longer in rural areas (4.9 days, $p < 0.05$) compared to urban areas (4.7 days, $p < 0.05$). The probability of absence varied significantly by region—compared to the reference region of Java (14.4%), probability was highest in Bali and Nusa Tenggara (20.3%) and lowest in Maluku and Papua (9.4%). The average duration of absence also varied by region, from a maximum of 5.3 days in Maluku and Papua to a minimum of 4.5 days in Kalimantan (reference: 4.8 days in Java).

Discussion and Conclusions

Study findings suggest that workers with JKN health insurance are nearly 12 percent more likely than uninsured workers to be absent from work due to illness, however, there are no differences in the average number of days missed from work due to illness between JKN insured and uninsured workers. The likelihood of illness-related work absence is also higher among the richest household consumption group, people living in rural areas, and women. Results also indicate that the risk of illness-related absenteeism does not differ by employment sector or type.

Taken together, these study findings may be an indication of the barriers faced by uninsured and poor workers when they need to miss work due to illness, rather than reflecting the hypothesized relationship between JKN, improved worker health, and illness-related absenteeism. For example, workers without health insurance may not be able to miss days from work when sick, perhaps because they rely on earnings to pay for healthcare costs that would otherwise be covered by JKN benefits. Similarly, the poor may not necessarily be less likely to experience a health incident than the rich as cursory data analysis might suggest, but may be less able to afford missing income. As illustrated in Figure 1, the statistically significant positive relationship between JKN insurance coverage and likelihood of illness-related absenteeism remains significant across all consumption groups, as evidenced by the non-overlapping 95-percent

Figure 1. Predicted Probability of Illness-Related Worker Absenteeism by JKN Coverage and Household Consumption Group with 95% Confidence Intervals



confidence intervals. It is also possible that the poor and uninsured are less likely to have access to employment benefits such as sick leave or paid time off to visit a physician (Davis et al., 2005).

Results from this study do not provide evidence in direct support of the hypothesis that JKN membership has a positive impact on the Indonesian economy. Based on a series of simulation studies, Dartanto and colleagues conclude that the JKN program will have a short term positive economic impact through creation of economic output in the Government Health Services Sector and in the Food and Beverage Industry sector, as well as through the potential to create up to 2.56 million jobs by 2021. They also believe that the JKN program is expected to have broad economic impacts in the long term through a human capital causal chain: JKN membership is expected to increase health service utilization, which will increase both school participation and life expectancy; these human capital improvements are expected to positively contribute to economic growth, such that every one percent increase in JKN participation will result in a one million Rupiah per capita increase in GDP (Dartanto et al., 2016). Our study viewed the question through a different lens, investigating whether the JKN program positively influences the economy through reduced illness-related absence from work. While study results do not provide evidence in support of this hypothesis, they do suggest another possible mechanism through which JKN membership could exert a positive economic influence: JKN affords members the financial resiliency to take sick leave from work.

Further investigation into how JKN can drive productivity and growth and improve the Indonesian economy is warranted, particularly given the reliance of BPJS-Kesehatan on the Dartanto et al. simulation studies (2016) to assert that increased economic productivity and growth are achievements of the JKN program (Idris, 2018). Future research could include a longitudinal analysis of Susenas data, including recent data collected in 2017 and 2018, to determine whether the relationships detected in 2015 have changed over time, particularly in response to the achievement of universal health insurance coverage in Indonesia.

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