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FACTORS AFFECTING CHILD IMMUNIZATION IN INDONESIA BASED ON IDHS 2012

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Abstract**:** *Immunization programs have contributed to prevent the spread of infectious diseases and mortality among children. Although Indonesia has experienced remarkable progress in reducing child mortality, universal immunization coverage has not been achieved. This paper aims to identify important factors affecting the incidence of child immunization in Indonesia using the Indonesia Demographic and Health Survey (IDHS) of 2012. By probit regression, I estimated the child immunization acceptance and analyzed the impact of location of households at the provincial level which divide the location of respondents both inside and outside of Java. I found that mother's level of education, household assets, and urbanity are important factors affecting the uptake of vaccinations. In addition, significant regional differences in vaccination incidence indicated that local resources serve as bottlenecks in vaccination. By encouraging government policies that improve women's schooling, household assets, and regional support for health, immunization coverage could increase and even become more universal.*
Keywords: *vaccination, children's health, probit regression*

Introduction

The Millennium Development Goals of Indonesia (MDGs) grew out of a United Nations (UN) vision to combat poverty. This vision was translated into 8 specific goals, the fourth of which is the reduction of child mortality to a level at or below (RATE). The MDG 2015 report showed a remarkable achievement for under-5 global mortality rate, decreasing it by more than half. This rate dropped from 90 deaths per 1,000 live births in 1990 to 43 deaths per 1,000 live births in 2015, obviously because of the important role of measles vaccination in preventing deaths related to measles cases (UN, 2015).

The world seems to be off track in reducing the under-5 death rate. More than half of all countries and less than one-third of International Development Association (IDA) countries will reach the goals (World Bank, 2015). Moreover, inequalities still persist, and disparities between rural and urban areas remain pronounced. The concentration of child deaths is in the poorest region (sub-Saharan Africa and Southern Asia), which accounted for 81 percent of deaths in children under5 worldwide (5.3 million of the 6.6 million total) (UN Fact sheets, 2013)

Indonesia has had mixed results in progress toward the two MDGs categories

that relate directly to health (Dibley&Budiharsana, 2015). In reducing child mortality, Indonesia was seemingly near to achieving the target, but it has been less successful in improving maternal health though the trend of vaccination uptake was increasing (see Table 1).

In achieving its targets, Indonesia faced substantial global challenges. Free trade and volatility of oil prices followed by ever-increasing fuel oil subsidies, alongside increasing food prices (as the largest expenditure) placed an additional burden on the households of the lower-middle income group and the poor (Bappenas, 2010).

Table 1

Trend in vaccination coverage in Indonesia, IDHS 2007 and 2012

Type of Vaccination	IDHS (year)	
	2007 (%)	2012 (%)
BCG	85.4	89.3
DPT1	84.4	88.1
DPT2	75.7	80.7
DPT3	66.7	72.0
Polio1	89.2	91.2
Polio2	82.6	85.5
Polio3	73.5	75.9
Hepatitis0	-	85.3
Hepatitis1	-	74.5
Hepatitis2	-	66.3
Hepatitis3	-	42.4
Measles	76.4	80.1

Source: Author's calculation

In the midst of this unfavorable global environment, Indonesia has made significant headway regarding child health (MDG4). Although the Ministry of Health is making significant efforts to reach the MDG targets, a particular area in eastern Indonesia remains left behind where, in several provinces, child mortality rates are more than double the national average (Lundine, Hadikusumah, & Sudrajat, 2013). Some key issues have emerged in achieving MDGs related to children's health. Decentralization has issued defiance to both central and local government authorities in Indonesia to utilize fiscal resources and coordinate programs effectively (Bappenas, 2010). Demographic changes due to migration and urbanization affect disparities in neonatal, infant, and under-5 mortality rates, as well as social and economic status.

Studies about vaccination and its determinants in the world have been done by many researchers. However, a few studies have been done observing immunization practices and their important factors in Indonesia and it needs to be improved. For instance, study about measles vaccination by Fernandez. et al (2012), economic evaluation of routine vaccination by Wilopo. et al (2009), immunization coverage improvement (KIT, 2008), and Malnutrition and infectious disease morbidity among children missed by the childhood immunization program by Semba et. Al (2007).

This study aims to identify important factors affecting child immunization in Indonesia that might be able to help policy makers in Indonesia creating appropriate policies to make

vaccination universal among Indonesian children. This is important and consistent with Bappenas's policy suggestion in MDG4 achievement progress; that is, to focus on core interventions of health services, emphasizing coverage of immunizations and child nutrition programs and enhancing public health facilities (Bappenas, 2010).

Vaccination is the process of introducing the vaccine into the human body in order to obtain the effect of immunity to a particular disease, so immunization is the process of obtaining immunity to a particular disease. From such an understanding, in this paper, I do not distinguish between vaccination and immunization using those two words alternately, as if they have the same meaning.

Research Methods

Survey

The data for this research were drawn from the 2012 Indonesia Demographic and Health Survey (IDHS) undertaken by Statistics Indonesia (Badan Pusat Statistik—BPS) in collaboration with the National Population and Family Planning Board (BKKBN) and the Ministry of Health (MOH), funded by the government of Indonesia and under the auspices of the Demographic and Health Surveys (MEASURE DHS) program, which is funded by the U.S. Agency for International Development (USAID). Basically, there are 7 waves of IDHS (1987, 1991, 1994, 1997, 2002, 2007, 2012), and I will use 2012 to represent the latest vaccination phenomenon in the country when this research conducted in 2016. The data provided detailed information about population, household characteristics, and health (including vaccination) in Indonesia.

The data set

IDHS presents data on respondents' economic status, family and household background, fertility, marriage, family planning, health care practices, child health, and other detailed information regarding infectious diseases. We used the standard DHS surveys because they contain data on children and have large sample sizes (usually between 5.000 and 30.000 households), covered 33 provinces in Indonesia, and permitted download after registration on its website. The children datasets consist of 18.021 children and were collected through married women questionnaire. (see Table 2).

Table 2

Number of Sample Children in Indonesia, IDHS 2012

Area -1	Province -2	Number of Sample -3	(%) -4
Sumatera	*Aceh*	586	3.25
	North Sumatera	812	4.51
	West Sumatera	530	2.94
	Riau	653	3.62

	Jambi	420	2.33
	South Sumatera	557	3.09
	Bengkulu	345	1.91
	Lampung	495	2.75
	Bangka Belitung	443	2.46
	Riau Islands	449	2.49
Java	*DKI Jakarta*	790	4.38
	West Java	805	4.47
	Central Java	633	3.51
	DI Yogyakarta	444	2.46
	East Java	644	3.57
	Banten	753	4.18
Bali and Nusa Tenggara	*Bali*	489	2.71
	West Nusa Tenggara	539	2.99
	East Nusa Tenggara	562	3.12
Kalimantan	*West Kalimantan*	550	3.05
	Central Kalimantan	425	2.36
	South Kalimantan	469	2.6
	East Kalimantan	434	2.41
Sulawesi	*North Sulawesi*	475	2.64
	Central Sulawesi	492	2.73
	South Sulawesi	661	3.67
	Southeast Sulawesi	511	2.84
	Gorontalo	425	2.36
	West Sulawesi	534	2.96
Maluku and Papua	*Maluku*	562	3.12
	North Maluku	521	2.89
	West Papua	537	2.98
	Papua	476	2.64
All Indonesia	**18,021**	**100**	

The vaccination incidence was measured from mother's report during survey interview and report card.

Definition of variables

The independent variable is incidence of vaccination (ever had vaccination or not). Vaccination in this study means incidence of vaccination "ever vaccinated." This variable takes the value of unity, if the child was ever vaccinated, and a value of zero, if otherwise.

Meanwhile, the dependent variables have 5 categories:

a. Child characteristics: age of child, gender, and weight of child at birth
b. Mother's education: highest education level

c. Household characteristics: possession of health insurance and wealth index
d. Urbanity of the household: rural or urban
e. Location: dummy for provinces

Regression model

We conduct the data estimation through probit analysis, where the dependent variable estimated is strictly between zero and one, i.e., participation in child vaccination. For independent variable, we use some factors that would involve or affect child vaccination, such as characteristics of the child, his/her mother, and the household, urbanity, and provincial dummies.

We classified the residence of respondents as in Java and outside Java Island and performed estimation in three groups: (1) all households, (2) those located in Java only, and (3) those located outside the Java island only. The estimation model as follows:

$$Yi = \beta_0 + \beta_1 ChildCharacteristic_i + \beta_2 Mothereduc_i + \beta_2 X_2 HHassets_i + \beta_4 Urbanity_i + \beta_5 Dummy_i + \varepsilon_{it}$$

where :

Y= Vaccination incidence
- 1 *if child had vaccination*
- *0 otherwise*

- Child characteri weight at birth
- Mother education: Highest educational level
- Household assets: Insurance, wealth index
- Urbanity: Rural and urban (1=yes)
- Dummy: 1=for Java, 0=otherwise

For control variable in provincial dummy variables, we take the province that has the highest percentage of vaccination uptake. For all provinces and Java island, it will be Yogyakarta, and for outside Java, Bali. The wealth index was taken from data conversion of wealth index factor score to obtain the value series from 0-100 by the following calculation:

$$W = \frac{Factorscoreit+292}{5{,}92}$$

Where 292 is the lowest value of the respondent's factor score and 592 is the range from the lowest to the highest value of the respondent's factor score. These data are taken from the Demographic Health Surveys and are not calculated by the author.

Probit regression is used. Probit analysis is based on the cumulative normal probability distribution. The coefficients of the probit model are effects on a cumulative normal function of the probabilities that the response variable equals one. The interpretation of probit coefficient is based on the z-score. The test statistic z is the ratio of the coefficient to the standard error of the respective predictor. The z value follows a standard normal distribution which is used to test against two-sided alternative hypothesis that the coefficient is not equal to zero. Among respondents, having a child whose age is higher versus lower increases the z -score by 0.166. In other words, we find that older children are more likely to be vaccinated and that children having higher weight (kg) at birth are less likely to be vaccinated, at least holding other variables constant.

Result and Discussion

Several factors that may affect child health have been indicated by the existing literature, either generally at global level or particularly in developing countries. Though they were not universally accepted, we could formulate that health might be correlated to individual factors and family or to the environment around children. There are factors identified by different authors that might be associated with parental healthcare-seeking behavior toward children (Baabale, 2013). The literature survey informed us regarding our choice of the following variables included in this study: child characteristics, mother's education, household assets, urbanity, and region-specific factors.

I did estimations for 3 regression models: (1) all Indonesia, (2) provinces on Java Island and (3) provinces outside Java Island. The Table 3 shows those 3 regression models.

Tabel 3

Probit Regression

Variable	**Dummy Regression**					
	Java only		**Outside Java**		**All Province**	
Age of child	0.144	***	0.17	***	0.166	***
	-0.027		-0.012		-0.011	
Gender of child	-0.009		0.01		-0.006	
	-0.074		-0.033		-0.03	
Weight of child	0	***	0	***	0	***
	0		0		0	
Mother's education	0.115	*	0.223	***	0.207	***
	-0.068		-0.027		-0.025	
Insurance (1=yes)	0.005		0.161	***	0.136	***
	-0.075		-0.033		-0.03	
Wealth index	0.012	***	0.01	***	0.01	***
	-0.003		-0.001		-0.001	
Urbanity (1=yes)	-0.086		0.116	***	0.084	**
	-0.094		-0.04		-0.037	
Province						
Sumatera						
Aceh			-0.557	***	-1.316	***
			-0.161		-0.381	
North Sumatera			-0.506	***	-1.278	***
			-0.155		-0.379	
West Sumatera			-0.39	**	-1.162	***
			-0.167		-0.384	
Riau			-0.641	***	-1.414	***
			-0.157		-0.38	

Jambi			-0.488	***	-1.26	***
			-0.17		-0.385	
South Sumatera			-0.351	**	-1.126	***
			-0.166		-0.383	
Bengkulu			-0.089		-0.862	**
			-0.192		-0.395	
Lampung			-0.054		-0.828	**
			-0.18		-0.39	
Bangka Belitung			-0.956	***	-1.739	***
			-0.164		-0.383	
Riau Islands			-0.312	*	-1.096	***
			-0.173		-0.386	
Java						
DKI Jakarta	-1.007	***			-1.069	***
	-0.382				-0.382	
Banten	-1.361	***			-1.33	***
	-0.379				-0.379	
West Java	-1.007	***			-0.967	***
	-0.382				-0.382	
Central Java	-1.157	***			-1.122	***
	-0.384				-0.386	
DI Yogyakarta	*Control Var*				*Control Var*	
East Java	-1.094	**			-1.094	***
	-0.386				-0.386	
Bali and Nusa						
Bali			*Control Var*		-0.782	**
					-0.399	
West NusaTenggara			0.169		-0.605	
			-0.181		-0.39	
East NusaTenggara			0.111		-0.643	*
			-0.172		-0.385	
Kalimantan						
West Kalimantan			-0.54	***	-1.314	***
			-0.162		-0.382	
Central Kalimantan			-0.985	***	-1.756	***
			-0.163		-0.382	
South Kalimantan			-0.34	**	-1.114	***
			-0.172		-0.386	
East Kalimantan			-0.072		-0.844	**
			-0.195		-0.397	
Sulawesi						
West Sulawesi			-0.448	***	-1.211	***

			-0.162		-0.381	
Central Sulawesi			-0.383	**	-1.151	**
			-0.168		-0.384	
Gorontalo			-0.214		-0.977	***
			-0.174		-0.387	
North Sulawesi			0.186		-0.586	
			-0.19		-0.394	
South Sulawesi			-0.516	***	-1.289	***
			-0.159		-0.38	
Southeast Sulawesi			-0.414	***	-1.176	***
			-0.163		-0.382	
Maluku and Papua						
Maluku			-0.662	***	-1.42	***
			-0.158		-0.38	
North Maluku			-0.052		-0.81	**
			-0.167		-0.384	
West Papua			-0.663	***	-1.426	***
			-0.161		-0.381	
Papua			-0.296	*	-1.062	***
			-0.163		-0.382	
_cons	1.82		0.41		1.286	
	-0.474		-0.187		-0.389	

Source: Author's calculation

*** significant at 1%

** significant at 5%

* significant at 10%

From the estimation on all province regression (see Table 3), only gender of child does not have a significant effect on child vaccination, indicating the absence of gender discrimination. This finding corresponds to Hilber et al., (2010) that differences between girls and boys may not occur in certain subgroups of individuals or households (e.g., in girls and boys belonging to the subgroup of poor households). However, other specific research stated that girls with a surviving older sister were less likely to be immunized compared to boys, and a large proportion of all children were found to be immunized considerably later than recommended (Corsi et al., 2009). Parity in immunization and child's sex were also shown to be major confounders for full immunization coverage (Rahman&Nasrin, 2010).

Table 4
Percentage of children ever vaccinated in Indonesia by gender, 2012

Area	Province	Ever had vaccination				Total	Vaccination rate (%)	
		----- No -----		----- Yes ----				
		Male	Female	Male	Female		Male	Female
A	B	C	D	E	F	G (C+D+E+F)	H (E/G*100)	I (F/G*100)
Sumatera	*Aceh*	41	29	202	193	465	43.44	41.51
	North Sumatera	59	57	276	241	633	43.60	38.07
	West Sumatera	24	19	174	161	378	46.03	42.59
	Riau	54	39	206	185	484	42.56	38.22
	Jambi	25	24	113	119	281	40.21	42.35
	South Sumatera	28	17	169	167	381	44.36	43.83
	Bengkulu	7	10	122	98	237	51.48	41.35
	Lampung	9	13	162	136	320	50.63	42.50
	Bangka Belitung	36	33	103	103	275	37.45	37.45
	Riau Islands	22	12	135	138	307	43.97	44.95
Java	*DKI Jakarta*	22	20	269	258	569	47.28	45.34
	West Java	19	25	230	247	521	44.15	47.41
	Central Java	12	20	130	152	314	41.40	48.41
	DI Yogyakarta		1	92	86	179	51.40	48.04
	East Java	15	19	142	145	321	44.24	45.17
	Banten	47	40	226	233	546	41.39	42.67
Bali and Nusa Tenggara	*Bali*	2	9	132	126	269	49.07	46.84
	West Nusa Tenggara	9	11	170	193	383	44.39	50.39
	East Nusa Tenggara	17	22	191	161	391	48.85	41.18
Kalimantan	*West Kalimantan*	32	40	143	140	355	40.28	39.44
	Central Kalimantan	61	39	105	89	294	35.71	30.27
	South Kalimantan	23	16	131	122	292	44.86	41.78
	East Kalimantan	9	5	125	107	246	50.81	43.50
Sulawesi	*North Sulawesi*	10	5	166	143	324	51.23	44.14
	Central Sulawesi	33	24	150	113	320	46.88	35.31
	South Sulawesi	47	38	187	200	472	39.62	42.37
	Southeast Sulawesi	32	37	160	158	387	41.34	40.83
	Gorontalo	22	17	118	130	287	41.11	45.30
	West Sulawesi	55	48	146	130	379	38.52	34.30
Maluku and Papua	*Maluku*	59	67	165	154	445	37.08	34.61
	North Maluku	28	19	193	173	413	46.73	41.89
	West Papua	46	47	132	124	349	37.82	35.53
	Papua	69	52	129	99	349	36.96	28.37
All Indonesia		**974**	**874**	**5,294**	**5,024**	**12,166**	**43.51**	**41.30**

Source: Author's calculation

On Table 4, we can see the vaccination rate based on gender is almost balance. Some studies explored whether child characteristics (gender, age, weight, ethnicity) affect children's vaccination uptake. Previous studies of influenza vaccine incidence in young children have demonstrated a correlation between age of child and vaccine uptake. Children younger than 2 years were less likely to be vaccinated. This fact could be associated with parental concern that children in this age group receive too many vaccines such that parents avoid additional vaccine shots (Nancy et al., 2011). A study in Canada and the US also

found that children younger than two years of age have lower rates of influenza immunization using. It also happened that children born as part of multiple births were more likely to be vaccinated (Campitelli, Inoue, Calzavara, Kwong, &Guttmann, 2012). Analyzing data from the 2008 National Immunization Survey (NIS) in the USA, the percentage of children aged 6-23 months receiving influenza vaccinations increased nationally, as did the percentage of those receiving full vaccination. However, influenza vaccination coverage among children remains low (Santibanez, Fiore, & Singleton, 2009). On the other hand, study on the effects of vaccination on children's physical and cognitive development in the Philippines did not find a significant relationship regarding child characteristics, either in height or in body mass index (Bloom, Canning, &Seiguer, 2011).

A growing body of literature indicates that higher rates of immunization practice occurred in women with primary education. Increasing a mother's education results in greater awareness about the risks of childhood diseases (Shuaib et al., 2010). Children whose mothers have primary education are more likely to be immunized than those children whose mothers have higher education. This is different from other studies that have found that use of immunizations is higher among children whose mothers have secondary or higher education (Tsawe et al., 2015). This difference might be caused by country-specific behavior patterns.

In the Java area only regression (see Table 3), three categories of variables (gender, insurance coverage, and urbanity) do not have a significant effect. Mother's education is significant at a 10% significance level, which means that mother's education is also important for vaccination. The low level of significance of mother's education is because the Java area is more developed than the area outside Java, and also access and level of education already spread equally compared to outside Java.

The regression result on mother's education corresponds to the finding published in the journal PLoS Medicine, which showed that parents with more education were less likely to let their daughters get HPV shots. It also adds to a growing body of evidence that suggests vaccination efforts are being rightfully eroded not by people who are under-educated, but by upper-middle class individuals with degrees. Generally speaking, individuals with more education have better health. This is possibly because they are better informed about how to achieve better health outcomes (Ogilvie et al., 2010). Furthermore, maternal education is the most frequently-cited factor influencing childhood immunization (Bbaale, 2013). It is argued that maternal education is associated with changes in attitudes/beliefs and practices, autonomy and decision making, control over resources, access to high-paying jobs and educated spouses, and control over fertility behavior, all of which enhance healthcare-seeking behavior. Generally, women who receive even minimal education are more aware than those who have no education regarding available resources for improving their own nutritional status and improvement of their families. Their nutritional status

is affected by their social and economic status (Grossman, 2006). This condition may also affect the level of resources available for the care of the child. If employed women do not have control over their income and decision-making authority within the household, they are deprived of the ability to take actions that will benefit their own well-being and that of their children.

Urbanity is strongly related to the costs of and resource allocation for immunization. Almost all formal health services entail indirect costs that are predominantly related to transportation though immunization services are usually free of charge (provided by government) (Merten et al., 2015), thus, urban households have a greater chance of vaccination uptake. Urban and rural households usually are differentiated by the location and disparity of infrastructure facilities. In low-resource settings, if a mother has to take her child for vaccination, she needs to raise the necessary resources. Urban households are generally favored with a greater access to resources and are thus more likely to have their children vaccinated. When resources are scarce, women have to reallocate household resources to meeting everyday needs such as purchasing food.

On Java-only regression (see Table 3), this paper also found that urbanity and household assets (insurance) have no statistically significant result. With more developed area and higher level of mother's education, there is no correlation between household assets and the rural-urban location with vaccination incidence. Rural-urban disparities are not really high in Java compared to areas outside Java, so the barriers that obstruct mothers' intentions to vaccinate their children, for instance, low quality Infrastructure, did not influence vaccination incidence.

Some literature captured the impact of household assets on vaccination uptake. Health insurance is one of asset forms. The health insurance coverage is the largest barrier to and the strongest predictor of vaccination after accounting for other socio-demographic characteristics, health behaviors, and health status (Takayama, Wetmore, &Mokdad, 2012). Having health care coverage was the strongest predictor of vaccination after accounting for other socio-demographic characteristics and health behaviors. Health vaccine coverage among the uninsured was markedly lower than among those with health insurance coverage.

The regression at the provincial level (see Table 3) also showed a consistent result between control variable (Yogyakarta), which has the highest vaccination incidence, compared to other provinces. It is marked by negative signs on the majority z-coefficient with statistically significant correlation. This result indicates that there are regional differences in vaccination uptake. Region-specific factors lead to regional differences in infection rates and the effects of every disease. The differences and characteristics of regions made variations of the choice of vaccine and dosage regimen in accordance with the specific target population and health system. Country-specific factors induce efforts to strengthen the national program's capacity to identify the locally relevant

causal factors and to develop adapted strategies to address them (Dube et al., 2014). The type of vaccine, vaccine efficacy, and organization of the local health care service organization influenced the effectiveness of the delivery system. Local authorities need to ensure the balance of risks and benefits, where cost constraints or logistical limitations will not obstruct universal coverage of immunization.

Conclusion

Immunization is an important form of primary health prevention, which protects the individual and the wider population by avoiding the spread of infectious disease. The purpose of this paper is to identify the factors affecting the uptake of vaccination in Indonesia, focusing on such factors as child characteristics, mother's education, and regional factors. Briefly, the main finding is that there is no significant difference between boys and girls in terms of vaccination and that mother's education seems to matter a lot, as there is a significantly higher incidence of vaccination among highly educated mothers; however, the significance level is at only 10%. Importantly, there are pronounced regional differences in vaccination, indicating that local government resources put a strain on the universal vaccination program of the country. On table 5, Papua showed the lowest vaccination uptake. The results from provincial level regression tell a clear story that almost all variable categories have significant effect on immunization incidence in Indonesia. Except gender of child, all independent variables are significant. This result could help the formulation of government policies to improve child immunization coverage in Indonesia. Policies that are strongly related to the variable categories should be encouraged further. Providing vast basic education for women, decreasing rural and urban inequality, evading disparities between Java and outside Java, and also supporting local institution/government to expand immunization universally are some important policy actions. Mother's education has influenced the awareness and intention of people who lived in rural areas to vaccinate their children. By increasing amount of transfer for health care programs, local institutions could reduce the number of children who could not receive basic immunization.

The results of this paper point to three important policy interventions: (1) improving education of mother, (2) expanding of health insurance coverage, and (3) providing earmarked funds from the national government to local government to support vaccination programs. Expanding health insurance should be implemented, particularly in low-income provinces such as Papua and other rural areas where vaccination coverage remains low.

Table 5

Percentage of children with at least one vaccination in Indonesia, IDHS 2012

Area	Province	At least one vaccination					
		No	Yes	Don't Know	Missing	Total	(%)

A	B	C	D	E	F	G	(D/G*100)
Sumatera	*Aceh*	70	395	1	1	467	84.58
	North Sumatera	116	517	5	0	638	81.03
	West Sumatera	43	335	1	2	381	87.93
	Riau	93	391	5	3	492	79.47
	Jambi	49	232	1	2	284	81.69
	South Sumatera	45	336	1	0	382	87.96
	Bengkulu	17	220	2	1	240	91.67
	Lampung	22	298	1	1	322	92.55
	Bangka Belitung	69	206	0	0	275	74.91
	Riau Islands	34	273	13	1	321	85.05
Java	*DKI Jakarta*	42	527	4	1	574	91.81
	West Java	44	477	1	8	530	90.00
	Central Java	32	282	1	2	317	88.96
	DI Yogyakarta	1	178	0	0	179	99.44
	East Java	34	287	1	2	324	88.58
	Banten	87	459	1	1	548	83.76
Bali and Nusa Tenggara	*Bali*	11	258	1	0	270	95.56
	West Nusa Tenggara	20	363	3	0	386	94.04
	East Nusa Tenggara	39	352	3	3	397	88.66
Kalimantan	*West Kalimantan*	72	283	5	3	363	77.96
	Central Kalimantan	100	194	1	0	295	65.76
	South Kalimantan	39	253	2	0	294	86.05
	East Kalimantan	14	232	2	0	248	93.55
Sulawesi	*North Sulawesi*	15	309	0	3	327	94.50
	Central Sulawesi	57	263	1	2	323	81.42
	South Sulawesi	85	387	0	5	477	81.13
	Southeast Sulawesi	69	318	2	6	395	80.51
	Gorontalo	39	248	1	0	288	86.11
	West Sulawesi	103	276	9	3	391	70.59
Maluku and Papua	*Maluku*	126	319	11	1	457	69.80
	North Maluku	47	366	3	1	417	87.77
	West Papua	93	256	8	13	370	69.19
	Papua	121	228	35	7	391	58.31
All Indonesia		**1,848**	**10,318**	**125**	**72**	**12,363**	**83**

Source: Author's calculation

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