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ARTICLE

Progress in Reducing Indoor Tobacco Smoke Pollution Toward the Establishment of Kabupaten/ Kota Layak Anak

Evidence From the 2012 and 2017 Indonesia Demographic and Health Surveys

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Abstract: In 2017, only about 26.68 percent of Indonesian households were smoke-free. Previous research established a relationship between the health of children under five and indoor tobacco smoke pollution. According to Presidential Regulation 25 of 2021, some indicators that should be met for establishing a child-friendly city/ regency (KLA) are the child's rights to health and family environment. Data from the Indonesia Demographic and Health Surveys (IDHS) 2012 and 2017 assessed progress toward smoke-free homes by evaluating the interaction between child age and indoor tobacco smoking at the urban-rural area and regional levels. T-test analysis was used to determine the statistical significance. Findings revealed a higher prevalence of indoor tobacco smoking in rural areas. Over time, the prevalence of indoor tobacco smoking in Indonesian rural areas decreased by 0.84 percent. There was no significant reduction in Kalimantan, Nusa Tenggara, or Maluku-Papua. Furthermore, Sulawesi experienced a significant increase of approximately 4.54 percent. From 2012 to 2017, the prevalence of indoor tobacco smoking was higher in households with children under five, home crowding, poor households, and households with a low education household head. Therefore, interventions should focus on rural areas. City/regency governments in Sulawesi, Kalimantan, Nusa Tenggara, and Maluku-Papua should be more concerned about indoor tobacco smoke pollution. Raising family awareness about the dangers of indoor tobacco smoke pollution could be targeted at households with children under the age of five, overcrowded households, low-income households, and households with a low-education household head.

Keywords: tobacco smoke pollution; home crowding; city/regency; region; smoke-free home policy

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1. Introduction

Housing conditions are extremely important for a child's health, development, and well-being. However, due to rapid urbanization, the UN-Habitat 2021 report revealed that approximately 37 percent of 62 countries reported that more than half of children lived in urban slums with inadequate housing conditions, with Asia and Africa having the highest proportion of children growing up in slums areas (Singh et al., 2022). Furthermore, the climate crisis exposed inadequate housing to rising sea levels and extreme weather events, increasing the vulnerability of children to multidimensional poverty, disease, and death.

In 2021, approximately 2.7 million children under the age of 5 died as a result of insufficient efforts to address infectious diseases such as acute respiratory infections (ARIs), diarrhea, and malaria (UNICEF, 2023). Another important health determinant linked to housing quality is indoor environmental quality (Haryanto, 2020; Swope & Hernández, 2019). Prior research has found an association between ARIs and indoor environmental quality among under-5 children. Poor ventilation, home crowding, and indoor air pollution increased the risk of ARIs (Admasie et al., 2018; Cox et al., 2017; Fakunle et al., 2016; Hassen et al., 2020; Islam et al., 2021; Nkosi et al., 2019; Rehman & Ishaq, 2018; Swope & Hernández, 2019; Tse et al., 2016). ARIs was one of the leading causes of preventable death among children under the age of 5 in low- and middle-income countries (LMICs) (UNICEF, 2023). Thus, providing adequate housing for children under age 5 was essential.

Tobacco smokers aged 15 and over have decreased globally from around 27 percent in 2000 to 17 percent in 2020 (WHO, 2021). The South-East Asia Region made the most progress in reducing tobacco smoking rates, with rates falling gradually from approximately 29 percent in 2000 to 19 percent in 2010 and 13 percent in 2020 (WHO, 2021).

In Indonesia, on the other hand, the prevalence rate of tobacco users aged 15 and over increased gradually from 34.7 percent in 2000 to 36.3 percent in 2010 and 37.9 percent in 2020 (WHO, 2021). The 2017 Indonesia Demographic and Health Survey (IDHS) revealed that indoor exposure to tobacco smoke pollution was common in Indonesian housing, with only about 26.68 percent of households free of indoor tobacco smoking (National Population and Family Planning Board (BKKBN) et al., 2018).

The 2018 Indonesia health research (RISKESDAS) found that 7.8 percent of Indonesian under-5 children had ARIs (Kementerian Kesehatan RI, 2018). The association between indoor tobacco smoke pollution and ARIs among under-5 children has been well established (Jones et al., 2011; Miyahara et al., 2017; Puspitasari & Rahardja, 2021; Zhuge et al., 2020).

As previously said, housing quality was crucial for children's health (Admasie et al., 2018; Cox et al., 2017; Fakunle et al., 2016; Hassen et al., 2020; Islam et al., 2021; Jones et al., 2011; Miyahara et al., 2017; Nkosi et al., 2019; Puspitasari & Rahardja, 2021; Rehman & Ishaq, 2018; Swope & Hernández, 2019; Tse et al., 2016; Zhuge et al., 2020). According to WHO, city and region should be considered when defining adequate and healthy housing (Singh et al., 2022). Geographic region was essential for the study because it posed a disproportionate threat to children's health (Chiao & Deji-Abiodun, 2020). A previous study has shown that regional planning and public policy were crucial for the health and well-being of children (Britton, 2017; Mantey et al., 2022).

Interventions to achieve smoke-free households (SFH) have been developed in several countries, with varying degrees of effectiveness (Baxter et al., 2011; Klassen et al., 2017). The Indonesian Ministry of Health has advanced the national indicator of smoke-free homes in a healthy lifestyle agenda (PHBS). The Ministry of Health began aggressively promoting a healthy living agenda in 2011, which has now been passed down to provincial and city/regency health offices (Ningsih & Jonyanis, 2014). Yogyakarta, a province in Indonesia, was the first to establish community-based smoke-free home rules in 135 urban areas (Padmawati et al., 2018). However, the involvement of children under the age of five in the implementation of smoke-free households in each region of Indonesia has not been thoroughly researched. Progress had to be assessed with a focus on improving the healthy living agenda. However, Indonesia has a shortage of knowledge about trends and geographic variations in indoor tobacco smoke pollution. Interacting with children under the age of five to assess progress in lowering indoor tobacco smoke pollution at the urban-rural and regional levels provides essential data for intervention targeting.

Along with children under the age of five, the socioeconomic status of the household, such as household wealth and parental education, was found to be associated with tobacco smoking at home (Hahn & Truman, 2015; Noble et al., 2015; Santero et al., 2019). Therefore, this study aims to identify progress in indoor tobacco smoke pollution, examine associations between tobacco smoke pollution and household characteristics (household socioeconomic status, the number of children under the age of five in the household, and home crowding), and estimate tobacco smoke pollution at the urban-rural area and regional levels. Household characteristics were also examined to offer necessary data for city/regency government intervention and support of a healthy lifestyle agenda. In accordance with Regulation of the Head of Statistics Indonesia (BPS) number 120 of 2020 on the classification of rural-rural and rural-urban in Indonesia 2020, the classification of urban and rural areas in the IDHS were parts of city/regency government.

The UNICEF-led Child-Friendly Cities Initiative (CFCI) aims to assist local governments in realizing children's rights at the local level in accordance with the UN Convention on the Rights of the Child (UNCROC). This initiative's government and other stakeholders collaborate to create more child-friendly cities and communities. One of the aims of the CFCI was to ensure that children have the right to live in a safe, secure, and clean environment, free of pollution. Furthermore, CFCI recognizes the role of the family in ensuring that children enjoy family life. Unfortunately, there has been no report of CFCI in Indonesia.

However, the Indonesian Ministry of Women Empowerment and Child Protection (KPPPA) initiates the establishment of child-friendly cities regencies (Kabupaten/Kota Layak Anak/KLA) at the city/regency level (Rosalin et al., 2016). By enforcing the Presidential Regulation of the Republic of Indonesia number 25 of 2021 on Policy on KLA, the city/regency government and other stakeholders should meet five clusters of the rights of children of Indonesia's KLA: rights of civilization and freedom; family environment and parenting; health and wellbeing; education, leisure, and cultural activities; and special protection.

Children under the age of 5 spend most of their time at home. Thus, the family environment was critical for children to achieve their rights, including their right to health and well-being. Indonesia's under-5 mortality rate (U5MR) remained at 23 per 1,000 live births (Statista, 2023), far above the 2030 SDG target of 15 per 1,000 live births. ARIs have been one of the leading causes of death among children under 5 in Indonesia. As one of the methods of reducing the risk of ARIs, housing interventions

focusing on the family unit to maintain behavior without tobacco smoking at home (Barnes et al., 2020; Pratt & Sonney, 2020; Puspitasari & Rahardja, 2021) were quite reasonable. Thus, to achieve KLA in terms of lowering the prevalence of ARIs among children under the age of 5, city/regency, governments should focus on creating housing environments free of indoor tobacco smoke pollution.

2. Methods

The data for this study came from the Indonesian Demographic and Health Surveys (IDHS) in 2012 and 2017. The unit of analysis of this study was all of the households recorded in the 2012 and 2017 IDHS. This study collected 43,603 observations from the 2012 IDHS and 47,884 observations from the 2017 IDHS. Data that was missing was omitted.

Indoor tobacco smoking was the outcome variable. Indoor tobacco smoking was measured if any household members smoked inside the house. Indoor tobacco smoking was a binary variable.

Explanatory variables included any child under the age of five (yes, no), home-crowding (yes, no), educational attainment of household head (primary education or less, secondary education, higher education), household wealth index (lowest, second, middle, fourth, highest), place of residence (urban, rural), and region (Sumatera, Java Bali, Kalimantan, Sulawesi, Nusa Tenggara, Maluku/Papua). These variables have been linked to indoor air pollution.

UN-Habitat defined home-crowding as an insufficient living area with four or more people per sleeping room (UN-Habitat, 2018). The wealth index of a household was calculated using the household's ownership of various assets and dwelling characteristics (ICF, 2018). The Demographic and Health Survey (DHS) standardized each household score for each asset, then used principal components analysis to divide wealth quintiles into five groups (lowest, second, middle, fourth, and highest) (ICF, 2018).

This study examined the level and progress of indoor tobacco smoke pollution. The trends analysis observed changes in smoke pollution by household characteristics between 2012 and 2017. The t-test was used to test the statistical significance of the change over time for each characteristic category. The formula t-test was used for two independent samples, as shown in equation (1). STATA version 17.0 was used for all analytical procedures, both descriptive and analytical.

$$t = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{s_x^2}{n_x} + \frac{s_y^2}{n_y}}} \quad \text{..... (1)}$$

2.1. Ethical Consideration

The 2012 and 2017 IDHS data collection was downloaded from the DHS website in accordance with the Access Policy (https://microdata.worldbank.org/index.php/catalog/3477). The information provided is devoid of any personal identifiers, such as name and address.

3. Results and Discussion

3.1. Level, Progress, and Changes of Indoor Tobacco Smoking by Household Environmental Characteristics (Table 2)

From 2012 to 2017, the prevalence of indoor tobacco smoking in households with children under 5 decreased by approximately 4.14 percentage points. However, the percentage of indoor tobacco smoking was very high in households with children under five between 2012 and 2017.

Compared to households without home crowding, households with home crowding had a significantly larger reduction in the prevalence of indoor tobacco smoking by about 4.29 percent over five years. However, the percentage of indoor tobacco smoking in homes with home crowding remained higher between 2012 and 2017 than in homes without home crowding.

Despite the largest decrease in the percentage of households smoking indoor tobacco, the prevalence of indoor tobacco smoking in households with the lowest wealth quintile was the highest among all wealth quintiles, at approximately 80.85 percent in 2012 and 77.03 percent in 2017. Households in the highest wealth quintile, on the other hand, had the second-largest reduction in the percentage of indoor tobacco smoking, but the prevalence of indoor tobacco smoking was the lowest over time. Previous research established an association between household wealth and the risk of ARIs (Chiao & Deji-Abiodun, 2020; Mulatya & Mutuku, 2020; Shibata et al., 2014).

Over time, the largest decrease in the prevalence of indoor tobacco smoking was in households with a head of household with a high level of education, decreasing by about 4.29 percent between 2012 and 2017. This finding indicated that the level of education of the head of the household was the most important factor in increasing the awareness of the danger of indoor tobacco smoking pollution (Herawati et al., 2019). On the contrary, findings based on household characteristics indicated that information, education, and communication (IEC) campaigns to raise awareness of the dangers of indoor tobacco smoke pollution should prioritize households with children under the age of 5, home crowding, and low socioeconomic status.

3.2. Level, Progress, and Changes of Indoor Tobacco Smoke Pollution at the Urban-Rural Area and Regional Levels

There were large and significant reductions in the prevalence of indoor tobacco smoking in Sumatra, Jawa-Bali, and Kalimantan between 2012 and 2017, with Jawa-Bali having the largest significant reduction (Table 2). However, indoor tobacco smoking increased significantly in Sulawesi by about 4.34 percent from 2012 to 2017 (Table 2). Despite reductions in indoor tobacco smoking prevalence in Nusa Tenggara and Maluku-Papua, the values were not statistically significant. Therefore, more efforts to raise awareness about the dangers of indoor tobacco smoking should be directed to Sulawesi, Nusa Tenggara, and Maluku-Papua. According to the 2018 Public Health Development Index (IPKM), Bali and Papua had the highest and lowest public health development rankings, respectively (Tjandrarini et al., 2019).

Figure 1 depicts the distribution of indoor tobacco smoking by urban/rural type in each region from 2012 to 2017. Indoor tobacco smoking was widespread in rural areas between 2012 and 2017. Furthermore, rural areas in Indonesia only had a small reduction in the prevalence of indoor tobacco smoking by less than 1 percent between 2012 and 2017. The greatest decrease over time was in urban areas, which fell by approximately 4.97 percentage points between the first and most recent

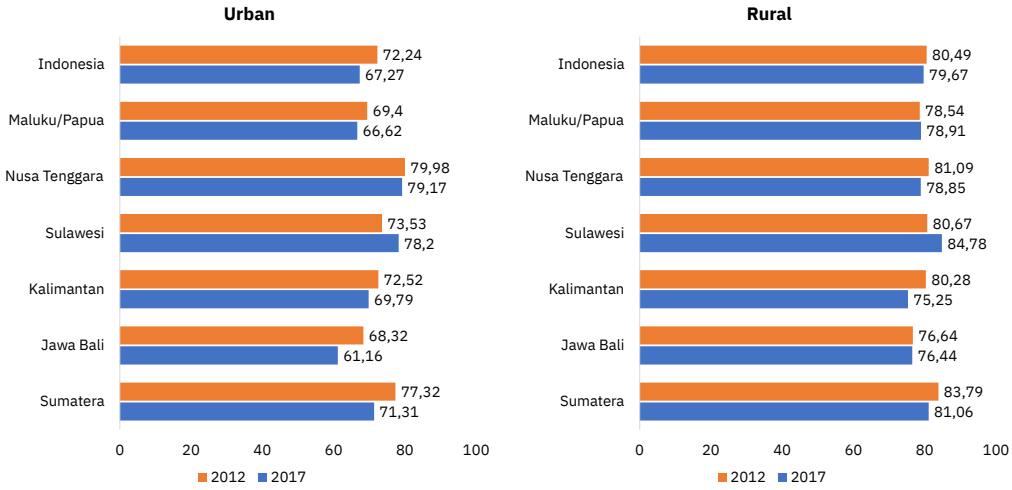

Figure 1. The Percentage Distribution of Households Exposed to Indoor Tobacco Smoke Pollution by Region and Urban/ Rural Areas

Source: *The 2012 and 2017 IDHS (calculated by authors)*

surveys. This finding is consistent with the prevalence of ARIs in children under the age of five in 2018, which was 7.6 percent in urban areas and 8.1 percent in rural areas, respectively (Kementerian Kesehatan RI, 2018). UN-Habitat data revealed that 73.1 percent of children under the age of 5 lived in rural areas, a percentage slightly lower than those who lived in urban areas (Singh et al., 2022). As a result, children in rural areas were more likely to contract ARIs. This finding indicated that rural public health management is still an issue. Furthermore, due to rural urbanization, city/regency governments should be cautious about urban development. Slum areas were inextricably linked to urban development as a result of rapid urbanization (Singh et al., 2022). A previous study found that using good social control and a mass media campaign to educate people about the dangers of smoking and other associated effects could be effective in lowering the prevalence of smoking behavior in rural areas (Swatan et al., 2020). Therefore, city/regency governments should highlight public health development in rural areas to achieve a KLA in terms of lowering the risk of ARIs among children under the age of 5.

Between 2012 and 2017, urban areas in Sumatra (Table 3) and Jawa-Bali (Table 4) experienced the greatest reductions in indoor tobacco smoke pollution, with reductions of approximately 6.01 percent and 7.16 percent, respectively. Over time, the percentage of indoor tobacco smoking in Sumatra and Jawa-Bali urban areas fell lower than in rural areas. However, urban areas in Kalimantan (Table 5), Nusa Tenggara (Table 7), and Maluku-Papua (Table 8) did not have a significant reduction in indoor tobacco smoking pollution between 2012 and 2017.

On the other hand, the prevalence of indoor tobacco smoking in urban areas in Sulawesi increased significantly from 73.53 percent in 2012 to 78.20 percent in 2017 (Table 6). Although the prevalence in urban Sulawesi has increased over time, it remains lower than in rural Sulawesi.

The use of large nationally representative data allows for generalizing the results at the national level, which is a strength of this study. However, the cross-section analysis excludes the possibility of a causal relationship. Furthermore, due to data limitations in the IDHS, this study did not measure proper ventilation as one of the important factors in reducing the risk of ARIs among children under the age of 5.

4. Conclusion

As one of the objectives of developing a child-friendly city in Indonesia was to improve children's health, city/regency governments should focus on efforts to reduce the risk of acute respiratory infections among children under the age of five. By identifying progress and geographic variation in indoor tobacco smoke pollution interacting with children under five and household characteristics in the urban-rural areas, the model revealed that interventions to reduce indoor tobacco smoking in Indonesia should focus on rural areas. Furthermore, city/regency governments in Sulawesi, Kalimantan, Nusa Tenggara, and Maluku-Papua should be more concerned about indoor tobacco smoke pollution, as there was no significant reduction in indoor tobacco smoking prevalence between 2012 and 2017. Eventually, adequate housing for children under the age of 5 can be established by enforcing the smoke-free home policy in every urban-rural area and region of Indonesia, as no policy exist to reduce tobacco smoking at home.

Analysis by household characteristics revealed that interventions should be directed toward households with children under five, with insufficient living areas, and poor households. City/regency governments could use IEC programs to raise family awareness about the dangers of indoor tobacco smoke pollution for children under the age of 5. Because education level was associated with indoor tobacco smoking, city/regency governments should make education more accessible.

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Table 1. Household Sample Distribution by Characteristics

Variable	2012		2017	
	n	%	n	%
Any household members smoking inside the house				
Never	10,218	23.43	12,775	26.68
Yes	33,385	76.57	35,109	73.32
Any child under the age of five				
No	25,936	59.48	30,364	63.41
Yes	17,667	40.52	17,520	36.59
Home crowding				
No	38,034	87.23	43,238	90.3
Yes	5,569	12.77	4,646	9.7
Education of household head				
Primary or less	21,293	48.83	22,013	45.97
Secondary	17,495	40.12	20,067	41.91
Higher	4,815	11.04	5,804	12.12
Household Wealth Index				
Lowest	12,104	27.76	13,211	27.59
Second	9,251	21.22	10,155	21.21
Middle	8,087	18.55	8,799	18.38
Fourth	7,329	16.81	8,122	16.96
Highest	6,832	15.67	7,597	15.87
Place of residence				
Urban	20,736	47.56	24,518	51.2
Rural	22,867	52.44	23,366	48.8
Region				
Sumatera	12,239	28.07	12,258	25.6
Jawa-Bali	13,703	31.43	17,362	36.26
Kalimantan	4,501	10.32	4,143	8.65
Sulawesi	7,041	16.15	6,954	14.52
Nusa Tenggara	2,358	5.41	3,507	7.32
Maluku-Papua	3,761	8.63	3,660	7.64
Total	**43,603**	**100.00**	**47,884**	**100.00**

Source: *The 2012 and 2017 IDHS (calculated by authors)*

Table 2. Levels and Changes in the Frequency of Indoor Tobacco Smoking by Household Characteristics

Variable	2012		2017		Diff (2017-2012)	p[2]
	%	p[1]	%	p[1]		
Any child under the age of five		0.000		0.000		
No	72.84		70.68		-2.16**	0.000
Yes	82.04		77.90		-4.14**	0.000
Home crowding		0.000		0.000		
No	75.36		72.55		-2.81**	0.000
Yes	84.81		80.52		-4.29**	0.000
Education of household head		0.000		0.000		
Primary or less	79.71		22,013		-2.03**	0.000
Secondary	77.50		20,067		-3.65**	0.000
Higher	59.25		5,804		-4.29**	0.000
Household Wealth Index		0.000		0.000		
Lowest	80.85		77.03		-3.82**	0.000
Second	79.74		77.41		-2.33**	0.000
Middle	77.47		74.85		-2.62**	0.000
Fourth	74.61		71.05		-3.55**	0.000
Highest	65.71		62.06		-3.64**	0.000
Place of residence		0.000		0.000		
Urban	72.24		67.27		-4.97**	0.000
Rural	80.49		79.67		-0.82*	0.027

Variable	2012		2017		Diff (2017-2012)	p[2]
	%	p[1]	%	p[1]		
Region		0.000		0.000		
Sumatera	81.03		76.52		-4.51**	0.000
Jawa-Bali	71.42		66.31		-5.11**	0.000
Kalimantan	76.89		72.39		-4.51**	0.000
Sulawesi	77.96		82.30		4.34**	0.000
Nusa Tenggara	80.66		78.96		-1.71	0.112
Maluku-Papua	75.22		74.45		-0.77	0.447
Total	**76.57**		**73.32**		**-3.24**	**0.000**

*Note: *<0.05, **p<0.01*
[1] p-value significance of the category in each wave
[2] p-value significance of difference between the two waves

Table 3. Levels and Changes in the Frequency of Indoor Tobacco Smoking in Sumatra

Variable	2012		2017		Diff (2017-2012)	p[2]
	%	p[1]	%	p[1]		
Any child under the age of five		0.000		0.000		
No	77.01		74.41		-2.60**	0.000
Yes	86.49		80.04		-6.44**	0.000
Home crowding		0.000		0.000		
No	79.99		75.38		-4.61**	0.000
Yes	88.25		86.75		-1.50	0.235
Education of household head		0.000		0.000		
Primary or less	82.91		79.05		-3.86**	0.000
Secondary	82.29		78.04		-4.24**	0.000
Higher	65.23		60.57		-4.66*	0.017
Household Wealth Index		0.000		0.000		
Lowest	83.69		79.26		-4.44**	0.000
Second	83.44		79.46		-3.98**	0.000
Middle	81.68		78.10		-3.58**	0.000
Fourth	79.81		76.12		-3.69**	0.003
Highest	72.93		67.58		-5.34**	0.000
Place of residence		0.000		0.000		
Urban	77.32		71.31		-6.01**	0.000
Rural	83.79		81.06		-2.73**	0.000

*Note: *<0.05, **p<0.01*
[1] p-value significance of the category in each wave
[2] p-value significance of difference between the two waves

Table 4. Levels and Changes in the Frequency of Indoor Tobacco Smoking in Jawa-Bali

Variable	2012		2017		Diff (2017-2012)	p[2]
	%	p[1]	%	p[1]		
Any child under the age of five		0.000		0.000		
No	68.46		64.01		-4.45**	0.000
Yes	77.03		71.17		-5.85**	0.000
Home crowding		0.000		0.000		
No	70.84		66.24		-4.60**	0.000
Yes	78.04		67.30		-10.74**	0.000
Education of household head		0.000		0.000		
Primary or less	75.87		73.37		-2.51**	0.000
Secondary	71.68		65.44		-6.24**	0.000
Higher	52.28		40.01		-12.27**	0.000

Variable	2012		2017		Diff (2017-2012)	p²
	%	p¹	%	p¹		
Household Wealth Index		0.000		0.000		
Lowest	73.22		70.49		-2.72**	0.000
Second	76.54		72.79		-3.75**	0.001
Middle	75.01		69.91		-5.10**	0.000
Fourth	73.19		64.89		-8.30**	0.000
Highest	62.66		54.18		-8.48**	0.000
Place of residence		0.000		0.000		
Urban	68.32		61.16		-7.16**	0.000
Rural	76.64		76.44		-0.20	0.806

*Note: *<0.05, **p<0.01*
¹ p-value significance of the category in each wave
² p-value significance of difference between the two waves

Table 5. Levels and Changes in the Frequency of Indoor Tobacco Smoking in Kalimantan

Variable	2012		2017		Diff (2017-2012)	p²
	%	p¹	%	p¹		
Any child under the age of five		0.000		0.000		
No	74.06		70.98		-3.08*	0.014
Yes	80.86		74.51		-6.35**	0.000
Crowding		0.000		0.000		
No	75.20		71.76		-3.44**	0.000
Yes	86.19		76.37		-9.82**	0.001
Education		0.000		0.000		
Primary or less	81.15		76.85		-4.30**	0.001
Secondary	76.06		72.46		-3.61*	0.012
Higher	59.65		55.28		-4.37	0.178
Wealth Index		0.000		0.000		
Lowest	81.53		75.29		-6.24**	0.000
Second	79.86		76.06		-3.81*	0.033
Middle	76.39		74.63		-1.76**	0.000
Fourth	71.62		68.50		-3.13	0.243
Highest	60.47		62.89		2.42	0.416
Place of residence		0.000		0.000		
Urban	72.52		69.79		-2.73	0.053
Rural	80.28		75.25		-5.03**	0.000

*Note: *<0.05, **p<0.01*
¹ p-value significance of the category in each wave
² p-value significance of difference between the two waves

Table 6. Levels and Changes in the Frequency of Indoor Tobacco Smoking in Sulawesi

Variable	2012		2017		Diff (2017-2012)	p²
	%	p¹	%	p¹		
Any child under the age of five		0.000		0.000		
No	73.91		80.01		6.10**	0.000
Yes	83.54		86.23		2.69**	0.006
Crowding		0.000		0.000		
No	76.09		81.31		5.21**	0.000
Yes	86.58		88.55		1.97	0.167
Education		0.000		0.000		
Primary or less	81.17		85.65		4.49**	0.000
Secondary	78.66		82.88		4.22**	0.000
Higher	62.01		68.86		6.85**	0.002

Variable	2012		2017		Diff (2017-2012)	p[2]
	%	p[1]	%	p[1]		
Wealth Index		0.000		0.000		
Lowest	82.39		82.35		-0.04**	0.000
Second	78.92		83.66		4.74**	0.001
Middle	76.47		85.49		9.02	0.420
Fourth	73.27		83.04		9.76**	0.000
Highest	66.39		75.35		8.96**	0.000
Place of residence		0.000		0.000		
Urban	73.53		78.20		4.67**	0.000
Rural	80.67		84.78		4.11**	0.000

*Note: *<0.05, **p<0.01*
[1] p-value significance of the category in each wave
[2] p-value significance of difference between the two waves

Table 7. Levels and Changes in the Frequency of Indoor Tobacco Smoking in Nusa Tenggara

Variable	2012		2017		Diff (2017-2012)	p[2]
	%	p[1]	%	p[1]		
Any child under the age of five		0.000		0.000		
No	77.46		76.41		-1.06	0.485
Yes	84.39		82.44		-1.95	0.192
Crowding		0.000		0.000		
No	79.87		78.17		-1.70	0.146
Yes	84.84		85.96		1.11	0.670
Education		0.000		0.000		
Primary or less	78.89		79.15		0.26	0.857
Secondary	84.84		80.30		-4.54*	0.012
Higher	77.73		74.46		-3.27	0.337
Wealth Index		0.000		0.000		
Lowest	79.55		79.40		-0.15	0.919
Second	81.49		83.39		1.90	0.405
Middle	85.05		75.41		-9.64**	0.002
Fourth	80.70		76.13		-4.57	0.230
Highest	77.48		71.56		-5.92	0.206
Place of residence		0.000		0.000		
Urban	79.98		79.17		-0.81	0.650
Rural	81.09		78.85		-2.25	0.096

*Note: *<0.05, **p<0.01*
[1] p-value significance of the category in each wave
[2] p-value significance of difference between the two waves

Table 8. Levels and Changes in the Frequency of Indoor Tobacco Smoking in Maluku-Papua

Variable	2012		2017		Diff (2017-2012)	p[2]
	%	p[1]	%	p[1]		
Any child under the age of five		0.000		0.000		
No	70.96		68.99		-1.97	0.178
Yes	79.77		81.01		1.24	0.357
Crowding		0.000		0.000		
No	73.71		73.71		0.00	0.998
Yes	83.11		80.05		-3.07	0.208
Education		0.000		0.000		
Primary or less	80.13		78.73		-1.40	0.350
Secondary	76.70		76.78		0.08	0.955
Higher	54.66		57.12		2.46	0.421

Variable	2012		2017		Diff (2017-2012)	p[2]
	%	p[1]	%	p[1]		
Wealth Index		0.000		0.000		
Lowest	81.09		76.08		-5.01**	0.000
Second	77.31		75.95		-1.36	0.522
Middle	70.27		70.23		-0.04	0.987
Fourth	62.14		70.37		8.23	0.015
Highest	60.00		71.14		11.14	0.020
Place of residence		0.000		0.000		
Urban	69.40		66.62		-2.78	0.122
Rural	78.54		78.91		0.37	0.754

*Note: *<0.05, **p<0.01*
[1] p-value significance of the category in each wave
[2] p-value significance of difference between the two waves