



MAPPING SCHOOL PROXIMITY TO CIGARETTE ADVERTISEMENTS AND CIGARETTE RETAILERS IN KOTA BARU DISTRICT JAMBI CITY

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ABSTRACT

Jambi City has a high proportion of first-time smokers. There are no regulations governing the sale of cigarettes around schools. Studies mapping cigarette sales and advertisements have been conducted in Indonesia, but so far no similar studies have been conducted in Jambi City. This study aims to map the distribution of cigarette sellers and advertisements to schools in Kota Baru District, Jambi City. This study was conducted by recording data on the coordinates of schools and the coordinates of cigarette advertisement locations and cigarette retailers. Data was collected using the open-source application KoBoToolbox. Data analysis was conducted through 2 stages. The first was descriptive data analysis to create a cross-table of types of educational facilities with types of shops and types of advertisements. This analysis used the IBM SPSS 25.0 application. Second, mapping with the buffer method to draw the radius of schools with types of shops and types of advertisements. The radius distance in this study is 100 meters and 300 meters from the school point to the type of advertisement and type of retailers. The mapping used the help of the open-source application Quantum GIS 3.30.2. The results of this study found many shops selling cigarettes around the school radius of 100 meters and 300 meters, dominated by grocery stores. The results of this study also found that there are still advertisements posted around educational facilities within a radius of 100 meters and 300 meters, dominated by the types of advertisements in the form of banners and banners.

Keywords: advertisements; cigarette; kota baru district; mapping; proximity; retailers

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INTRODUCTION

Smoking harms almost every organ of the body, causes a burden of disease and disability, degrades the health of smokers, and can lead to death (CDC, 2022). Globally, smoking kills more than 8 million people each year, of which more than 7 million are active smokers, while about 1.3 million are passive smokers (WHO, 2023). About 80% of the world's 1.3 billion smokers come from low- and middle-income countries. Indonesia is one of the major contributors to global smoking, with 61.4 million active smokers in 2018 (WHO, 2018). The 2018 National Basic Health Research Report shows that the national prevalence of smokers in Indonesia is 28.9% with the prevalence of smokers in the adolescent population (10-18 years old) increasing from 7.2% in 2013 to 9.1% (Balitbangkes, 2019). Data from the Global Youth Tobacco Survey shows that over the past 5 years there has been an increase in the number of smokers among students (aged 13-15 years) from 18.3 percent to 19.2 percent in 2019 (WHO, 2019). The prevalence of smokers in Jambi Province is still quite high. The 2018 National Health Survey showed 25.2%. Jambi City has a high proportion of first-time smokers aged ≥ 15 years, which is 54.05% (Riskesdas, 2018).

One of the main causes of the high prevalence of smokers in Indonesia is the ineffectiveness of national tobacco control efforts (Astuti et al., 2020). Until now, the Indonesian government has not signed and ratified the Framework Convention on Tobacco Control (FCTC) (Ahsan et al., 2022). The Indonesian government has also yet to make regulations governing direct advertising of cigarettes, advertising of cigarettes at points of sale, and the display of cigarette products. So far the Indonesian government has issued regulations to encourage local governments to implement smoke-free zone policies in a number of facilities such as education, health, and workplace facilities (Peraturan Pemerintah Republik Indonesia Nomor 109 Tahun 2012, 2012).

The Indonesian government through the Minister of Education and Culture has issued a regulation regarding non-smoking areas in the school environment (Peraturan Menteri Pendidikan Dan Kebudayaan RI Nomor 64 Tahun 2015 Tentang Kawasan Tanpa Rokok Di Lingkungan Sekolah, 2015). The regulation only regulates no-smoking areas within school premises without being supported by regulations governing the sale of cigarettes around schools. Current studies show a close relationship between the number of shops selling cigarettes and the distance between shops and the prevalence of smoking among students (Adams et al., 2013; Marsh et al., 2021; Scully et al., 2013). The closer the distance between school and cigarette shops, the higher the chance of students to smoke, and the lower the chance to quit smoking, and the higher the frequency of smoking in adolescents (Marashi-Pour et al., 2015).

In addition to the presence of cigarette retailers, cigarette advertisements placed near schools also have the potential to trigger smoking behavior in adolescents. A study conducted in Semarang showed that adolescents in schools with medium and high cigarette advertisement density had almost three times the risk of smoking compared to adolescents in schools with low cigarette advertisement density (Handayani et al., 2021). Another study conducted in Jogjakarta with a sample of 2,115 junior and senior high school students also found that 32.4% of students felt that at least 1 in 15 cigarette advertisements they saw could encourage them to smoke. Cigarette advertisements are considered capable of stimulating adolescents to decide to smoke (Prabandari & Dewi, 2016).

The WHO Framework Convention on Tobacco Control (FCTC) and Non-FCTC have made policy directives to countries to regulate sales, particularly regarding cigarette advertising and minimum distances from certain public facilities (Alebshehy et al., 2023). Knowing the number of advertisements and cigarette sellers that are at a minimum distance from schools is important as a first step in efforts to formulate regulations regarding the number of advertisements and the distance of shops selling cigarettes around schools. A method that can be used is geographical mapping to determine the distribution of cigarette advertisement points and cigarette shops with schools. Mapping the distribution of cigarette sellers and advertisements can be useful as input for the development and evaluation of the No Smoking Area policy in Jambi City. Studies on mapping cigarette sellers and advertisements have been conducted in Indonesia, but so far no similar studies have been conducted in Jambi City (Astuti et al., 2019; Dewi et al., 2020; Nurjanah et al., 2020). This study aimed to map the distribution of cigarette sellers and advertisements to schools in Kota Baru District, Jambi City.

METHOD

Study area

Kota Baru District is one of the districts in Jambi City, Jambi Province. Kota Baru District is located at 1.6376° S, 103.5830° E and is in the western part of Jambi City with an area of 36.16 km. Kota Baru District oversees 5 urban villages, namely the Simpang III Sipin, Suka Karya, Kenali Asam Atas, Kenali Asam Bawah, and Paal V urban villages. The population of Kota Baru District in 2020 was 80,062 people with an average density of 2,127 people/km² (BPS Kota Jambi, 2020).

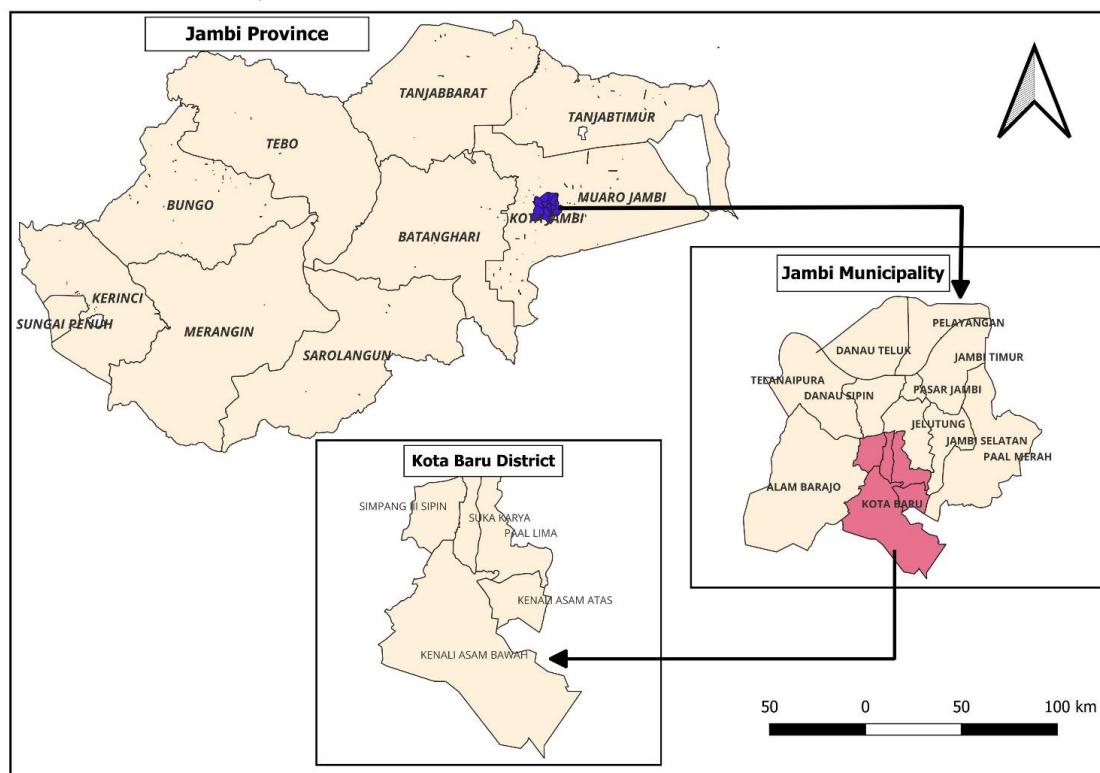


Figure 1. Map of the study area

Data collection

This study was conducted from October to December 2022. This study was conducted by collecting data on the coordinate points of schools at the elementary, junior high, and high school education levels, both private and public, and by collecting data on the coordinate points of the locations of all forms of cigarette advertisements such as billboards, banners, banners, and posters, as well as the location points of cigarette retailers located in the Kota Baru Subdistrict of Jambi City. The data in this study were collected by 17 trained enumerators using the help of the open-source KoboCollect application found on android-based mobile phones. KoboCollect is a data collection application that is part of the KoBoToolbox. KoBo Toolbox is a field data collection platform that can be in online or offline mode (Kobotoolbox, 2023). Data collection is done after testing to check and revise if errors occur.

Data analysis

Data analysis was conducted through 2 stages. First, descriptive data analysis to create a cross-table of types of educational facilities with types of retailers and types of advertisements. This analysis used the IBM SPSS 25.0 application. Second, mapping using buffer analysis to draw the radius of schools with types of retailers and types of advertisements. The radius distance in this study is 100 meters and 300 meters from the

school point to the type of advertisement and type of retailer. The mapping used the help of the open-source application Quantum GIS 3.30.2.

RESULTS

This study explores the presence of cigarette advertisements and cigarette retailers within a radius of 100 meters and 300 meters from schools in the Kota Baru District of Jambi City. This study found that there were a total of 190 cigarette shops located within a radius of 100 meters and 300 meters from schools. A total of 238 types of advertisements were located within a radius of 100 meters and 300 meters.

Number of cigarette retailers from school

The table below shows that there are 297 types of shops located at a radius of 100 meters and 300 meters from schools in Kota Baru District. At a radius of 100 meters from schools, there were a total of 25 retailers selling cigarettes with 20 shops (80.0%) dominated by grocery stores. At a radius of 300 meters, there are 165 types of retailers with 142 (86.0%) grocery stores dominating. The detailed distribution map can be seen in Figure 2 below:

Table 1.
number and types of cigarette shops selling cigarettes from schools within a radius of 100 meters and 300 meters in Kota Baru District, Jambi City

Education Facilities	Kinds of retailer													
	100 meters buffer						300 meters buffer							
	Grocery shop		Mini market		Convenience Store		Total	Grocery shop		Mini market		Convenience Store		Total
	f	%	f	%	f	%		f	%	f	%	f	%	
State Elementary School	11	76.5	1	7.1	2	14.2	14	94	84.6	8	7.2	9	8.1	111
Private Elementary School	2	66.6	0	0.0	1	0.0	3	1	50.0	1	50.0	0	0.0	2
State Junior High School	0	0.0	0	0.0	0	0.0	0	24	92.3	1	3.8	1	3.8	26
Private Junior High School	0	0.0	0	0.0	0	0.0	0	1	100.0	0	0.0	0	0.0	1
State Senior High School	2	100.0	0	0.0	0	0.0	2	7	0.0	0	0.0	1	0.0	8
Private Senior High School	2	100.0	0	0.0	0	0.0	2	3	0.0	0	0.0	0	0.0	3
Private Vocational Schools	3	75.0	0	0.0	1	25.0	4	12	0.0	1	100.0	1	0.0	14
Total	20	80.0	1	4.0	4	16.0	25	142	86.0	11	6.6	12	7.2	165

Source: Primary data, 2023

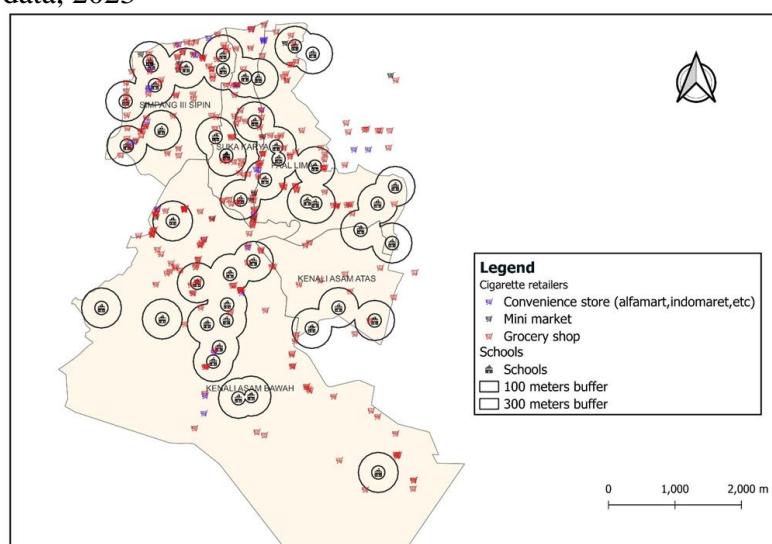


Figure 2. Map of the distribution of types of shops to schools with a radius of 100 meters and 300 meters in the Kota Baru District of Jambi City

Number of cigarette advertisements near schools

Table 2.

Number and types of advertisements from schools within a radius of 100 meters and 300 meters in Kota Baru Subdistrict, Jambi City

Education Facilities	Kinds of advertisements																	
	100 meters buffer							300 meters buffer							Total			
	Phamflet		Banner		Billboard		Poster	Total	Phamflet		Banner		Billboard					
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%		
State Elementary School	0	0.0	14	93.3	0	0.0	1	6.6	15	14	10.4	111	82.8	5	3.7	4	2.9	134
Private Elementary School	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0.0	1	100.0	0	0.0	0	0.0	1
State Junior High School	0	0.0	2	66.6	0	0.0	1	3.3	3	2	13.3	11	7.3	0	0.0	2	13.3	15
Private Junior High School	0	0.0	2	100.0	0	0.0	0	0.0	2	1	8.3	8	66.6	3	25.0	0	0.0	12
State Senior High School	0	0.0	0	0.0	0	0.0	0	0.0	0	1	7.6	10	7.7	0	0.0	2	15.3	13
Private Senior High School	0	0.0	0	0.0	0	0.0	0	0.0	0	1	16.6	4	66.6	1	16.6	0	0.0	6
Private Vocational Schools	0	0.0	0	0.0	0	0.0	0	0.0	0	6	35.2	10	58.8	0	0.0	1	5.8	17
Total	0	0.0	18	90.0	0	0.0	2	0.0	20	142	71.7	25	12.6	9	4.5	9	4.5	198

Source: Primary data, 2023

Table 2 above shows that there are 218 types of cigarette advertisements located at a radius of 100 m and 300 m from educational facilities with details of 20 advertisements located at a radius of 100 meters and 198 advertisements located at a radius of 300 meters. In advertisements located at a radius of 100 meters from educational facilities, the dominant type is banners as many as 18 (90%). At a radius of 300 meters the dominant type of advertisement is banner as many as 142 (71.7%). A detailed map of the distribution of cigarette advertisements at a radius of 100 meters and 300 meters from educational facilities can be seen in the figure below:

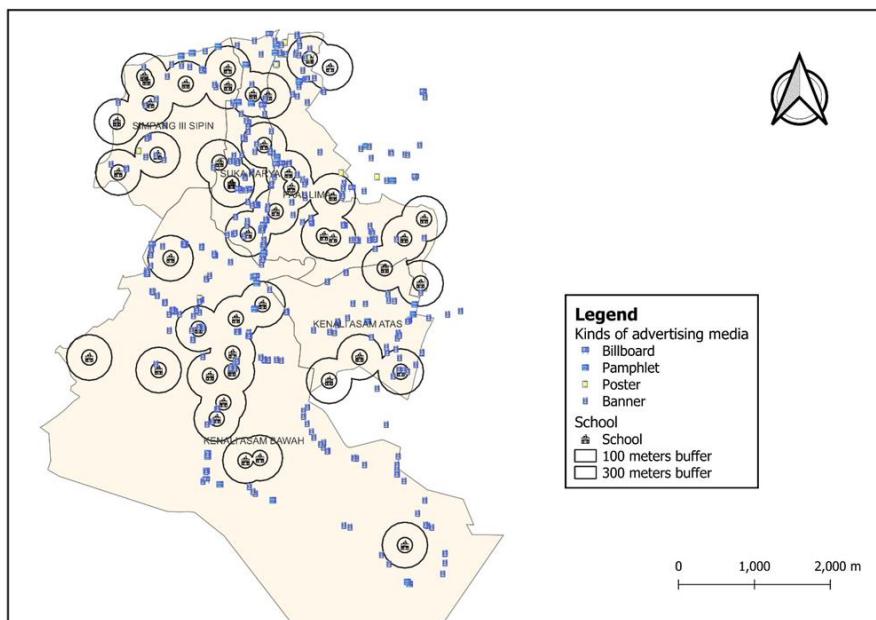




Figure 4. Examples of ad types

DISCUSSION

This research is a preliminary study to explore the distribution of cigarette advertisements and cigarette sellers from a determined radius with schools in Jambi City. This preliminary research was conducted in Kota Baru District, Jambi City. The Jambi City Government has passed a smoke-free area regulation since 2017, one of which regulates smoke-free areas in the school environment in Jambi City. The results of this study found that there are many shops that sell cigarettes within a radius of 100 meters and 300 meters from schools. The results of this study also found that the majority of cigarette sellers within a radius of 100 meters from schools were grocery stores. Likewise, the 300-meter radius was dominated by grocery stores. Several studies conducted in Indonesia show that there are still many shops that sell cigarettes in areas that are at a radius close to educational facilities (Astuti et al., 2019; Dewi et al., 2020).

The large number of cigarette shops in the vicinity of educational facilities in this study area indicates that there is no specific regulation governing the prohibition of selling cigarettes at a certain radius from educational facilities, and also no specific regulation concerning the prohibition of selling cigarettes to minors. The Jambi City government has regulated that the school environment is a no-smoking area, but students can buy cigarettes outside of school at easily accessible shops, many of which are located within a fairly close radius to their school. The availability of shops that sell cigarettes around the school area is a triggering factor for them to smoke (Dewi et al., 2020). Research conducted by Hartanto, et al (2023) in Jakarta besides there are many shops that sell cigarettes around the area with a certain radius from educational facilities, even these shops also sell cigarettes at retail, making it easier for

students to buy them (Hartono et al., 2023).

The results of this study found the presence of cigarette advertisements within a radius of 100 meters and 300 meters from the school. The dominant types of cigarette advertisements are banners and banners. The results of this study are in line with research conducted by Nurjanah, et al (2020) which found that 74 percent of cigarette advertisements in Semarang were within a radius of 300 meters from schools (Nurjanah et al., 2020). Research conducted in Malang Regency which looked at adolescent smoking behavior during the Covid-19 pandemic concluded that there was a relationship between the type of cigarette advertising media on television, and the number of exposure to types of advertisements, smoke-free promotions, and the provision of cigarette logos to adolescent smokers during the Covid-19 pandemic (Laili et al., 2022).

Research conducted by Brown, et al (2022) in more than 40 low- and middle-income countries found that major global companies systematically advertise cigarettes to children in areas close to educational facilities. The study also analyzed data collected over 6 years and found that cigarette sales points were generally within walking distance of educational facilities. The study concluded that there is a marketing strategy that targets children in an effort to introduce them to cigarette products as early as possible. There are four strategies that are carried out, namely by placing cigarettes near snacks and soft drinks. Placing cigarette advertisements in places that can be reached by children's eyes. Creating advertisements with the appearance of flavored cigarettes. Selling cigarettes at retail (Brown et al., 2023).

CONCLUSION

The results of this study found many shops selling cigarettes around the school radius of 100 meters and 300 meters, dominated by grocery stores. The results of this study also found that there are still advertisements posted around educational facilities within a radius of 100 meters and 300 meters, dominated by the types of advertisements in the form of banners and banners.

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