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## Unmet Need For Contraception Spatial Pattern In Muaro Jambi Regency, Jambi Province 2019-2021

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### Abstract

*Unmet Need for contraception is a key indicator to measure increased access to reproductive health and a key indicator to improve maternal and child health. In Indonesia, Unmet Need for contraception is the only strategic achievement of the BKKBN that has not been achieved and has an increasing trend from 2019 to 2021. Followed by an increase in unmet need for contraception for three consecutive years in Jambi Province with the highest number of unmet need for contraception in Muaro Regency, Jambi. This study aims to determine the spatial distribution pattern of the incidence of unmet need for contraception in Muaro Jambi Regency in 2019-2021. This research method is an epidemiological study using an ecological study design with a spatial approach. The sample in this study used an aggregate data analysis unit in 155 villages in Muaro Jambi Regency. This research was conducted from March to July 2022. Based on the results of spatial analysis, there is a tendency to increase the unmet need for contraception and there is a positive spatial autocorrelation between villages and there are 33 villages known as hot spot areas which are the main priority in overcoming the unmet need for contraception in Muaro Regency, Jambi.*

**Keywords:** *Unmet Need For Contraception, Spatial Analysis*

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## INTRODUCTION

The family planning Program is one of the efforts to overcome the quality and quantity problems of the Indonesian population (RPJMN, 2020-2024). When viewed from the Total birth rate (TFR) in Indonesia which is in a stagnant position from 2017-2020 of 2.26 (BKKBN, 2020). So one of the efforts to reduce TFR is by sharpening the decrease in unmet need for contraception. In accordance with the determination (United Nations, 2021) that Unmet Need is a key indicator to measure increased access to reproductive health and efforts to improve maternal and Child Health. Based on WHO data in 2020, there are 270 unmet needs globally. Supported by Jain Research (2017) in 36 countries shows that there are 27% of women have unmet contraceptive needs (Barden, 2018, Dibaba 2021). In developing countries 1 in 3 women of reproductive age constitutes unmet need (Catherine Akoth 2021, Joseph 2016).

In Indonesia, based on the BKKBN report in 2020, Unmet Need is the only indicator of strategic goals that are not achieved with a level of achievement of the less category of 64.2 percent. Unmet needs 13.4% and has not reached the target of 8.6% in 2020 (BKKBN, 2021). The high Unmet Need in Indonesia, of course, is influenced by the high Unmet Need in the provinces in Indonesia. One of them is Jambi province with unmet need level which continues to increase with unmet need level of 14.0% in 2020 (BKKBN Jambi province, 2020).

Muaro Jambi regency is one of the districts in Jambi province and is the Regency with the highest unmet need rate in Jambi province in 2021 at 14.54%. When viewed from the trend of using contraception itself, in Muaro Jambi regency in 2021 the majority of PUS used short-term contraceptives pills and injections by 81.15% (BKKBN Muaro Jambi regency, 2021). In accordance with the results of the Barden Study (2018) of 6927 women of childbearing age, there were 34.7% of

contraceptive stops caused by the use of pill and injectable contraceptives, which could lead to an increase in unmet need for contraception (Dibaba 2021, Jain 2017).

The high unmet need for contraception is a major cause of unwanted pregnancy in developing countries. More than 30 million unwanted pregnancies occur in women with unmet need (Joseph 2016, Jain 2017). Where in unmet need women have a 4-fold chance of unwanted pregnancy (Sunny Yaya, 2018). According to Kazuyo Machiyama et al in 2017 developed a theoretical framework for the cause of unmet need for contraception that is influenced by geographical areas, supported by research (Catherine Akoth et al 2021, Anbessa Wolde, et al 2020, Kriti Yadav 2020, Barden 2018). Based on these conditions, it is deemed necessary to map the cases and Risk Factors of unmet need for contraception in the District. Muaro Jambi. Spatial analysis is an analysis that considers spatial effects on several locations related to environmental and geographical characteristics between regions. Based on these reasons, then in this study the researchers wanted to see the spatial influence in the analysis with the hope to add new information related to the spread pattern unmet need contraception in Muaro Jambi.

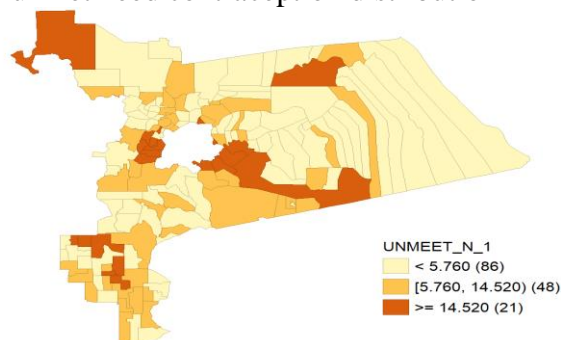
## **RESEARCH METHODS**

This study used an ecological study research design using a spatial approach and using secondary data from the BKKBN of Muaro Jambi regency in 2019-2021. The sample in this study using aggregated data analysis units in 155 villages in Muaro Jambi regency. This study was conducted from March to July 2022. The Data were analyzed using the Moran's  $i$  method with the help of the unpaid software GeoDa 1.2. which begins with the process of editing, coding and cleaning data then continued with the identification of unmet need distribution of contraception with spatial dependence test using moran index value to assess the presence or absence of spatial autocorrelation between villages globally and finally the pattern of grouping and distribution between locations presented with Moran's scatterplot which shows the relationship of the number of unmet need cases in a village is standardized with the average number of cases of neighboring locations with the village concerned.

## **RESULTS AND DISCUSSION**

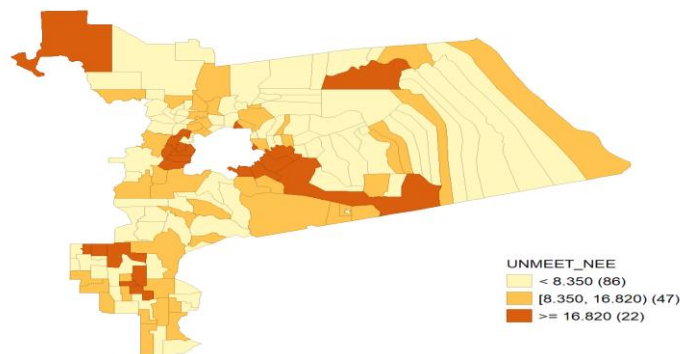
Muaro Jambi is one of the districts in Jambi province, Indonesia. In 2021, the population of Muaro Jambi regency was 406,799 people. The district with the largest area is Kumpeh District which is approximately 1,658.93 km<sup>2</sup> (31.51%), while the district with the smallest area is Bahar River District which is 160.50 km<sup>2</sup> (3.05%). Geographically, Muaro Jambi regency is located between 1-15 Latitude and 1-2-20 Longitude and between 103-10-104-20 Longitude. Muaro Jambi regency is one of 11 regencies/cities in Jambi province with an area of 532,600 Ha (5,326 km<sup>2</sup>) and is located at an altitude of 0-38 meters above sea level. Where Muaro Jambi regency is divided into sub-districts and 155 villages/kelurahan (BPS, Kab. Muaro Jambi, 2021).

Picture 1. Thematic Map of unmet need contraception distribution in Muaro Jambi regency 2019



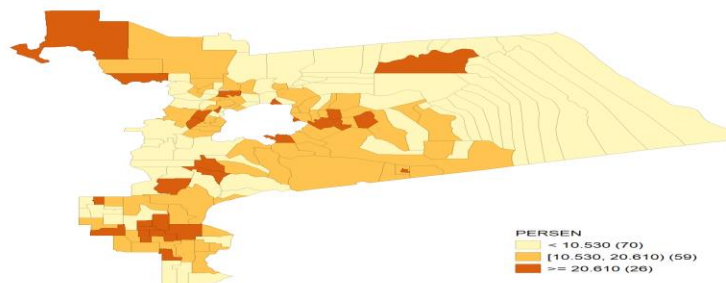
Based On Picture 1. shows that the distribution of the incidence of unmet need contraception in Muaro Jambi regency in 2019 where the incidence rate of unmet need <5.7% is found in 86 villages, the incidence rate between 5.76% -14.52% is found in 48 villages and the incidence rate of unmet need  $\geq 14.52\%$  is found in 21 villages.

Picture 2. Thematic Map of unmet need contraception distribution in Muaro Jambi regency 2019



Based On Picture 2. shows that the distribution of the incidence of unmet need contraception in Muaro Jambi regency in 2020 where the incidence rate of unmet need <8.35% is found in 86 villages, the incidence rate is between 8.35%-16.82% is found in 47 villages and the incidence rate of unmet need  $\geq 16.82\%$  is found in 22 villages.

Picture 3. Thematic Map of unmet Need contraception distribution in Muaro Jambi regency 2021



Based On Figure 3. shows that the distribution of the incidence of unmet need contraception in Muaro Jambi regency in 2021 where the incidence rate of unmet need <10.53% is found in 70 villages, the incidence rate between 10.53% -20.61% is found in 59 villages and the incidence rate of unmet need  $\geq 20.61$  is found in 26 villages.

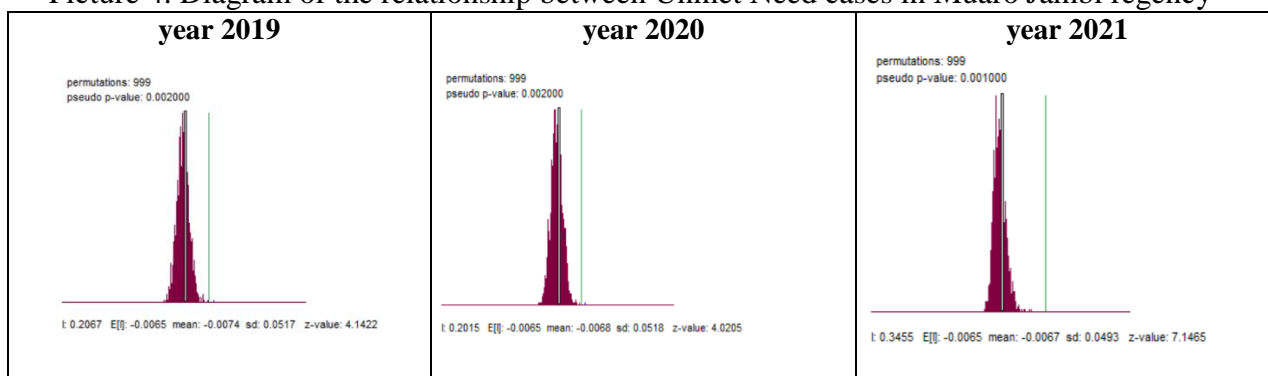
Based on Moran's test results or Moran Index is generally used to measure spatial autocorrelation globally and can be applied to detect the onset of spatial randomness. In the following table are the results of the analysis of Morgan's Index conducted in Muaro Jambi regency to see the distribution of Unmet Need in 2019 to 2021:

Tabel 1. Pola Sebaran Unmet Need di Kabupaten Muaro Jambi Tahun 2019-2021

Year	Indeks Moran	P value	Spread Patterns
2019	0,207	0,002	Clustered
2020	0,201	0,002	Clustered
2021	0,346	0,001	Clustered

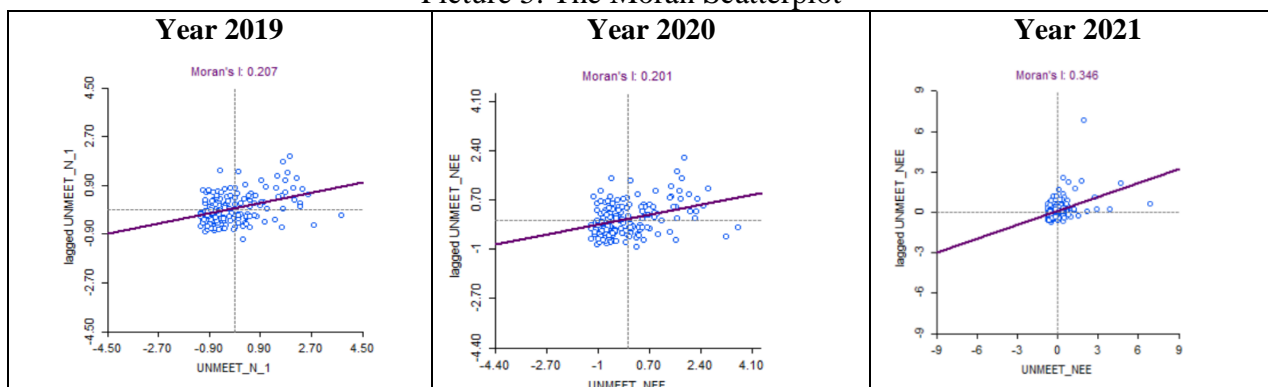
The results of the spatial autocorrelation analysis of Unmet Need cases in 2019, 2020 and 2021 showed that there was an autocorrelation in the year with a p value<0.05. The distribution pattern of Unmet Need cases in 2019, 2020, and 2021 shows a clustered distribution pattern.

Picture 4. Diagram of the relationship between Unmet Need cases in Muaro Jambi regency

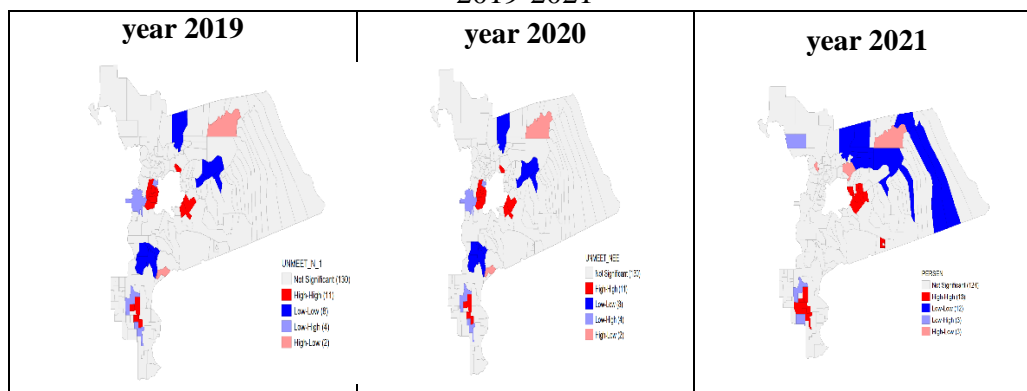


Spatial dependence between villages / kelurahan can be proven by the results of Morgan's test where it is concluded that Unmet need contraception in Muaro Jambi regency shows that globally there is a tendency for positive autocorrelation. This can be proven by the results of Morgan's Scatterplot found in the image below:

Picture 5. The Moran Scatterplot



Picture 6. LISA Cluster Map Unmet Need cases by Village/Kelurahan in Muaro Jambi regency 2019-2021



Unmet Need case Clustering by village the village is divided into 4 quadrants as follows:

Quadrant I: villages with a high number of unmet need cases and the surrounding villages are also high there are 33 villages known as hot spot areas that are the main priority in overcoming unmet need contraception

Quadrant II: villages with high number of unmet need cases and low surrounding villages identified in 7 villages. Where control and intervention efforts are needed in this village so as not to spread to neighboring villages.

Quadrant III: villages with a low number of unmet need cases and high surrounding villages were identified in 10 villages. Protection or prevention efforts are needed so as not to be affected by the surrounding villages

Quadrant IV: villages with a low number of unmet need cases and surrounding villages are also Low, known as low spot areas identified in 30 villages. In this village should be able to maintain the status of free from unmet need contraception

### Discussion

The pattern of distribution of the incidence of unmet need contraception in Muaro Jambi regency in three years of observation from 2019 to 2021 found unmet need contraception in Muaro Jambi regency there has been a trend of increasing the number of unmet need contraception where in 2019 there was the highest unmet need incidence rate of  $\geq 14.52\%$  in 21 villages, in 2020 there was an increase in the incidence of unmet need the highest  $\geq 16.82\%$  in 22 villages and in 2021 there has been a re-increase in the incidence of unmet need, which is highest at  $\geq 20.61$  in 26 villages. In addition, based on the results of analysis using the Moran's  $I$  method with the help of GeoDa 1.2 software. Where is obtained the distribution pattern of unmet need contraception in Muaro Jambi regency in 2019-2021 in the form of clusters or clusters ( $1 > 0, p < 0.05$ ) spatially there is a correlation between the spread of unmet need contraception in a village and other villages and shows that globally there is a tendency for positive autocorrelation.

In accordance with the results of research Abdu, Kedir Jesuf, et al. 2020 in Ethiopia with a total sample of 10,223 married women aged between 15-49 years who analyzed spatially where the prevalence of unmet family planning needs was 2280 (22.3%). Where unmet need contraception, spatial variation is found at the zone level because Morgan's global  $I$  value of 0.31 ( $p$  value  $< 0.01$ ) indicates that there is a significant unmet need contraception grouping. The spatial distribution of unmet need KB in all regions of Ethiopia showed significant variation and clustering with a Global value of Morgan's  $I$  0.31 ( $p$  value  $< 0.001$ ). The high incidence of unmet need for this contraceptive

in various regions is due to geographically related factors in addition to socio-demographic factors. The study also revealed the geographic area in which a woman lives was found to be an important predictor for unmet need for contraception (Pal, Anita et al. 2018), (Sharma, Himami, SK Singh, and Shobit Srivastava. 2021). Supported by research (Mamuye, Melkalem Azanaw et al. 2022) using the Ethiopian demographic and Health Survey 2016 with a total sample of 15,683 women of reproductive age by analyzing spatially where factors of residence and region are significantly related to unmet need for contraception.

Based on the results of Morgan's Scatterplot that shows the relationship between the value of observations at a location (standardized) with the average value of observations from neighboring locations to obtain the results of the village with a high number of unmet need cases surrounded by surrounding villages is also high. Where in 2019-2021 there are 33 villages known as hot spot areas that are the main priority in overcoming unmet need for contraception in Muaro Jambi regency. In 2019 there were 11 villages namely Sungai Duren, Mendalo Darat, Simpang Sungai Duren, Mendalo Indah, Pematang Gajah, Suka Makmur, Marga Mulya, Marga Manunggal Jaya, Kebon IX, Tangkit, Kunangan. In 2020 there are 10 villages namely Sungai Duren, Mendalo Darat, Simpang Sungai Duren, Mendalo Indah, Pematang Gajah, Suka Makmur, Marga Mulya, Marga Manunggal Jaya, Kebon IX, Tangkit, Kunangan. And in 2021 there are 12 villages, namely Kasang Pudak Alai, Kasang Pudak, Solok, Sungai Terap, Marga Mulya, Mekar Sari Makmur, Bakti Mulya, Panca Bakti, Tangkit, Tangkit Baru, Petaling Jaya, Tri Jaya.

In accordance with the results of research Abdu, Kediri Jesuf, et al. 2020 where unmet highest contraceptive need is spatially clustered in Jimma, Arsi, West Arsi, Southwest Shewa, Borena, Guji, and West Hararge zones. The results of this study are supported by research (Mamuye, Melkalem Azanaw et al. 2022) who spatially analyzed the unmet need for contraception determinants using a sample of 15,683 women of reproductive age. Where obtained positive autocorrelation between regions. Women from the Oromia and Gambela regions are more likely to have unmet family planning needs. However, women from the Somali region have less unmet needs compared to the Tigray region.

Based on the regulation of the Minister of Law and Human Rights of the Republic of Indonesia No. 22 of 2021 on criteria for Regency/City Human Rights care, that as the ratio of doctors per population is 1:2200, midwives 1:850, nurses 1:560, and the ratio of exception Health Centers 1:2. When compared to Muaro Jambi regency where the population of Muaro Jambi regency in 2020 was 412 052 people with the number of health workers consisting of 97 doctors, 403 midwives and 272 nurses and health facilities 3 hospitals, 22 Health Centers, 10 polyclinics and 89 auxiliary health centers spread across 11 districts. Where the spread of health facilities and personnel in Muaro Jambi regency is still unevenly distributed throughout the village/kelurahan because most of the village still consists of plantations and forests, resulting in community difficulties in getting access to health facilities. In addition, the state of the roads of Muaro Jambi regency in 2020, as many as 8.89 percent were damaged and 23.30 percent were severely damaged and there were 579.34 km still unpaved, which became an obstacle factor for the community in achieving health access (BPS Muaro Jambi, 2021).

In addition, access problems, are often the reason women do not use contraceptives because they cannot find or buy them or they have to travel too far to get them (PRB, 2012). Supported by research Abdu, Kediri Jesuf, et al. 2020 where the high unmet need for contraception varies in various regions, this is due to more than half of 5775 respondents (56.49%) having difficulty accessing health facilities. Moreover, it is largely due to infrastructure not meeting the demand for women's family planning (Mamuye, Melkalem Azanaw et al. 2022). Supported by (Sharma, Himami, SK Singh, and Shobit Srivastava. 2021) that geographic location significantly affects

unmet need for contraception due to accessibility, availability, and means of transportation directly or indirectly.

According to the WHO statement in 2017, there are 214 million women of childbearing age in developing countries who have unmet contraceptive needs. There are various reasons for the high unmet need for contraception including limited access to contraceptive services, limited choice of contraceptive methods, fear or experience of side effects, cultural or religious views, poor quality of available Family Planning Services and gender-based barriers. Supported by Pal research, Anita et al. A 2018 analysis of contraceptive unmet need spatially in India conducted in different districts of Kenya, India and Rajasthan districts showed most countries have a spatial variation of unmet need for family planning distribution. This implies differences in socio-demographic characteristics of respondents, health service delivery capacity and public awareness of family planning are possible explanations for regional variations in unmet family planning needs. In accordance with research (Knewa, 2022) that women in the Mamose region have a greater likelihood of unmet contraceptive needs compared to those in the southern region. Interventions aimed at reducing unmet contraceptive needs should be implemented taking into account the significant socio-demographic characteristics of women as identified in this study.

Unmet high contraceptive need illustrates the inefficiency of contraceptive providers and shows the need to formulate ineffective contraceptive policies, especially focusing on high-risk groups and inefficient public health planning outreach to high-risk villages as in this study is Muaro Jambi District, thus the health care sector and other non-governmental stakeholders should conspicuously focus on areas with high unmet need groups and need to be intervened with more resource allocation, depending on the specific needs of the area and its population. (Sharma, Himami, SK Singh, and Shobit Srivastava. 2021).

## CONCLUSION

The trend of increasing unmet need for contraception in Muaro Jambi regency in 2019-2021 with the distribution pattern of unmet need contraception in the form of clusters or clusters and shows that globally there is a tendency for positive autocorrelation with 33 villages known as hot spots areas that are the main priority in overcoming unmet need for contraception.

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