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Does A Spatial Influence on Fertility Rates of Ethnic Groups in Indonesia? A Spatial Analysis Using National Data

Mario Ekoriano[1,2], Agus Joko Pitoyo[3], Nawawi[4], Yanu Endar Prasetyo[5]

[1] School of Postgraduate, Universitas Gadjah Mada (UGM), Yogyakarta, Indonesia
[2] Directorate of Policy, Human Development, Population, and Culture, National Research and Innovation Agency, Jakarta Pusat, Indonesia. Email: marioekoriano@gmail.com. ORCID: 0000-0003-3747-7622
[3] Center Studies of Population and Policy, Universitas Gadjah Mada (UGM), Yogyakarta, Indonesia. Email: aguspit@ugm.ac.id. ORCID: 0000-0002-6825-2461
[4] Center of Population Research, National Research and Innovation Agency, Jakarta Pusat, Indonesia. Email: nawa003@brin.go.id. ORCID: 0000-0002-2657-7049
[5] Center of Population Research, National Research and Innovation Agency, Jakarta Pusat, Indonesia. Email: yanu005@brin.go.id. ORCID: 0000-0003-3382-1131

Correspondence: Mario Ekoriano, School of Postgraduate, Universitas Gadjah Mada (UGM), Yogyakarta, Indonesia.; Directorate of Policy, Human Development, Population, and Culture, National Research and Innovation Agency, Jakarta Pusat, Indonesia. e-mail: marioekoriano@gmail.com

Abstract
Fertility rates in Indonesia have continued to decline over the past 50 years, but disparities in each region still occur. Since regional autonomy was implemented, policies have not been centralized, resulting in population control policies varying in each region. The purpose of this study is to analyze the influence of regions on fertility rates in ethnic groups in Indonesia. This study uses long-form data from the 2020 Population Census (PC) which was conducted in 2022 with a level of representation in districts/cities. Statistical analysis using the Moran Index and LISA Statistical Test using Geoda Software to determine the influence of regions on fertility measures based on ethnic groups. The results of the spatial analysis show that there is a regional or spatial influence on fertility based on ethnic groups in Indonesia. The evidence of the fertility measure is based on the largest ethnic group in Indonesia spatially, the influence of regions and culture in a region can be used as a consideration in determining policies and programs in providing interventions and planning in the future to control fertility rates in Indonesia.

Keywords: Ethnic Groups, Spatial, Fertility, Culture

1. Introduction

The total fertility rate (TFR) for the past 50 years from 1971 to 2017 has continued to decline. This decline proves the success of the family planning program in suppressing the rate of population growth in Indonesia. This can be proven from the results of the 1971 Population Census (SP) which showed a TFR of 5.61 and the TFR figure continued to show a decline in the 1980 SP of 4.68 and the 1990 SP of 3.33. Furthermore, the Indonesian

government through the Central Statistics Agency (BPS) surveyed to measure the TFR every 5 (five) years. The 1991 Indonesian Demographic and Health Survey (DHS) found that the TFR figure had decreased again to 3.02. In the 1994 DHS, the TFR figure also decreased again to 2.85 and continued to decrease in the 1997 SDKI to 2.78. Based on the TFR figures from the 1994 DHS to the 1997 DHS results, the decline in the TFR figure began to show a downward trend. The TFR rate that declined in the 1994-1997 DHS fell again to 2.6 in the 2002 DHS. However, the decline in the TFR rate from the 2002 DHS to the 2012 DHS stagnated for 10 years and based on the 2017 DHS, the TFR rate fell again to 2.4 per woman of childbearing age (BPS, 1987.; BKKBN et al., 1992; BKKBN et al., 1995; BPS et al., 1998; BPS et al., 2003; BPS et al., 2008; BPS et al., 2012; BPS et al., 2018).

The government's success in controlling the population in Indonesia is faced with challenges in implementing the family planning program. Since regional autonomy was implemented, each district and city has been given direct authority to regulate policies at the regional level which have previously been vertically centralized. This has caused the policy authority which is an indicator of National Development performance to not be fully implemented optimally in each region, one of which is the family planning program as an effort to control the population and maintain reproductive health (BKKBN, Bappenas, Kemenkes, UNFPA, Kedutaan Canada, 2021).

The challenges faced after the decentralization include causing significant variations in the implementation of family planning programs throughout Indonesia. The Central BKKBN as a government institution tasked with controlling the population through various programs, one of which is the family planning program, continues to set policies to control the birth rate, but the implementation of these policies can be adjusted by district and regional authorities. The family planning institution at the district/city level which is combined with other institutions also influences the implementation of the family planning program in the community. The quantity and quality of contraceptive services vary depending on the commitment of the regional head to family planning, (United Nation Population Fund Indonesia, 2012). The impact of the implementation of regional autonomy has made policies vary in each region. This causes geographical or spatial factors to possibly influence birth rates based on ethnicity in a region (Ekoriano et al., 2025). The results of a study conducted in Taiwan tested the possibility of a relationship between regions on the variables of education level and decreasing mortality rates (Li, 1973). Other studies have also concluded that geographical aspects are something that can cause variations in birth rates (Goldstein dan Klüsener, 2014; Mansour et al., 2021). The spatial or geographical influence that occurs between regions is also due to the association between regional transformation and degree of access, which means that high levels of transformation will cluster in areas that also have high degrees of accessibility (Giyarsih, 2010). Therefore, this study aims to analyze the influence of regions on fertility rates in ethnic groups in Indonesia.

2. Method

2.1 Source of Data

This study uses secondary data sources from the 2020 Population Census (PC) Long Form, the data collection of which was carried out in 2022 by BPS with a total sample of 4,294,896 households with an estimated level in 514 districts/cities (BPS, 2023). The estimated sampling error is around 2.2 percent for the TFR estimate at the district/city level with a sampling stage using multistage techniques and a sample fraction of 5 percent (n/N), https://sensus.bps.go.id/metadata_kegiatan/index/sp2022/desain%20penarikan%20sampel
(accessed May 25, 2023).

2.2 Data Analysis

In this study, birth history data was not available. An indirect method was used to calculate the total fertility rate (TFR). Calculation of TFR using an indirect method consists of several calculation methods, including the Rele method, the Palmore method, the Gunasekaran-Palmore method, and the own children method (BPS, 2012). The TFR calculation in this study used one of the indirect methods, namely the Rele Method. The Rele method uses the ratio of children and women/child women ratio (CWR) and estimated mortality so that the birth rate can be known in one, two to 5 years before the census. The Rele method is used to estimate the GRR obtained from the Child Women Ratio (CWR) value and life expectancy. The data needed is quite simple, such as the number of children aged 0-4 and 5-9 years; the number of women aged 15-44, 15-49, 20-49, 20-54; total life expectancy; sex

ratio at birth. The results obtained Gross Reproduction Rate (GRR) and TFR (United state cencus bereau, UNFPA, 2019; Gunawan et al., 2017).

BPS has published TFR figures at the national level to the district/city level using the own children method, so in this study the TFR figures are calculated based on the 15 largest ethnic groups at the district and city levels. As for calculating TFR. The calculation of TFR using the indirect method (rele method) is based on the following justifications, (1) the sample of women based on 15 ethnic groups in each ethnic group at each birth age group is not sufficient for the minimum sample at the district/city aggregation level, (2). The number of samples in each age group in each ethnic group is insufficient. Researchers only focus on the total birth rate (TFR), so the birth rate per age group (ASFR) is not needed, the relay method is a method with the closest birth rate calculation results to the biological child method compared to other indirect methods BPS DIY, https://dinp3ap2kb.slemankab.go.id/wp-content/uploads/2020/07/Paparan-TFR-Kab-Kota2020-2.pptx (accessed February 29, 2024). To facilitate and reduce human error, the TFR calculation uses the FERT mini software developed by the East-West Population Center in 1992. This software has been implemented so far by BPS in calculating indirect methods, one of which is the relay method (Salim et al., 2018). Geographical or spatial data plays an important role in life, from the simplest to the most complex. The simplest thing is a residential address that contains spatial information such as a postal code. Information on a location that includes the coordinates of the depth location is an example of the use of spatial data. Spatial data can be interpreted as everything related to the earth's space marked by geographic attributes such as location coordinates and other points so the Geographical Information System (GIS) has an important role in spatial studies (Lioyd, 2010).

This study aims to present and explore spatial data using the Geoda application. Geoda is software that was first introduced by Luc Anselin in 2002. Geoda software was developed to facilitate simple spatial data analysis to data analysis exploration, presenting both global and local autocorrelation visually spatially and ending in spatial regression (Anselin et al., 2006).

Spatial analysis in this study using Geoda software emphasizes the ability to visualize maps, namely maps with outlier categories, map smoothing, cortogram maps, and animated maps. Data exploration is presented in the form of statistical graphs, parallel coordinate plots, and conditional plots. Geoda's capabilities are also able to calculate spatial autocorrelation univariately and bivariately. Geoda facility can create a spatial weight matrix, according to contiguity, distance, and K-nearest neighbor criteria *(*Anselin, 2003).

The most important part of determining spatial autocorrelation is determining the most relevant neighbors of an area or region to be studied and where these neighbors are expected to influence the observation value of their neighboring areas. Measurement techniques to determine these neighbors are contiguity, distance, K-nearest neighbors, and Customized contiguity (Insee- Eurostat, 2018). Some characteristics of spatial autocorrelation are if there is a systematic pattern in the spatial distribution of a variable, it can be said to be spatially autocorrelated, if adjacent or neighboring areas are the same, this is called positive spatial autocorrelation, but if adjacent or neighboring areas are not the same, it is said to be negative spatial autocorrelation and random patterns indicate no spatial autocorrelation.

Moran's index value ranges between -1 and 1. Identify patterns using the Moran's I index value criteria,

a. If the value of $I > E(I)$ then it has a clustered pattern,
b. If $I < E(I)$ then it has a spread pattern,
c. If $I = E(I)$ then it has an uneven spread pattern

The higher the local Moran value, the adjacent areas have almost the same value or form a clustered distribution.

3. Results

Fertility rate (TFR) varies across the 15 largest ethnic groups in Indonesia. The TFR of the Javanese, Madurese, Balinese, Dayak, and Chinese ethnic groups has been below the national TFR value, which is 2.18 per WUS aged 15-49 years, but the TFR values of other ethnic groups are still above the national TFR value. The Sasak ethnic

group has the highest TFR value of 2.53, then the Acehnese ethnic group, at 2.43, and the Banten ethnic group at 2.39. The TFR value of the Chinese ethnic group is the lowest, at 1.49. Then the Madurese ethnic group, at 1.92, and the Balinese ethnic group, at 1.93 It is very important that culture can be used to provide information about differences in fertility and to consider program policies in population control. It is very important, cultural aspects are also used to inform people about differences in fertility.

In addition, cultural aspects can be used as part of government policies to control population growth and provide information to the public about the importance of reproductive health. The fertility of the Batak ethnic group (2.37), Minangkabau (2.29), Bugis (2.28), Banjar (2.24), Betawi (2.23) and Sunda (2.20) also requires control. The size of fertility in a particular culture shows how social construction is built into a civilization in viewing fertility in a particular culture in a region. To also find out the influence of culture in each region on fertility in 15 ethnic groups, a spatial analysis of fertility based on ethnicity in Indonesia is carried out, namely the Sasak ethnic group, Acehnese ethnic group, Banten ethnic group, Malay ethnic group, Batak ethnic group, and Minangkabau ethnic group. This section will then present and test how the fertility value based on ethnicity is globally through the global Moran's Index value and P-value so that it can be seen that each region influences the adjacent or bordering areas through the Moran's Index spatial test (Moran's I) and Local indicator of spatial autocorrelation (LISA) using Geoda software.

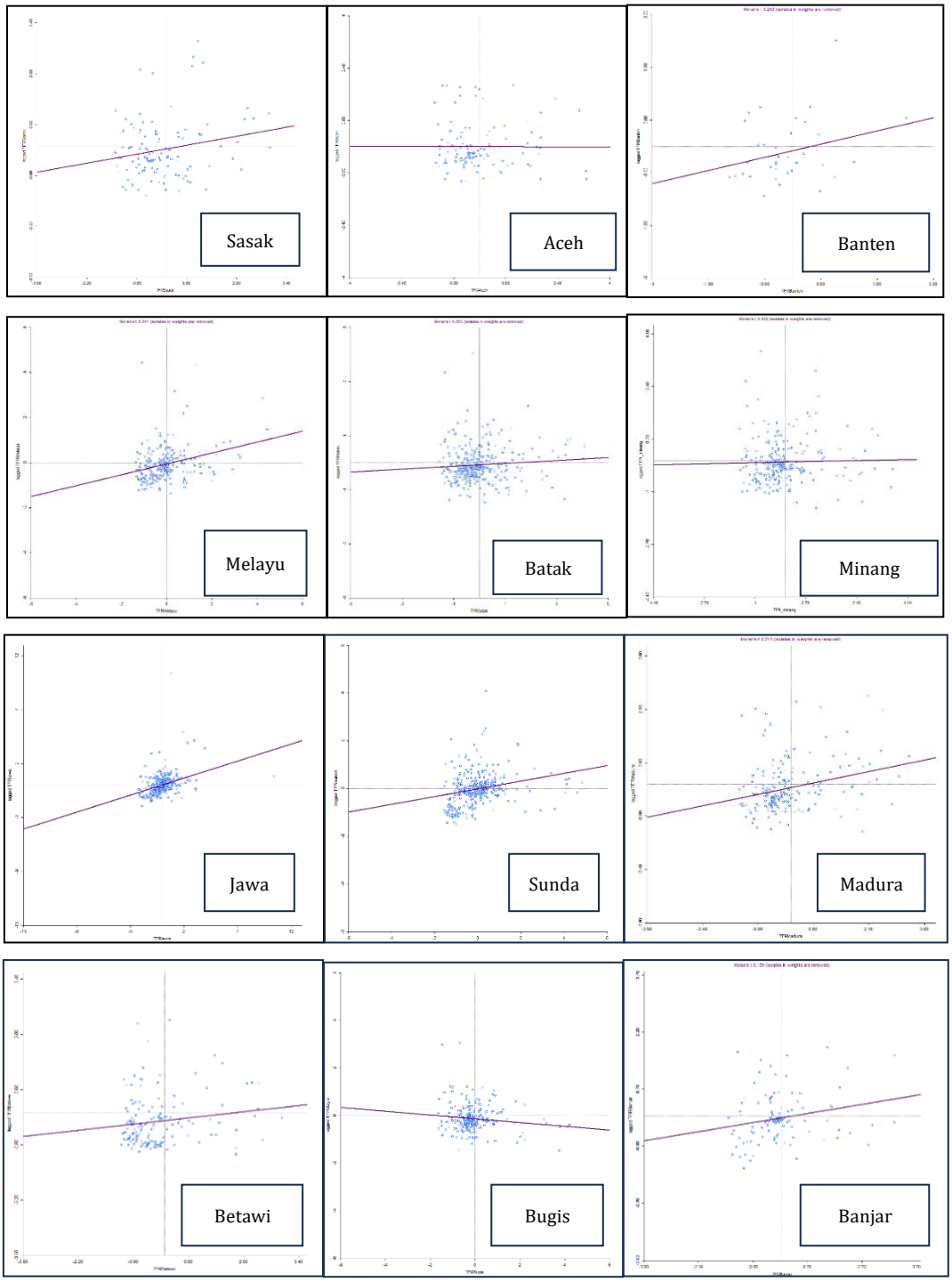
Table 1: Global Moran Index Value, E(I), Standard Deviation, and P-Value of Ethnic Fertility in Districts/Cities in Indonesia 2022

No.	Variable	Global Moral Index	E[I]	Standard Deviation	P-Value
1.	Ethnic Sasak	0.1765	-0.0086	0.0965	0.042
2.	Ethnic Aceh	-0.0050	-0.0101	0.0857	*0.466*
3.	Ethnic Banten	0.2500	-0.0263	0.1500	0.037
4.	Ethnic Malay	0.2409	-0.0038	0.0530	0.001
5.	Ethnic Batak	0.0533	-0.0030	0.0460	*0.126*
6.	Ethnic Minangkabau	0.0196	-0.0041	0.0569	*0.350*
7.	Ethnic Javanese	0.3165	-0.0022	0.0362	0.001
8	Ethnic Sundanese	0.1349	-0.0022	0.0363	0.001
9.	Ethnic Madurese	0.2148	-0.0053	0.0676	0.001
10.	Ethnic Betawi	0.1123	-0.0068	0.0807	*0.080*
11.	Ethnic Bugis	-0.0786	-0.0039	0.0531	*0.065*
12.	Ethnic Banjar	0.1588	-0.0088	0.0772	0.014
13.	Ethnic Balinese	0.2276	-0.0061	0.0757	0.002
14.	Ethnic Dayak	0.2150	-0.0067	0.0596	0.001
15.	Ethnic Chinese	0.1535	-0.0048	0.0651	0.018

Source: Geoda, data processed, 2024

Based on Table 1, the results of the univariate test with a global significance value (<0.05) are obtained, namely the Sasak ethnic group (0.042), Banten ethnic group (0.037), Malay ethnic group (0.001), Javanese ethnic group (0.001), Sundanese ethnic group (0.001), Madurese ethnic group (0.001), Banjar ethnic group (0.014), Balinese ethnic group (0.002), Dayak ethnic group (0.001) and Chinese ethnic group (0.018) which means that there is spatial autocorrelation between the fertility of the Sasak ethnic group, Banten ethnic group, Malay ethnic group, Javanese ethnic group, Sundanese ethnic group, Madurese ethnic group, Banjar ethnic group, Balinese ethnic group, Dayak ethnic group and Chinese ethnic group with the fertility of the Sasak ethnic group, Banten ethnic group and Malay ethnic group, Javanese ethnic group, Sundanese ethnic group, Madurese ethnic group, Banjar ethnic group, Balinese ethnic group, Dayak ethnic group and Chinese ethnic group in Indonesia. Table 1 also informs that the fertility of the Sasak, Acehnese, Malay, Javanese, Sundanese, Madurese, Banjarese, Balinese, Dayak, and Chinese ethnic groups shows positive spatial autocorrelation because they have a Moran Index I> E(I) meaning that the pattern of the relationship between the fertility of each ethnic group between districts/cities is clustered. Meanwhile, the Acehnese, Bataknese, Minangkabau, Betawi, and Bugis ethnic groups have a significant

P-value (>0.05) which means that there is no spatial autocorrelation between fertility in each of these ethnic groups. The results of the autocorrelation test presented in Figure 1 globally on 15 ethnic groups using GeoDa software obtained Moran's I values in the 15 ethnic groups showing values> E(I), which means that there is positive spatial autocorrelation in the six variables between sub-districts. The Moran's I value for the six ethnic groups is greater than E(1), so it can be concluded that it shows the pattern of fertility distribution in each ethnic group is clustered and has similar characteristics in adjacent districts/cities. Moran's scatterplot and I value can be seen in Figure 1.



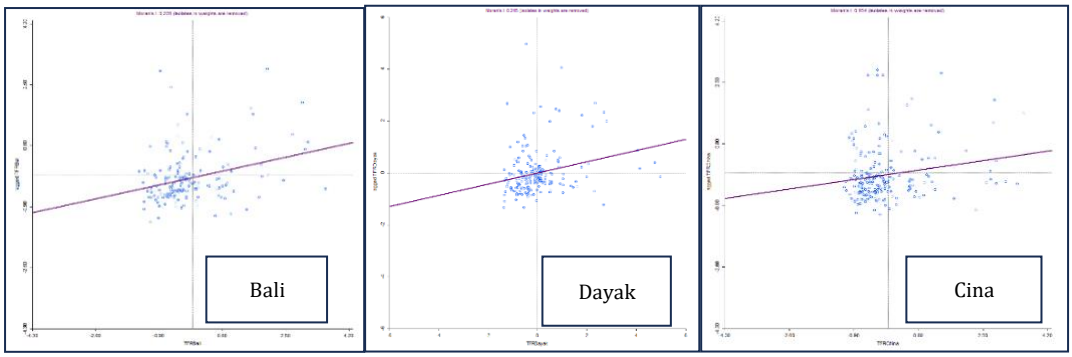


Figure 1: Moran's I Scatterplot of Variables
Source: data processed, 2024

The LISA statistical test in this study is only presented for the three highest ethnic groups as follows below such as Sasak ethnic groups, Aceh ethnic groups and Banten ethnic groups. Through Map 1, a LISA statistical test was obtained which informed that fertility in the Sasak ethnic group was the highest TFR nationally and spatial analysis showed through (a moran scatter plot) which was categorized into four categories as follows:

a. Quadrant I (High-High), has positive autocorrelation because the observed value of fertility in the area is high and is surrounded by surrounding areas that are also high. This area is also called a hotspot area. The areas or regencies/cities included in this category are 5 areas, namely South Solok, Bandung City, Bandung Regency, and West Sumba Regency.
b. Quadrant II (Low-High), This quadrant has negative autocorrelation, because the observed value of the area is low and is surrounded by surrounding areas that have high values. The areas included in this category are two areas, namely Purwakarta and Palopo.
c. Quadrant III (Low-Low), has positive autocorrelation, this is because the observation value of the region is low and is surrounded by 4 low surrounding areas, namely Kampar, Bintan, Tanjung Pinang, and Tapin.
d. Quadrant IV (High-Low), has negative autocorrelation. This is because the observation value of the region is high and is surrounded by low areas. There are three locations in this category, namely Langkat, North Jakarta, and Banjarmasin.

The results of the LISA statistical test in grouping regions into four quadrants with fertility based on ethnicity still require caution in concluding the spatial analysis in this study, because the adequacy of the minimum sample in each region in the calculation of fertility does not all meet the minimum limit (30 samples).
The following table 2 in the Sasak ethnic group below presents regions with categories of regions included in the high-high, low-low, low-high, and high-low categories. The LISA test presents Moran's I value and p-value in each region included in the category.

Table 2: List of Regions based on Quadrants I (1), II (3), III (2) and IV (4)
Sasak Ethnic Group

ID	Provinces	District	TFR_Sasak	Sasak_i	Sasak_cl	Sasak_sig
1310	WEST SUMATERA	SOLOK SELATAN	5.07	1.915662	1	0.011
1473	RIAU	D U M A I	5.69	2.419986	1	0.022
3204	WEST JAVA	BANDUNG	8.32	1.676775	1	0.044
3273	WEST JAVA	BANDUNG CITY	5.02	1.676775	1	0.014
5301	EAST NUSA TENGGARA	SUMBA BARAT	5.38	2.655968	1	0.012
1406	RIAU	KAMPAR	2.11	0.719621	2	0.011
2102	RIAU ISLAND	BINTAN	0.62	1.328013	2	0.037
2172	RIAU ISLAND	TANJUNG PINANG	0.81	1.328013	2	0.022
6305	SOUTH KALIMANTAN	TAPIN	1.61	0.897312	2	0.031
3214	WEST JAVA	PURWAKARTA	2.52	-0.71405	3	0.026

7373	SOUTH SULAWESI	PALOPO	1.73	-1.49155	3	0.026
1213	NORT SUMATERA	LANGKAT	4.17	-0.46116	4	0.018
3175	DKI JAKARTA	JAKARTA UTARA	5.89	-1.34916	4	0.035
6371	SOUTH KALIMANTAN	BANJARMASIN	3.33	-0.00751	4	0.028

Source: Geoda, data processed

Based on Map 2, informs the fertility of the Acehnese ethnic group using spatial analysis showing through (a moran scatter plot) which is categorized into four categories as follows:

a. Quadrant I (High-High), has a positive autocorrelation because the observed value of fertility in the region is high and is surrounded by surrounding areas that are also high. This area is also called a hotspot area. The regions or districts/cities included in this category are two regions, namely West Lampung and Purworejo.
b. Quadrant II (Low-High), This quadrant has a negative autocorrelation, because the observed value of the region is low and is surrounded by surrounding areas that have high values. The regions included in this category are six regions, namely Bangka, Cilegon, Serang, Bengkayang, Balikpapan and Samarinda.
c. Quadrant III (Low-Low), has a positive autocorrelation, this is because the observed value of the region is low and is surrounded by surrounding areas that are also low, one region, namely Ogan Ilir.
b. Quadrant IV (High-Low), has negative autocorrelation. This is because the observation value of the region is high and surrounded by low areas. There is not a single region in this category. The following is a list of regions based on the fertility of the Acehnese ethnic group in each cluster of the LISA statistical test results.

Table 3: List of Regions based on Quadrants I (1), II (3), III (2) and IV(4)
Aceh Ethnic Groups

ID	PROVINCE	DISTRICT	TFR_Aceh	Aceh_i	Aceh_ci	Aceh_sig
1801	LAMPUNG	LAMPUNG BARAT	5.14	1.943	1	0.014
3306	CENTRAL JAVA	PURWOREJO	7.82	3.441	1	0.047
1610	SUMATERA SELATAN	OGAN ILIR	1.82	0.598	2	0.039
1901	BANGKA BELITUNG ISLAND	BANGKA	1.76	-0.923	3	0.046
3672	BANTEN	CILEGON	2.74	-0.222	3	0.036
3673	BANTEN	SERANG	1.76	-1.084	3	0.035
6102	WEST KALIMANTAN	BENGKAYANG	2.96	-0.028	3	0.029
6471	EAST KALIMANTAN	BALIKPAPAN	0.91	-1.87	3	0.024
6472	EAST KALIMANTAN	SAMARINDA	0.62	-2.13	3	0.028

Source: Geoda, data processed

Furthermore, Map 3 informs the fertility of the Banten ethnic group using spatial analysis showing through (moran scatter plot) which is categorized into four categories as follows:

a. Quadrant I (High-High), has a positive autocorrelation because the observed value of fertility in the region is high and is surrounded by surrounding areas that are also high. This area is also called a hotspot area. The regions or regencies/cities included in this category are four regions, namely Aceh Tamiang, Asahan, Serdang Bedagai, and Batu Bara.
b. Quadrant II (Low-High), This quadrant has a negative autocorrelation, because the observed value of the region is low and is surrounded by surrounding areas that have high values. The regions included in this category are two regions, namely Palembang City and Bandung Regency.
c. Quadrant III (Low-Low), has a positive autocorrelation, this is because the observed value of the region is low and is surrounded by surrounding areas that are also low, one region, namely Depok.
d. Quadrant IV (High-Low), has a negative autocorrelation. This is because the observation value of the area is high and surrounded by low areas. There is one area, namely Bandung City. The following table presents a list of 4 areas based on the fertility of the Banten ethnic group in each cluster of the LISA statistical test results.

Table 4: List of Regions based on Quadrants I (1), II (3), III (2) and IV (4)
Banten Ethnic Groups

ID	PROVINCES	DISTRICT	TFR_Banten	banten_i	banten_cl	banten_sig
1114	ACEH	ACEH TAMIANG	3.16	0.052	1	0.036
1208	NORT SUMATERA	ASAHAN	4.84	2.225	1	0.012
1218	NORT SUMATERA	SERDANG BEDAGAI	3.74	0.335	1	0.039
1219	NORT SUMATERA	BATU BARA	7.84	1.56	1	0.046
3276	WEST JAVA	DEPOK	1.79	0.685	2	0.023
1671	SOUTH SUMATERA	PALEMBANG	1.62	-0.617	3	0.024
3204	WEST JAVA	BANDUNG	0.97	-0.599	3	0.031
3273	WEST JAVA	BANDUNG CITY	4.18	-0.599	4	0.033

Source: Geoda, data processed

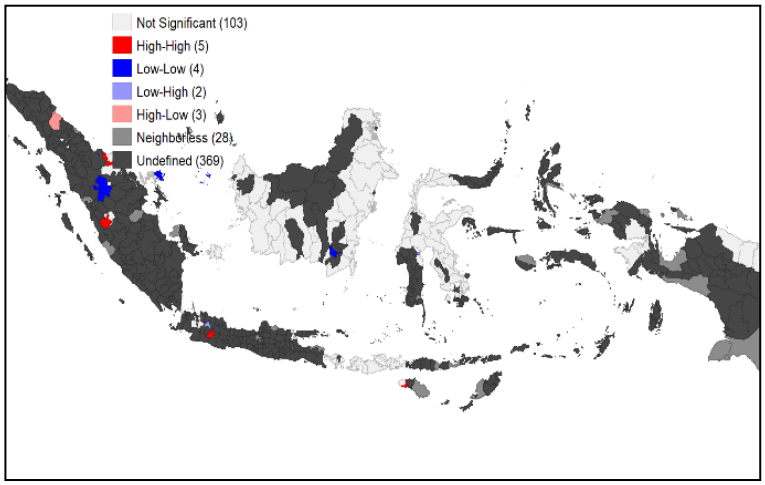


Figure 2: Fertility cluster Map of Sasak Ethnic Group

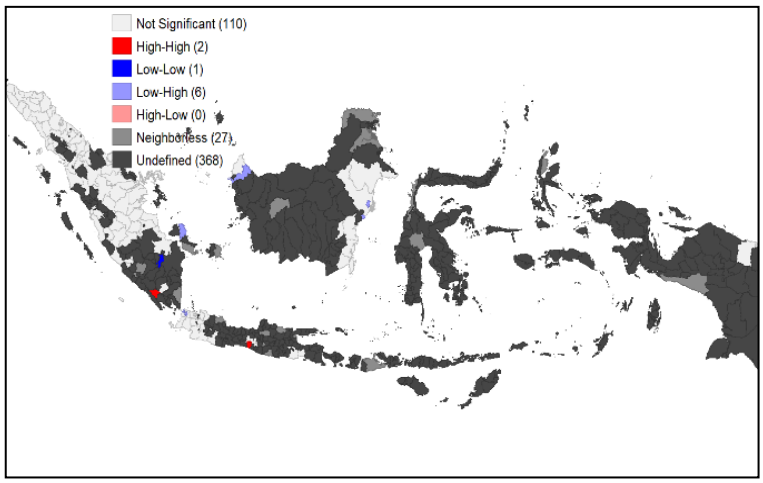


Figure 3: Fertility Cluster Map of Aceh Ethnic Group

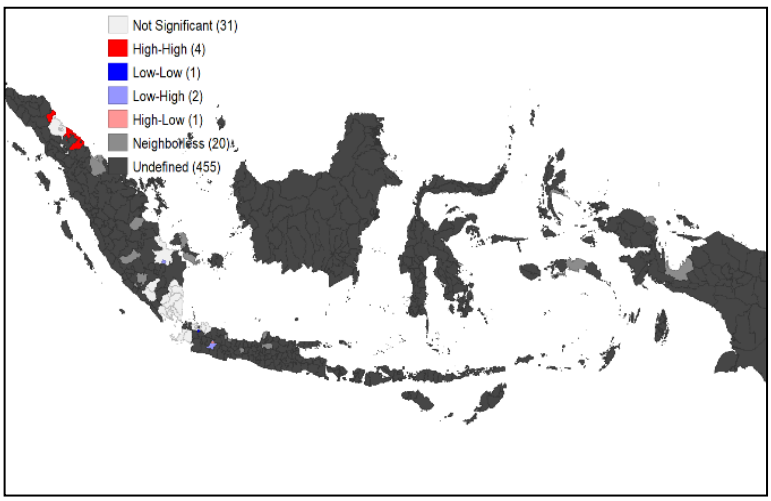


Figure 4: Fertility Cluster Map of Banten Ethnic Group

4. Discussion

The results of the spatial analysis described above show the influence of regional or spatial factors on fertility based on ethnic groups in Indonesia. Several studies in the world also confirm this, such as in South Korea and 21 European countries, Jung et al. (2019); Campisi et al. (2020) explain the relationship between socio-demographic, economic, cultural, and spatial factors on births (TFR). Regional influences occur due to similarities in policies, reproductive health programs and cultural similarities in a region which can influence fertility measures in other regions. With the proof of fertility based on the 15 largest ethnic groups in Indonesia through spatial testing, the regional and local cultural factors in a region can be used as considerations for determining policies and programs, in providing interventions and planning in the future in controlling fertility in Indonesia. The influence of fertility measures on each ethnic group spatially or regionally is certainly directly related to the community in the region. The influence of fertility based on a particular ethnicity spatially occurs, and attitudes and behaviors increase along with the increasing spread of these attitudes and behaviors from one part of a community to another (diffusion process). Jhon B. Casterline (2001) explains that birth is a consequence of attitudes and behaviors that were initially very rare or not involved in a particular society, in other words, social interaction between individuals in a community occurs because they see and observe each other's fertility behavior. This will change their social environment, which in turn affects their decision-making about fertility.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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Appendix A

Name of Ethnic Groups (Large)	List of Ethnics, Sub Ethnics, and Sub-sub Ethnics
Aceh	Aceh/Achin/Akhir/Asji/A-Tse/Ureung Aceh/Lambai/Lamuri
Batak	Batak/Batak Tapanuli/Batak Angkola/Karo/Mandailing/Dairi/Batak Pakpak Dairi/Pakpak/Batak Simalungun/Batak Toba
Malay	Melayu/Melayu Asahan/Asahan/Melayu Langkat/Langkat/Melayu Deli/Melayu Riau/Melayu Banyu Asin/Melayu Lahat/Kikim/Lematang/Lintang/Pasemah/Gumai/Kisam/Serawai/Semendo/Melayu Semendo/Semidang/Melayu Pontianak/Melayu Sambas/Jambi/Bengkulu
Minangkabau	Minangkabau
Banten	Banten
Betawi	Betawi
Javanese	Jawa/Samin/Tengger/Nagaring/Nagarigung
Madurese	Madura
Sundanese	Sunda/Naga
Balinese	Bali/Bali Hindu/Bali Majapahit/Bali Aga/Baliaga/Trunyan
Sasak	Samoro/Sasak/Bayan
Banjar	Banjar/Banjar Kuala/Batang Banyu/Pahuluan
Dayak	Dayak/Tudung/Tingalan/Tidung/Abai/Dayak Abai/Abal/Ahe/Badeng/Baka/Bakung Metulang/Balangan/Banjau/Bantai/Dayak Bantian/Dayak Bara Dia/Berangas/Barangas/Bawo/Beketan/Beraki/Merau/Berau/Murut/Bulungan/Bungan/Busang/Dayak Sempadian/Dayak Sekakai/Dayak Pelanjau/Dayak Menggaling/Dayak Membulu'/Dayak Kendawangan/Dayak Belaban/Dayak Batu Payung/Dayak Air Upas/Dayak Air Durian/Dayak Senangkatn/Dayak Senangkan/Dayak Senangan/Dayak Sekapat/Dayak Sekalau/Dayak Sebaru'/Dayak Merakai/Dayak Mandau/Dayak Kumpang/Dayak Ketungau-sesae'/Dayak Embarak/Dayak Demam/Dayak Begelang/Dayak Banjur/Dayak Air Tabun/Dayak Ketungau Senangan/Dayak Ketungau Sekapat/Dayak Ketungau Sekalau/Dayak Ketungau Sebaru'/Dayak Ketungau Merakai/Dayak Ketungau Mandau/Dayak Ketungau Kumpang/Dayak Ketungau Embarak/Dayak Ketungau Demam/Dayak Ketungau Begelang/Dayak Ketungau Banjur/Dayak Ketungau Air Tabun/Dayak Ketungau/Dayak Lau'/Dayak Alau'/Dayak Angan/Dayak Sakanis/Dayak Moro Batukng/Dayak Banyuke-Songga Batukng/Dayak Banyuke-Satona/Dayak Banyuke-Satolo/Dayak Banyuke-Sakanis/Dayak Banyuke-Moro Batukng/Dayak Banyuke-Banokng/Dayak Banyuke-Angkabang/Dayak Banyuke/Dayak Banokng/Dayak Angkabakng/Palin/Dayak Apalin/Apalin/Dayak Apoyan/Dayak Babak/Dayak Badat/Dayak Bahau/Bahau/Dayak Lumar/Dayak Lape/Dayak Bakati' Tari/Dayak Bakati' Subah/Dayak Bakati' Sebiha'/Dayak Bakati' Sara/Dayak Bakati' Riok/Dayak Bakati' Rara/Dayak Bakati' Payutn/Dayak Bakati' Palayo/Dayak Bakati' Lumar/Dayak Bakati' Lape/Dayak Bakati' Kuma/Dayak Bakati' Kanayatn Satango/Dayak Bakati'/Dayak Balantiatn/Dayak Neban/Dayak Iban/Dayak Hivan/Dayak Daya/Dayak Balau/Dayak Bangau/Dayak Banyadu'/Dayak Simpakng/Dayak Semanakng/Dayak Sajan/Dayak Kualatn/Dayak Banyur/Dayak Barai/Dayak Bassap/Basap/Dayak Batu Entawa'/Dayak Sepauhan/Dayak Pesaguan Kanan/Dayak Pesaguan Hulu/Dayak Pesaguan/Dayak Marau/Dayak Kengkubang/Dayak Kekura'/Dayak Batu Tajam/Dayak Bauk/Dayak Baya/Mangkatip/Dayak Taboyan/Dayak Bawo/Dayak Beginci/Dayak Begeleng/Dayak Beah/Dayak Benane/Dayak Behe/Dayak Tembiruhan/Dayak Tanjung/Dayak Sumanjawat/Dayak Riam/Dayak Pringkunyit/Dayak Perigi/Dayak Penyarang/Dayak Jalai/Dayak Benatu/Dayak Benawas/Dayak Bentian/Karau/Dayak Leok ara/Dayak Lemper/Bentian/Ayus/Dayak Benuaq/Benuak/Dayak BI Somu/Dayak Bidayuh/Dayak Biatah/Dayak Bihak/Dayak Brusu/Berusu/Dayak Bubung/Dayak Bugau/Dayak Ukit/Dayak Bukut/Dayak Bukit/Dayak Buket/Dayak Bukat/Ukit/Bukut/Buket/Bukat/Dayak Bukit Talaga/Dayak Buratmato/Dayak Butok/Dayak Cempedak/Dayak Kayan/Dayak Da'/Dayak Kayanath/Dayak Dait/Dayak Dalam/Dayak Kayu Bunga/Dayak Kaluas/Dayak Dalang/Dayak Darai/Dayak Darat/Dayak Daro'/Dayak Darok/Dayak Dayah Sa'ban/Dayak Desa/Dayak Dsa/Dusun/Dayak Dusun/Dayak Dosan/Dusun Deyah/Dayak Dosatn/Dayak Ella/Dayak Taman Ba/Dayak Mbaloh/Dayak Maloh/Dayak Embaloh/Dayak Umaloh/Dayak Empayuh/Dayak Ensilat/Dayak En Silat/Dayak Engkarong/Dayak Engkode/Dayak Ensanang/Dayak Entebang/Dayak Entabang/Dayak Entuka/Dayak Entungau/Dayak Galik/Dayak Gali/Dayak Gerai/Dayak Gerunggang/Dayak Golik/Dayak Goneh/Dayak Gun/Dayak Hibun/Dayak Hovogan/Dayak Inggar Silat/Dayak Jagoi/Dayak Jangkang Kopa/Dayak Jangkang Jungur Tanjung/Dayak Jangkang Engkarong/Dayak Jangkang Benua/Dayak Jangkang/Dayak Jawan/Dayak Jawatn/Dayak Jelai/Dayak Joka'/Dayak Kalis/Dayak Kanayan Satango/Dayak Kanayan/Kencing/Dayak Kanayatn-Soari/Dayak Kanayatn-Sawak-Bademea/Dayak Kanayatn-Sapari/Dayak Kanayatn-Samaroa/Dayak Kanayatn-Padakng/Dayak Kanayatn-Mampawah-Samaya'/Dayak Kanayatn-Mampawah-Saba'i/Dayak Kanayatn-Mampawah-Pinyuh Gresik/Dayak Kanayatn-Mampawah-Pak Utan/Dayak Kanayatn-Mampawah-Pak Nungkat/Dayak Kanayatn-Mampawah-Oha/Dayak Kanayatn-Mampawah-Moton Buliat/Dayak Kanayatn-Mampawah-Lumut/Dayak Kanayatn-Mampawah-Kaca/Dayak Kanayatn-Mampawah-Buah Muda/Dayak Kanayatn-Mampawah_Batukng/Dayak Kanayatn-Mampawah -Sua' Barangan/Dayak Kanayatn-Mampawah -Saputukng/Dayak Kanayatn-Mampawah Ngabakang-Bonsoratn/Dayak Kanayatn-Mampawah-Banana'-Badamea Sangkikng/Dayak Kanayatn-Mampawah/Dayak Kanayatn-Bukit-Tarap /Dayak Kanayatn-Bukit-Sidik/Dayak Kanayatn-Bukit-Samih/Dayak Kanayatn-Bukit-Sairi/Dayak Kanayatn-Birnana'-Mampawah-Ipuh/Dayak Kanayatn-Banana'-Mampawal -Salutukng/Dayak Kanayatn-Banana' -Mampawah-Sabawis/Dayak Kanayatn-Banana'-Mampawah-Pulo Padakng Sairi/Dayak Kanayatn-Banana'- Mampawah-Barabas/Dayak Kanayatn-Ambawang-Mampawah/Dayak Kanayatn Capala/Dayak Kanayatn/Dayak Kanaya/Dayak Kancikng/Dayak Kantuk/Dayak Kantu'/Dayak Kayaan/Dayak Kayong/Dayak Kayung/Dayak Kebahan/Dayak Tayap/Dayak Sum/Dayak Pangkalan Suka/Dayak Kebuai/Dayak Kede/Dayak Kelabit/Dayak Kelata/Dayak Keluas/Dayak Keneles/Dayak Keninjal/Dayak

	Kenyah/Kenyah Lo Bakung/Kenyah/Kejin/Kajang/Dayak Kenyilu/Dayak Kepuas/Dayak Kerabat/Dayak Keramay/Dayak Keramai/Dayak Ketiur/Dayak Ketior/Dayak Klematan/Klemantan/Dayak Kodatn/Dayak Koman/Dayak Konyeh/Dayak Kopak/Dayak Kowotn/Dayak Koyon/Kriau/Karehan/Dayak Kriau/Dayak Krio/Dayak Krinu/Dayak Kubitn/Dayak Labu/Dayak Lamantawa/Dayak Laman Tuha/Dayak Lara/Dayak Laur/Dayak Laut/Lawangan/Dayak Lawangan/Dayak Laya/Dayak Lebang/Dayak Lebong/Dayak Lemandau/Dayak Liboy/Dayak Limbai/Dayak Linoh/Dayak Lomur/Dayak Mahap/Dayak Mali/Dayak Manyan/Dayak Maanyan/Dayak Maanyan Paju Lima/Dayak Maanyan Benua Lima/Dayak Maanyan Dayu/Dayak Maanyan Paju Epat/Dayak Maanyan Paju Sepuluh/Dayak Maanyan Paku/Dayak Mayan/Dayak Mayau/Dayak Melahoi/Dayak Melanau/Dayak Mentebah/Dayak Mentebak/Dayak Menterap Kabut/Dayak Menterap Sekado/Dayak Mentuka'/Dayak Menyangka/Dayak Menyanya/Manyuke/Dayak Menyuke/Dayak Merau/Dayak Mobui/Dayak Modang/Medang/Modang/Medan/Dayak Mualang/Dayak Muara/Dayak Mudu'/Dayak Muduh/Dayak Muluk/Dayak Nahaya'/Dayak Nanga/Dayak Ngabang/Dayak Ngalampan/Ngalampa/Dayak Ngamukit/Nganayath/Dayak Nganayat/Dayak Nonguh/Dayak Nyadupm/Dayak Oruung da'an/Dayak Pampang/Dayak Pandu/Dayak Pangin/Dayak Pangkodan/Dayak Pengkedang/Dayak Pantu/Dayak Panu/Dayak Papak/Dayak Pasir/Dayak Paus/Dayak Pawan/Dayak Pawatn/Dayak Paya'/Dayak Paya'/Pinihing/Penihing/Dayak Penihing/Dayak Peruan/Dayak Pompakng/Dayak Pompang/Dayak Punang/Dayak Punan/Dayak Ponan/Punan Badeng/Dayak Punti/Dayak Ponti/Dayak Pos/Dayak Pruna'/Dayak Pruwan/Putuk/Dayak Putuk/Dayak Randu'/Dayak Ronduk/Dayak Randuk/Dayak Ransa/Dayak Rantawan/Dayak Raut/Dayak Rembay/Dayak Ribun/Dayak Salako Garantukng Sakawokng/Dayak Salako Badamea-Gajekng/Dayak Salako/Dayak Sambas/Dayak Sami/Samihin/Dayak Samihin/Dayak Sampit/Sampit/Dayak Kota Waringin Barat/Dayak Bakumpai/Bakumpai/Arkais/Dayak Sane/Dayak Sanggau/Dayak Sangku'/Dayak Sapatoi/Dayak Sawai/Dayak Sawe/Dayak Sebaruk/Dayak Seberuang/Dayak Segai/Dayak Sekajang/Dayak Sekubang/Dayak Sekujam/Dayak Selawe/Dayak Selayang/Dayak Selibong/Dayak Selimpat/Dayak Semayang/Dayak Sengkunang/Dayak Seritok/Undup/Srul/Skrang/Serul/Seru/Dayak Undup/Dayak Skrang/Dayak Seru/Dayak Sikukng/Dayak Silatn Muntak/Dayak Sintang/Dayak Sisang/Dayak Sontas/Dayak Suka Maju/Dayak Suaid/Dayak Sum Daruk/Dayak Sungkung/Dayak Suruk/Dayak Suruh/Dayak Suti/Dayak Taba/Dayak Tabuas/Dayak Tadietn/Dayak Tagel/Tagol/Tagel/Dayak Tagelan/Dayak Tamambalo/Dayak Taman/Dayak Taman Sekado/Dayak Tameng/Dayak Tawaeq/Dayak Tebang/Dayak Tebidah/Dayak Tenggalan/Dayak Tengon/Dayak Tingging/Dayak Tingui/Dayak Tinying/Dayak Tobak/Dayak Tola'/Dayak Tulak/Tunjung/Dayak Tunjung/Dayak Turije'ne/Dayak Uheng Kereho/Ohong/Oheng/Dayak Aoheng/Auheng/Aoheng/Dayak Ulu Air/Dayak Ulu Ai'/Dayak Ulu Sekadau/Dayak Undak Sanang/Dayak Undau/Dayak Urang Da'an/Dayak Ot Danum/Dayak Uud Danum/Dayak Uud Danum Cihie/Dayak Uud Danum Dohoi/Dayak Badang/Badang/Ulu Batang Ali/Empran/Gaat/Harakit/Huang Tering/Hulu Banyu/Kanowit/Katibas/Dayak Ngaju/Dayak Katingan/Bara Urik/Bara Nyet/Kendayan/Dayak Ka-Lepo Ka/Dayak Jalan/Lepo Tukung/Lepo Tepu/Lepo Jalan/Lepo Bakung/Lapo Tukung/Lapo Timai/Lapo Ngibun/Lapo Maut/Lapo Kulit/Lapo Ke/Lapo Bem/Lapo Bakung/Lepo Mant/Lepo Tau/Tukung/Long Paka/Paka/Long Gelat/Lundayeh/Malang/Tungku/Dayak Singa Rasi/Dayak Purui/Dayak Pauk/Dayak Nyumit/Dayak Mangku Anam/Menui/Merab/Dayak Murung/Oloh Kantu'/Oloh masih/Paku/Pitap/Sagai/Sani/Sebayau/Saribas/Sarbas/Segayi/Sekadau/Seputan/Dayak Siang Murung/Dayak Siak Murung/Dayak Siang/Sekayang/Senunang/Sului/Suntung/Tabuyan/Dayak Tamuan/Timai/Tomun/Touk/Tou/Tumbit/Tungui/Umaq Tau/Umaq Suling/Umaq Pramuka/Umaq Lasan/Umaq Jalan/Umaq Baqaq/Umaq Bakaq/Umaq Baka/Umaq Alim/Umaq Lokan/Umaq Kulit/Umaq Badang/Umaq PugungPuh/Umaq Pliau/Umaq Paku/Umaq Naving/Umaq Leken/Umaq Lasung/Undang Sanang/Warukin/Bara Hayam/Bara Nare/Bara Je/Kahayan/Dayak Kapuas/Dusun Witu/Bayan Kayan/Kerawatan/Dusun tabo/Karamaun/Dusun Daya/Lawangan Karau/Dayak Bawu/Taboyan Teweh/Tungka/Tungka Malang/Dayak Bara Raren -Uluh Mangkatip/Lampeung/Baloi/Dayak Uluh Mantaya-Sampit/Dayak Pagatan/Seruyan/Sembuluh/Tebilun/Kuwing-Kohin/Ulang/Arut/Batang Kawa/Mentubi/Delang/Bulik/Belantikan/Sahiei/Limbei/Kubin/Sabaung/Tawahui/Pananyari/Rahan/Duhoi/Tohup/Ot siang/Kalang Lupu/Jambun Jama/Gunung Kambang/Nyaring Uhing/Babuat/Danau Usung/
Bugis	Bugis/Ugi/Pagatan/Bugis Pagatan/Orang Kajang/Ammatowa/Amatoa/Tolotang
Chinese	Tionghoa/Cina/Cina RRC/RRT/Cina Taiwan
Others	Bangka, Belitung, Gayo, Kerinci, Lampung, Nias, Palembang, Rejang, Osing/Using, Buton, Gorontalo, Kaili, Mamasa, Mandar, Makassar, Minahasa, Mongondow, Sangir, Tolaki, Toraja, Ambon, Galela, Seram, Ternate, Tobelo, Papua

Source: Central Statistics, 2023