

Distribution Pattern of Coffee Shop Based on Geographic Information System (GIS) in Majene City

Astinawaty^{1*}, Jafar Mukhlis¹, Ahmadussaleh¹, Muh.Fauzan Ahmad¹

¹Urban and Regional Planning Departement, Engineering Faculty, Sulawesi Barat University, Prof. Dr. H. Baharuddin Lopa Street, Majene, 91412, Indonesia

*e-mail: astinawaty@unsulbar.ac.id

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Abstract

The phenomenon of urban transformation in Majene through the proliferation of coffee shops reflects significant changes in the social, economic, and physical structures of small cities in Indonesia. This study aims to analyze the of coffee shops in shaping urban lifestyles and spatial dynamics in Majene by employing a mixed-methods approach, comprising GIS analysis using buffer and Average Nearest Neighbor. The findings reveal a clustered spatial distribution of coffee shops, predominantly concentrated in East Banggae District (81.8%), with visitors primarily consisting of students, frequent evening visits, relatively affordable expenditures, and strong preferences for interior design and digital amenities. These results show that coffee shops function as catalyst for shifts in consumption behavior, fostering discussion hubs, new productive spaces, and enhanced social networks, thereby contributing to a positive and competitive transformation of Majene's identity of urban development.

Keywords: Coffee Shop, Majene City, distribution pattern, GIS

INTRODUCTION

The growing phenomenon of coffee shops in Indonesia is an indication of the transformation of urban lifestyles, occurring not only in large cities but also extending to small cities such as Majene, West Sulawesi (Nisa et al., 2022; Widhiasti et al., 2022; Saey & Foss, 2016). Shifting urban consumption patterns demonstrate that the presence of modern public facilities, such as coffee shops, is a primary need to support accelerated urbanization in small and medium-sized cities (Kurniawan, 2025; Junaidi, 2022; Kusumawardhani & Zerlina, 2021). Majene City, as an educational center in West Sulawesi, has become a magnet for higher education students, university students, and educators from across the region, driving demand for modern and interactive public spaces (Rosslaina, 2022; Dewi, 2022). Coffee shops emerged adaptively to meet the needs of the younger generation for study spaces, discussions, and social networking, while replacing the function of traditional spaces such as coffee shops and open fields (Damajani, 2008; Ardekani & Rath, 2017).

Majene's economic growth of 5.2% throughout 2023, primarily driven by the trade and services sector, including culinary MSMEs, strengthens the role of coffee shops in transforming the city's spatial structure through design innovation, digital facilities, and comfort oriented towards an urban lifestyle (BPS West Sulawesi, 2023; Nisa et al., 2022; Widyaningsih et al., 2021). A study by Nisa et al. (2022) observed that coffee shops in Indonesia after the pandemic tended to optimize indoor and outdoor spaces, serving the needs of social interaction, self-actualization, and the commodification of public space (Junaidi, 2022; Nisa et al., 2022). The preferences of the younger generation are also increasingly shifting from conventional consumption culture to the "hangout" culture that is emerging in digital communities (Rosslaina, 2022; Dewi, 2022). Coffee shops function as a medium for cultural production and the formation of urban identity, strengthening social networks across generations and social status (Junaidi, 2022). A similar phenomenon has been found in Jakarta, Bandung, and Makassar, where the expansion of commercial space on residential land has significantly changed the city's spatial landscape (Widhiasti et al., 2022; Kurniawan, 2025; Pratiwi et al., 2022). However, coffee shops are still predominantly located in the city center, while suburban and

coastal areas rely on traditional coffee shops, resulting in disparities in access to public space (Kurniawan, 2025; Dewi, 2022; Kusumawardhani & Zerlina, 2021).

In addition, this sector faces significant challenges such as business competition, innovation, and competitiveness, with only around 30% of coffee shops surviving for more than two years due to competition and the dominance of franchise networks (Nisa et al., 2022; Damajani, 2008; Febrian, 2020). The emergence of coffee shops not only impacts socio-cultural aspects but also encourages economic growth and regional revitalization, empowers local MSMEs in the coffee supply chain, creates new jobs, and strengthens the region's image as a center of culture and community (Sukriadi et al., 2024; Ahmad, 2024; Widhiasti et al., 2022; Dewi, 2022; Firdhaus, 2016). The role of coffee shops has evolved as a space for art discussions, literacy activities, and even mini music concerts that enrich social life, while also becoming a source of additional income and a platform for sustainable coffee education (Sukriadi et al., 2024; Ahmad, 2024; Dewi, 2022; Ardekani & Rath, 2017). However, the coffee shop business faces challenges of monopoly and gentrification that can lead to social exclusion and the homogenization of local culture (Oldenburg, 1999; Waxman, 2006; Saey & Foss, 2016).

Inefficient urban land use, particularly when public facilities are converted for coffee businesses, demands the formulation of sustainable spatial planning policies (Nisa et al., 2022; Widhiasti et al., 2022; Pratiwi et al., 2022; BPS West Sulawesi, 2023). Within the framework of urban development, coffee shops can act as catalysts for social innovation, the creative economy, and environmental preservation if supported by regulations, cross-sector collaboration, and local community participation (Rosslaina, 2022; Ahmad, 2024; Widyaningsih et al., 2021). Comparative studies in Metro, Makassar, and Semarang demonstrate the potential of coffee shops as centers for coffee education, integration of supporting MSME businesses, and spaces to introduce coffee drinking culture to the younger generation of urbanites (Ahmad, 2024; Dewi, 2022; Firdhaus, 2016). Thus, the development of coffee shops in secondary cities such as Majene encourages the creation of inclusive public spaces, local economic growth, as well as harmonization of business innovation and preservation of the spatial identity of small cities in Indonesia (Nisa et al., 2022; Kurniawan, 2025; Saey & Foss, 2016).

The purpose of this study is to analyze the distribution patterns of coffee shops in Majene City, as represented through third-place practices in coffee shops. Therefore, this study is important to identify how coffee shops in Majene not only represent urban lifestyle but also change the physical and social structure of the city. Therefore, this study has a problem formulation: How is the Distribution of Coffee Shops in Majene City.

METHODS

The research method used in this study is a mixed-methods approach, combining quantitative and qualitative approaches to gain an in-depth understanding of the phenomenon of urban coffee shop agglomeration (Creswell, 2014; Johnson et al., 2022). The quantitative approach involves spatial analysis and descriptive statistics to map the distribution and characteristics of coffee shop locations in the study area (Zheng et al., 2025; Li & Wang, 2023). Spatial analysis by GIS by Nearest Neighbor Analysis (NNA) is a method use to analyze distribution pattern using Geographic Information System technology. Distance-based pattern analysis techniques using the Average Nearest Neighbor method contain information related to spatial pattern measurements, including: z-scores, p-values, expected mean distances, and spatial pattern statistical analysis curves. The z-score and p-value are measures of statistical significance that indicate random data distribution. This method will produce a ratio value obtained by comparing the average observed value with the average expected value.

The z-score is used as an indicator to determine the type of pattern (Kurniati, 2016 in Bangun, 2021), which states that the z-score is used to identify the position of a value relative to the average value within a group. The research data began by identifying coffee shop locations in Majene Cty by combining secondary data from the Majene Statistics Agency (BPS) for 2020-2025 and scraping results from Google Maps. This process aims to obtain more comprehensive data from both official sources and actual field records. The compiled data was then inventoried as a reference for direct observation of coffee shop locations, supported by coordinate point mapping using the Avenza Maps geotagging application (Ismail et al., 2024). All observation activities were also complemented by visual documentation in the form of geotagged photographs so that each data point was integrated with visual and spatial evidence. This data collection was then analyzed using buffer analysis at a 500-meter radius to map the coffee shop influence zone. The

results were then further processed using clipping techniques to ensure the distribution map conforms to the administrative boundaries of Majene City.

The initial stage of the research began with data collection on the number and location of coffee shops through field surveys and digital mapping, then verified using secondary data from relevant agencies and online mapping platforms (Li & Wang, 2023). Next, this data was analyzed spatially using a Geographic Information System (GIS) with a 500-meter-radius buffer analysis, mapping coffee shop agglomeration zones around public facilities such as campuses, offices, and shopping centers, and using clipping to geographically limit the analysis results according to the study's administrative area (Zheng et al., 2025). The application of the buffer technique has proven effective for mapping the accessibility and distribution of urban public facilities, as has been used in international urban accessibility mapping studies, including those referenced by Misra et al. (2021).

RESULTS AND DISCUSSION

Characteristics of Coffee Shop Distribution in Majene Urban Area.

The number of coffee shop and cafe locations in Majene urban area was obtained through field observations, Google Maps scraping, and coordinate retrieval using a Geographic Information System (GIS)-based application. Table 1 shows a total of 44 coffee shop and cafe locations/units spread across Majene Urban Area, comprising two main sub-districts: Banggae and East Banggae. East Banggae District has the highest concentration of coffee shops and cafes, with 26 coffee shops (18 actively operating and 8 inactive) and 10 cafes, all of which are operational. In contrast, Banggae District has only 6 coffee shops and 2 cafes, all of which are actively operating. This distribution pattern indicates a tendency for coffee-based businesses and modern cafes to dominate in East Banggae, which can be attributed to demographic factors, urban mobility, and the level of local economic development.

Tabel 1. Number of coffee shops and cafes in Majene City

	Coffe Shop	Café	Total
Banggae District	6	2	8
East Banggae District	26	10	36
	Majene City		44

Source: survey data processing

Table 1 details that 81.8% (36/44) are located in East Banggae District, consisting of 26 coffee shops and 10 cafes. Meanwhile, Banggae only contributes 18.2% (8/44) units. This distribution reflects the spatial disparity or inequality in the distribution of coffee shops and cafes between districts. East Banggae's dominance can be an indicator of business location preferences oriented towards public traffic flow, intensity of economic activity, and higher consumer accessibility. The high number of coffee shops still operating in East Banggae (18 units) also indicates a more competitive business dynamic and adaptability to local market needs.

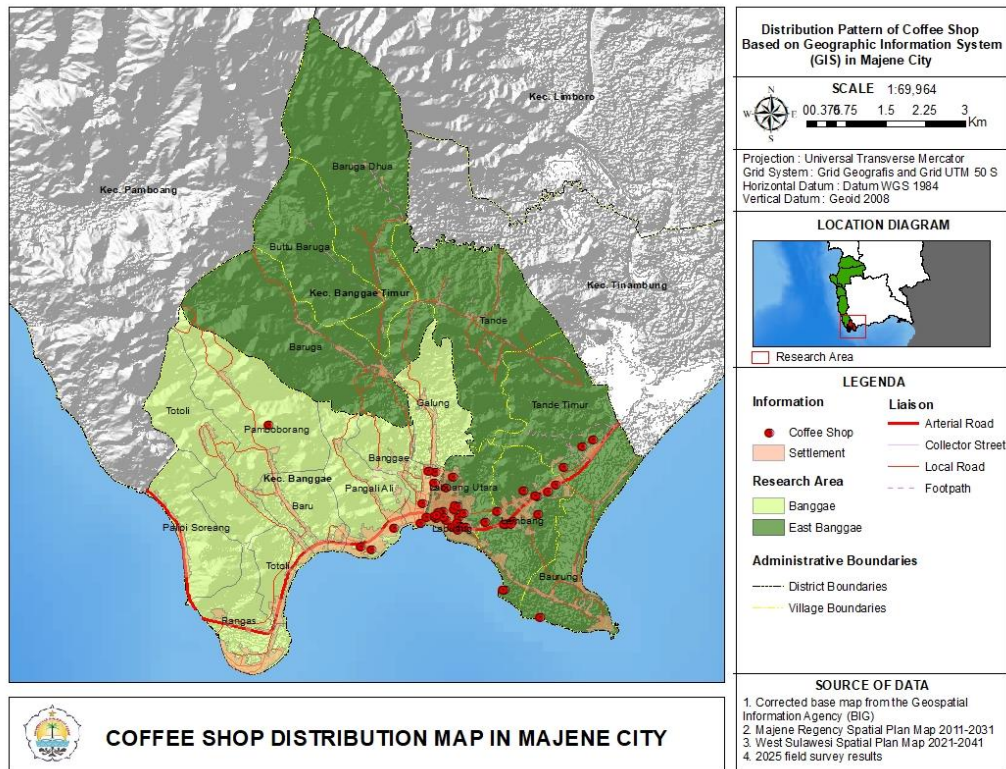


Figure 1. Map of Coffee Shop Distribution in Majene City

The next analysis focused on the characteristics of the spatial distribution of these locations by GIS and the Average Nearest Neighbor (ANN) model. Through the Avenza application, the coordinates of the coffee shop and cafe locations were successfully mapped, showing a tendency for locations to cluster according to the city's functional areas, namely Banggae District which connects the western part of Majene and East Banggae District in the eastern part. The spatial analysis process using the nearest neighbor method resulted in an ANN ratio of 0.655567. This value indicates a clustered distribution pattern, because an ANN index of less than one indicates the distance between one location and another is relatively close and forms an aggregate. Furthermore, the observed mean distance was recorded at 217.98 meters, while the expected mean distance was 332.52 meters. This phenomenon of proximity of one location to another was also supported by further statistical results, namely a z-score of -4.517352 and a p-value of 0.000006. The highly negative z-score value and p-value far below the 0.05 threshold indicate high spatial significance and indicate that the distribution of coffee shops and cafes in Majene Urban Area is truly clustered and does not occur randomly.

The discovery of coffee shop clustering in Majene City has important implications for spatial planning and business development. The clustered distribution is influenced by strategic location, high accessibility, proximity to population centers (e.g., main roads, educational centers), and the area's significant market potential. Similar studies confirm that visibility, parking capacity, and distance between competitors also influence the agglomeration pattern of business locations (Nasmi et al., 2024). Understanding this spatial distribution can be used to optimize culinary business spaces, develop the local economy, and strengthen the competitiveness of MSMEs. It also serves as a reference for the government and business actors in managing commercial spaces sustainably.



Figure 2. Map of Buffer Zone Coffee Shops in Majene City.

CONCLUSION

The urban life of the local community, coffee shops serve as new, inclusive social spaces, serving as primary venues for collective activities, relaxation, and the formation of social networks that adapt to digital demands and the dynamic development of the city. Coffee shops function beyond mere consumption spaces; they have evolved into centers of productive interaction and a tangible manifestation of changes in urban spatial habitus.

This transformation process emphasizes the shift in Majene's city identity toward an egalitarian, creative, and technology-based lifestyle. Coffee shops, as strategic "third places," have facilitated social dynamics, spatial preferences, and design innovations that strengthen community relations and participation in urban development agendas. Therefore, the presence of coffee shops has become a key catalyst in the construction of a progressive urban identity and culture that is relevant to the changing social and economic structure of Majene.

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