

Spatial Analysis of Regional Poverty Rates in Bali for the Period 2016-2020

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Abstract

Poverty is a severe issue for local governments, particularly in Bali. This study aims to investigate factors influencing the regional poverty rate in Bali Province between 2016 and 2020. In the primary data obtained from BPS Bali Province, spatial regression data approaches and analyses were used. The findings show that housing, access to technology, and availability of natural resources affect poverty rates. The poverty line in Bali in the period 2016–2020 fluctuated significantly. Urban and rural poverty levels are affected by the availability of rice. At the same time, non-food commodities are higher in rural areas regarding housing, religious ceremonies, and customs. The contribution of the food poverty line to the urban poverty line was 68.76% less than the contribution of the food poverty line to the rural poverty line, which was 69.74%. From 2016 to 2020, the districts of Buleleng, Karangasem, Klungkung, and Tabanan each had the highest poverty depth index. The poverty depth index in urban areas reached 0.653, and in rural areas, 0.753. The severity index for urban poverty is 0.154, which is lower than the severity index for rural poverty, which is 0.156.

Abstrak

Kemiskinan menjadi masalah serius bagi pemerintah daerah, khususnya di Bali. Penelitian ini bertujuan untuk menyelidiki faktor-faktor yang mempengaruhi tingkat kemiskinan daerah di Provinsi Bali antara tahun 2016 dan 2020. Pada data primer yang diperoleh dari BPS Provinsi Bali menggunakan pendekatan dan analisis regresi spasial. Temuan diperoleh perumahan, akses ke teknologi, dan ketersediaan sumber daya alam mempengaruhi tingkat kemiskinan. Garis kemiskinan di Bali pada periode 2016-2020 berfluktuasi secara signifikan. Tingkat kemiskinan di perkotaan dan pedesaan dipengaruhi oleh ketersediaan beras. Pada saat yang sama, komoditas non-pangan lebih tinggi di daerah pedesaan mengenai perumahan, upacara keagamaan, dan adat istiadat. Kontribusi garis kemiskinan pangan terhadap garis kemiskinan perkotaan sebesar 68,76% lebih rendah dibandingkan kontribusi garis kemiskinan pangan terhadap garis kemiskinan pedesaan yang sebesar 69,74%. Sejak 2016 hingga 2020, kabupaten Buleleng, Karangasem, Klungkung, dan Tabanan masing-masing memiliki indeks kedalaman kemiskinan tertinggi. Indeks kedalaman kemiskinan di perkotaan mencapai 0,653, dan di pedesaan sebesar 0,753. Indeks keparahan kemiskinan perkotaan sebesar 0,154 atau lebih rendah dari indeks keparahan kemiskinan pedesaan sebesar 0,156.

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INTRODUCTION

Poverty is a problem in various regions and is a comprehensive issue that needs to be addressed by various related sectors. Poverty occurs as a result of inequality between regions with each other (Dawood et al., 2019; Jindra & Vaz, 2019; Tianming et al., 2018). Poverty rates tend to change, leading to less economic growth and more economic inequality in the affected areas. The issue of poverty needs attention from various parties. The issue of poverty is important for a country's progress and success in managing the resources and potential in the region (Mattes, 2020; Omar & Inaba, 2020; Rahayu et al., 2021; Sihombing et al., 2021; Sun et al., 2022). It is also important for achieving the goals of sustainable development, which include reducing poverty and ensuring that people are safe and happy. Recent reports say that Indonesia is listed as contributing to a fairly high poverty rate (Dawood et al., 2019; Husein et al., 2021; Nugroho et al., 2021). Indonesia has a high level of trend because of its location, access to technology, and natural resources, among other things (Djuraidah & Wigena, 2012; Handoyo et al., 2021; Hartono & Nugroho, 2019; Melati et al., 2021; Prasodjo, 2017).

In Indonesia, many areas are classified as 3T (lagging, frontier, and outermost), contributing to the poverty rate (Nugroho et al., 2021; Prabowo et al., 2022; Purwono et al., 2021; Sudaryanto et al., 2021; Susilowati et al., 2021). However, even though some places have been labeled "developed," like Bali, they still contribute to the rise in poverty. In addition to hurting a region's economy, poverty is a key measure for determining the proportion of community well-being and economic growth rate (Hasbullah et al., 2022; Laurens & Putra, 2020; Lunawati & Sasana, 2022). In line with the COVID-19 pandemic in the last two years, this has contributed to economic inequality and the poverty rate in Bali Province (BPS RI, 2021). The 2020 study indicates that 4.45% of the population in Bali Province is impoverished (BPS RI, 2021). If not followed up, this amount affects the regional economy's decline.

There needs to be more information about how poverty and location are linked, especially in Bali. This analysis is important to identify factors that influence the incidence and increase in poverty rates in each region by mapping each district, city, and province. Previous research has identified factors that affect poverty levels. Tilahun et al. (2021), and Whiteside-Mansell et al. (2019) explain that childhood and family poverty affects poverty resistance after adulthood using a panel study of income dynamics data. Furthermore, Shoaf Kozak et al. (2012) stated that most people live in poor conditions of poverty. Rumahorbo (2014), explained that variables that affect the number of poor people in North Sumatra include economic growth, per capita income, inflation, and unemployment, with a coefficient of determination (R^2) of 0.932199 (93.21%). Saputra & Mudakir (2011) research showed that the population greatly affects the poverty rate in Central Java. Prasodjo (2017) and Prastyo & Edy Yusuf (2010) explained that economic growth, the minimum wage, education, and unemployment influence the poverty rate in Central Java.

In order to find out what cause poverty Alvitiani et al. (2019), spatial regression models need to be used in Bali Province for spatial analysis. The purpose of this study was to identify factors that affect the regional poverty rate in Bali Province for the 2016–2020 period. Based on spatial models, it can provide the latest information on Bali's acceleration of poverty alleviation.

RESEARCH METHODS

This study's data approach and analysis use spatial regression containing quantitative data (Darwin et al., 2021). This analysis is used to determine what factors affect the poverty level based on where they are. The data came from the Central Statistics Agency of Bali Province (BPS RI, 2021). The data analyzed in this study covered the period from 2016 to 2020. The poverty line (GK), determined by adding the results of the food poverty line (*GKM*) and the non-food poverty line, is one of the factors examined in this study. If a person's average monthly spending falls below the poverty level, they are deemed poor (BPS RI, 2021). The value of spending on the bare necessities of food is equal to 2100 kilograms (or calories) per person per day at the food poverty line. The commodity bundle for basic food needs includes 52 different types: grains, tubers, fish, meat, eggs, milk, vegetables, nuts, fruits, oils and fats, and more. The Non-Food Poverty Line is the minimum amount needed for a place to live, clothes, food, education, health care, and medical care. In metropolitan regions, there are 51 different categories of commodities, whereas, in rural

areas, there are 47 different types of commodities that make up the non-food basic requirements commodity bundle (Dawood et al., 2019; Faharuddin et al., 2022; Tianming et al., 2018).

GKM calculation method, the reference population group, which is the population 20% or more above the temporary poverty line, is determined in the first stage. Locals from the margins of society are considered to be this reference group. GKS is based on the poverty line from the previous period, which is then raised by the CPI, which measures general inflation. Populations were determined using these references and the food and non-food poverty levels. The total cost of the 52 staple foods that the reference group consumes, or 2100 kilocalories per person per day, is considered the "food poverty level." The Widyakarya Pangan dan Gizi results from 1978 are used as the baseline. The average price per calorie of the 52 goods is used to figure out how much it costs to meet the basic needs of food. The equations used in the analysis are presented as follows (Adnyana, 2021; Klärner & Knabe, 2019; Sewell et al., 2019).

$$GKM_{*jp} = \sum_{p=1}^{52} P_{jkp} \times Q_{jkp} = \sum_{p=1}^{52} V_{jkp} \dots\dots\dots (1)$$

Information

- GKM*_{jp} : food poverty line j area (Before being equalized to 2100 kilocalories) province p
- P_{jkp} : average commodity price k in region j and province p
- Q_{jkp} : average quantity of commodity k consumed in area j in province p
- V_{jkp} : the value of expenditure on the consumption of commodity k in the area j province p
- j : Regions (Urban and rural)
- p : province to -p

Based on this equation, identifying poverty line determinants in nine regencies/cities in Bali province is based on standard reference data for determining the poverty line and the proportion in each region. The data are presented in tables, narrations, and images following the results obtained. In spatial modeling, the area-type spatial weighting matrix used is *queen contiguity*. A spatial weighting matrix is a matrix that describes the proximity of relationships between locations (Le Sage & Pace, 2009). The model spatial regression equation is expressed in the following equation (Anselin et al., 2004)

$$y = pWy + X\beta + u \dots\dots\dots (2)$$

$$u = \lambda Wu + \varepsilon \dots\dots\dots (3)$$

$$\varepsilon \sim N(0, \sigma^2 I) \dots\dots\dots (4)$$

Information

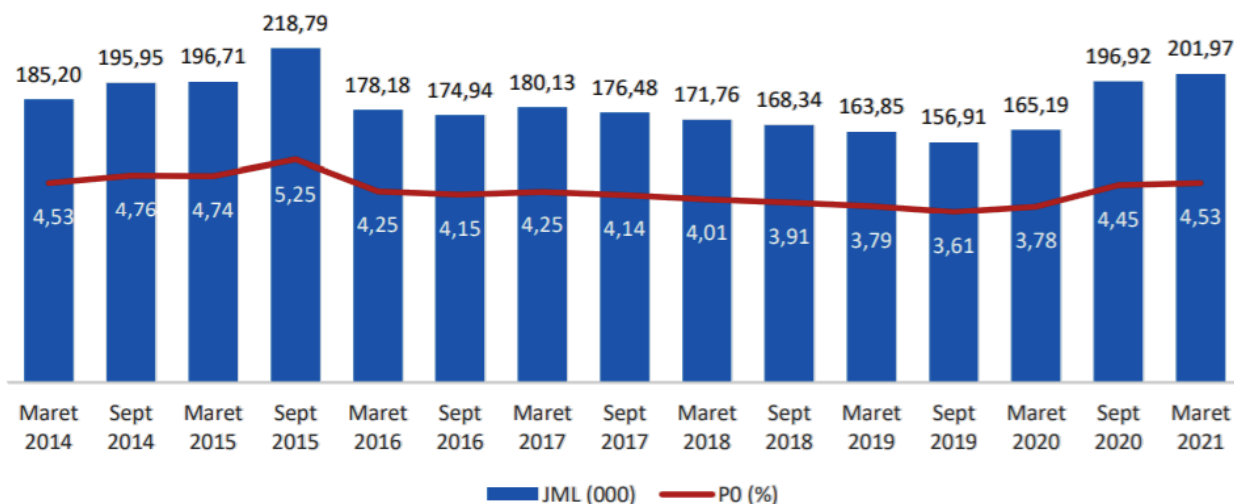
- y : response variables
- X : explanatory variable matrix
- W : spatial weighting matrix
- ε : error vector with constant variance σ²
- β : regression parameter coefficient vector
- p : spatial lag autoregression coefficient
- λ : coefficient of autoregression of spatial errors

RESULT AND DISCUSSION

Distribution of poverty in Bali

Based on the identification of the poverty line in Bali Province for the period of March 2014 – March 2021, it was obtained that the poverty rate in Bali fluctuated significantly and had a tendency to stagnate both in terms of numbers and percentages. A fairly high increase occurred in September 2015 (5.25%) due to the fuel oil (BBM) increase. After that, it decreased but not significantly. Furthermore, from March 2020 to March 2021, there was a resurgence due to the decline in the tourism sector, which is the main livelihood of the Balinese people. The COVID-19 pandemic has implications for Bali's economic downturn. In Bali Province, nine regencies/cities

geographically have different characteristics, which allows for inequality from one area to another due to differences in geographical location. Data on poverty in Bali for the period March 2014 – March 2021 is presented in figure 1.



Source: BPS RI (2021).

Figure 1. Poverty Data in Bali March 2014 – March 2021

According to the distribution of poverty in Bali by area of residence between September 2020 and March 2021, there were 4.10,000 more poor persons living in urban areas, up from 125.48 thousand in September 2020 to 129.58 thousand in March 2021. There was an increase of 100,38k persons in one year (March 2021 to March 2020). Additionally, there were 7.57 thousand more poor people in rural areas in March 2021 compared to March 2020, when there were 64.82 thousand poor people, up from 71.44 thousand in September 2020 to 72.39 thousand in March 2021 (BPS RI, 2021). In March 2021, 4.12 percent of urban residents were classified as poor, up 0.08 percent from September 2020's figure of 4.04 percent. From 5.40 percent in September 2020 to 5.53 percent in March 2021, there was an increase of 0.12 percent in the percentage of poor individuals living in rural regions.

Food Poverty Line in Bali Province 2016-2020

The Food Poverty Line (GKM), or 2100 kilos/calories per person per day, is the amount needed to meet the absolute minimal amount of dietary needs. Fifty-two commodities (such as grains, tubers, fish, meat, eggs, milk, vegetables, nuts, fruits, oils, and fats) make up the commodity package for basic food requirements (BPS RI, 2021). Table 1 shows Bali's local food poverty threshold based on the division of urban and rural areas and their combination.

Table 1.
The food poverty line in Bali according to regional classification

Regional Classification	Year (Rupiah/capita/ month)				
	2020	2019	2018	2017	2016
Urban	309. 933	292. 350	268. 910	252. 298	242. 429
Rural	284. 541	271. 679	267. 059	251. 307	233. 243
Urban + Rural	302. 154	285. 920	268. 275	251. 921	238. 822

Source: processed data (2022)

Rice is the food item that has the biggest impact on the poverty line in both urban and rural settings (Ha et al., 2015). There is no difference between rural and urban commodities in food indicators, and the resulting comparisons tend to have similarities. In this case, the rice commodity is the main thing with the highest percentage in rural areas. In line with Bagaskara et al. (2022), Rahman et al. (2022), and Thurlow et al. (2019), which states that all food commodities are observed, changes in rice prices have the greatest impact on both producer and consumer prices, as well as the cost of living of households, especially low-income and poor-income households.

Similar to the findings reported by Faharuddin et al. (2022), It showed that a 20% increase in the cost of each food category resulted in a 1,360-point rise in the population ratio of rice. For this food group, maintaining price stability is crucial because as prices rise, the impact on poverty grows. Because rising food costs have a greater impact in rural communities than in urban ones, food price policy in rural areas is also more important. Schmidt et al. (2021) according to studies, a 25% increase in global rice prices will cut Papua New Guinea's total rice consumption by 14% and poor people's rice consumption (the bottom 40% of total household expenditure distribution) by 15%. Due to the COVID-19-related economic slowdown and the rise in rice prices, household income fell by 12%. As a result, the poor consumed 20% less rice in urban areas and 17% less in rural regions.

Bairagi et al. (2022), according to a study conducted in the Philippines, rice is a staple food for most households, particularly those in rural areas. For those who are underprivileged and destitute, rice is a crucial part of their daily needs. However, when household income rises, wealthier households prefer to substitute nutrient-dense foods and more animal proteins like meat and dairy for rice-heavy diets. However, non-food commodities tend to be higher in rural areas in the aspect of housing and religious ceremonies and customs. This is because the dominance of mutual aid and various worship activities in rural areas tends to prioritize local wisdom and is subject to applicable regulations so that this can reduce the income of residents who require participating in these activities. Furthermore, non-food commodities in urban areas tend to focus on education which every year experiences an increase ranging from operational costs, completeness of schools and lectures, and various aspects that support educational needs. Unlike in rural areas, which still use firewood for cooking and daily life, this factor is important in forming the poverty line in Bali (BPS Bali, 2021). In the Philippines, different study findings revealed that non-food commodities selected by the top 30% of rural Filipinos and the top 40% of urban Filipinos were inferior goods (Subir). Table 2 shows dor poverty lines by commodity.

Table 2.
Bali's Food Poverty Line Formation Commodities in 2021

Urban		Rural	
Commodities	Percentage	Commodities	Percentage
Food			
Rice	26,59	Rice	30,52
Meat breeds of chickens	6,36	Meat breeds of chickens	3,93
Filtered clove cigarettes	4,62	Filtered clove cigarettes	3,84
Egg breeds of chickens	3,68	Egg breeds of chickens	3,13
Cayenne pepper	2,23	Cayenne pepper	3,09
Shallot	2,21	Shallot	2,44
Instant noodles	2,06	Instant noodles	1,96
Wet cakes	1,74	Wet cakes	1,72
Ground coffee and instant coffee	1,54	Ground coffee and instant coffee	1,64
Sugar	1,52	Sugar	1,54
Not Food			
Housing	10,69	Housing	11,18
Petrol	5,45	Petrol	4,35
Religious Ceremonies or customs	3,01	Religious Ceremonies or customs	3,37
Electricity	2,77	Electricity	1,60
Education	1,83	Firewood	1,28

Source: processed data (2022)

Poverty line based on the regional classification in Bali Province 2016-2020

The results of identifying poverty based on the regional classification in Bali Province for the 2016-2020 period show that its importance in urban and rural areas has increased significantly. In urban areas in the last five years, there has been an increase of 94,207 people who are classified as poor. In rural areas, there has been an increase of 79,283 people, with a

total of 173,490 people who are on the poverty line based on the regional classification in table 3.

Table 3.
Bali poverty line according to regional classification 2016-2020

Regional Classification	Year (rupiah/capita/ month)				
	2020	2019	2018	2017	2016
Urban	451.634	424.292	393.989	371.118	357.427
Rural	407.316	387.546	376.733	350.826	328.033
Urban + Rural	438.167	412.906	388.451	364.064	346.398

Source: Data Processed 2022

When measuring macro poverty rates, the poverty line is used as a scale or boundary to classify persons who can be classified as poor or not poor. Residents who live below (or below) the amount known as the poverty line are said to be impoverished. The poverty line in Bali Province was determined to be IDR 452,221.00 per capita per month in March 2021. The poverty level in September 2020 was IDR 438,167.00 per capita per month; this amount has climbed by 3.21 percent since then. The poverty line rose by 5.21 percent in March 2021 compared to March 2020s. According to its constituents, the food poverty line (GKM) contributed 68.76% to the poverty line (GK) in urban areas in March 2021, while the non-food poverty line (GKNM) contributed 31.24%. In contrast, the non-food poverty line contributed 30.26 percent to the rural poverty level in March 2021, while GKM provided 69.74 percent (BPS Bali, 2021). Table 4 displays the poverty line based on the 2020 Bali regional classification.

Table 4.
Poverty line by Bali regional classification 2020

Region/ year	Poverty line (rupiah/capita/ month)				Total (rupiah)
	Food		Not food		
	Rupiah	% of total	Rupiah	% of total	
Urban					
March 2020	307.459	69,39	135.611	30,61	443.070
September 2020	309.933	68,62	141.710	31,38	451.634
March 2021	321.245	68,76	145.944	31,24	467.189
Changes march 2020 – march 2021 (%)	4,48		7,62		5,44
Changes September 2020 – march 2021	3,65		2,99		2,99
Rural					
March 2020	280.900	70,00	120.391	30,00	401.291
September 2020	284.541	69,86	122.774	30,14	407.316
March 2021	291.311	69,74	126.411	30,36	417.722
Changes march 2020 – march 2021 (%)	3,71		5,00		4,09
Changes September 2020 – March 2021	2,38		2,96		2,55
Urban and rural					
March 2020	298.945	69,55	130.889	30,45	429.834
September 2020	302.154	68,96	136.013	31,04	438.167
March 2021	312.020	69,00	140.201	31,00	452.221
Changes march 2020 – march 2021 (%)	4,37		7,11		5,21
Changes September 2020 – March 2021	3,27		3,08		3,21

Source: Data Processed 2022.

Poverty Rate of Urban Districts in Bali Province 2016-2020

The result of the analysis related to the level of poverty of regencies/cities in Bali Province 2016-2020 showed that the Poverty Depth Index in Bali Province by Regency/City in 2016 was

highest in Buleleng Regency (0.75%) while the lowest in Badung Regency (0.19%). Meanwhile, in 2017, the highest impoverishment rate was in the Karangasem district (0.87%) and the lowest in Badung Regency (0.21%). In 2018, the highest poverty rate was in Klungkung Regency (0.79%), while the lowest was in Badung Regency (0.28%). In 2019, the highest poverty rate was in Karangasem Regency (0.75%), while the lowest was in Badung Regency (0.16%). In 2020, the highest poverty rate was in Tabanan Regency (0.58%), while the lowest in Bangli Regency was 0.3%. Badung Regency had the lowest poverty rate from 2016 to 2019. However, in 2020 the lowest poverty rate in Bali Regency was 0.3%, with a difference of 1% from Badung Regency. Table 5 displays the poverty depth index for Bali by city and regency from 2016 to 2020.

Table 5.
Bali Province Poverty Depth Index 2016-2020

Districts/Cities	Year (percent)				
	2020	2019	2018	2017	2016
Jembrana District	0.39	0.59	0.57	0.86	0.53
Tabanan District	0.58	0.26	0.5	0.69	0.57
Badung District	0.31	0.16	0.28	0.21	0.19
Gianyar District	0.57	0.27	0.43	0.57	0.43
Klungkung District	0.67	0.62	0.79	0.33	0.78
Bangli District	0.3	0.24	0.49	0.52	0.63
Karangasem District	0.52	0.75	0.83	0.87	0.58
Buleleng District	0.53	0.72	0.62	0.72	0.75
Denpasar City	0.25	0.29	0.32	0.4	0.2
Bali Province	0.52	0.53	0.68	0.68	0.51

Source: Data Processed 2022

These results are in line with Klärner & Knabe (2019) research, which suggests that the high level of poverty in an area, especially rural areas, due to the low social network owned, including poor economic governance in every household, has implications for increasing the poverty rate. In contrast, urban areas tend to have good social networks, especially in tourism areas. It said social networks are becoming an important resource to tackle poverty in rural areas, including the support capacity of these networks, which is weakened by structural changes in the region. Similar research by Tianming et al. (2018) indicated that the high poverty rate in rural areas results from multiple causes, including income disparity, decreased labor demand in rural areas, inadequate social services in rural communities, and the poor social standing of rural residents. Research in Africa found differences in socioeconomic conditions between rural communities with better access and isolated communities due to inadequate road infrastructure (Sewell et al., 2019) Furthermore, Jindra & Vaz (2019) revealed that governance at the village level tends to be poor, causing setbacks from various things that have implications for improving the status and level of poverty.

Based on the area of residence, the poverty depth index (P1) in 2020 in urban areas is lower than in rural areas. The poverty depth index (P1) value in urban areas was recorded at 0.653, while in rural areas, it was 0.753. Likewise with the poverty severity index (P2), in March 2021, in urban areas, it was recorded at 0.154, lower than the Poverty Severity Index in rural areas, which was recorded at 0.156. This indicates that the average expenditure of the poor in urban areas located in the Bali Province area is closer to the poverty line than in rural areas. In contrast, the expenditure inequality among the poor in rural areas is higher or tends to be more heterogeneous than in urban areas. These results are consistent with research conducted in Kenya, which found that the poverty severity index is lower in urban areas than rural areas. This is because urban areas generally have a strong space for developing a tourism sector, indirectly allowing poorer households to approach the poverty line due to e-tourism expansion (Njoya & Seetaram, 2018). Mustika & Nurjanah (2021) According to data collected between 2011 and 2019 on the island of Sumatra, the rural poverty rate was 11.68 percent, much higher than the urban poverty rate of 9.22 percent. Rural areas have a wider poverty gap and a higher poverty severity index than metropolitan areas. The study's findings revealed that HDI considerably influenced rural poverty levels.

According to Handoyo et al. (2021), improved rural development would open up additional prospects for expanding rural economic activity and enhancing the welfare of the populace. The results of the identification of the poverty line of Bali province by regency/city from 2016-2020 show that the area that contributed to the poverty line by regency/city (rupiah) in 2016-2020 was highest in Denpasar City while the lowest in Klungkung Regency (BPS Bali, 2021). The poverty line in Provinsi Bali by district/city (rupiah) 2016-2020 is presented in table 6.

Table 6.
Poverty line Provinsi Bali by district/city tahun 2016-2020

Districts/Cities	Year (Rupiah)				
	2020	2019	2018	2017	2016
Jembrana District	403.462	390.102	385.959	374.057	354.901
Tabanan District	450.571	425.926	422.345	412.561	392.479
Badung District	587.737	547.186	534.069	500.885	470.732
Gianyar District	400.079	382.380	378.561	358.496	339.414
Klungkung District	318.139	312.864	310.764	299.664	284.789
Bangli District	346.458	329.014	327.668	321.674	305.200
Karangasem District	330.441	315.805	311.321	301.720	288.436
Buleleng District	424.602	401.377	395.678	372.399	350.902
Denpasar City	618.064	571.246	545.357	512.947	483.821
Bali Province	429.834	400.624	382.598	361.387	338.967

Source: Data Processed 2022

CONCLUSION AND SUGGESTION

Spatial analysis is important to assess the level of poverty in Bali Province. The findings show that housing, access to technology, and availability of natural resources affect poverty rates. The poverty line in Bali in 2016-2020 fluctuated significantly, with a tendency to stagnate in numbers and percentages. The food indicator that accounts for the poverty line in urban and rural areas is rice. At the same time, non-food commodities tend to be higher in rural areas regarding housing, religious ceremonies, and customs. Based on the classification of regions, the poverty line fluctuates and is higher in rural areas, with a total increase of 173,490 people in both regions. The contribution of the food poverty line to the urban poverty line was 68.76% lower than the rural 69.74%, while the non-food poverty line was 31.24% in urban areas and 30.26% in rural areas. The highest poverty depth index from 2016-2020 was successively contributed by Buleleng, Karangasem, klungkung, Karangasem, and Tabanan districts, while Badung districts from 2016-2019 and bangli in 2020 accounted for the lowest poverty rate. The poverty depth index (P1) value in urban areas was recorded at 0.653, while in rural areas, it was 0.753. The poverty severity index (P2) in urban areas is 0.154, lower than in rural areas reaching 0.156. The average expenditure of the poor in urban areas in Bali is closer to the poverty line. In contrast, the expenditure inequality among the rural poor is higher or tends to be more heterogeneous than in urban areas. Future research must focus on examining factors that influence the poverty rate in each regency/city in Bali Province, as well as assessing the extent to which the income of each household can support family members, to reduce the prevalence of poverty in Bali.

REFERENCES

- Adnyana, I. M. D. M. (2021). Populasi dan Sampel. In *Metode Penelitian Pendekatan Kuantitatif* (1st ed., pp. 103–116). CV Media Sains Indonesia.
- Alvitiani, S., Yasin, H., & Mukid, MA. (2019). Pemodelan Data Kemiskinan Provinsi Jawa Tengah Menggunakan Fixed Effect Spatial Durbin Model. *Jurnal Gaussian*, 8(2), 220–232. <https://doi.org/10.14710/j.gauss.v8i2.26667>
- Anselin, L., Rey, S. J., & Florax, R. J. (2004). *Advances in Spatial Econometrics*. Springer. <https://doi.org/10.1007/978-3-662-05617-2>
- Bagaskara, R. A., Kumalasari, A. N., Devaisnaini, A. R., Ghani, A. F., Dewantara, E. J., Karimah, N., Setyawati, T. U., & Putri, R. F. (2022). *Agricultural Resources Analysis: Urban Area's*

- Food Sufficiency in South Sulawesi Province. *Proceedings of the 2nd International Conference on Smart and Innovative Agriculture (ICoSIA 2021)*, 56–62. <https://doi.org/10.2991/absr.k.220305.009>
- Bairagi, S., Zereyesus, Y., Baruah, S., & Mohanty, S. (2022). Structural shifts in food basket composition of rural and urban Philippines: Implications for the food supply system. *PLOS ONE*, 17(3), e0264079. <https://doi.org/10.1371/journal.pone.0264079>
- BPS Provinsi Bali. (2021). Pertumbuhan Ekonomi Bali Triwulan I-2021. 27, 1–16. retrieved from: https://bali.bps.go.id/backend/materi_ind/materiBrsInd-20210505123600.pdf (diakses pada 13 November 2022).
- BPS RI. (2021). Profil Kemiskinan di Indonesia Maret 2021. *Berita Resmi Statistik*, 7(56), 9-15. https://www.bps.go.id/website/materi_ind/materiBrsInd-20220117120322.pdf (diakses pada 13 November 2022).
- Darwin, M., Mamondol, M. R., Sormin, S. A., Nurhayati, Y., Tambunan, H., Sylvia, D., Adnyana, I. M. D. M., Prasetyo, B., Vianitati, P., & Gebang, A. A. (2021). *Quantitative approach research method* (T. S. Tambunan, Ed.; 1st ed.). CV Media Sains Indonesia.
- Dawood, T. C., Pratama, H., Masbar, R., & Effendi, R. (2019). Does financial inclusion alleviate household poverty? Empirical evidence from Indonesia. *Economics & Sociology*, 12(2), 235–252. <https://doi.org/10.14254/2071-789X.2019/12-2/14>
- Djuraidah, A., & Wigena, A. H. (2012). Regresi Spasial untuk Menentukan Faktor- faktor Kemiskinan di Provinsi Jawa Timur. *Statistika*, 12(1), 1–8. <https://doi.org/10.29313/jstat.v12i1.1055>
- Faharuddin, F., Yamin, M., Mulyana, A., & Yunita, Y. (2022). Impact of food price increases on poverty in Indonesia: empirical evidence from cross-sectional data. *Journal of Asian Business and Economic Studies*. <https://doi.org/10.1108/JABES-06-2021-0066>
- Ha, P. van, Nguyen, H. T. M., Kompas, T., Che, T. N., & Trinh, B. (2015). Rice production, trade and the poor: regional effects of rice export policy on households in Vietnam. *Journal of Agricultural Economics*, 66(2), 280–307. <https://doi.org/10.1111/1477-9552.12087>
- Handoyo, F., Hidayatina, A., & Purwanto, P. (2021). The Effect of Rural Development on Poverty Gap, Poverty Severity and Local Economic Growth in Indonesia. *Jurnal Bina Praja*, 13(3), 369–381. <https://doi.org/10.21787/jbp.13.2021.369-381>
- Hartono, D., & Nugroho, A. (2019). Impacts of food prices on the economy: social accounting matrix and microsimulation approach in Indonesia. *Review of Urban & Regional Development Studies*, 31(1–2), 137–154. <https://doi.org/10.1111/rurd.12099>
- Hasbullah, H., Murti, W., Jasin, M., & Nugroho, Y. (2022). *Determinants of Economic Growth and its Impact on Poverty in Lampung Province*. <http://dx.doi.org/10.4108/eai.30-10-2021.2315855>
- Husein, S., Herdiansyah, H., & Putri, L. G. (2021). An Ecofeminism Perspective: A Gendered Approach in Reducing Poverty by Implementing Sustainable Development Practices in Indonesia. *Journal of International Women's Studies*, 22(5), 210–228. <https://vc.bridgew.edu/jiws/vol22/iss5/14/>
- Jindra, C., & Vaz, A. (2019). Good governance and multidimensional poverty: A comparative analysis of 71 countries. *Governance*, 32(4), 657–675. <https://doi.org/10.1111/gove.12394>
- Klärner, A., & Knabe, A. (2019). Social Networks and Coping with Poverty in Rural Areas. *Sociologia Ruralis*, 12250. <https://doi.org/10.1111/soru.12250>
- Laurens, S., & Putra, A. H. P. K. (2020). Poverty alleviation efforts through MDG's and economic resources in Indonesia. *The Journal of Asian Finance, Economics and Business*, 7(9), 755–767. <https://doi.org/10.13106/jafeb.2020.vol7.no9.755>
- Le Sage, J., & Pace, R. K. (2009). *Introduction to Spatial Econometrics*. CRC Press. <https://doi.org/10.4000/rei.3887>
- Lunawati, A., & Sasana, H. (2022). The effect of population, hdi, and grdp on the level of poverty in the kedu residency. *Marginal: Journal of Management, Accounting, General Finance and International Economic Issues*, 2(1), 68–85. <https://doi.org/10.55047/marginal.v2i1.356>
- Mattes, R. (2020). *Lived poverty on the rise: Decade of living-standard gains ends in Africa*. 34. Retrieved from:

- https://books.google.co.id/books/about/Lived_Poverty_on_the_Rise.html?id=ISx8zgEACAAJ&redir_esc=y (diakses pada 13 November 2022).
- Melati, A. M., Sudrajat, & Burhany, D. I. (2021). The Effects of Education Expenditure, Health Expenditure and Social Assistance Expenditure on Poverty In Regency. *Indonesian Accounting Research Journal*, 1(3), 422–430. Retrieved from <https://jurnal.polban.ac.id/ojs-3.1.2/iarj/article/view/3013> (diakses pada 13 November 2022).
- Mustika, C., & Nurjanah, R. (2021). Rural and urban poverty models on Sumatra Island. *Jurnal Perspektif Pembiayaan Dan Pembangunan Daerah*, 9(1), 107–114. <https://doi.org/10.22437/ppd.v9i1.10684>
- Njoya, E. T., & Seetaram, N. (2018). Tourism Contribution to Poverty Alleviation in Kenya: A Dynamic Computable General Equilibrium Analysis. *Journal of Travel Research*, 57(4), 513–524. <https://doi.org/10.1177/0047287517700317>
- Nugroho, A., Amir, H., Maududy, I., & Marlina, I. (2021). Poverty eradication programs in Indonesia: Progress, challenges and reforms. *Journal of Policy Modeling*, 43(6), 1204–1224. <https://doi.org/10.1016/j.jpolmod.2021.05.002>
- Omar, M. A., & Inaba, K. (2020). Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis. *Journal of Economic Structures*, 9(1), 37. <https://doi.org/10.1186/s40008-020-00214-4>
- Prabowo, D. H., Maski, G., & Santoso, D. B. (2022). Fostering Inclusive Growth in Indonesia: Evidence from Panel Regression Analysis. *Journal of International Conference Proceedings*, 5(2), 139–149. <https://doi.org/10.32535/jicp.v5i2.1680>
- Prasodjo, I. (2017). Perkembangan Tingkat Kemiskinan Dan Kesenjangan Sosial Regional di Indonesia 2011-2015. *Jurnal Ekonomi*, 22(1), 22–36. <https://doi.org/10.24912/je.v22i1.179>
- Prastyo, A. A., & Edy Yusuf, E. Y. (2010). *Analisis Faktor-Faktor Yang Mempengaruhi Tingkat Kemiskinan (Studi Kasus 35 Kabupaten/Kota Di Jawa Tengah Tahun 2003-2007)*. Skripsi. Semarang: Universitas Diponegoro.
- Purwono, R., Wardana, W. W., Haryanto, T., & Khoerul Mubin, M. (2021). Poverty dynamics in Indonesia: empirical evidence from three main approaches. *World Development Perspectives*, 23, 100346. <https://doi.org/10.1016/j.wdp.2021.100346>
- Rahayu, H. C., Purwanto, P., & Setyowati, E. (2021). Measuring the Effect of Inequality and Human Resource Indicators to Poverty Density in Indonesia. *Jurnal Ekonomi Pembangunan: Kajian Masalah Ekonomi Dan Pembangunan*, 22(2), 153–160. <https://doi.org/10.23917/jep.v22i2.13631>
- Rahman, M. T., Akter, S., Rana, M. R., Sabuz, A. A., & Jubayer, M. F. (2022). How COVID-19 pandemic is affecting achieved food security in Bangladesh: A perspective with required policy interventions. *Journal of Agriculture and Food Research*, 7, 100258. <https://doi.org/10.1016/j.jafr.2021.100258>
- Rumahorbo, R. A. (2014). Analisis Faktor-Faktor yang Mempengaruhi Jumlah Penduduk Miskin Provinsi Sumatera Utara. Skripsi. Makassar: Universitas Hasanuddin.
- Saputra, W. A., & Mudakir, Y. B. (2011). *Analisis pengaruh jumlah penduduk, pdrb, ipm, pengangguran terhadap tingkat kemiskinan di kabupaten/kota Jawa Tengah*. Skripsi. Semarang: Universitas Diponegoro.
- Schmidt, E., Dorosh, P., & Gilbert, R. (2021). Impacts of COVID-19 induced income and rice price shocks on household welfare in Papua New Guinea: Household model estimates. *Agricultural Economics*, 52(3), 391–406. <https://doi.org/10.1111/agec.12625>
- Sewell, S. J., Desai, S. A., Mutsaa, E., & Lottering, R. T. (2019). A comparative study of community perceptions regarding the role of roads as a poverty alleviation strategy in rural areas. *Journal of Rural Studies*, 71, 73–84. <https://doi.org/10.1016/j.jrurstud.2019.09.001>
- Shoaf Kozak, R., Lombe, M., & Miller, K. (2012). Global Poverty and Hunger: An Assessment of Millennium Development Goal #1. *Journal of Poverty*, 16(4), 469–485. <https://doi.org/10.1080/10875549.2012.720661>
- Sihombing, P. R., Sari, F. M., & Nasution, H. F. (2021). Pemodelan data kemiskinan provinsi Sumatera Barat menggunakan regresi spasial. *Infinity: Jurnal Matematika dan Aplikasinya*, 2(1), 51–62. <https://doi.org/10.30605/27458326-66>

- Sudaryanto, T., Purba, H. J., Rachmawati, R. R., Dermoredjo, S. K., Yusuf, E. S., Nuryantono, N., Pasaribu, S. H., Amalia, S., Amin, M., Erwidodo, Dermoredjo, S. K., Yusuf, E. S., Nuryantono, N., Pasaribu, S. H., Amalia, S., & Amin, M. (2021). Three decades of agricultural and rural transformation in Indonesia. *IOP Conference Series: Earth and Environmental Science*, 892(1), 12056. <https://doi.org/10.1088/1755-1315/892/1/012056>
- Sun, H., Li, X., Li, W., & Feng, J. (2022). Differences and Influencing Factors of Relative Poverty of Urban and Rural Residents in China Based on the Survey of 31 Provinces and Cities. *International Journal of Environmental Research and Public Health*, 19(15). <https://doi.org/10.3390/ijerph19159015>
- Susilowati, S. H., Ashari, & Sudaryanto, T. (2021). Rural Transformation in Various Ecosystem in Indonesia. *E3S Web of Conferences*, 232, 04002. <https://doi.org/10.1051/e3sconf/202123204002>
- Thurlow, J., Dorosh, P., & Davis, B. (2019). Demographic change, agriculture, and rural poverty. *Sustainable Food and Agriculture*, 31–53. <https://doi.org/10.1016/B978-0-12-812134-4.00003-0>
- Tianming, G., Ivolga, A., & Erokhin, V. (2018). Sustainable Rural Development in Northern China: Caught in a Vice between Poverty, Urban Attractions, and Migration. *Sustainability*, 10(5), 1467. <https://doi.org/10.3390/su10051467>
- Tilahun, N., Persky, J., Shin, J., & Zellner, M. (2021). Childhood Poverty, Extended Family and Adult Poverty. *Journal of Poverty*, 1–14. <https://doi.org/10.1080/10875549.2021.2010860>
- Whiteside-Mansell, L., McKelvey, L., Saccente, J., & Selig, J. P. (2019). Adverse Childhood Experiences of Urban and Rural Preschool Children in Poverty. *International Journal of Environmental Research and Public Health*, 16(14), 2623. <https://doi.org/10.3390/ijerph16142623>