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ANALYSIS OF FACTORS AFFECTING POVERTY IN INDONESIA

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Abstract

This study aims to examine the influence of health, per capita expenditure, population density, labor force, communication expenditure, and inflation on poverty across 34 provinces in Indonesia. The research employs a dynamic panel data method using the Generalized Method of Moments (GMM). The type of data used is secondary data obtained from the Central Bureau of Statistics (Badan Pusat Statistik/BPS) and Bank Indonesia (BI). The independent variables in this study include health, per capita expenditure, population density, labor force, communication expenditure, and inflation, while the dependent variable is poverty. The results indicate that health, per capita expenditure, labor force, and communication expenditure have a negative and significant effect on poverty. Conversely, population density, inflation, and the lag of poverty have a positive and significant effect on poverty in Indonesia.

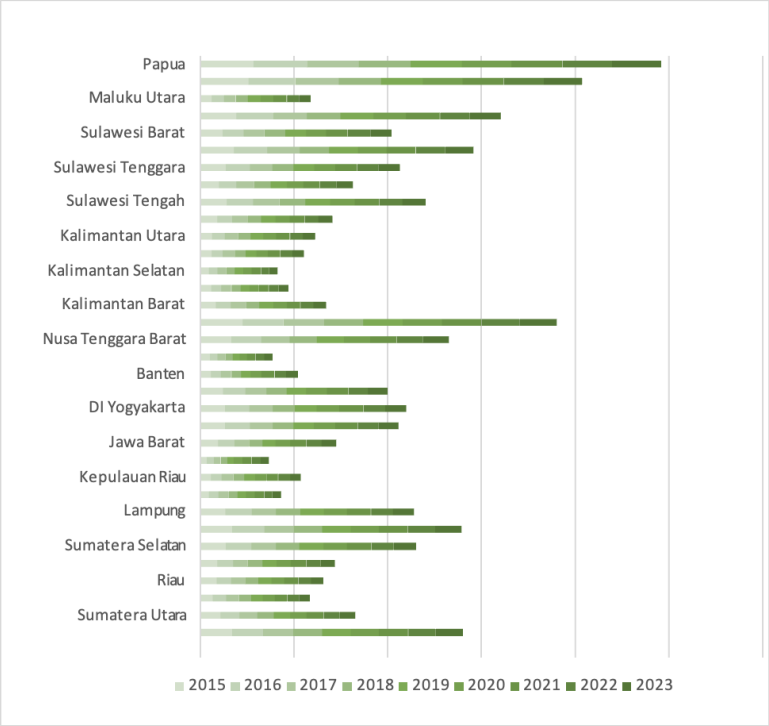
Keywords: Health, Per Capita Expenditure, Population Density, Labor Force, Communication Expenditure, Inflation, GMM, BPS

INTRODUCTION

Poverty is a fundamental issue that continues to be a major concern in the global development agenda, especially in developing countries such as Indonesia (Pamungkas, n.d.). The United Nations Statistics Division (2023) report notes that around 689 million people in the world still live on less than $1.90 per day, signaling the massive challenges in overcoming poverty globally. In Indonesia itself, the Central Bureau of Statistics (BPS) has formulated a national poverty standard based on the basic needs method, which is the minimum amount of rupiah to meet food and non-food needs. In 2019, Indonesia's poverty line stood at Rp425,250 per capita/month and continued to rise until March 2024, reaching Rp582,932 per capita/month. This phenomenon shows the complex socio-economic dynamics of Indonesian society, where most of the population has not been able to access a decent life due to various limitations (Putri, n.d.)

(Carorina, n.d.)Poverty is not only a matter of economic inability, but is also influenced by the low quality of human resources, limited access to education and health, and the lack of opportunities to obtain decent work. A poverty cycle is formed when low income leads to limitations in accessing adequate education and health services, thus worsening people's future productivity and income (Solehah, n.d.). With the world's fourth-largest population and an abundance of natural resources, Indonesia should have great potential to escape poverty. However, the East Asia and the Pacific Economic Update report (2022) ranked Indonesia as the 73rd poorest country in the world, indicating a significant gap between potential and realized development (BPS, 2024).

The Indonesian government has pursued various programs to reduce poverty. The poverty reduction target of 7-8% in 2019, for example, was only able to reduce the proportion of poor people from 10.96% (2014) to 9.22% (2019), and down again to 9.03% in March 2024. A decline of 1.55% over five years and only 0.38% in the last five years indicates a slowdown, far from the expected target (BPS, 2024). Data from the Ministry of Home Affairs states that Indonesia's population reached 282.4 million in the first semester of 2024, up from 277.5 million in the previous year. Population growth that is not matched by the availability of jobs, health services, and other basic infrastructure, makes it increasingly difficult for people's basic needs to be met, so the poverty rate remains high in absolute terms-at around 25.22 million people in 2024.



Source: Badan Pusat Statistik 2024, (data processed)

Figure 1.
Percentage of the Poor in 34 Provinces in Indonesia 2015-2023

The distribution of poverty in Indonesia also shows clear disparities between regions. Provinces in Eastern Indonesia such as Papua (26.03%), West Papua (20.49%), East Nusa Tenggara (19.96%), and Maluku (16.42%) have the highest poverty rates, far above the national average (BPS, 2023, p. 4). Most of the poor live in rural areas and work in the agricultural sector, which generally has low productivity and income. The graph of the percentage of poor people 2015-2023 in 34 provinces shows a fluctuating trend, indicating a challenge that has not been resolved despite various policies and interventions by the government (Hidayanti, 2023).

(Nova, 2023)The dynamics of poverty in Indonesia cannot be separated from a number of multidimensional factors, including: the quality of public health, the level of per capita expenditure, population density, the amount of labor absorbed, expenditure on communication and access to technology, and the inflation rate. Previous empirical studies confirm the importance of the relationship between these variables and poverty. For example, poor health has been shown to increase people's vulnerability to poverty, while an increase in per capita expenditure is negatively correlated with poverty levels (Sriyana et al., 2021). Population density and inflation are also often cited as key determinants that exacerbate poverty, especially in regions with high population growth and unequal resource distribution (Anderesta, 2019)

(Ruslan et al., 2023)Conceptually, poverty is not only influenced by macroeconomic factors, but also social, demographic, and technological aspects. The development of information and communication technology (ICT) in the digital era opens up new opportunities in poverty reduction through increased access to information, education, and the labor market (Lundini, 2024). However, if not balanced with digital literacy and equitable access, communication expenditure can actually become an additional burden for poor households. In addition, uncontrolled inflation will reduce the purchasing power of the poor, making it more difficult for them to fulfill their basic needs. Therefore, a comprehensive analysis of the determinants of poverty is very important to formulate more effective and evidence-based

policies (Choirunnisa & Khoirudin, 2024).

(Ghannili, 2024)Previous studies have indeed examined many factors affecting poverty in Indonesia, but most of them are still partial and have not taken into account the dynamic interaction between variables simultaneously at the provincial level in the long term. Some studies, such as those conducted by Adhitya et al. (2022) and Nuryana & Unggul Priyadi (2024), emphasize more on the influence of education, health, or labor separately, while the influence of other variables such as communication expenditure and inflation is often ignored or only analyzed descriptively. (Yan et al., 2025)In addition, there are still limitations in the use of dynamic panel analysis models that are able to capture the long-term effects and dynamics of interrelationships between variables in influencing poverty (Siregar, 2023).

Based on this background, this research offers a new contribution by analyzing the determinants of poverty simultaneously using a dynamic panel data approach (Generalized Method of Moments, GMM) in 34 provinces in Indonesia in the 2014-2024 time span. This model allows researchers to identify the effect of health (measured by Life Expectancy), per capita expenditure, population density, labor, communication expenditure, and inflation on poverty rates empirically, taking into account lag effects and dynamic relationships between variables (Nasarudin, 2024). Thus, this study is expected to fill the gap in the literature related to the comprehensive analysis of dynamic panel-based poverty at the national level and provide evidence-based input for the formulation of more precise poverty alleviation policies.

This study aims to: (1) analyze the effect of health, per capita expenditure, population density, labor force, communication expenditure, and inflation on poverty in 34 provinces in Indonesia over the past decade; (2) identify which variables are most significant in reducing or increasing poverty; and (3) develop relevant policy recommendations based on the empirical findings. With a broader scope of analysis and a more robust methodological approach, this research is expected to not only contribute to the development of development economics theory, but also provide practical insights for central and local governments, social institutions, and economic actors in a joint effort to reduce poverty in a sustainable manner.

The main problem formulation in this research is: How do health, per capita expenditure, population density, labor, communication expenditure, and inflation affect the poverty rate in Indonesia from the perspective of a dynamic panel of provinces during 2014-2024? By answering this question, the research is expected to be able to identify strategic leverage points that can be utilized to accelerate poverty reduction and improve community welfare inclusively in all regions of Indonesia.

RESEARCH METHOD

This research uses a quantitative approach with a dynamic panel data design to analyze the factors that influence poverty in Indonesia. The scope of the study covers 34 provinces in Indonesia during the period 2014 to 2024, so that the data analyzed includes time series and cross section for 11 years. The type of data used is secondary data sourced from official publications of the Central Statistics Agency (BPS), Bank Indonesia, World Bank, and supported by data from Databoks and other relevant sources such as national and international scientific journals. The dependent variable in this study is the poverty rate, while the independent variables include health (measured by Life Expectancy Rate/AHH), per capita expenditure (in rupiah), population density (people/km²), number of workers (in percentage), communication expenditure (in rupiah for ICT access), and inflation rate (in percent based on the Consumer Price Index/IHK).

Data collection was done by accessing annual datasets from all provinces in Indonesia according to the variables studied, and cross-verifying between sources to ensure data validity and reliability. (Nurjanah, n.d.)The operational definition of variables is explained in detail: poverty is measured based on the number of poor people according to the BPS poverty line,

health with AHH, per capita expenditure as total household consumption per member, population density as the ratio of population per area, labor force as the proportion of the labor force that is employed, communication expenditure as total household expenditure for ICT access, and inflation as the percentage change in the CPI.

Specifically, the model used in this study is as follows:

$$\mathbf{IG}\ it = \propto \beta\ \mathbf{IG}it\text{-}_1 + \beta\ \mathbf{KES\ IG}it + \beta it + \beta\ \mathbf{PP\ KP\ TN}it + \beta it + \beta it + \beta\ \ \mathbf{PK}\ it + \beta\ \mathbf{INF}\ t + \varepsilon it$$

With:

i : number of observations
t : number of times,
$\beta \mathrm{Kes}it$: Health
$\beta \mathrm{IG}it$: Poverty
$\beta \mathrm{PP}it$: Per Capita Expenditure
$\beta \mathrm{KP}it$: Population Density
$\beta \mathrm{TN}$: Total Labor Force
$\beta \mathrm{PK}$: Communication Expenditure
$\beta \mathrm{INF}$: Inflation

(Rozaki & Afiatno, 2024)Data analysis was conducted using the Generalized Method of Moments (GMM) method, specifically the System GMM (SYS-GMM) approach, to overcome potential bias due to endogeneity, autocorrelation, and heteroscedasticity in dynamic panel models. The analysis process begins with a stationarity test using the Hadri Unit Root Test to ensure that all variables are stationary. Next, model estimation was conducted using Stata software version 17, including instrument validity test (Sargan test), model consistency test (Arellano-Bond Test), and estimator unbiasedness test by comparing SYS-GMM results to other estimators such as FEM and CEM. The best model was selected based on three main criteria: instrument validity, consistency of results, and estimator unbiasedness (Angelika et al., 2024).

RESULTS ND DISCUSSION

The Development of Poverty in Indonesia

Poverty is a situation that a person experiences in a limited way that occurs not because of the will of the person concerned. People who are said to be poor are characterized by low education, work productivity, income, health and nutrition, and the welfare of their lives which shows a circle of helplessness. Poverty also occurs because of the limited resources that humans have both through formal and non-formal education channels which ultimately have consequences. In this study, the poverty variable uses the number of poor people according to 34 provinces in Indonesia in 2014-2024 in thousands of people as shown in the following table:

Table 1.
Number of Poor People (Souls) 2014-2024

No	Provinsi	Jumlah Penduduk Miskin Menurut Provinsi (Ribu Jiwa)										
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	Aceh	837,42	859,41	841,31	829,8	831,5	809,76	814,91	834,24	806,82	806,75	804,53
2	Sumatera Utara	1,378	1508,14	1452,55	1326,57	1291,99	1260,5	1283,29	1343,86	1268,19	1239,71	1228,01
3	Sumatera Barat	354,74	349,53	376,51	359,99	353,24	343,09	344,23	370,67	335,21	340,37	345,73
4	Riau	498,28	562,92	501,59	496,39	494,26	483,92	483,39	500,81	485,03	485,66	492,25
5	Jambi	124,17	311,56	290,81	278,61	281,47	273,37	277,8	293,86	279,37	280,68	265,42
6	Sumatera Selatan	281,75	1112,53	1096,5	1086,76	1076,4	1067,16	1081,58	1113,76	1044,69	1045,68	984,24
7	Bengkulu	1,042	322,83	325,6	302,62	303,55	298	302,58	306	297,23	288,46	281,36
8	Lampung	67,23	1100,68	1139,78	1083,74	1091,6	1041,48	1049,32	1083,93	1002,41	970,67	941,23
9	Kep. Bangka Belitung	316,5	66,62	71,07	76,2	69,93	67,37	68,39	72,71	66,78	68,69	69,95
10	Kepulauan Riau	1143,94	114,83	119,14	128,43	125,36	127,76	131,97	144,46	151,68	142,5	138,3
11	DKI Jakarta	412,79	368,67	385,84	393,13	372,26	362,3	480,86	501,92	502,04	477,83	464,93
12	Jawa Barat	4,421	4485,65	4168,11	3774,41	3539,4	3375,89	3920,23	4195,34	4070,98	3888,6	3848,67
13	Jawa Tengah	649,19	4505,78	4493,75	4197,49	3867,42	3679,4	3980,9	4109,75	3831,44	3791,5	3704,33
14	DI Yogyakarta	4,863	485,56	488,83	466,33	450,25	440,89	475,72	506,45	454,76	448,47	445,55
15	Jawa Timur	532,58	4775,97	4638,53	4405,27	4292,15	4056	4419,1	4572,73	4181,29	4188,81	3982,69
16	Banten	4,961	690,67	657,74	699,83	668,74	641,42	775,99	867,23	814,02	826,13	791,61
17	Bali	195,96	218,79	174,94	176,48	168,34	156,91	165,19	201,97	205,68	193,78	184,43
18	Nusa Tenggara Barat	816,62	802,29	786,58	748,12	735,62	705,68	713,89	746,66	731,94	751,23	709,01
19	Nusa Tenggara Timur	991,88	1160,53	1150,08	1134,74	1134,11	1129,46	1153,76	1169,31	1131,62	1141,11	1127,57
20	Kalimantan Barat	381,91	405,51	390,32	388,81	369,73	370,47	366,77	367,89	350,25	353,35	336,08
21	Kalimantan Tengah	148,82	148,13	137,46	137,88	136,45	131,24	132,94	140,04	145,1	142,17	145,63
22	Kalimantan Selatan	189,49	189,16	184,16	194,56	195,01	190,29	187,87	208,11	195,7	188,93	183,31
23	Kalimantan Timur	252,68	209,99	211,24	218,67	222,39	220,91	230,26	241,77	236,25	231,07	221,34
24	Kalimantan Utara	40,93	40,93	47,03	48,56	49,59	48,61	51,79	52,86	49,46	47,97	47,83
25	Sulawesi Utara	197,56	217,15	200,35	194,85	189,05	188,6	192,37	196,35	185,14	189	186,85
26	Sulawesi Tengah	195,1	406,34	413,15	423,27	413,49	404,03	398,73	404,44	388,35	395,66	379,76
27	Sulawesi Selatan	387,06	864,51	796,81	825,97	779,64	759,58	776,83	784,98	777,44	788,85	736,48
28	Sulawesi Tenggara	806,35	345,02	327,29	313,16	301,85	299,97	301,82	318,7	309,79	321,53	319,71
29	Gorontalo	154,69	206,51	203,69	200,91	188,3	184,71	185,02	186,29	185,44	183,71	177,99
30	Sulawesi Barat	314,09	153,21	146,9	149,47	152,83	151,87	152,02	157,19	165,72	164,14	162,19
31	Maluku	307,02	327,78	331,79	320,42	317,84	319,51	318,18	321,81	290,57	301,61	297,68
32	Maluku Utara	84,79	72,65	76,4	78,28	81,93	87,18	86,37	87,16	79,87	83,8	83,09
33	Papua Barat	864,11	225,54	223,6	212,86	213,67	207,59	208,58	219,07	218,78	214,98	110,16
34	Papua	225,46	898,21	914,87	910,42	915,22	900,95	911,37	920,44	922,12	915,15	152,91

Source: BPS, data processed (2025)

The table above shows the decrease and increase in the number of poor people each year in 34 provinces in Indonesia, Java dominates the highest number of poor people such as West Java has a number of poor people in 2024 of 3848.7 people even though in 2022 it had decreased. The provinces with the lowest number of poor people, namely Riau Islands and North Kalimantan from 2022-2024, continue to experience a decline and several provinces that tend to stabilize and even decrease poverty rates, namely North Sumatra and Bali. Health Development in Indonesia

Health Development in Indonesia

Every year, around 178 million people in the world struggle to pay for health care, and 100 million of them fall into extreme poverty because they have to sell assets for treatment. To achieve a healthy family, the Indonesian Ministry of Health sets 12 indicators, including participation in family planning programs, delivery in health facilities, complete basic immunization, exclusive breastfeeding, monitoring toddler growth, and treatment for tuberculosis, hypertension, and mental disorders, plus not smoking, JKN membership, and access to clean water and healthy latrines. According to WHO, global life expectancy in 2018 reached 72.5 years, while in Indonesia it was 71.5 years, and this increase was influenced by healthy living habits and positive attitudes towards health from a young age.

Table 2.
Life Expectancy by Province in 2014-2024

No	Provinsi	UMUR HARAPAN HIDUP SAAT LAHIR (AHH)										
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	Aceh	69,35	69,5	69,51	69,52	69,64	69,87	69,93	69,96	70,18	70,34	70,44
2	Sumatera Utara	68,04	68,29	68,33	68,37	68,61	68,95	69,1	69,23	69,61	69,98	70,28
3	Sumatera Barat	68,32	68,66	68,73	68,78	69,01	69,31	69,47	69,59	69,9	70,19	70,33
4	Riau	70,76	70,93	70,97	70,99	71,19	71,48	71,6	71,67	71,95	72,24	72,52
5	Jambi	70,43	70,56	70,71	70,76	70,89	71,06	71,16	71,22	71,5	71,77	72,04
6	Sumatera Selatan	68,93	69,14	69,16	69,18	69,41	69,65	69,88	69,98	70,32	70,66	70,93
7	Bengkulu	68,36	68,5	68,56	68,59	68,84	69,21	69,35	69,42	69,69	69,92	70,13
8	Lampung	69,66	69,9	69,94	69,95	70,18	70,51	70,65	70,73	70,99	71,25	71,5
9	Kep. Bangka Belitung	69,72	69,88	69,92	69,95	70,18	70,5	70,64	70,73	70,98	71,23	71,49
10	Kepulauan Riau	69,15	69,41	69,45	69,48	69,64	69,8	69,96	70,12	70,5	70,91	71,24
11	DKI Jakarta	72,27	72,43	72,49	72,55	72,67	72,79	72,91	73,01	73,32	73,65	73,87
12	Jawa Barat	72,23	72,41	72,44	72,47	72,66	72,85	73,04	73,23	73,52	73,8	74,07
13	Jawa Tengah	73,88	73,96	74,02	74,08	74,18	74,23	74,37	74,47	74,57	74,69	74,93
14	DI Yogyakarta	74,5	74,68	74,71	74,74	74,82	74,92	74,99	75,04	75,08	75,12	75,22
15	Jawa Timur	70,45	70,68	70,74	70,8	70,97	71,18	71,3	71,38	71,74	72,11	72,35
16	Banten	69,13	69,43	69,46	69,49	69,64	69,84	69,96	70,02	70,39	70,77	71,02
17	Bali	71,19	71,35	71,41	71,46	71,68	71,99	72,13	72,24	72,6	72,98	73,29
18	Nusa Tenggara Barat	64,89	65,38	65,48	65,55	65,87	66,28	66,51	66,69	67,07	67,47	67,73
19	Nusa Tenggara Timur	65,91	65,96	66,04	66,07	66,38	66,85	67,01	67,15	67,47	67,77	67,99
20	Kalimantan Barat	69,76	69,87	69,9	69,92	70,18	70,56	70,69	70,76	71,02	71,32	71,55
21	Kalimantan Tengah	69,39	69,54	69,57	69,59	69,64	69,69	69,74	69,79	70,04	70,27	70,43
22	Kalimantan Selatan	67,47	67,8	67,92	68,02	68,23	68,49	68,66	68,83	69,13	69,42	69,65
23	Kalimantan Timur	73,62	73,65	73,68	73,7	73,96	74,22	74,33	74,61	74,62	74,72	75,03
24	Kalimantan Utara	72,12	72,16	72,43	72,47	72,5	72,54	72,59	72,65	72,67	72,69	72,73
25	Sulawesi Utara	70,94	70,99	71,02	71,04	71,26	71,58	71,69	71,76	72,08	72,4	72,69
26	Sulawesi Tengah	67,18	67,26	67,31	67,32	67,78	68,23	68,69	68,83	68,93	69,17	69,42
27	Sulawesi Selatan	69,59	69,8	69,82	69,84	70,08	70,43	70,57	70,66	70,97	71,22	71,43
28	Sulawesi Tenggara	70,39	70,44	70,46	70,47	70,72	70,97	71,22	71,27	71,37	71,47	71,6
29	Gorontalo	67	67,12	67,13	67,14	67,45	67,93	68,07	68,19	68,51	68,83	69,09
30	Sulawesi Barat	64,04	64,22	64,31	64,34	64,58	64,82	65,06	65,25	65,63	66,01	66,27
31	Maluku	65,01	65,31	65,35	65,4	65,59	65,82	65,98	66,09	66,45	66,78	66,99
32	Maluku Utara	67,33	67,44	67,51	67,54	67,8	68,18	68,33	68,45	68,79	69,11	69,35
33	Papua Barat	65,13	65,19	65,3	65,32	65,55	65,9	66,02	66,14	66,46	66,79	67,05
34	Papua	64,84	65,09	65,12	65,14	65,36	65,65	65,79	65,93	66,23	66,44	68,79

Source: BPS, data processed (2025)

The province that has the highest UHH is Yogyakarta, which from 2014 has a UHH of 74.5 and continues to increase until in 2024 UHH 75.22 years and other provinces also such as East Kalimantan, West Java and Central Java. UHH in Indonesia from year to year has increased with the chances of survival in each being between 69-71 years. This is characterized by the level of public awareness of the importance of maintaining health and utilizing available health facilities.

Development of Per Capita Expenditure

Per capita expenditure, adjusted for the consumer price index and declining marginal utility, reflects people's purchasing power and is used as an indicator of living standards. Food expenditure is calculated from consumption during the past week, while non-food expenditure is calculated from consumption in the past month or year and converted to a monthly average. As one of the important components, per capita expenditure gives an idea of the level of human development in a region.

Table 3.
Food and Non-Food Per Capita Expenditure (Rupiah) 2015-2024

No	Provinsi	Pengeluaran Perkapita Makanan Dan Bukan Makanan (Rupiah) Di 34 Provinsi									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	Aceh	996.300	1.108.350	1.186.868	1.271.298	1.279.821	1.359.654	1.458.492	1.452.582	1.486.170	1.531.447
2	Sumatera Utara	869.682	967.546	1.045.482	1.130.828	1.199.508	1.283.256	1.287.594	1.358.335	1.459.387	1.504.731
3	Sumatera Barat	1.088.500	1.194.321	1.264.998	1.369.151	1.372.955	1.451.856	1.482.362	1.538.088	1.604.354	1.694.014
4	Riau	1.192.509	1.301.143	1.305.078	1.389.237	1.481.633	1.654.423	1.582.715	1.682.301	1.800.795	1.803.757
5	Jambi	1.020.732	1.148.222	1.253.040	1.275.067	1.316.971	1.374.805	1.426.715	1.506.899	1.702.077	1.748.949
6	Sumatera Selatan	933.502	1.083.594	1.170.537	1.206.545	1.145.074	1.222.262	1.282.386	1.360.516	1.451.084	1.519.678
7	Bengkulu	990.410	1.197.110	1.261.578	1.412.614	1.422.723	1.492.207	1.465.253	1.483.583	1.651.654	1.823.564
8	Lampung	986.147	1.042.631	1.128.107	1.177.320	1.190.647	1.230.555	1.316.597	1.319.283	1.489.191	1.444.133
9	Kep. Bangka Belitung	1.219.977	1.355.801	1.580.689	1.595.898	1.691.652	1.666.984	1.686.341	1.780.537	1.859.710	1.958.323
10	Kepulauan Riau	1.434.924	1.556.907	1.663.556	1.655.145	1.853.241	1.843.006	1.910.991	1.912.840	2.080.728	2.189.491
11	DKI Jakarta	11.773.431	1.876.648	1.997.446	2.039.157	2.156.112	2.257.991	2.336.429	2.525.347	2.791.716	2.794.485
12	Jawa Barat	1.014.991	1.113.959	1.219.151	1.333.971	1.375.177	1.430.785	1.474.427	1.540.228	1.673.230	1.733.834
13	Jawa Tengah	818.715	893.907	937.525	1.060.038	1.081.327	1.153.035	1.185.244	1.263.053	1.349.916	1.428.449
14	DI Yogyakarta	1.082.571	1.232.540	1.302.004	1.473.853	1.518.744	1.606.351	1.596.695	1.661.193	1.930.749	1.949.163
15	Jawa Timur	1.032.114	1.074.691	1.145.588	1.213.551	1.229.503	1.254.834	1.297.046	1.334.819	1.520.316	1.547.730
16	Banten	1.203.739	1.318.910	1.450.769	1.582.754	1.612.861	1.700.626	1.692.245	1.776.821	1.919.699	1.916.352
17	Bali	1.179.578	1.227.087	1.544.578	1.546.388	1.537.470	1.697.999	1.630.920	1.589.383	1.933.464	2.077.457
18	Nusa Tenggara Barat	755.382	874.344	950.677	1.034.704	1.132.187	1.211.683	1.342.227	1.289.838	1.402.359	1.397.357
19	Nusa Tenggara Timur	874.428	953.114	1.092.545	1.122.013	1.153.788	1.246.858	1.263.545	1.258.219	1.309.666	1.304.872
20	Kalimantan Barat	999.203	1.116.874	1.238.390	1.373.396	1.406.325	1.445.353	1.454.923	1.556.019	1.695.285	1.742.114
21	Kalimantan Tengah	1.055.202	1.227.648	1.341.964	1.414.633	1.466.063	1.545.959	1.560.658	1.543.135	1.609.984	1.686.240
22	Kalimantan Selatan	1.181.244	1.236.588	1.430.266	1.490.547	1.495.292	1.593.293	1.644.260	1.636.801	1.642.912	1.720.017
23	Kalimantan Timur	1.317.048	1.430.365	1.619.246	1.727.926	1.766.727	1.928.160	1.877.342	1.948.484	2.110.735	2.198.681
24	Kalimantan Utara	1.159.918	1.293.577	1.521.299	1.536.838	1.587.768	1.693.861	1.713.704	1.659.805	1.799.341	1.707.736
25	Sulawesi Utara	979.682	1.150.622	1.338.258	1.395.263	1.301.754	1.393.965	1.353.064	1.375.242	1.474.855	1.571.646
26	Sulawesi Tengah	1.059.134	1.177.621	1.301.338	1.262.697	1.318.382	1.338.594	1.324.835	1.331.878	1.438.790	1.521.919
27	Sulawesi Selatan	1.012.222	1.193.719	1.257.137	1.305.899	1.291.355	1.326.930	1.369.019	1.396.971	1.514.050	1.538.348
28	Sulawesi Tenggara	905.655	1.096.446	1.135.651	1.255.958	1.305.906	1.316.402	1.383.130	1.405.682	1.421.379	1.515.401
29	Gorontalo	942.564	1.026.768	1.206.426	1.155.347	1.273.536	1.344.334	1.392.479	1.438.878	1.512.747	1.511.267
30	Sulawesi Barat	737.378	847.902	935.538	1.065.974	1.124.391	1.185.661	1.137.202	1.300.555	1.376.243	1.558.054
31	Maluku	998.199	1.095.907	1.143.510	1.309.112	1.290.170	1.376.479	1.446.335	1.466.724	1.540.135	1.611.578
32	Maluku Utara	975.292	1.085.482	1.322.889	1.461.067	1.474.891	1.530.708	1.517.379	1.433.881	1.634.396	1.893.235
33	Papua Barat	1.270.082	1.303.566	1.439.701	1.507.583	1.607.055	1.637.600	1.737.497	1.645.371	1.774.910	1.834.209
34	Papua	1.406.626	1.414.980	1.593.875	1.606.865	1.678.146	1.710.012	1.718.431	1.884.103	1.982.221	1.850.673

Source: BPS Indonesia, data processed (2025)

Based on data from 2015-2024, the provinces of DKI Jakarta, North Maluku, Bengkulu, Bali, West Papua and East Kalimantan recorded the highest average increase in per capita expenditure in Indonesia. In contrast, East Nusa Tenggara, West Sulawesi and Central Java have the lowest average per capita expenditure, which is less than IDR1,600,000 per month. In general, per capita expenditure in Indonesia continues to increase in line with positive economic growth, which has led to an increase in people's income and a shift in spending away from basic needs towards other sectors such as entertainment and education.

Population Density Development

Population density is a measure of how many people live in an area within a square kilometer of territory. Areas that have more physical and human resources will be more populated.

Based on the results of the Population Census of the Central Bureau of Statistics, 2022 in the report on population growth and distribution in Indonesia 57.5% of the population density is dominated by Java Island and the least province is West Papua Province. Every year the population of Indonesia continues to increase. BPS reported that the population density in Indonesia is estimated to reach 14.27 people/KM^{2}in 2023. The following population density data is presented in the following table:

Table 4.
Population Density (People/KM2) 2014-2024

No	Provinsi	Kepadatan Penduduk jiwa/KM2 di 34 Provinsi										
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	Aceh	85	86	88	90	91	93	91	92	95	96	98
2	Sumatera Utara	189	191	193	195	198	200	203	205	209	212	215
3	Sumatera Barat	122	124	125	127	128	130	132	133	134	137	139
4	Riau	71	73	75	77	78	80	73	75	74	74	75
5	Jambi	67	68	69	70	71	72	71	72	74	75	76
6	Sumatera Selatan	87	88	89	90	91	92	92	93	100	101	102
7	Bengkulu	93	94	96	97	99	100	101	102	102	104	105
8	Lampung	232	234	237	239	242	244	260	262	273	277	281
9	Kep. Bangka Belitung	82	84	85	87	89	91	89	90	90	91	92
10	Kepulauan Riau	234	241	247	254	260	267	252	258	264	260	264
11	DKI Jakarta	15.173	15.328	15.478	15.624	15.764	15.900	15.907	15.978	16.158	16.146	16.165
12	Jawa Barat	1.301	1.320	1.339	1.358	1.376	1.394	1.365	1.379	1.334	1.346	1.359
13	Jawa Tengah	1.022	1.030	1.037	1.044	1.052	1.058	1.113	1.120	1.078	1.093	1.104
14	DI Yogyakarta	1.161	1.174	1.188	1.201	1.214	1.227	1.171	1.185	1.186	1.178	1.186
15	Jawa Timur	808	813	817	822	826	831	851	855	857	865	870
16	Banten	1.211	1.237	1.263	1.288	1.313	1.338	1.232	1.248	1.310	1.316	1.329
17	Bali	710	718	727	735	743	750	747	755	790	788	793
18	Nusa Tenggara Barat	257	260	264	267	270	273	286	290	278	283	287
19	Nusa Tenggara Timur	103	105	107	109	110	112	109	111	118	120	122
20	Kalimantan Barat	32	33	33	33	34	34	37	37	38	38	39
21	Kalimantan Tengah	16	16	17	17	17	18	17	18	18	18	18
22	Kalimantan Selatan	101	103	105	106	108	110	105	106	113	114	115
23	Kalimantan Timur	26	27	27	28	28	29	29	30	30	31	32
24	Kalimantan Utara	8	9	9	9	9	10	9	9	10	10	11
25	Sulawesi Utara	172	174	176	178	179	181	189	190	183	185	186
26	Sulawesi Tengah	46	47	47	48	49	49	48	49	50	50	51
27	Sulawesi Selatan	180	182	184	186	188	189	194	196	204	207	209
28	Sulawesi Tenggara	64	66	67	68	70	71	69	70	75	76	77
29	Gorontalo	99	101	102	104	105	107	104	105	99	101	102
30	Sulawesi Barat	75	76	78	79	81	82	85	86	88	89	91
31	Maluku	35	36	37	37	38	38	39	40	41	42	42
32	Maluku Utara	36	36	37	38	39	39	40	41	40	41	41
33	Papua Barat	9	9	9	9	9	9	11	11	12	12	10
34	Papua	10	10	10	10	10	11	13	14	14	14	13

Source: BPS Indonesia, data processed (2025)

DKI Jakarta is the province with the highest population density, reaching 16,158 people/km² in 2022, while West Papua is recorded as the lowest, with only 9 people/km² in 2014 and increasing to 12 people/km² in 2022. Nationally, Indonesia experienced a consistent increase in population density during 2014-2024, although it stagnated in 2019-2020 due to the initial impact of the COVID-19 pandemic. After that, the density trend increased significantly again. Population growth that continues to rise amid a fixed area poses challenges in the implementation of development, so optimal efforts are needed in equalizing the population between regions.

Labor Force Development

Labor is the population of working age (15-64 years) or the entire population in a country that is capable of producing goods and services if there is a demand for their labor. The current labor market demand is influenced by demographics, which specifically increases the proportion of the working-age population.

Table 5.
Total Workforce (%) 2014-2024

No	Provinsi	Jumlah Tenaga Kerja (%)										
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	Aceh	39,62	39,5	42,83	40,42	40,56	42,88	38,12	39,31	38,55	50,64	43,73
2	Sumatera Utara	41,39	39,86	40,02	42	43,43	45	40,38	40,67	40,93	40,9	46,33
3	Sumatera Barat	34,94	35,59	38,2	35,61	36,06	37,87	33,72	35,23	34,74	47,17	40,42
4	Riau	48,78	51,36	46,37	47,3	45,05	47,78	44,03	45,43	45,98	43,67	42,66
5	Jambi	41,11	41,35	37,91	41,47	43,55	42,94	37,26	37,99	40,02	39,94	18,29
6	Sumatera Selatan	39,08	38,69	39,29	37,6	38,78	39,48	34,74	35,84	36,72	36,72	44,22
7	Bengkulu	33,09	31,19	34,08	33,61	31,16	34,88	30,77	31,84	32,46	31,69	31,73
8	Lampung	30,09	29,17	29,9	29,71	29,21	31,51	27,74	28,69	28,49	29,07	28,46
9	Kep. Bangka Belitung	47,45	45,87	44,43	51,62	49,57	53,18	47,07	49,07	50,37	48,61	50,98
10	Kepulauan Riau	71,725	71,9	66,2	68,51	68,22	70,43	64,59	64,8	63,68	64,77	70,93
11	DKI Jakarta	72,25	72,96	68,71	71,55	69,85	68,65	61,78	61,74	63,12	64,2	59
12	Jawa Barat	51,74	49,61	51,36	50,22	51,79	49,8	44,41	45,39	45,39	44,52	101,35
13	Jawa Tengah	38,71	38,28	37,83	39,71	39,33	42,01	37,25	39,62	39,84	39,37	40,06
14	DI Yogyakarta	46,37	48,79	45,09	43,45	45,55	48,36	42,59	44,64	46,62	46,08	45
15	Jawa Timur	38,15	36,81	37,88	38,65	38,12	39,36	36,36	37,36	36,14	36,72	36,5
16	Banten	61,11	61,46	61,51	58,07	56,01	57,86	50,83	51,13	52,04	53,51	47,9
17	Bali	49,09	47,2	45,68	50,2	50,62	50,54	43,31	42,9	46,57	47,08	52,38
18	Nusa Tenggara Barat	27,58	26,8	26,89	26,38	28,19	28,98	26,53	26,11	24,64	27,25	26,15
19	Nusa Tenggara Timur	23,71	21,4	25,2	24,14	24,35	27,74	23,9	24,03	24,76	24,76	25,62
20	Kalimantan Barat	36,83	34,44	38,19	38,57	40,45	39,89	36,99	39,13	41,23	40,02	41,68
21	Kalimantan Tengah	44,39	45,56	41,35	45,67	47,63	48,98	44,2	44,5	48,5	47,74	48,45
22	Kalimantan Selatan	39	41,48	37,81	38,98	39,92	43,18	39,18	40,37	42,7	44,4	43,73
23	Kalimantan Timur	59,21	60,34	55,25	59,96	58,84	58,24	52,86	53,51	55,74	55,04	52,78
24	Kalimantan Utara	58,46	56,82	56,98	57,76	57,05	53,31	49,07	49,26	51	47,99	45,43
25	Sulawesi Utara	41,89	40,45	38,68	44,54	44,39	45,19	39,54	39,3	40,85	41,66	41,22
26	Sulawesi Tengah	33,69	33,37	33,55	31,94	33,34	37,03	32,63	32,68	32,13	33,37	32,99
27	Sulawesi Selatan	36,8	36,95	35,11	37,63	36,68	39,45	35,78	36,76	36,45	36,8	36,92
28	Sulawesi Tenggara	32,46	30,48	31,47	36,29	36,91	37,45	35,41	37,19	37,61	37,55	40,3
29	Gorontalo	39,59	37,14	39,69	39,49	38,22	41,34	37,88	37,61	35,03	35,8	35,68
30	Sulawesi Barat	29,09	26,32	29,85	31,58	25,31	28,09	27,37	27,2	22,75	26,13	24,3
31	Maluku	34,96	31,98	35,76	37,18	35,63	38,02	33,44	35,59	36,7	34,23	36,04
32	Maluku Utara	34,9	31,4	35,97	38,05	33,08	38,31	33,87	36,44	34,37	33,61	35,17
33	Papua Barat	42	39,45	40,57	40,9	45,7	47,75	42,02	42,08	39,72	40,86	42,29
34	Papua	21,96	18,51	21,63	21,81	21,89	20,71	20,08	19,53	15,89	15	15,69

Source: BPS Indonesia, data processed (2025)

Based on BPS data, the 2021-2024 period recorded an increase in the number of labor force of 7.56 million people or around 5.39%. In February 2024, there were 149.37 million labor force members (69.80% of the total working-age population), with 7.2 million people or 4.82% still unemployed. Historically, the number of workers in Indonesia declined in 2014-2016, then experienced steady growth until 2019 before declining sharply due to the COVID-19 pandemic in 2020. However, from 2021 to 2024, the labor market showed a strong recovery with a consistent upward trend in the number of workers.

Communication Expenditure Growth

Telecommunications is now a staple of society, with global internet access in 2019 reaching 50-75% of the population and more than 57% of households having an internet connection. In Indonesia, in 2021 there are around 63 millennials (23.8%) with 77.3% active on social media, especially WhatsApp, YouTube, and Instagram. The majority of children aged 5 years and above also regularly access the internet. The World Population Review 2023 notes Indonesia as the fourth-largest global internet user, with 204.7 million users who spend an average of 143 minutes per day on social media. The APJII 2023 survey shows that people's internet spending ranges from Rp100,001-Rp250,000 per month. This research will explain further through related variables.

Table 6.
Communication Expenditure in 34 Provinces (IDR) 2016-2024

No	Provinsi	Pengeluaran Telekomunikasi (Rupiah)										
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	Aceh	82.350	111.682	113.26.00	107.359	129.497	127.049	141.674	148.401	156.327	170,08	106.747
2	Sumatera Utara	80.963	107.714	111.24.00	111.235	133.25.00	138.231	151.112	165.863	175.320	199,75	122.316
3	Sumatera Barat	94.728	117.877	121.42.00	136.588	154.621	159.771	170.752	199.464	206.890	214,32	145.240
4	Riau	102.656	133.913	145.33.00	147.921	166.168	176.634	201.492	215.108	228.352	254,48	160.433
5	Jambi	77.905	104.564	117	121.877	138.173	140.020	157.784	172.508	186.890	226,88	130.538
6	Sumatera Selatan	81.280	96.587	111.45.00	105.485	130.532	126.878	140.675	156.400	161.764	174,66	112.888
7	Bengkulu	75.986	96.715	104.33.00	112.793	135.629	145.343	147.467	159.225	172.606	198,31	122.941
8	Lampung	64.640	89.739	93.47.00	95.661	114.839	116.078	119.492	144.109	144.137	155,35	102.442
9	Kep. Bangka Belitung	103.426	124.009	138.10.00	161.798	182.433	199.898	199.020	196.764	232.198	238	162.153
10	Kepulauan Riau	162.189	196.290	200.58.00	222.844	248.213	252.590	244.788	275.305	280.345	300,27	194.184
11	DKI Jakarta	209.582	278.963	278.896	238.054	255.849	235.540	242.609	278.656	331.623	376,45	184.279
12	Jawa Barat	92.572	112.004	135.221	133.518	146.975	151.589	163.544	181.665	193.498	213,88	131.951
13	Jawa Tengah	66.663	86.361	92.904	95.622	112.354	115.323	127.711	147.096	156.146	159,19	108.706
14	DI Yogyakarta	91.668	117.562	135.892	125.604	147.348	147.969	159.706	195.202	219.007	239,14	143.577
15	Jawa Timur	74.066	111.481	111.249	112.959	117.666	123.807	131.960	150.783	158.576	170,81	106.786
16	Banten	126.876	162.760	165.768	174.934	199.838	194.552	201.231	215.187	223.716	252,9	153.438
17	Bali	122.978	141.325	150.324	185.701	200.066	201.280	203.198	224.494	238.880	282,12	166.959
18	Nusa Tenggara Barat	54.743	64.263	72.969	77.026	85.589	111.761	117.100	138.193	111.326	123,21	93.676
19	Nusa Tenggara Timur	66.667	81.099	86.211	83.663	103.663	110.574	119.607	142.884	160.006	171,22	107.187
20	Kalimantan Barat	93.861	110.723	117.120	123.906	155.092	167.107	177.923	190.774	202.235	211,84	145.231
21	Kalimantan Tengah	93.003	116.577	137.791	153.509	185.129	206.099	212.429	228.017	245.411	242,1	181.683
22	Kalimantan Selatan	87.723	112.861	122.112	137.568	154.176	159.436	181.274	202.990	207.311	210,42	150.376
23	Kalimantan Timur	159.695	189.882	189.706	210.753	250.938	264.611	278.061	309.817	325.750	342,34	229.576
24	Kalimantan Utara	138.084	170.596	179.896	204.603	257.627	281.081	288.383	312.881	323.422	327,8	241.347
25	Sulawesi Utara	96.331	108.630	126.028	122.431	159.838	164.750	178.742	178.939	177.711	190,16	133.249
26	Sulawesi Tengah	88.385	102.694	116.839	120.713	145.838	158.784	171.407	186.322	180.156	196,81	108.706
27	Sulawesi Selatan	88.072	113.004	128.328	127.159	154.963	162.937	163.023	177.511	184.125	195,52	132.213
28	Sulawesi Tenggara	71.948	96.230	108.287	129.740	161.693	177.086	170.986	180.005	194.036	196,35	146.908
29	Gorontalo	74.532	91.470	101.119	116.584	136.296	162.263	177.188	194.170	189.392	175,82	147.295
30	Sulawesi Barat	53.905	73.557	81.653	91.248	115.583	114.001	139.044	143.604	159.301	155,89	116.140
31	Maluku	118.155	177.377	176.946	183.017	231.356	230.939	249.149	251.626	270.865	277,28	194.467
32	Maluku Utara	102.996	144.340	149.250	173.176	206.198	211.732	213.007	221.434	216.068	257,56	165.959
33	Papua Barat	151.030	213.391	195.620	243.078	279.276	296.410	303.522	320.460	306.481	337,38	234.896
34	Papua	158.390	198.074	198.626	214.357	249.161	254.325	256.882	266.861	295.314	264,14	200.275

Source: Bps, Indonesia data processed (2025)

The table above shows that all provinces in Indonesia experienced an increase in telecommunication expenditure during 2016-2024, reflecting the expansion of infrastructure and public awareness of the importance of communication services. However, on the other hand, uncontrolled communication expenditure can become a burden for poor households. The provinces with the lowest expenditure in 2024 are NTB and NTT, at IDR93,676 and IDR107,187 respectively. Nationally, communication expenditure increased from around Rp100,000 to Rp200,000 per month, and even touched almost Rp210,000 during the pandemic due to mobility restrictions, WFH, SFH, and increased online activities. This phenomenon is also driven by cheaper data access and the emergence of digital applications such as social media, e-commerce, and streaming services.

Inflation Development

Inflation is a global economic phenomenon that reflects a general rise in the prices of goods and services, and in recent decades has tended to occur in a coordinated manner across countries. Inflation can be triggered by shocks such as disruptions in food supply, natural disasters, or fluctuations in international commodity prices. In addition, inflation is also influenced by government policies, such as adjustments to fuel prices, electricity tariffs, and public transportation. To measure it, the Consumer Price Index (CPI) is used, which records average changes in the prices of household goods and services based on data from the Cost of Living Survey (SBH) by BPS.

Table 7.
Inflation in 34 Provinces (%) 2014-2024

No	Provinsi	Data inflasi										
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
1	Aceh	7,83	1,27	3,13	4,86	1,93	1,38	3,46	2,41	6	1,53	2,17
2	Sumatera Utara	8,24	3,32	6,6	3,18	1	2,43	1,76	1,7	6,1	2,19	2,12
3	Sumatera Barat	11,9	0,85	5,02	2,11	2,55	1,72	2,12	1,37	7,38	2,55	0,89
4	Riau	8,53	2,71	4,19	4,07	2,54	2,56	2,24	1,55	7,04	2,5	1,25
5	Jambi	8,72	1,37	4,54	2,68	3,02	1,27	3,09	1,67	6,39	3,27	1,43
6	Sumatera Selatan	8,38	3,05	3,68	2,85	2,78	2,06	1,5	1,84	5,95	3,22	1,2
7	Bengkulu	10,9	3,25	5	3,56	2,35	2,91	0,89	2,42	5,92	3,09	0,84
8	Lampung	8,36	4,65	2,75	3,14	2,92	3,53	1,93	2,13	5,52	3,52	1,57
9	Kep. Bangka Belitung	6,81	4,66	7,78	2,66	3,45	2,31	0,52	3,6	6,07	2,01	0,75
10	Kepulauan Riau	7,49	4,66	7,78	2,66	3,45	2,56	2,24	1,55	7,04	2,5	2,09
11	DKI Jakarta	8,95	3,3	2,37	3,72	3,27	3,23	1,59	1,53	4,21	2,28	1,48
12	Jawa Barat	7,76	3,93	2,93	3,46	3,76	2,78	1,75	1,65	7,45	0,63	1,64
13	Jawa Tengah	8,53	2,56	2,32	3,64	2,76	2,93	1,49	1,49	4,99	2,84	1,67
14	DI Yogyakarta	6,59	3,09	2,29	4,2	2,66	2,77	1,4	2,29	6,49	3,17	1,28
15	Jawa Timur	7,9	3,43	3,22	4,37	3,03	2,21	1,33	2,71	6,59	3,03	1,51
16	Banten	11,3	4,67	3,26	5,17	3,78	3,06	1,91	2,23	7,22	2,11	1,88
17	Bali	8,03	2,7	2,94	3,31	3,4	2,37	0,55	2,01	6,44	2,54	2,34
18	Nusa Tenggara Barat	7,18	3,25	2,47	3,59	3,15	1,76	0,58	2,28	6,18	3,04	1,28
19	Nusa Tenggara Timur	8,32	5,07	2,31	2,05	3,23	0,5	0,29	1,86	7,07	2,21	1,19
20	Kalimantan Barat	9,38	6,17	3,88	3,86	3,99	2,64	2,11	1,16	6,35	2,09	1,71
21	Kalimantan Tengah	6,63	4,2	1,91	3,11	3,69	2,7	0,71	2,58	6,51	2,68	1,03
22	Kalimantan Selatan	7,16	5,03	3,68	3,82	2,63	4,15	1,67	2,54	6,98	2,28	1,95
23	Kalimantan Timur	6,74	4,24	2,83	3,69	3,32	1,49	0,86	2,05	5,22	3,37	1,47
24	Kalimantan Utara	11,9	3,42	4,31	2,77	5	-	1,96	2,33	7,98	2,38	1,29
25	Sulawesi Utara	9,67	5,56	0,35	2,44	3,83	3,52	-0,2	2,65	4	2,87	0,44
26	Sulawesi Tengah	8,85	4,17	1,49	4,33	6,46	2,3	1,81	2,14	5,81	1,87	1,29
27	Sulawesi Selatan	8,51	5,18	3,18	4,48	3,48	2,43	2,13	2,26	5,81	2,89	1,23
28	Sulawesi Tenggara	7,4	1,64	3,07	2,96	2,55	3,22	1,37	3,05	7,11	2,61	1,05
29	Gorontalo	6,14	4,3	1,3	4,34	2,15	2,87	0,81	2,59	5,15	3,88	-0,8
30	Sulawesi Barat	7,88	5,07	2,23	3,79	1,8	1,43	1,78	4,39	4,85	1,82	1,49
31	Maluku	6,81	5,92	3,28	-0,1	3,53	2,06	0,09	4,05	6,39	2,77	1,28
32	Maluku Utara	9,34	4,52	1,91	1,97	4,12	2,02	2,13	2,38	3,37	4,41	1,5
33	Papua Barat	5,7	2,77	5,75	1,78	6,02	4,76	-0,9	3,39	6,06	2,39	2,53
34	Papua	7,98	2,79	4,13	2,41	6,7	0,6	0,75	1,7	5,81	1,65	1,75

Source: BPS, data processed by researchers (2025)

Based on BPS data, Indonesia's annual inflation in December 2022 reached 5.51%, with monthly inflation of 0.66%. South Kalimantan province recorded the highest inflation of 6.98%, while North Maluku was the lowest with 3.37%. Nationally, inflation mainly occurred in the goods and services group in household expenditure. In 2014-2016, inflation was relatively low due to macroeconomic stability and controlled monetary-fiscal policies. However, after 2016 inflation started to pick up, and in 2022 there was the highest spike due to rising commodity prices, before falling back to a stable level of around 2% in 2023-2024.

Data Analysis Results

Unit Root Test

This study uses a unit root using Hadri's method at the level level. The basis for making a decision that the data is stationary can be seen from the probability. It can be said to be stationary if the probability value< 0.05. The results of each variable can be seen as follows:

Table 8.
Unit Root Test Results Using Hadri Method

Variable	P-Value
Poverty	0,0000
AHH	0,0000
Per capita Expenditure	0,0000
Population Density	0,0000
Total Labor Force	0,0000
Communication expenditure	0,0000

Inflation	0,0003

Source: Processed by researchers (2025)

Based on the results of the stationary test in the table above, the independent variable and the dependent variable do not have a unit root or each variable is stationary and deserves to be continued to the next test.

Estimation of Generalized Method Of Moments (GMM) Model Specifications

Each dynamic panel data model variable estimation is influenced not only by other variables in the same period, but also by the influence of these variables in the previous period.

Sargan Test

In the GMM estimation model, the Sargan test is used to ensure that there is no error correlation between the model and the instrument used. The results of a significant sargan test indicate that the model is considered valid and there is no error correlation. In the sargan test the model is considered valid if the chi2 value> 0.05. The following are the results of the validity test using the sargan test.

Table 9.
Sargan test results

Sargan Test	Prob.chi2
FD-GMM	0,8885
SYS-GMM	0,9909

Source: Processed by researchers (2025)

Based on the estimation results carried out through the prob. chi2 value on the estimation model, it can be seen that the sargan test results with FD-GMM are 0.8885 and SYS-GMM 0.9909 with prob.chi2> 0.05 so it can be concluded that the estimation model is valid or the validity requirements of the GMM instrument have been met.

Arellano-Bond Test

In making a decision, the model is said to be consistent or not affected by autocorrelation; it can be seen from the probability value of Z which must be> 0.05. The following AB test estimation results have been carried out are as follows:

Table 10.
Arrelano-Bond Test Results

Arellano-Bond Test	Z-Count	P.Value
FD-GMM	-2.9221	0,0028
SYS-GMM	-1.344	0.1790

Source: Processed by researchers (2025)

Based on the FD-GMM test results, it shows that the estimated model has a z-value with a value of 0.0028, this value is smaller than $\alpha = 0.05$. So it can be concluded that the regression model is not fulfilled. While the SYS-GMM test results show that the estimated model has a large z-value of 0.1790, this value is greater than $\alpha = 0.05$ so it can be concluded that the regression model is fulfilled or the model is consistent in the SYS-GMM test.

Unbiasedness Test

This test is conducted to determine whether the model is said to be good or not in the GMM model. The bias test requirement is if the estimated value of FEM<DPGMM<CEM. The bias test results on the GMM model are as follows:

Table 11.
Unbiasedness Test Results

FEM	FD-GMM	SYS-GMM	CEM
0,302485	-0,0789608	0,66171721	0,7268006

Source: Processed by researchers (2025)

From the table above, it can be seen that the coefficient value of endogenous lag 1 or lag 1 of the poverty variable is 0.066171721, this value is greater than the coefficient of endogenous lag 1 in the FEM model, which is 0.302485 and lower than the coefficient value of endogenous lag 1 in the CEM model, which is 0.7268006. So it can be concluded that neither downward-biased nor upward-biased occurs. Therefore, the System GMM model is the selected model because it has met the overidentifying requirements using the Sargan test, consistency test, and non-biased requirements. The following is a summary of the best model selected:

Table 12.
Summary of Test Results

Criteria	FD-GMM	SYS-GMM
Sargan Test	Fulfilled	Met
AB Test	Not fulfilled	Met
Unbiased	Not met	Met

Source: Processed by researchers (2025)

From the table above, it can be seen that the best model is SYS-GMM because all criteria from the assumption test are successfully met.

Selected Model Estimation Results

At this stage, based on the results of the Sargan test, validity test and unbiased test, the dynamic panel data regression model that meets the best GMM model criteria is the SYS-GMM approach. The results of the intercept and slope values for each variable are shown in the following table:

Table 13.
Sys-GMM Estimation Results

Variable	Coefficient	Standard error	Probability Z
Poverty t-1	0,6617172	0,171354	0,000
AHH	-0,5827061	1,029763	0,000
Per capita expenditure	-0,722648	0,0099762	0,000
Population Density	0,2540377	0,0190018	0,000
Labor Force	-0,5117414	0,403768	0,000

Communication expenditure	-0,0137621	0,0009523	0,000
Inflation	-0,004474	0,0008574	0,000

Source: Processed by researchers (2025)

The table above is the result of dynamic panel data regression using the GMM system method where the value of the coefficient and probability -z provide a significant level of each in accordance with the estimation table attachment that is available.

The Effect of Previous Period Poverty on Poverty

The estimation results with the Generalized Method of Moment (GMM) show that poverty in the previous period has a positive and significant effect on current poverty. This means that an increase in poverty in the previous year will increase the likelihood of poverty in the current year. This finding is consistent with the research of Onsay et al. (2025) in Luzon, Philippines who found a positive correlation of past poverty, as well as Ilaria and Federico (2024) who highlighted the sensitivity of annual poverty measures to the assumption of household economic scale in Italy.

Additional support is provided by Siryana (2020) who states that the success of poverty reduction policies in the previous year largely determines the current year's poverty rate. This finding confirms the importance of continuity and effectiveness of policy interventions, as well as the need for longitudinal monitoring for the evaluation of poverty alleviation programs.

The Effect of Health on Poverty

The health variable represented by Life Expectancy (UHH) has a negative and significant effect on poverty in 34 provinces in Indonesia. This means that improvements in public health can reduce poverty. This finding is supported by Afandi et al. (2024) who emphasized the close relationship between poverty and health vulnerability in the ASEAN region. Firmansyah (2022) and Nenik (2018) also prove that improving the quality of public health directly has the potential to reduce poverty.

Theoretically, these results are in line with the health capital theory (Bloom, 2021), where investment in health means investment in human capital that has an impact on productivity, life expectancy, and economic welfare. However, there are empirical differences in the studies of Laily (2021) and Ramna (2024) who found the opposite relationship, suggesting the importance of local socioeconomic context and public health policies in explaining this dynamic.

The Effect of Per Capita Expenditure on Poverty

Regressions show that per capita expenditure has a negative and significant effect on poverty. This means that an increase in per capita expenditure will reduce poverty. This finding is consistent with Cruz Martinez (2015), Qurrotu & Purbadharmaja (2023), and Jonas et al. (2025), who found that an increase in consumption expenditure is strongly associated with a decrease in poverty levels in various countries.

Theoretically, this is in line with the expectation that an increase in economic welfare will have a positive impact on poverty reduction. However, not all studies are in line, such as Nurcita (2021), who found that per capita expenditure actually increases poverty. This difference could be influenced by the high level of income inequality, as mentioned by Martin (2019), so that even though per capita expenditure increases, the poor are not automatically lifted from the poverty line.

Effect of Population Density on Poverty

Population density has a positive and significant effect on poverty. This result shows that the denser an area is, the more the poverty rate tends to increase. Research by Dwi Pamungkas (2019), Hilmi & Nasir (2022), and Glorina (2019) reinforces this finding, where high population density is associated with slums, poor sanitation, and reduced quality of life.

Malthusian theory and Neo-Malthusian views also support this result, namely that exponential population growth can exceed the capacity of available resources, leading to competition and increased poverty. However, it is important to note that the factors of migration and economic concentration in certain regions also amplify this phenomenon.

The Effect of Total Labor on Poverty

The number of workers shows a negative and significant effect on poverty, which means that as more people work, poverty will decrease. Adelia & Yani Rizal (2024), Rizki (2022), and Michael and Raitano (2024) found that high labor force participation increases household income and lifts families from the poverty line.

However, Sudirman (2020) found a different result: the number of workers has a positive effect on poverty, especially when dominated by the informal sector with low wages and no social security. This suggests that the quality of jobs and the structure of the labor market determine the effectiveness of this variable in reducing poverty.

Effect of Communication Expenditure on Poverty

Communication expenditure has a negative and significant effect on poverty. The greater the communication expenditure (ICT access), the lower the poverty rate. This finding is in line with Nabila et al. (2025) and Haider (2017), who assert that the utilization of information and communication technology (ICT) can reduce poverty through increased access to information, employment opportunities, and economic inclusion.

Digital inclusion theory emphasizes the importance of equal access to technology for inclusive economic growth. However, Angela and Mario (2025) found that the effect of ICT on poverty can be positive in certain contexts, depending on socioeconomic conditions and specific dimensions of poverty in rural Europe.

The Effect of Inflation on Poverty

The results show that inflation has a negative and significant effect on poverty, meaning that an increase in inflation reduces poverty-a result that contradicts the hypothesis and most of the literature. Massimo (2025) and Norristyo (2017) find that inflation has no significant impact on poverty, while Argante and Lee (2021) and Kirkegata (2021) show that high inflation worsens poverty, especially for low-income groups.

Theoretically, welfare economics emphasizes the role of government policies, such as subsidies and direct aid, in cushioning the negative impact of inflation on the poor. In addition, Keynesian theory emphasizes that inflation due to high aggregate demand can increase prices and erode the purchasing power of the poor.

CONCLUSIONS

Based on the tests that have been carried out, the best GMM dynamic panel data used is SYS GMM, the author concludes:

1. Health has a negative and significant effect on poverty in Indonesia.
2. Per capita expenditure has a negative and significant effect on poverty in Indonesia.
3. Population density has a positive and significant effect on poverty in Indonesia.
4. Total labor force has a negative and significant effect on poverty in Indonesia.
5. Expenditure communication has a significant negative effect on poverty in Indonesia.
6. Inflation has a negative and significant effect on poverty in Indonesia.
7. The lag variable of poverty in the previous year has a positive and significant effect on poverty in the current year.

Suggestion

After the author conducts research using secondary data, the author's suggestions are:

1. It is necessary to improve access and quality of health services and preventive health programs to break the cycle of poverty.
2. On the economic side, efforts to increase per capita income through the creation of quality jobs, providing support for MSMEs and more equitable income distribution,
3. Controlling inflation so as to strengthen people's purchasing power and avoid unreasonable increases in goods,
4. Equitable development to reduce population density in certain areas,
5. Improving quality and productivity through education and training as well as protecting workers' rights, utilizing information and communication technology (ICT) through expanding access to infrastructure and digital literacy programs so as to open up new economic opportunities.
6. The government needs to evaluate, verify and validate poverty data so that poverty data is more reliable and valid so that the impact of poverty reduction in the previous year is known and poverty alleviation programs are not mistargeted because the government has a crucial responsibility in breaking the cycle of intergenerational poverty.

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