

## Analysis of the Influence of Population Growth, Education, and Health on Poverty in Indonesia from 2018 to 2022

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### ABSTRACT

The aim of this study is to analyze the influence of population growth, education, and health on poverty in Indonesia. The data used in this research are panel data from 34 provinces in Indonesia spanning the years 2018 to 2022. Poverty is utilized as the dependent variable, while population growth, education, and health serve as independent variables. The analytical method employed is panel data regression. The findings indicate that population growth does not significantly affect poverty in Indonesia, whereas education and health significantly influence poverty in Indonesia from 2018 to 2022.

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## INTRODUCTION

Indonesia is an archipelagic country with a dense population consisting of 34 provinces. As a nation rich in natural resources and supported by its strategic geographical location, Indonesia has made rapid progress in various sectors, especially in the economic aspect. However, a persistent challenge faced by the country is the issue of poverty. Poverty is a condition where individuals or community groups are unable to meet basic needs such as food, clothing, shelter, education, and healthcare.

Poverty has negative impacts on the well-being of society by limiting access to various essential resources. Individuals or groups living in poverty tend to face limitations in education, healthcare services, and economic opportunities. These limitations not only affect their ability to reach their full potential personally but also harm the community as a whole. This aligns with the perspective of Adam Smith (1776), who stated that a society cannot prosper and be happy if a significant portion of its members live in poverty and suffering.

In Indonesia, the percentage of the population living in poverty varies for each region, with some areas having high poverty rates while others have lower rates. The following are the percentage data of the population living in poverty according to provinces in Indonesia from 2018 to 2022:

Percentage of Population Living in Poverty by Province, 2018-2022

Province Names	Percentage of Poor Population (P0) by Province (Percent)				
	2018	2019	2020	2021	2022
ACEH	15,97	15,32	14,99	15,33	14,64
NORTH SUMATRA	9,22	8,83	8,75	9,01	8,42
WEST SUMATRA	6,65	6,42	6,28	6,63	5,92
RIAU	7,39	7,08	6,82	7,12	6,78
JAMBI	7,92	7,6	7,58	8,09	7,62
SOUTH SUMATRA	12,8	12,71	12,66	12,84	11,9
BENGKULU	15,43	15,23	15,03	15,22	14,62
LAMPUNG	13,14	12,62	12,34	12,62	11,57
BANGKA BELITUNG ISLANDS	5,25	4,62	4,53	4,9	4,45
KEPULAUAN RIAU	6,2	5,9	5,92	6,12	6,24
DKI JAKARTA	3,57	3,47	4,53	4,72	4,69
WEST JAVA	7,45	6,91	7,88	8,4	8,06
CENTRAL JAVA	11,32	10,8	11,41	11,79	10,93
DI YOGYAKARTA	12,13	11,7	12,28	12,8	11,34
EAST JAVA	10,98	10,37	11,09	11,4	10,38
BANTEN	5,24	5,09	5,92	6,66	6,16
BALI	4,01	3,79	3,78	4,53	4,57
WEST NUSA TENGGARA	14,75	14,56	13,97	14,14	13,68
EAST NUSA TENGGARA	21,35	21,09	20,9	20,99	20,05
WEST KALIMANTAN	7,77	7,49	7,17	7,15	6,73
CENTRAL KALIMANTAN	5,17	4,98	4,82	5,16	5,28
SOUTH KALIMANTAN	4,54	4,55	4,38	4,83	4,49
EAST KALIMANTAN	6,03	5,94	6,1	6,54	6,31
NORTH KALIMANTAN	7,09	6,63	6,8	7,36	6,77
NORTH SULAWESI	7,8	7,66	7,62	7,77	7,28
CENTRAL SULAWESI	14,01	13,48	12,92	13	12,33
SOUTH SULAWESI	9,06	8,69	8,72	8,78	8,63
SOUTHEAST SULAWESI	11,63	11,24	11	11,66	11,17
GORONTALO	16,81	15,52	15,22	15,61	15,42
WEST SULAWESI	11,25	11,02	10,87	11,29	11,75
MALUKU	18,12	17,69	17,44	17,87	15,97
NORTH MALUKU	6,64	6,77	6,78	6,89	6,23
WEST PAPUA	23,01	22,17	21,37	21,84	21,33
PAPUA	27,74	27,53	26,64	26,86	26,56

Data source: BPS

In the table above, it can be seen that during the period of 2018-2022, Papua Province was the region with the highest percentage of poor population

in Indonesia, ranging from 26.25 to 27.74 percent, with 2018 having the highest percentage of poor population. On the other hand, the region with the lowest percentage of poor population in Indonesia is DKI Jakarta Province, with a percentage ranging from 3.47 to 4.72 percent, and 2019 being the year with the lowest percentage of poor population.

Poverty in different regions can be influenced by several factors. Amartya Sen (1981) stated that poverty is not only related to income deficiency but also involves the inability of individuals to meet basic needs such as education, health, and freedom. For him, poverty is not just a matter of inability to meet material needs but also a matter of inability to obtain basic rights for a decent life.

Sustainable population growth has significant impacts on social, economic, and environmental aspects in Indonesia. Although rapid population growth has the potential to positively impact economic development through increased productivity and equitable income distribution, it can also pose problems, especially in the context of poverty in Indonesia. The increase in the population in Indonesia creates high demand for resources such as employment opportunities, food, housing, education, and healthcare. If economic growth fails to effectively absorb the workforce, there can be an increase in unemployment rates and higher poverty risks in the country. Therefore, a good understanding of the interconnection between population growth and poverty issues is crucial for designing appropriate and inclusive policies in Indonesia.

Improving access to and the quality of education is key to addressing poverty amid global development and economic transformation. Quality education establishes the foundation for human resource development, provides better employment opportunities, and enhances individuals' capacity to participate productively in society. Equitable and affordable education can reduce social and economic disparities, creating a fair and sustainable society. For example, Singapore, the wealthiest country in Southeast Asia, also has the best education system in the region. In 2020, Singapore ranked first for the best education system in Southeast Asia, indicating that a good education system can contribute to a country's prosperity. However, inequality in access to education can trigger poverty, especially in areas with limited educational infrastructure. Education also shapes the skills and knowledge needed to face economic challenges, providing greater opportunities for individuals with a good educational background to succeed in the job market and reduce the risk of poverty. Therefore, improving the education system is a necessity for Indonesia to enhance well-being and reduce the risk of poverty.

Low levels of health in the population of a country or region can be a major obstacle to achieving sustainable economic prosperity. Infectious diseases, malnutrition, and limited access to quality healthcare services can trigger poverty by causing low productivity, work absenteeism, and high medical expenses. In 2020, Indonesia faced serious consequences from the COVID-19 pandemic, affecting both health and the economy. The healthcare system faced significant pressure with a shortage of facilities and medical personnel, while negative economic growth and high COVID-19 treatment costs

had the potential to increase poverty rates. To address these issues, better access to healthcare services and investment in a strong healthcare system are needed to help prevent and address health problems that are triggers for poverty. Health also plays a crucial role in the development of children, with long-term impacts on human quality within society, enhancing the potential for poverty alleviation through improved human quality in the future. Based on this background, this research aims to analyze the influence of population growth, education, and health on poverty in Indonesia.

## **THEORETICAL REVIEW**

### ***Poverty***

The issue of poverty has been an economic challenge since ancient times. Although it is a phenomenon that is difficult to eliminate entirely, efforts to reduce it are crucial. Lowering the poverty rate has a positive impact on the overall well-being of society. The phenomenon of poverty can arise due to disparities in abilities, opportunities, and available resources (Amalia, 2017).

Poverty is a condition where an individual's life falls below the minimum standard of needs, usually related to basic necessities such as food, shelter, as well as access to education and health. This phenomenon creates a context in which individuals face difficulties in meeting their essential needs to achieve a healthy and productive life. Key aspects such as the inability to obtain adequate food, decent housing, and limited access to education and healthcare are determining factors in determining the poverty rate. In this perspective, poverty is not just a material deficiency issue but also reflects inequality in access to opportunities and resources that can shape an individual's quality of life (Azizah, 2018).

Ragnar Nurkse (1953), in the concept of the vicious circle of poverty, explains the occurrence of a vicious circle of poverty that starts with low income, low savings, low investment, capital deficiency, lagging in market competition. Eventually, all these factors impact the decline in productivity, leading to a continuous cycle of poverty. However, on the other hand, if productivity can be increased, this vicious circle can be broken. Good education coupled with adequate health can increase productivity. Well-controlled population growth can also increase productivity with the addition of labor. With increased productivity, this can break the cycle of poverty.

### ***Population Growth***

The population's size is one of the factors that can influence poverty. Malthus (1798) stated that human development faster than agricultural production would one day lead to problems such as hunger and poverty. To avoid this, Malthus suggested controlling or supervising population growth to maintain a balance between population and resources.

Karl Marx disagreed with Malthus. According to Karl Marx, population growth does not suppress food but affects job opportunities. Poverty and deprivation do not occur because of rapid population growth but because capitalists take away some rights from laborers. Furthermore, Karl Marx stated

that the higher the human population, the higher its productivity. Therefore, humans do not need to suppress their birth rate (Deliarnov, 2014).

Indonesia, as a country rich in natural resources, does not need to worry about the problem of food scarcity due to the increasing population. However, population control remains important because population growth in Indonesia impacts job opportunities. Rapid population growth can have a positive impact on economic development if accompanied by increased productivity and income distribution. However, if population growth is not balanced with effective development efforts, issues such as widespread poverty may arise.

### *Education*

Education is a process in which we learn and understand essential knowledge, skills, and life values. It occurs not only in schools but also through everyday experiences. Education not only helps us become academically intelligent but also shapes our personalities and social skills. Its goal is to help us prepare for life challenges and contribute to the progress of society. Through education, we have the opportunity to develop our potential and achieve our life goals.

In the Human Capital Theory (Gary Becker, 1964), education and training are considered investments in human capital, which can enhance individual productivity and income in the long run. Becker sees education as an investment that can improve an individual's capabilities and skills, thus increasing the economic value of that human resource.

Amalia (2017) elaborates on education as one of the factors influencing the poverty rate. Education is considered the path to the country's future and plays a central role in shaping character and defending individual identity within society. A high level of education increases the chances of getting a job with adequate pay, creating a positive correlation between education and income. Investing resources to improve the quality of education is seen as a strategic step to address poverty, providing individuals with the ability to meet their living needs.

### *Health*

Health is an essential aspect of human life that not only affects individual well-being but also has a significant impact on the poverty level in society. Poor health not only affects individuals but can also cause serious economic consequences, especially in the context of poverty.

According to Todaro (2009), health plays a very important role in achieving happiness. Health is not only a prerequisite for increasing productivity but also a determinant of success in education. The success or failure of the education process often depends on optimal health conditions. Therefore, ensuring adequate health is crucial because it not only affects productivity but also serves as a solid foundation for overall well-being.

From a health perspective, Michael Grossman's socio-economic approach to health can provide a relevant framework. According to Grossman (1972), individuals invest in health with the goal of improving productivity and quality of life. Grossman's theory states that health has a significant impact on poverty

through various mechanisms. Optimal health can increase individual productivity, reduce the financial burden of healthcare costs, and provide a solid foundation for better education achievement. Increased productivity and job opportunities make individuals more likely to avoid or overcome poverty. Conversely, poverty can worsen health and create a negative cycle between health and economic conditions. Therefore, investment in health is considered a strategic step to reduce the risk of poverty and improve the economic well-being of individuals and society.

### ***Previous Research***

Numerous studies have examined the issue of poverty, as it is a prevalent problem in various economies. The following are past research studies, not only used as references but also for comparison of analytical results in this study:

1. Rudy Susanto & Indah Pangesti (2019) aimed to analyze the influence of education on poverty in DKI Jakarta, utilizing 2014 data and chi-square analysis. The results indicated that education has a significant negative impact on poverty in DKI Jakarta.
2. Saharuddin Didul & Ferri Fauzi (2016) conducted research on the Influence of Population, Education, and Economic Growth on Poverty in Kabupaten Lebak during the period 2003-2012, using multiple analyses. The findings revealed that population, education, and economic growth variables have a significant negative impact on poverty in Kabupaten Lebak.
3. Evi Adriani & Wahyudi (2015) aimed to determine the impact of education, health, and income on poverty from 2000-2014 in Provinsi Jambi, using multiple analyses. The results indicated that education and income have a significant negative impact on poverty, while health has a positive impact on poverty in Provinsi Jambi.
4. Nurlaila Maysaroh Chairunnisa & Yuha Nadhirah Qintharah (2022) conducted research titled "The Influence of Health, Education, and Minimum Wage on Poverty in West Java Province for the years 2019-2020" using multiple regression analysis. The results showed that health does not significantly influence poverty, education has a significant negative impact on poverty, and minimum wages in cities/counties do not significantly affect poverty.
5. Nadia Islami & Ali Anis (2019) tested the impact of provincial minimum wages, education, and health on poverty in Indonesia using panel data regression analysis for the period 2012-2017, discovered that minimum wages and education significantly affect poverty in Indonesia, whereas health does not have a significant impact.
6. Elda Wahyu Azizah, Sudarti, & Hendra Kusuma (2018) examined the impact of education, per capita income, and population size on poverty in East Java Province using panel data regression analysis. The results indicated that both education and per capita income have a significant negative impact on poverty, while population size has a positive and significant impact on poverty in East Java Province.

7. Evi Adriani & Wahyudi (2015) attempted to analyze the impact of education, health, and income on poverty in Provinsi Jambi using multiple regression analysis for the period 2002-2014. The results of this research indicate that education and income have a significant negative impact on poverty, while health does not have a significant impact on poverty in the province of Jambi.

### **Hypothesis**

Based on the preceding explanations, the hypotheses to be tested in this research are as follows:

1. Population growth has a negative and significant impact on poverty in Indonesia.
2. Education has a negative and significant impact on poverty in Indonesia.
3. Health has a negative and significant impact on poverty in Indonesia.

### **METHODOLOGY**

This research is a quantitative study, which is a scientific approach that utilizes numeric data to answer research questions. The data used in this study are secondary data from 34 provinces in Indonesia over a 5-year period (2018-2022), obtained through the BPS website. This research employs poverty, represented by the percentage of the population in poverty, as the dependent variable. It utilizes population growth, represented by the percentage of population growth, education represented by the school participation rate, and health represented by life expectancy at birth as independent variables. The research employs a panel data analysis method to achieve its objectives and test hypotheses. The regression model for this study is presented as follows:

$$\text{LnKm}_{it} = \beta_0 + \text{Ln}\beta_1\text{PP}_{it} + \text{Ln}\beta_2\text{Pd}_{it} + \text{Ln}\beta_3\text{Ks}_{it} + \delta_{it} \dots \dots \dots (1)$$

Explanation of variables in the model are as follows: Km represents poverty, PP denotes population growth, Pd is education, and Ks is health.  $\beta_i$  represents the coefficients of the independent variables, t is time, i is the province, and  $\delta_{it}$  is the error term, with a confidence level of 95%.

Subsequently, this study will conduct Chow and Hausman tests to select the best panel data regression model out of three potential models. Based on the chosen model, statistical tests such as the F-test, t-test, and determinant coefficient will be performed. The research also conducts classical assumption tests, including a normality test to observe whether the residual values are normally distributed and a multicollinearity test to detect any multicollinearity by conducting partial regression between independent variables.

### **RESULTS**

The objective of this study will be addressed using panel data regression analysis, but before that, an estimation test needs to be conducted.

**Model Estimation**

The model estimation test is used to determine the best model among three regression approach models. The test results are as follows:

**Table 1: Results of Chow Test and Hausman Test**

**Chow Test**

Effects Test	Statistic	d.f.	Prob.
Cross-section F	607.645617	(33,133)	0.0000
Cross-section Chi-square	853.801376	33	0.0000

**Hausman Test**

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	18.737017	3	0.0003

Source: Research Results

From the table above, it can be observed that the Chow test results show a p-value < 0.05. Therefore, the selected model is the Fixed Effect Model (FEM) among the Common Effect Model (CEM) and Fixed Effect Model (FEM). The Hausman test results also indicate a p-value < 0.05, leading to the selection of the Fixed Effect Model (FEM) over the Random Effect Model (REM).

Based on the estimation test of the three approaches, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), the Fixed Effect Model (FEM) is identified as the best model.

**Table 2: Regression Equation Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	83.70094	14.77481	5.665111	0.0000
Population Growth (X1)	-0.008205	0.011264	-0.728434	0.4676
Education (X2)	-0.233689	0.087533	-2.669730	0.0085
Health (X3)	-0.794765	0.139530	-5.695998	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.995817	Mean dependent var		10.53888
Adjusted R-squared	0.994684	S.D. dependent var		5.451821
S.E. of regression	0.397485	Akaike info criterion		1.182526
Sum squared resid	21.01326	Schwarz criterion		1.865024
Log likelihood	-63.51475	Hannan-Quinn criter.		1.459476
F-statistic	879.4375	Durbin-Watson stat		1.654646
Prob(F-statistic)	0.000000			

Source: Research Results

### **Hypothesis Testing**

1. Prob.  $t (0.4676) > \alpha = 0.05$ , indicating that the influence of population growth (X1) on poverty (Y) is not significant at a 5% alpha level. This means that H0 is rejected, and it can be concluded that population growth does not affect poverty in Indonesia.
2. Prob.  $t (0.0085) < \alpha = 0.05$ , indicating that the influence of education (X2) on poverty (Y) is significant at a 5% alpha level. This means that H0 is accepted, and it can be concluded that education affects poverty in Indonesia.
3. Prob.  $t (0.0000) < \alpha = 0.05$ , indicating that the influence of health (X3) on poverty (Y) is significant at a 5% alpha level. This means that H0 is accepted, and it can be concluded that health affects poverty in Indonesia.

### **Regression Equation Formula**

Since the hypothesis testing results show that population growth (X1) does not significantly affect poverty (Y), only education (X2) and health (X3) are included in the regression formula, while population growth (X1) is not included. The regression equation is as follows:

$$Y = 83,7009 - 0.2336 X2 - 0.7947 X3 + e$$

From the above formula, it can be understood how education (X2) and health (X3) influence poverty (Y). For a clearer understanding of the influence:

## **DISCUSSION**

### ***The Impact of Population Growth on Poverty in Indonesia***

The results of the regression analysis indicate that population growth (X1) does not significantly affect poverty (Y) in Indonesia. This finding contradicts previous research conducted by Saharuddin Didu1 & Ferri Fauzi in 2016 in Lembak District, where the study showed that the population had a negative and significant effect on poverty. Conversely, another prior study by Elda Wahyu Azizah, Sudarti, & Hendra Kusuma in 2018 in East Java Province demonstrated that population growth has a positive and significant impact on poverty. The disparities in these research outcomes may be attributed to controlled population growth in Lembak District, coupled with the provision of job opportunities, leading to increased productivity and reduced poverty. In contrast, East Java Province, being densely populated with limited job opportunities, experiences unemployment that contributes to an increase in poverty rates. As for Indonesia as a whole from 2018-2022, population growth does not affect poverty due to significant economic improvement, in conjunction with the government's efforts to implement development policies. Despite the continuous increase in population, the positive effects of economic growth, such as increased employment opportunities and improved access to

education and healthcare, have successfully mitigated the potential rise in poverty rates. Nevertheless, the government needs to remain vigilant to ensure that population growth does not bring negative impacts on societal well-being. Therefore, efforts are required to control population growth through family planning policies and the creation of more job opportunities to reduce poverty levels.

### ***The Influence of Education on Poverty in Indonesia***

The education variable (X2) has a significant negative impact on poverty (Y) in Indonesia. With an influence of 23% (percentage), it means that a 1% increase in education in Indonesia will decrease poverty by 23%. This is in line with previous research conducted by Evi Adriani & Wahyudi in 2015 in Lembak Regency, which showed that education has a significant negative impact on poverty. Furthermore, a study conducted by Rudy Susanto & Indah Pangesti in 2019, analyzing the influence of education on poverty in Jakarta, also yielded similar results. Based on these findings, it can be concluded that an increase in education will reduce the poverty rate in Indonesia. Therefore, improvements in the education system are key to addressing the issue of poverty in the country, and there is a need for collective support to enhance accessibility and quality of education.

### ***The Impact of Health on Poverty in Indonesia***

The health variable (X3) has a significant negative impact on poverty (Y) in Indonesia. With an influence of 79% (percentage), it means that a 1% increase in health in Indonesia will decrease poverty by 79%. This is inconsistent with previous research conducted by Nadia Islami & Ali Anis in 2019 in Indonesia, which showed results indicating that health does not affect poverty. The difference in research findings may be attributed to different time periods and situations. Nadia Islami & Ali Anis's research used data from 2012-2017, a period where health might not have been the primary factor influencing poverty rates. In contrast, this study involves data from 2018-2022, during which the adverse impact of the COVID-19 pandemic in 2020 negatively affected health and the economy in Indonesia, leading to decreased productivity and an increase in poverty rates that persisted for up to two subsequent years. This highlights the importance of health in reducing poverty levels. Therefore, there is a need for health improvement by enhancing the accessibility and quality of healthcare services, strengthening the healthcare system, and providing health education to the public to reduce poverty rates in Indonesia.

### ***Coefficient of Determination ( $R^2$ )***

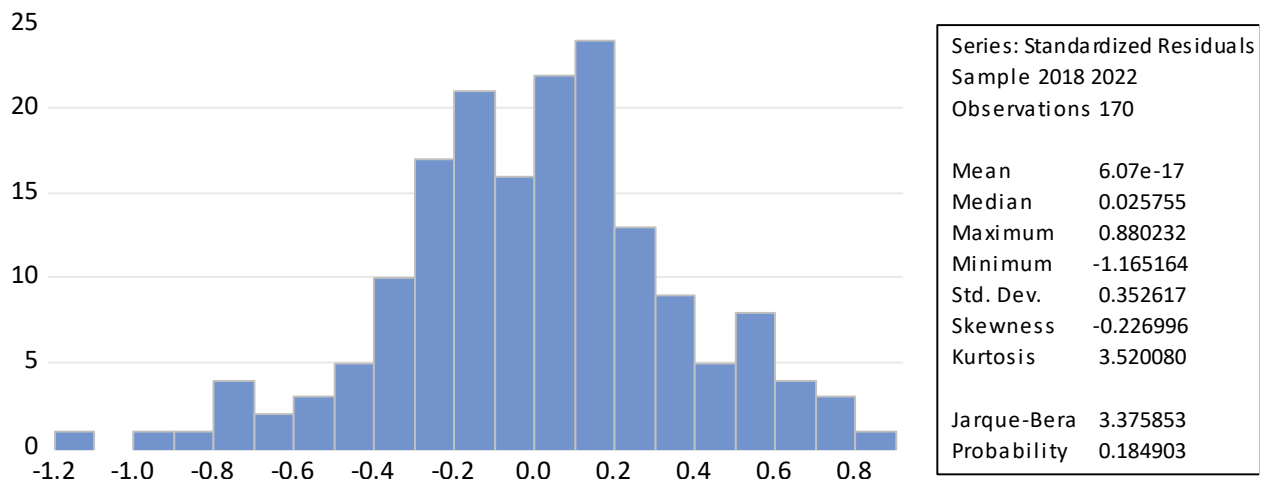
The regression results from this study indicate that the  $R^2$  value is 0.995817. This means that the variables of education and health collectively influence poverty in Indonesia by 99.58%, while the remaining percentage is influenced by other variables not included in this study.

***F-Test***

Based on Table 2, it can be observed that the calculated F-value is greater than the tabulated F-value ( $879.4375 > 1.69726$ ) with a probability value smaller than the significance level ( $0.0000 < 0.05$ ). This indicates that education and health variables simultaneously have a significant influence on the poverty variable.

***Normality Test***

The normality test is conducted to observe whether the residual values are normally distributed, in other words, whether the residual values are normally distributed. The normality test in this study is performed through testing. If the p-value is greater than 0.05, then  $H_0$  is accepted, indicating that normality is met.



Results of the normality test can be observed in the above graph. From the calculation results, a p-value of 0.184903 is obtained (as seen in the table), which is greater than 0.05. According to the  $H_0$  acceptance criteria, the normality assumption is met, and the data is normally distributed.

***Multicollinearity Test***

The multicollinearity test is conducted to ensure that there is no very strong or perfect linear relationship, and that independent variables are not highly correlated with each other. The testing method involves comparing correlation values obtained from panel regression calculations, and if the correlation values between variables are less than 0.8, multicollinearity is considered not to occur.

Table 3: Results of the Multicollinearity Test

	X1	X2	X3
X1	1,00	-0,06	-0,21
X2	-0,06	1,00	0,13
X3	-0,21	0,13	1,00

Explanation:

X1: Population Growth

X2: Education

X3: Health

The results of the multicollinearity test can be observed in the table above, where the testing outcomes for each independent variable show correlations less than 0.8. From these test results, it can be concluded that there is no multicollinearity among the independent variables.

### CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis of the influence of population growth, education, and health on poverty in Indonesia from 2018 to 2022, the following conclusions can be drawn. Papua emerged as the province with the highest percentage of poor population in Indonesia, reaching its peak at 27.53% in 2018. On the other hand, DKI Jakarta had the lowest percentage of poor population, recording 3.47% in 2019. Population growth did not significantly affect poverty in Indonesia. However, education and health both had a negative and significant impact on poverty in the country. The normality test results indicated that the residual values were normally distributed, and the multicollinearity test results showed no multicollinearity among the independent variables.

It is crucial for Indonesia to prioritize the advancement of education, not only to reduce poverty rates but also because it is closely related to overall development and societal well-being. Quality education shapes skilled human resources, enhances labor productivity, and develops citizenship character. In addition to focusing on education, improving health should also be a priority due to its positive impact on productivity; healthy individuals tend to be more productive than those who are unwell. Looking ahead, it is hoped that Indonesia will strive for educational equality and facilitate healthcare access, especially in remote areas, to become an advanced and prosperous nation.

### FURTHER STUDY

Although this study has been undertaken with the aim of investigating the impact of population growth, education, and health on poverty, there are several limitations that need to be acknowledged. First, the theoretical framework of the research is limited, and it would be more beneficial to incorporate additional theories to support the core theory of the study. Second, sampling from 34 provinces in Indonesia over a five-year period (2018-2022) may not encompass all possible variations. Third, determining data for

education and health variables is challenging due to the lack of precise measures, such as relying solely on school participation rates and life expectancy at birth. Fourth, the measurement of education and health is overly simplistic, without considering crucial aspects such as school grades and achievements, or other factors affecting bodily health. Additionally, this research could be enriched by introducing additional variables such as income and economic growth to broaden the understanding of poverty. Nevertheless, acknowledging these limitations serves as a crucial first step towards enhancing the design of future research.

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