

# The Impact of Poverty and Human Development Index on Inequality of Income Distribution of Regency/City in North Sumatra

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## Abstract

This research aims to analyze the impact of poverty and the Human Development Index (HDI) on inequality of income distribution of regency/city in North Sumatra province. This research is quantitative descriptive. The research was conducted in 33 regencies/cities in North Sumatra province. The type of data used is secondary data. Data is accessed online on the website of Central Statistical Agency (BPS) for North Sumatra Province. The data used includes poverty rate data, HDI and Gini Ratio. Data analysis used multiple linear regression analysis. The results showed that poverty had a positive and significant impact on inequality of income distribution of regency/city in North Sumatra province. HDI also has a positive and significant impact on inequality of income distribution of regency/city in North Sumatra province. The results of the simultaneous test conclude that poverty and HDI simultaneously have a significant impact on inequality of income distribution of regency/city in North Sumatra province. This research implicates on preparation of poverty alleviation programs and equal of income distribution of regency/city in North Sumatra province.

**Keywords:** Inequality of income distribution, poverty, human development index

## INTRODUCTION

Inequality of income distribution is a problem faced by almost every region in Indonesia. Income inequality widens the gap between the poor and the rich in the long run. The Gini ratio is often used as an indicator of income distribution inequality. The Gini ratio ranges from 0 to 1. If the Gini coefficient is 0 it means perfect equality, whereas if the Gini coefficient is 1 it means there is absolutely perfect inequality.

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Inequality of income distribution of North Sumatra province is moderate. According to Central Statistical Agency for North Sumatra Province, the Gini ratio of North Sumatra province in 2021 is 0.3145. The coefficient value is moderate. Even though inequality is not high, the government should pay attention to this. Equal distribution of income is a goal that must be achieved by the government to realize social justice for all people.

The current North Sumatra provincial government must maintain consistency in suppressing inequality of income distribution. This is because, in 2021, as many as 27 or 82 percent of regencies/cities in North Sumatra province have low income inequality. Meanwhile, 6 or 18 percent of other regencies/cities are at a moderate level. However, this achievement was slightly tarnished, because in 2021 the Gini ratio of 7 regencies/cities has increased compared to the previous year. This means that the inequality of income distribution in the area has increased. This is a setback for the province of North Sumatra in the midst of efforts to improve equality and social welfare.

Solving the problem of income inequality is a challenge for the government. An in-depth introduction to the important factors that affect inequality of income distribution can help the government formulate appropriate policies to accelerate equity. Several previous studies have found many factors that affect inequality of income distribution, including poverty and the Human Development Index (HDI).

Poverty was found to have a significant positive impact on inequality of income distribution (Hindun et al., 2019). This means that an increase in the poverty rate will further sharpen the income inequality that occurs. Poverty makes it more difficult for marginalized people to enjoy the benefits of development, and instead become victims of development (Suryanto, 2001). The low-income group of people has a lower speed in enjoying the benefits of successful economic growth (Wibowo, 2016) because the factors of production, the use of resources and their profits are controlled by the capitalists, or the rich (Dewantara, 2020). This causes the rich to get richer, while the poor get poorer. In the end the gap in inequality gets deeper.

If poverty is seen as further deepening the inequality gap, the HDI should have the opposite effect. HDI reflects human development achievements from the aspects of education, health and income. A high HDI indicates that people's access to these three aspects is very good. This means that an increase in the HDI should be able to reduce the income inequality that occurs. This is supported by the findings of several previous studies which concluded that HDI has a significant negative effect on income distribution inequality (Samsir & Rahman, 2018; Yanthi & Sutrisna, 2018).

This study aims to analyze the effect of poverty and HDI on the inequality of income distribution in districts/cities in North Sumatra province, either partially or simultaneously. This research is expected to contribute to supporting the regency/city government efforts in North Sumatra province to increase the equity of income distribution

## **METHOD**

The research type is quantitative research. The variables tested consisted of inequality of income distribution as the dependent variable, poverty and HDI as the independent variables. The research was conducted in 33 regencies/cities in North Sumatra province. This research uses secondary data which is accessed online on the Central Statistical Agency (BPS) for North Sumatra Province. The data collected includes poverty rate data, HDI and the gini ratio of districts/cities in North Sumatra Province in 2021.

This research uses multiple linear regression analysis method. Data were analyzed using the IBM SPSS 26 software. The process of data analysis includes several stages. In the early stages, classical assumption testing will be carried out to prove that the model meets the Best Linear Unbiased Estimator (BLUE) criteria. In testing the classical assumptions, there are three tests performed, namely the normality test, multicollinearity test and heteroscedasticity test. Normality testing uses the Kolmogorov-Smirnov test. Multicollinearity testing uses tolerance values and Variance Inflation Factor (VIF). While the heteroscedasticity test uses the Glejser test. If the test results do not find any classical assumption problems, then the analysis process

is continued to the next stage, namely testing the coefficient of determination and testing the hypothesis. The hypothesis test consists of a simultaneous significance test and a partial significance test.

The research equation can be written as follows:

$$Y = a + b_1X_1 - b_2X_2 + e$$

Explanation:

Y = Inequality of income distribution

X<sub>1</sub> = Poverty

X<sub>2</sub> = Human Development Index

a = Constant

b<sub>1</sub>,b<sub>2</sub> = Regression Coefficient

e = Error Standard

## **RESULTS AND DISCUSSION**

### **Classical Assumption Testing**

The classic assumption test aims to ensure that the research model meets the BLUE criteria. In this study, testing the classical assumptions begins with a normality test using the Kolmogorov-Smirnov test. Then proceed with the multicollinearity test and heteroscedasticity test. In the normality test, there are certain criteria that must be met in order for the data to be declared normally distributed. If the Asymp. Sig. (2-tailed) > 0.05, it can be concluded that the data is normally distributed.

**Table 1** Summary of Normality Test

	<b>Value</b>	<b>Explanation</b>
N	33	Normally distributed
Asymp. Sig. (2-tailed)	0,100	Normally distributed

Source: Processed data (2022)

Based on Table 1, it is known that the Asymp. Sig. (2-tailed) value of 0.100. Asymp. Sig. (2-tailed) value is greater than 0.05. This shows that the research data is normally distributed.

**Table 2** Summary of Multicollinearity Test

<b>Independent Variables</b>	<b>Tolerance</b>	<b>VIF</b>	<b>Explanation</b>
Poverty	0,462	2,165	No multicollinearity
Human Development Index	0,462	2,165	No multicollinearity

Source: Processed data (2022)

Table 2 shows the tolerance value for poverty and HDI variables is greater than 0.1. Likewise, the VIF values of the two variables are smaller than 10. This indicates that there is no multicollinearity problem in the research model.

**Table 3** Summary of Heteroskedasticity Test

<b>Independent Variables</b>	<b>Sig.</b>	<b>Explanation</b>
Poverty	0,098	No heteroskedasticity
Human Development Index	0,064	No heteroskedasticity

Source: Processed data (2022)

Table 3 shows that the p-value of the poverty variable is 0.098 and HDI is 0.064. Both of these variables have a p-value greater than 0.05. This shows that there is no heteroscedasticity problem in the research model.

### Multiple Linear Regression Analysis

Summary of multiple linear regression analysis is presented in Table 4:

**Table 4** Summary of Multiple Linear Regression Analysis

<b>Variabel Independen</b>	<b>B</b>
Constant	-0,367
Poverty	0,004
Human Development Index	0,008

Source: Processed data (2022)

Based on the results of the analysis presented in Table 4, the research equation is obtained:

$$Y = -0,367 + 0,004X_1 + 0,008X_2$$

This equation can be explained as follows:

1. The values of constanta -0.367 indicates that if poverty and HDI are zero, then the inequality of income distribution of regency/city in North Sumatra province is -0.367.
2. Coefficient regression of poverty variable 0.004 indicates that if poverty rate increases by 1 percent and the other independent variables remain, then the inequality of income distribution of regency/city in North Sumatra province increases by 0.004. In contrast, a 1 percent decrease in poverty rate will reduce the inequality of income distribution of regency/city in North Sumatra province by 0.004. Poverty has a statistically positive relationship to inequality of income distribution.
3. Coefficient regression of HDI variable 0.008 indicates that if HDI increases 1 percent and the other independent variables remain, then the inequality of income distribution of regency/city in North Sumatra province increases by 0.008. In contrast, a 1 percent decrease in HDI by will reduce the inequality of income distribution of regency/city in North Sumatra province by 0.008. HDI has a statistically positive relationship with inequality of income distribution.

### **Testing the Coefficient of Determination**

The coefficient of determination shows how many independent variables can be in the research model to explain the variation of a dependent variable. The coefficient of determination in this study is shown by the Adjusted R Square value. Summary of coefficient of determination test presented in Table 5:

**Table 5** Summary of The Coefficient Test of Determination

<b>Variabel Independen</b>	<b>B</b>
R	0,700
R Square	0,490
Adjusted R Square	0,456

Source: Processed data (2022)

Based on Table 5, it is known that an Adjusted R Square value of 0.456. This means that poverty and HDI are able to explain 45.6 percent variations of income distribution inequality, while the remaining 54.4 percent is explained by other variables not included in the research model.

### Hypothesis test

This research examines the impact of poverty and HDI on inequality of income distribution, both partially (t test) and simultaneously (F test). Decision making on hypothesis testing is done based on certain criteria. If the significance probability value of the t test is  $<0.05$ , then independent variables are stated partial to affect the dependent variable, and vice versa. If the significance probability value of the F test is  $<0.05$ , then independent variables are stated to simultaneously have a significant effect on the dependent variable, and vice versa. This research uses an alpha value of 5%.

A summary of the results of the t test and F test is presented in Table 6:

**Table 6** Summary of t Test and F Test

<b>Variable</b>	<b>Coefficient</b>	<b>t Statistic</b>	<b>Prob.</b>
Poverty	0.004	2.546	0.016
Human Development Index	0.008	5.079	0.000
F-statistic			14.404
Prob(F-statistic)			0.000

Source: Processed data (2022)

The results of the F test presented in Table 6, show the F-test of 14.404. The significance probability value is 0.000, less than 0.05. Thus, it can be concluded that poverty and HDI simultaneously have a significant impact on inequality of income distribution of regency/city in North Sumatra province.

Poverty has a positive and significant impact on inequality of income distribution. This can be seen from the significance probability value of poverty which is less than 0.05 (0.016 <0.05). The poverty regression coefficient is positive, indicating the direction of the impact of increasing and decreasing poverty on inequality of income distribution of regency/city in North Sumatra province. The results of this research are consistent with the initial allegations that poverty exacerbates inequality of income distribution. People living below the poverty line have very limited access to the benefits of economic development. This is because the factors of production, resource utilization and profits are controlled by capitalists, or the rich (Dewantara, 2020). Meanwhile, the poor only get the smallest share of the benefits of this development (Itang, 2015). Therefore, in the long run, inequality of income distribution will widen. On the other hand, sharpening inequality will make it more difficult for the poor to get out of the poverty zone. In this case, poverty and inequality of income distribution have a causal relationship (Ahmad & Triani, 2018; Fernando & Amar, 2021; Randa & Sentosa, 2020). The results of this study are in line with the research of Hindun et al. (2019).

Inequality of income distribution is also significantly affected by HDI. Table 6 shows that the regression coefficient of HDI is positive. In addition, the HDI probability value is smaller than 0.05 (0.000 <0.05). This means that HDI has a positive and significant impact on inequality of income distribution of regency/city in North Sumatra province. The results of this study are in line with the research of Ariesta et al. (2022) and Farrah & Yuliadi (2020). The findings of this study are different from the initial assumption. The assumption that an increase in HDI will reduce inequality of income distribution is not proven. The research findings reflect the opposite. HDI may positively affect inequality of income distribution. HDI can have a positive effect on income distribution inequality. Farrah and Yuliadi (2020) suggest the reason,

namely that the existence of inequality in a region will affect the level of welfare owned by the people in the region itself. The unevenness of the Human Development Index in all regency/city in North Sumatra causes there to be more developed regions because the quality of human resources in the area is better and there are areas that are left behind because the quality of human resources in the area is still low.

## **CONCLUSION**

Based on the results of the analysis that has been conducted, it can be concluded that poverty has a positive and significant impact on inequality of income distribution of regency/city in North Sumatra province. Similarly, HDI has a positive and significant impact on inequality of income distribution of regency/city in North Sumatra province. The simultaneous test results conclude that poverty and HDI simultaneously have a significant impact on inequality of income distribution of regency/city in North Sumatra province.

Regency/city governments in North Sumatra province need to prioritize poverty alleviation programs so that the poor can move out of the poverty zone. This research implicates on preparation of poverty alleviation programs and equal of income distribution of regency/city in North Sumatra province.

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