

# Estimation of the Proportion of Vulnerable Households and Its Determinants in Lampung Province in 2022

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## ABSTRACT

**Aims:** The purpose of this research to determine the profile of poverty vulnerability in Lampung Province and the factors that influence it. This is one of the efforts to achieve the ultimate goal of determining targeted policies as a preventive effort to prevent poverty from occurring in vulnerable households in Lampung Province in 2022.

**Study design:** Carrying out poverty grouping then carries out testing to determine poverty vulnerability.

**Place and Duration of Study:** The data sources used in this study are secondary data in the form of raw data from the National Socio-Economic Survey (SUSENAS) KOR and Module for March 2022. In addition, this study also uses various other data sourced from the BPS Lampung Website and the Lampung Province Publication in Figures 2022.

**Methodology:** The first step is to estimate poverty vulnerability using the Vulnerability as Expected Poverty (VEP) method. The study continued by analyzing the determinants of poverty vulnerability. The analysis of vulnerability determinants was carried out using the logit regression method.

**Results:** Analysis of the level of vulnerability to poverty in the Lampung region shows that areas with high vulnerability, such as East Lampung, Tanggamus, and South Lampung, are influenced by various structural factors such as limited access to infrastructure and public services, minimal economic opportunities, and dependence on the agricultural sector. These factors are exacerbated by low levels of education and limited access to credit, which further worsen the economic conditions of the community. The number of household members, age of the head of household, education, gender, regional classification, access to credit, savings, employment status, and non-cash food assistance all contribute to the level of vulnerability; increasing the number of household members and the age of the head of household increase the likelihood of vulnerability, while higher education is also associated with increased risk. Male heads of households and urban areas are less likely to experience poverty vulnerability, while access to credit, savings, employment status, and non-cash food assistance can reduce the risk of poverty.

**Conclusion:** The government needs to prioritize infrastructure development in vulnerable areas, such as East Lampung, Tanggamus, and South Lampung, to improve connectivity and public accessibility to basic services, in line with the Lampung Provincial Government's program to improve production efficiency and regional connectivity.

*Keywords: Poverty Vulnerability, Lampung Province, and SUSENAS.*

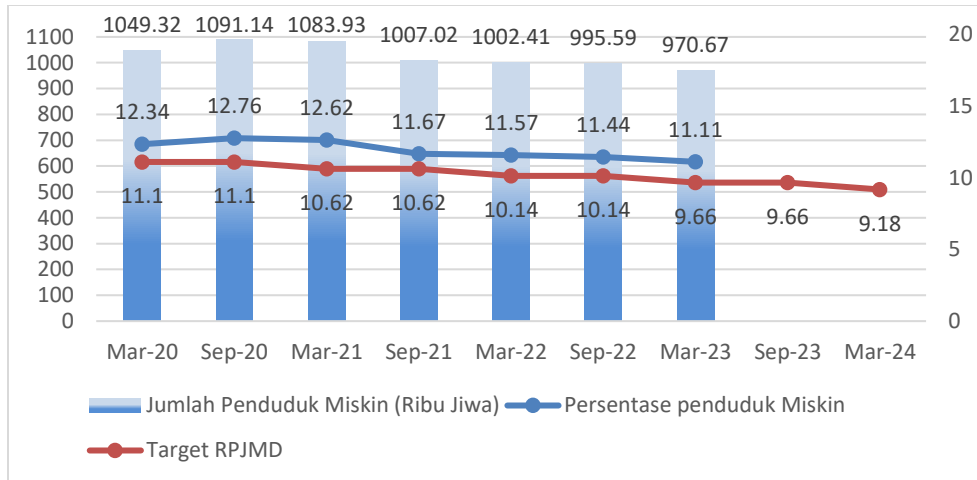
## 1. INTRODUCTION

The issue of poverty is still an ongoing problem that continues to be resolved. Problems in poverty are closely related to the welfare of society in a region. Welfare is described through a person's ability to meet the needs of life and access to

resources.(Haughton & Shahidur R Khandker, 2009).Therefore, poverty becomes a central theme in development because the success of development is often measured by changes in poverty levels. Poverty alleviation has become a commitment and agreement for world leaders, including Indonesia. Globally, the poverty alleviation agreement refers to the Sustainable Development Goals with the target indicators to be achieved, namely the eradication of all forms of poverty in all places by 2030. Furthermore, the Indonesian government has also agreed to target the elimination of extreme poverty by 2024. The Indonesian government's commitment to overcoming poverty is also reflected in the 2020-2024 Medium-Term Development Plan (RPJM) which is part of the National Poverty Alleviation Strategy. The target set by the government is to reduce the poverty rate to 6.0–7.0 percent by 2024.

Based on data from the Central Statistics Agency, Indonesia's poverty rate has a downward trend, namely from 10.64 in 2017 to 9.54 percent in 2022. Although it continues to decline, the majority of Indonesian people are not yet safe from the threat of poverty and can fall into poverty again at any time.(Girsang, 2018)found that although Indonesia has succeeded in reducing poverty rates, there has been quite high socioeconomic mobility from 2000 to 2007 and from 2007 to 2014. This is illustrated by the still high movement out of and into poverty during the three periods. As many as 18.03 percent of households have experienced poverty at least once. These facts show that Indonesia is not only facing poverty problems, but also facing vulnerability problems. This means that there are a large number of people who can easily fall below the poverty line. Therefore, vulnerability problems can hinder efforts to accelerate the reduction of the poor population in Indonesia.

Lampung Province is one of the provinces with a relatively high poverty rate compared to the national rate. The poverty rate in Lampung Province is always above the national rate every year. In 2022, the national poverty rate was 9.54 percent, while in Lampung Province it was still 11.57 percent. Lampung's poverty rate even ranks fourth highest in Sumatra. The poverty rate in Lampung Province has a downward trend. The percentage of poor people in 2017 was 13.69 percent, dropping to 11.57 percent in 2022. Although the poverty rate in Lampung Province has decreased, the target set has not yet been achieved. The target for poverty alleviation in Lampung Province has been outlined in the 2020-2024 RPJMD. Where the poverty rate in Lampung Province in 2024 is targeted to decrease to 9.18 percent.



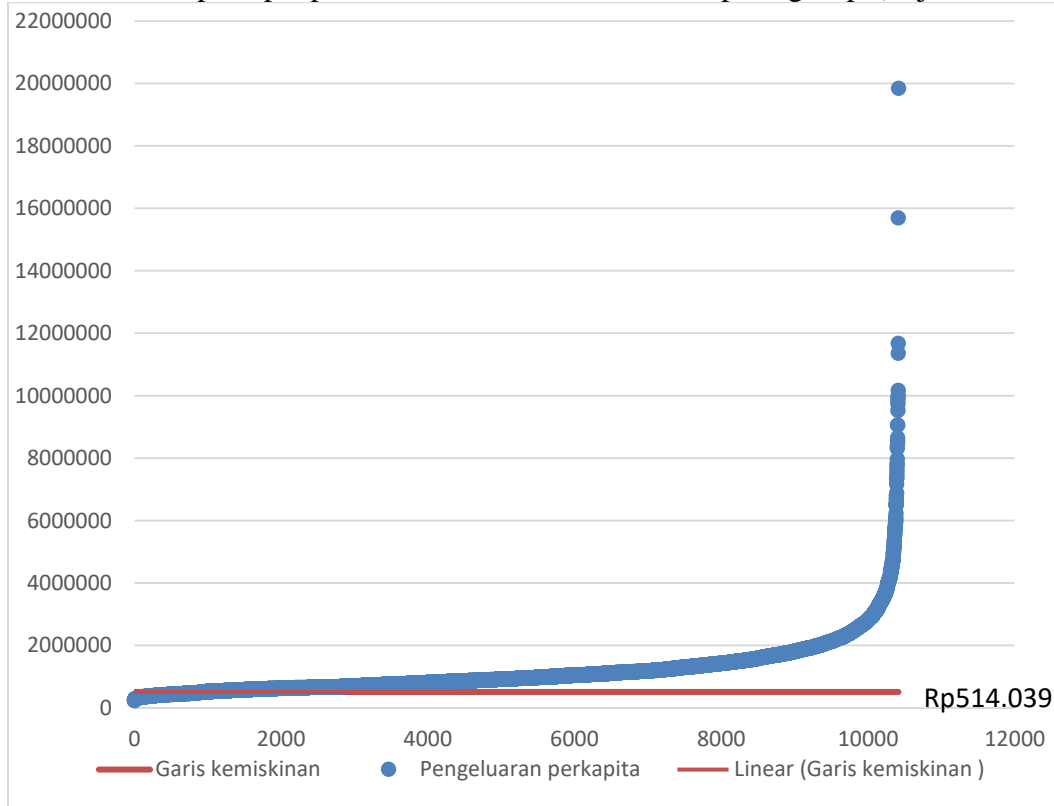
Source: BPS, processed

Figure 1 Poverty Reduction Targets of the Lampung Province RPJMD 2020-2024

From Figure 1, it can be seen that each year the target of the Lampung Province RPJMD has not been achieved. In fact, the gap between the target and the achievement of poverty reduction tends to widen. In 2020, the poverty target for Lampung Province was 11.1 percent, but based on March Susenas data, Lampung's poverty still reached 12.34 percent. In 2023, the poverty rate in Lampung Province was 11.11 percent while the RPJMD target was 9.96 percent. This condition shows that the achievement of the poverty alleviation strategy has not been maximized. Changes in poverty rates are not one-way changes. Changes in the percentage of the poor population are full of movement, going out and into poverty (Haughton & Shahidur R Khandker, 2009). The movement shows that poverty is dynamic. People who are poor in a certain year will not necessarily remain poor in the following years. Conversely, people who are not poor in a certain year will not necessarily not become poor in the following year. The existence of shocks in the economic, climate and natural and social environmental conditions or other detrimental conditions can cause people to become poor in the coming period. (Chaudhuri et al., 2002). This brings us to the concept of vulnerability to poverty, which is defined as the risk that a household will become poor in the near future.

Traditional poverty measures, such as the poverty rate using the current poverty line, do not take into account aspects of dynamic poverty such as this. Traditional poverty measures only focus on people who are currently poor without considering the chances of them becoming poor in the future. Existing poverty programs have not been able to prevent vulnerable poor groups from falling into poverty when there is a shock to their economy. The problem of vulnerability can also be seen from the distribution of households based on their per capita expenditure. Households that are around the poverty line (GK) are households that are vulnerable to falling into poverty. Households that are almost poor experience conditions of insecure income,

so that even a small shock can cause them to fall into poverty. Vulnerable poor households often escape the attention of society and even the government because the policies taken currently focus on those who have the status of poor people. In fact, vulnerable poor people are not much different from poor groups (Pujiwati, 2023)



Source: Susenas March 2022, processed

Figure 2 Distribution of Households Based on Expenditure Per Lampung Province Chapter 2022

Figure 2 shows the distribution of household per capita expenditure in Lampung based on the March 2022 SUSENAS data sample. From the figure, it can be seen that there are still many households in Lampung who live slightly above the poverty line. These residents are called vulnerable poor residents. Referring to several journals, vulnerable poor households are approached with households that have per capita consumption below 1.6 of the poverty line. Thus, there are still 30.75 percent of the population of Lampung Province who are included in the vulnerable poor group. Previously (Adnyani & Lilik Sugiharti, 2019) conducted a study on household vulnerability profiles and determinants, where the results of the study showed that Lampung Province faces vulnerability problems. In the study, Lampung Province was even the province with the highest poverty vulnerability value in 2014.

Calculation of poverty vulnerability is not the same as poverty measurement. Poverty vulnerability analysis is ex ante or future impact.. so that the policies implemented by the government are expected to be able to prevent vulnerable poor people from

falling into poverty. Meanwhile, poverty measurement is an ex-post measurement, namely a measurement of something that has happened, so that the strategies developed only aim to reduce the impact of poverty. Chaudhuri et al., (2002) Vulnerability measurement has an important function, namely informing the design of forward-looking poverty alleviation strategies. The second function is to highlight the differences between poverty prevention and poverty alleviation interventions and the third function is to explain the existence of risks in poverty dynamics. In addition, (Indahwati, 2006) Poverty alleviation policies should not only focus on poor households. Poverty alleviation policies should be differentiated in order to respond to the dynamics of poverty itself, namely by making different policies for poor and vulnerable household groups. Poor household groups need types of policies that can support their daily survival, such as direct assistance, subsidies for basic necessities, and others. Meanwhile, vulnerable household groups need types of policies that can reduce income fluctuations themselves so that they do not fall into poverty when there is a shock to their economy.

Poverty vulnerability prevention policies cannot be separated from their determinants. These determinants are in the form of household characteristics. The household characteristics in question include a large number of household members, female heads of households, households in rural areas, households that do not have savings, households that do not own land, households that do not have access to credit and households that do not receive social assistance. The factor of a large number of household members is very closely related to household poverty vulnerability. This is in accordance with research conducted (Adnyani & Lilik Sugiharti, 2019) The large number of household members will have an impact on the high dependency ratio and reduced household per capita expenditure. As a result, the lower the level of welfare that can be enjoyed by household members, making them vulnerable to falling into poverty.

The low level of education is also a factor that causes households to become vulnerable to poverty. According to (Ngepah et al., 2023) There is a significant negative relationship between education and household poverty vulnerability. This is because the skills and knowledge gained from education can improve the quality of human capital. While limited knowledge will cause the inability to access various resources so that they are vulnerable to poverty. The location factor of households in rural areas has a higher risk of experiencing poverty vulnerability (Chaudhuri et al., 2002). This is also supported by research conducted (Adnyani & Lilik Sugiharti, 2019) where the proportion of rural residents who are classified as vulnerable to poverty is greater than urban residents. This condition can occur because public facilities in urban areas are more complete than in rural areas. This causes households living in villages to have difficulty accessing health service centers, educational facilities, and markets. As a result, household economic activities are hampered, making them vulnerable to poverty in the coming year

Household factors headed by women have a higher risk of experiencing vulnerability. This is in line with research conducted by (Mba et al., 2018). Where the results of the study show that female heads of households increase poverty vulnerability by 1.62 percent. The factor of credit access reduces the risk of households experiencing poverty vulnerability. This is in accordance with the study (Abebe, 2016) where the results of the study show that significant credit access reduces households vulnerable to poverty. Credit access can help households build resilience to poverty in the future because it can enable the purchase of inputs and production assets and protection against shocks. Another important factor of poverty vulnerability is physical assets, namely land ownership. This is in accordance with research conducted by (Adnyani & Lilik Sugiharti, 2019). Based on his research, it was found that statistically the land ownership variable has a significant effect and has a negative direction on the possibility of households being vulnerable to poverty. This means that when compared to households that do not own land, households that own land are less likely to fall into poverty in the coming year. Land ownership can be another source of income to deal with negative shocks to the main income. (Haq, 2015).

The social assistance factor is no less important in reducing the risk of households experiencing vulnerability. This is in accordance with research conducted by (Abebe, 2016). This study shows that household participation in social protection programs statistically significantly reduces poverty vulnerability. This is because social protection programs will increase household per capita expenditure. Economic factors in the form of ownership of financial assets such as savings are also factors that reduce the risk of poverty vulnerability. Ownership of savings has been shown to significantly reduce poverty vulnerability (Adnyani & Lilik Sugiharti, 2019). By having savings, households are able to face economic shocks such as natural disasters and rising prices. (Haughton & Shahidur R Khandker, 2009)

Based on the background and identification of the problems that have been explained, the researcher is interested in knowing the profile of poverty vulnerability in Lampung Province and the factors that influence it. This is one of the efforts to achieve the ultimate goal of determining targeted policies as a preventive effort to prevent poverty from occurring to vulnerable households in Lampung Province in 2022.

## 2. METHODOLOGY

### 2.1 Data Types and Sources

This study uses a quantitative approach with cross-sectional data. In the initial stage of the study, poverty vulnerability measurements were carried out in Lampung Province. The method used in this study is the Vulnerable Expected as Poverty (VEP) method developed by Chaudhuri (2000). The next stage is testing the hypothesis of whether or not there is an effect of the number of household members, female heads of households, regional classification, access to credit, land ownership, savings ownership, social assistance on poverty vulnerability. The data sources used in this study are secondary data in the form of raw data from the National Socio-Economic Survey (SUSENAS) KOR and the March 2022 Module. In addition, this study also uses various other data sourced from the Lampung BPS Website and the Lampung Province Publication in Figures 2022.

### 2.2 Data Analysis Methods

The analytical methods used in this study are descriptive analysis and inferential analysis. Descriptive analysis is used to describe the distribution and profile of households according to poverty status in Lampung Province in 2022. Inferential analysis is carried out using binomial logistic regression.

#### 2.2.1 Poverty Status Classification Analysis

To answer the first objective, namely to determine the proportion of households based on their poverty status, several stages are required. The stages that must be carried out include:

1. Getting the Consumption Log Variance Value  $X_h \hat{\theta}_{FGLS}$

To assess household poverty vulnerability, a prediction of future prospects of household consumption expenditure is required. To be able to predict future household expenditure, a model is needed that takes into account various factors that influence consumption expenditure. To calculate vulnerability, household consumption expenditure will be used as the basis for forming the probability function, so that the consumption expenditure variable is required to follow a certain distribution, for example normal. However, consumption expenditure between individuals or households will vary greatly in value and of course it will be difficult to follow a normal distribution. Therefore, in the VEP approach, consumption expenditure is assumed to be distributed log-normally so that by transforming consumption expenditure in the form of a natural logarithm (Ln), Ln $C_h$  is assumed to be distributed normally (Chaudhuri et al., 2002). The model of consumption expenditure that is formed is:

$$\ln C_h = \alpha + \beta_1 jlh\_art_h + \beta_2 pendidikan_h + \beta_3 Jenis\_kelamin_h + \beta_4 Klasifikasi\_Daerah_h + \beta_5 Kepemilikan\_Lahan_h + \beta_6 Bantuan\_Sosial + \beta_7 Akses\_Kredit_h + \beta_8 Kepemilikan\_Tabunga_h + \varepsilon_h \quad (1)$$

Through this OLS regression, the expected value of log consumption and residuals will be obtained. Furthermore, the residuals are squared. The equation for the model is written as follows:

$$\varepsilon^2 = \alpha + \beta_1 jlh\_art_h + \beta_2 pendidikan_h + \beta_3 Jenis\_kelamin_h + \beta_4 Klasifikasi\_Daerah_h + \beta_5 Kepemilikan\_Lahan_h + \beta_6 Bantuan\_Sosial + \beta_7 Akses\_Kredit_h + \beta_8 Kepemilikan\_Tabunga_h + \varepsilon_h \dots (2)$$

The estimation results in model (2) are used to transform the problem into the following form:

$$\frac{\hat{\varepsilon}_{OLS,h}^2}{X_h \hat{\theta}_{OLS}} = \left( \frac{X_h}{X_h \hat{\theta}_{OLS}} \right) \theta + \frac{\eta_h}{X_h \hat{\theta}_{OLS}} \dots \dots \dots (3)$$

From this second step, an estimate of the variance will be obtained.  $X_h \hat{\theta}_{FGLS}$

2. Get the Expected Value of Log Consumption ( $X_h \hat{\beta}_{FGLS}$ )

To measure poverty vulnerability using the VEP approach, it is necessary to estimate the expected value and variance of household consumption expenditure per capita from the model that has been formed. The expected value of consumption expenditure per capita shows consumption expenditure per capita in the future period. To estimate the expected value of consumption per capita, OLS regression is carried out again using Weighted Least Square or weighting. The weighting used is . The equation of the transformation form is:

$$\frac{\ln C_h}{\sqrt{X_h \hat{\theta}_{FGLS}}} = \left( \frac{X_h}{\sqrt{X_h \hat{\theta}_{FGLS}}} \right) \beta + \frac{\varepsilon_h}{\sqrt{X_h \hat{\theta}_{FGLS}}}$$

Through this OLS regression, the expected value of log consumption will be obtained.  $X_h \hat{\beta}_{FGLS}$

3. Vulnerability Level Calculation

After obtaining the expected value and variance of household consumption expenditure per capita, the next stage is to estimate the probability of a household falling into poverty or the level of household vulnerability. Based on the calculation, the probability of a household falling into poverty in the next year is obtained as a cumulative density function (Cumulative Distribution Function/ CDF) of the standard normal distribution. Household poverty vulnerability h with characteristics can be calculated using the following formula:  $X_h$

$$\hat{V} = \hat{P}_r (\ln C_h < \ln GK | X_h) \phi \left[ \frac{\ln GK_t - \ln X_h \hat{\beta}_{FGLS}}{\sqrt{X_h \hat{\theta}_{FGLS}}} \right]$$

$\hat{V}$  states the level of poverty vulnerability, namely the chance that the per capita consumption level will fall below the poverty line on the condition that the household has the characteristics GK is the provincial poverty line. While  $X_h \cdot \phi$  shows the cumulative density of the standard normal distribution.

4. Grouping of Household Poverty Status

To group households according to their poverty status, the cut off value The probability used is 0.5 based on p there is research (Chaudhuri et al., 2002). The following is an explanation of the grouping of poverty vulnerability:

- a) Households with a value of 0.5 are classified as highly vulnerable households, meaning that households that fall into the vulnerable category in this alternative are estimated to have a very high chance of becoming poor in the next period.  $\hat{V} \geq$
- b) Households with a value of 0.5 are classified as low vulnerable households.  $\hat{V} \leq$

**2.2.2 Analysis of Variables Affecting Poverty Vulnerability**

To answer the second objective, namely to determine the variables that influence the proportion of vulnerable poor households in Lampung Province, the researcher used binomial logistic regression. Logistic regression is one of the methods used to conduct regression analysis if the dependent variable is a category (Gujarati and Porter, 2010: 543). The dependent variable consists of 2 categories, namely high vulnerable poor denoted  $y = 1$  and low vulnerable poor denoted  $y = 0$ . So that the variable  $y$  follows the Bernoulli

distribution for each single observation. The logistic distribution function is stated as in the following equation:

$$P_h = \frac{e^{\alpha + x_h \beta}}{1 + e^{\alpha + x_h \beta}}$$

The non-linear relationship of  $P_h$  with and parameters cause OLS estimation cannot be done, so a transformation is carried out which finally finds a logit function that is linear to and parameters. Logit is the natural logarithm of the odds ratio is the ratio of the probability of an event of interest to the probability of an event of interest not occurring, this is shown in the following equation:  $x_h \beta$

$$\frac{P_h}{1 - P_h} = \frac{1 + e^{\alpha + x_h \beta}}{1 + e^{-(\alpha + x_h \beta)}} = e^{\alpha + x_h \beta}$$

The logarithm of the equation above produces a Logit Model as in the following equation:

$$L_h = \ln\left(\frac{P_h}{1 - P_h}\right) = \alpha + x_h \beta$$

$$L_h = \alpha + \beta_1 jlh\_art_h + \beta_2 pendidikan_h + \beta_3 Jenis\_kelamin_h + \beta_4 Klasifikasi\_Daerah_h + \beta_5 Kepemilikan\_Lahan_h + \beta_6 Bantuan\_Sosial + \beta_7 Akses\_Kredit_h + \beta_8 Kepemilikan\_Tabunga_h + \varepsilon_h$$

Parameter estimation The equation above is done with Maximum Likelihood (ML). Likelihood is a function of the probability of the occurrence of an event of interest expressed by the joint probability. The principle of this ML method is to find the parameter value that can maximize the likelihood or find the parameter value that can maximize the probability of an event occurring in this case high poverty vulnerability or low poverty vulnerability. Model parameter testing in logistic regression analysis is done to see whether the explanatory variables have a real influence on the model. The parameter tests used in this study are as follows:

### 2.2.2.1 Goodness of Fit (Nagelkerke R square value)

Nagelkerke R square explains how much the independent variables are able to explain the variation that occurs in the dependent variable. The value of the coefficient of determination is between zero and one. A small Nagelkerke R square value indicates that the independent variables are very limited in explaining the variation in the dependent variable. A value approaching one indicates that the independent variables provide almost all the information needed to predict the variation in the dependent variable.

### 2.2.2.2 Hosmer and Lemeshow's Goodness of Fit Test

Hosmer and Lemeshow's Goodness of Fit test is used to prove empirical data fits or matches the model. There is no difference between the model and the data so that the model can be said to be fit. This test uses the Hosmer and Lemeshow test statistics (Hosmer & Lemeshow, 2000) with the following hypotheses:

- H0 : Fit model  
H1 : Model does not fit

Test Statistics:

The Hosmer-Lemeshow test statistic follows a chi-square distribution with degrees of freedom of g-2.

$$\hat{C} = \sum_{r=1}^g \frac{(O_r - n'_r \bar{P}_{1r})^2}{n'_r \bar{P}_{1r} (1 - \bar{P}_{1r})}$$

Where

$O_r$  : number of successful event samples in the rth group

$\bar{P}_{1r}$ : average estimated probability of success of the rth group

$n'_r$ : total sample of rth group

Rejection region: Reject H0 if  $\hat{C} > \chi^2_{(a; g-2)}$  or p-value  $< \alpha$

### 2.2.2.3 Omnibus Test of Model Coefficient

Omnibus test of model coefficient is used to find out whether independent variables can simultaneously predict dependent variables or not. G test statistic is a maximum likelihood ratio test used to test the role of independent variables simultaneously with the hypothesis:

$$H_0 : \beta_1 = \beta_2 = \dots = \beta_p = 0$$

$H_1$ : There must be at least one, with  $\beta_i \neq 0, i = 1, 2, \dots, p$

Test Statistics:

$$G = -2 \ln \frac{\left(\frac{n_1}{n}\right)^{n_1} \left(\frac{n_0}{n}\right)^{n_0}}{\sum_{i=1}^n \hat{\pi}_i^{y_i} (1 - \hat{\pi}_i)^{(1 - y_i)}}$$

With

$n_0$ : number of observations with category  $y=0$

$n_1$ : number of observations with category  $y=1$

$n$ : total number of observations

Rejection area:

Reject  $H_0$  if  $G > X^2_{(a,v)}$  or  $p\text{-value} < \alpha$

## 3. RESULTS AND DISCUSSION

### 3.1 Household Grouping Based on Poverty Status in Lampung Province

After obtaining the best parameter estimate value of household consumption, the next step is to estimate the expected value and variance of household consumption. Then, by using the estimated results of the expected value and variance, the probability value of each household to fall into poverty in the future can be calculated. Based on the obtained poverty vulnerability figures, it can be done

household poverty vulnerability grouping. Household poverty vulnerability grouping is divided into two, namely highly vulnerable groups and low vulnerable groups. Households that have a poverty vulnerability value of more than or equal to 0.5 are declared highly vulnerable, while those below 0.5 are classified as low vulnerable. Based on the calculation of poverty vulnerability values, the average aggregate of household poverty vulnerability values in 15 regencies/cities in Lampung Province in 2022 is obtained.

Table 1 Results of Poverty Vulnerability Calculation

Region	Poverty Vulnerability	
	Low (%)	Tall (%)
West Lampung	78.77	21.23
The Great Wall	73.87	26.13
South Lampung	74.14	25.86
East Lampung	71.72	28.28
Central Lampung	72.53	27.47
North Lampung	74.18	25.82
Right Way	79.94	20.06
Onion Bones	78.69	21.31
Offerings	72.56	27.44
Pringsewu	76.29	23.71
Mesuji	75.00	25.00
West Tulang Bawang	78.00	22.00
West Coast	76.94	23.06

Region	Poverty Vulnerability	
	Low (%)	Tall (%)
Bandar Lampung	81.81	18.19
Metro	83.27	16.73

Source: Stata 14, 2024

Based on Table 1, it is concluded that the areas with the highest levels of vulnerability in Lampung are East Lampung (28.28%), Tanggamus (26.13%), and South Lampung (25.86%). Some common factors that can cause high levels of poverty vulnerability in these areas are limited access to infrastructure and public services. Areas with less developed infrastructure, such as limited access to education, health facilities, and transportation, often show high levels of poverty vulnerability. These limitations affect the quality of life and economic productivity of the community. Furthermore, limited economic opportunities, in rural or remote areas such as some parts of East Lampung and Tanggamus, access to formal employment is often limited. The community relies more on the informal sector or agriculture with unstable income levels.

Next, dependency on the agricultural sector. Areas with a high dependence on the agricultural sector are often more vulnerable to economic fluctuations influenced by climate factors and commodity prices. If crops fail or commodity prices fall, people in these areas are more likely to fall into poverty. Furthermore, low levels of education, lack of access to or poor quality of education can lead to limited skills and knowledge that prevent people from obtaining better jobs. Areas with low levels of education generally show higher rates of poverty and vulnerability. In addition, lack of access to credit or capital for entrepreneurship can also worsen the economic conditions of people. In many rural areas, people do not have access to formal financial systems that could help them improve their standard of living.

### 3.2 Determinants Affecting Poverty Vulnerability

#### a. Overall Model Significance Test Household Individual

From the SPSS results, the "Omnibus Tests of Model Coefficients" table can be used to see the results of simultaneous testing of the influence of variables. Number\_of\_household\_members, Age\_of\_head\_of\_household, Education, Gender, Regional\_Classification, Credit\_Access, Savings, Working, Non-Cash Food Assistance.

Table 2 Omnibus Tests of Model Coefficients Household Individual

		Chi-square	df	Sig.
Step 1	Step	9564.757	9	0.000
	Block	9564.757	9	0.000
	Model	9564.757	9	0.000

Source: SPSS 25 Output, Appendix 3

The overall significance test through the Omnibus Test of Model Coefficients in Table 6 is used to knowing the influence of variables Number\_of\_household\_members, Age\_of\_head\_of\_household, Education, Gender, Regional\_Classification, Credit\_Access, Savings, Working, Non-Cash Food Assistance as a whole or together towards poverty vulnerability. So the criteria in testing are if significant value  $< 0.05$  for all independent variables (dependent variables) Number of household members, Age of household head, Education, Gender, Regional Classification, Credit Access, Savings, Working, Non-Cash Food Assistance) together is said to influence the dependent variable (poverty) or one of them contains one independent variables that affect the dependent variable. On the other hand, if the value significance  $> 0.05$  then the variable Number\_of\_household\_members,

Age\_of\_head\_of\_household, Education, Gender, Regional\_Classification, Credit\_Access, Savings, Working, Non-Cash Food Assistance together not affects poverty vulnerability. Based on Table 2, it shows that the Chi-Square model prob. value is of  $0.000 < 0.05$  significance level  $\alpha = 5\%$ . It can be concluded that the variables Number\_of\_household\_members, Age\_of\_head\_of\_household, Education, Gender, Regional\_Classification, Credit\_Access, Savings, Working, Non-Cash Food Assistance in a way together influence vulnerability to poverty.

**b. Model Fit Test Household Individual**

**1) Nagelkerke R Square Test**

The Nagelkerke R Square test was conducted to determine how large percentage of fit between models with values ranging between zero (0) up to one (1). If the Nagelkerke R Square value is one (1), it can be interpreted that there is a perfect match between the dependent variable and the dependent variable. free. Where the results of the Nagelkerke R Square test are shown in Table 3.

Table 3. Model Summary Household Individual

Step	-2 Log likelihood	Cox & Snell R Square	Nails R Square
1	1534.708a	0.606	0.917

a. Estimation terminated at iteration number 10 because parameter estimates changed by less than .001.

Source: SPSS 25 Output, Appendix 4

Table 3. shows the Model Summary to see the ability of the variables. Number of household members, Age of household head, Education, Gender, Regional Classification, Credit Access, Savings, Working, Non-Cash Food Assistance in explaining poverty vulnerability, the Cox & Snell R Square and Nagelkerke R Square values are used. These values are also called Pseudo R-Square or if in linear regression (OLS) it is better known as R-Square. The Nagelkerke R Square value is 0.917 and the Cox & Snell R Square is 0.606, which shows that the ability variable Number\_of\_household\_members, Age\_of\_head\_of\_household, Education, Gender, Regional\_Classification, Credit\_Access, Savings, Working, Non-Cash Food Assistance, in explaining the vulnerability of poverty in individual household is 0.917 or 91.7% and there are 8.3% other factors outside the model that explain the vulnerability to poverty in individual district/city households in Lampung Province.

**2) Hosmer and Lemeshow Test**

Hosmer and Lemeshow Test is a Goodness of fit test (GoF) or model suitability test, which is a test to determine whether the model formed is appropriate or not. It is said to be appropriate if there is no significant difference between the model and its observation value. From the output results in Table 7, it can be analyzed using a hypothesis test with a p-value, namely in the Sig column. Hypothesis: H0: the model is in accordance with the data; H1: the model does not match the data. Significance level  $\alpha = 5\%$ . Critical area: reject H0 if  $\text{Sig} < \alpha$  Test statistics p-value =  $0.068 > \alpha = 0.05$  the decision fails to reject H0 or H0 is accepted. The calculated Chi Square (X2) value is  $14.538 < \text{Chi Square (X2) table value}$  is 15.507, so H0 is accepted (Table 7). With a significance level of  $\alpha = 5\%$ , it can be concluded that the model that has been obtained is in accordance with the data on individual joint households.

Table 4. Hosmer and Lemeshow Test Household Individual

Step	Chi-square	df	Sig.
1	1.100	8	0.998

Source: SPSS 25 Output, Appendix 5

**c. Hypothesis Testing Household Individual**  
**1) Partial Significance Test and Model Building**

Table 5. *Variables in the Equation*

	Independent Variable	B	SE	Wald	df	Sig.	Exp (B)
Step 1a	Number_of_ART	0.391	0.053	55,198	1	0.000	1,478
	Age_KRT	0.889	0.032	759,907	1	0.000	2.434
	Education	0.402	0.022	337,653	1	0.000	1,495
	Gender	-6.644	0.313	451,416	1	0.000	0.001
	Classification_Area	-6.938	0.307	512.151	1	0.000	0.001
	Credit_Access	2.618	0.199	173,603	1	0.000	13,708
	Savings	-0.128	0.005	575,194	1	0.000	0.880
	Work	-0.216	0.008	675,834	1	0.000	0.806
	Non-Cash Food Assistance	-0.434	0.151	8.209	1	0.004	0.648
	Constant	-33,548	1.283	683,716	1	0.000	0.000

a. Variable(s) entered on step 1: Number of Household Members, Age of Household Head, Education, Gender, Regional Classification, Credit Access, Savings, Work, Non-Cash Food Assistance.

Source: SPSS 25 Output, Appendix 6

With *alpha* level 5% Table 4.5 The variables in the equation above are the variables Number\_of\_household\_members, Age\_of\_head\_of\_household, Education, Gender, Regional\_Classification, Credit\_Access, Savings, Working, Non-Cash Food Assistance which has a P value of the Wald test (Sig) < 0.05, meaning that each variable has a significant partial influence on poverty vulnerability in the model, while for the P Value of the Wald test (Sig) > 0.05, meaning that each variable does not have a significant partial influence on poverty vulnerability in the model. These variables include:

1. The constant has a Wald Sig Value:  $0.000 < 0.05$ , so the constant value in this model is also significant, indicating that even without the influence of independent variables, there are other factors that significantly influence poverty vulnerability.
2. The number of ART (Household Members) has a Wald Sig Value:  $0.000 < 0.05$ , so  $H_0$  is rejected and accept  $H_a$ , which means that the number of household members has a partial or significant effect on poverty vulnerability. The Exp(B) value of 1.478 indicates that with the addition of one household member, the chance of poverty vulnerability increases by 1.478.
3. The age of the KRT (Head of Household) has a Wald Sig Value:  $0.000 < 0.05$ , so  $H_0$  is rejected and accept  $H_a$ , which means that the age of the KRT has a significant effect on poverty vulnerability. The Exp(B) value of 2.434 shows that the older the age of the KRT, the chance of poverty vulnerability increases by 2.434.
4. Education has a Wald Sig Value:  $0.000 < 0.05$ , so  $H_0$  is rejected and accept  $H_a$ , which means that education has a significant effect on poverty vulnerability. The Exp(B) value of 1.495 indicates that the higher the level of education, the chance of poverty vulnerability increases by 1.495.
5. Gender has a Wald Sig Value:  $0.000 < 0.05$ , so  $H_0$  is rejected and accept  $H_a$ , which means that gender has a significant effect on poverty vulnerability. The Exp(B) value of 0.001 indicates that male heads of households have a smaller chance of being in a vulnerable poverty condition compared to female heads of households by 0.001.
6. The Regional Classification has a Wald Sig Value:  $0.000 < 0.05$ , so  $H_0$  is rejected and accept  $H_a$ , which means that the classification of areas (rural and urban) has a significant effect on poverty vulnerability. The Exp(B) value of 0.001 indicates that areas with urban classification have a lower chance of experiencing poverty vulnerability than urban areas by 0.001.

7. Credit Access has a Wald Sig Value:  $0.000 < 0.05$ , so  $H_0$  is rejected and accept  $H_a$ , which means that credit access has a significant effect on poverty vulnerability. The Exp(B) value of 13,708 indicates that those without credit access have a lower chance of experiencing poverty vulnerability than those with credit access of 13,708.
8. Savings have a Sig Wald Value:  $0.000 < 0.05$ , mother rejects  $H_0$  and accept  $H_a$ , which means that savings have a significant effect on poverty vulnerability. The Exp(B) value of 0.880 indicates that having savings reduces the chance of poverty vulnerability by 0.880.
- 3) Work has a Wald Sig Value:  $0.000 < 0.05$ , then rejects  $H_0$  and accept  $H_a$ , which means that employment status has a significant effect on poverty vulnerability. The Exp(B) value of 0.806 indicates that working reduces the chance of poverty vulnerability by 0.806.
- 4) Non-Cash Food Assistance has a Sig Wald Value:  $0.004 < 0.05$ , so it rejects  $H_0$  and received  $H_a$ , which means that non-cash food assistance has a significant effect on poverty vulnerability. The Exp(B) value of 0.648 indicates that receiving non-cash food assistance has a lower chance of experiencing poverty vulnerability than those who do not receive non-cash food assistance of 0.648.

Factors such as more limited infrastructure, limited access to basic services, and government assistance programs may explain the low poverty vulnerability in this region. Appropriate social assistance and economic policies may have succeeded in reducing the risk of vulnerability. Overall, these results indicate that despite differences between regions, poverty vulnerability in Lampung Province is generally at a relatively low level. However, this does not mean that poverty-related challenges do not exist. There may be other factors that may not be captured in these data, such as the distribution of economic resources, job quality, or the impact of ongoing social programs. Santoso, A., et al. (2021) found that access to credit and formal financial services had a significant impact on reducing poverty vulnerability in rural areas. This study underscores the importance of policies that support financial inclusion in remote areas. Wulandari, E., & Sudirman, M. (2020) discuss the effectiveness of social assistance programs in Lampung, showing that non-cash assistance programs significantly reduce poverty vulnerability levels in areas with less developed infrastructure. Azhar et al. (2023) shows that areas with a dependence on the agricultural sector are often more vulnerable to economic fluctuations, but programs to improve food security and access to microcredit have succeeded in reducing vulnerability in many rural areas, including Lampung. Murdiyana & Mulyana (2017) discusses the importance of financial inclusion and the role of access to financial services in reducing poverty. Areas with better access to banking and financial institutions show lower levels of poverty vulnerability. Permana et al. (2021) concluded that education, basic infrastructure, and government assistance directly affect the level of poverty vulnerability in Lampung and South Sumatra. Higher education tends to reduce poverty vulnerability significantly. A study published in 2019 analyzed poverty vulnerability in various provinces in Indonesia, including Lampung, and found that Lampung had a high level of vulnerability in 2014, but has improved since then. Factors such as the age of the household head, education, household size, and ownership of assets such as savings and land also play an important role in determining poverty vulnerability (Saidah, 2020).

The addition of one household member can increase vulnerability to poverty, especially in an unstable economic context. Research shows that the addition of household members often implies an increase in economic burden, which can lead to a decrease in welfare. For example, in a study conducted by Ni Kadek Suardani and Kadir (2024), it was found that households with more members tend to have difficulty meeting basic needs, especially if their per capita income is below the poverty line. This study underlines the importance of understanding the depth of poverty and the gap between the per capita expenditure of poor

households and the poverty line, which shows that the more household members, the more likely they are to be trapped in poverty.(Suardani, 2024). Furthermore, research by the Smeru Research Institute noted that during the pandemic, many individuals who were previously in the vulnerable poor group fell into poverty due to job loss or reduced wages. This shows that social and economic dynamics greatly affect poverty vulnerability at the household level. Thus, the addition of household members not only has an impact on economic well-being but also on the social and mental stability of the family.(Unicef et al., 2021).

The older the age of the head of the household (KRT), the likelihood of vulnerability to poverty tends to increase. This is due to several factors, including decreased productivity and limited access to decent work. Research byThe Last Supper (2019)shows that heads of households aged over 40 years are at higher risk of being trapped in poverty, especially since many of them work in the informal sector which does not provide adequate social protection. In addition, in old age, physical abilities and health often decline, reducing their earning potential. The study also noted that in Indonesia, the proportion of heads of households aged over 40 years who experience poverty vulnerability reached 80.76%. In addition, research byArbarizq (2024)underlined that the older the head of household, the more likely they are to not have sufficient savings or assets to support their lives in old age. This shows that financial planning and access to social services are essential to reduce this vulnerability. Therefore, it is important for the government and related institutions to formulate policies that can support the elderly group so that they do not get trapped in the cycle of poverty.

Education level has a significant influence on poverty vulnerability, although some studies show different results. In the Indonesian context, research by(Surbakti et al., 2023)found that an increase in the average length of schooling was actually positively associated with an increase in poverty of 0.16% for every 1% increase in the average length of schooling. This finding reflects that although education is considered a tool to improve welfare, in practice, the quality of education and its relevance to the labor market greatly determine its impact on poverty. In other words, education that is not balanced with skills that are in accordance with industry needs can produce graduates who find it difficult to compete in the labor market, thus increasing their vulnerability to poverty. Furthermore, research by(Susanto & Pangesti, 2019)shows that the higher the level of education, the lower the poverty rate. This study uses secondary data from the Central Bureau of Statistics and analyzes the relationship between education level and poverty in DKI Jakarta. The results confirm that individuals with low education tend to have limited access to decent jobs, so they are at higher risk of falling into poverty. This shows the importance of quality education in equipping individuals with the skills needed to get good jobs. On the other hand, research by(Zacky & Sholihah, 2023)underlines that while higher education can increase employment opportunities and income, there are other factors such as location of residence and access to resources that also play an important role in determining poverty vulnerability. People in rural areas or areas with less developed infrastructure often do not benefit from higher education due to limited employment opportunities. Therefore, to effectively reduce poverty vulnerability, a holistic approach is needed that focuses not only on improving education levels but also on developing the local economy and providing access to better employment opportunities.

Research by(Yanto et al., 2023)shows that female heads of households often face greater challenges in accessing health and education services, which contributes to their vulnerability to poverty. On the other hand, male heads of households, even though they work in the informal sector, often have better access to employment opportunities and more stable incomes, especially in rural areas. Furthermore, research by(Satriawan, 2022)noted that most male household heads in Indonesia are still of productive age and have higher

education compared to female household heads. This contributes to their ability to get better jobs and avoid poverty. In contrast, female household heads are often trapped in low-wage jobs and lack access to adequate education, increasing their risk of falling into poverty. This study emphasizes the importance of paying attention to gender differences in the context of poverty in order to formulate more effective policies. In addition, a study by (Arbarizq, 2024) shows that the characteristics of the head of the household, including gender, have a significant effect on the chances of poverty. In this study, it was found that female heads of households have a 32.58% higher risk of living in poverty compared to men. This shows that although men as heads of households may face economic challenges, they still have advantages in terms of access to resources and job opportunities. Therefore, to reduce overall poverty vulnerability, it is important to design programs that support women's economic empowerment and improve their access to education and health services.

Research by (Ihsani & Rohman, 2022) shows that in urban areas, individuals have more opportunities to engage in the formal economic sector that offers higher wages and social protection. In contrast, in rural areas, many residents are trapped in informal jobs with low wages and no social security, increasing the risk of poverty. Furthermore, data from the Central Statistics Agency (BPS) shows that the poverty rate in urban areas tends to be lower than in rural areas. In March 2024, the poverty rate in urban areas was recorded at 7.09%, while in rural areas it reached 11.79%.

Research by (Agustina, 2021) shows that while micro and small business credit can provide capital to increase income, unwise or excessive use of credit can cause individuals to get trapped in debt. This has the potential to worsen their financial condition, especially if the income generated is not enough to repay the loan. In this context, access to credit can be a double-edged sword that increases vulnerability if not managed properly. Furthermore, a study by (Anindyntha, 2020) revealed that although access to financial services can help reduce poverty, inappropriate use of credit can cause individuals to experience financial difficulties. This study shows that the variable of financial service use has a significant negative effect on poverty, but only if used wisely. If individuals rely on credit without careful planning, they risk falling into a cycle of debt that is difficult to overcome. Therefore, it is important for the community to have good financial literacy in order to utilize credit access effectively and avoid debt traps.

Research conducted by (Pane et al., 2024) found that access to formal financial services, such as bank accounts and savings products, can increase the proportion of people who set aside their income. By having access to savings, people can not only keep their money safe, but also prepare themselves for future investments, such as education and health. This contributes to improving the quality of life and reducing vulnerability to poverty. However, challenges remain in ensuring that people have adequate access to financial services. Research by (Lalamentik et al., 2022) shows that despite the increasing number of bank accounts among the community, many individuals in remote areas still have difficulty accessing these services. The inability to save due to lack of access to formal financial institutions can worsen poverty. Therefore, it is important for the government and related institutions to continue to expand access to financial services and improve financial literacy among the community so that they can take advantage of savings opportunities effectively and reduce poverty vulnerability in a sustainable manner.

Research by (Purnomo, 2020) shows that increased employment absorption is directly related to a decrease in poverty levels. In this context, the more individuals involved in economic activities, the greater their chances of earning income that can meet basic needs and improve the quality of life. This study underlines the importance of expanding employment opportunities as a primary strategy in poverty alleviation, especially in areas that still have

high unemployment rates. Furthermore, research by (Trimulato & Syarifuddin, 2023) highlights the important role of Micro, Small and Medium Enterprises (MSMEs) in creating jobs and reducing poverty. MSMEs not only provide employment opportunities for individuals, but also contribute to local economic growth. By providing skills training and access to capital, MSMEs can empower people to create their own businesses, thereby reducing dependence on formal employment that may not always be available. This study shows that supporting MSMEs is a strategic step in poverty alleviation efforts in Indonesia. However, challenges remain in ensuring that the jobs provided can actually improve welfare.

Research by (Ridha & Rumayya, 2024) shows that households receiving BPNT experienced an average increase in food expenditure of 6.52%. This shows that the assistance not only helps in meeting basic needs, but also improves family food security, which is an important step in reducing vulnerability to poverty. Furthermore, the BPNT program also functions as an effective social protection mechanism. According to The Last Supper (2022) This program provides access to Beneficiary Families (KPM) to purchase decent and nutritious food through a non-cash system. With this program, the burden of expenditure on the poor in meeting their basic needs can be significantly reduced. This study also noted that BPNT helps alleviate the impact of poverty by providing an important social safety net for vulnerable families. However, challenges in implementing the BPNT program remain, such as the accuracy of targeting beneficiaries. Research by (Salsabila et al., 2024) shows that there are still problems in the data collection of aid recipients, where some recipients do not meet the established criteria. This can reduce the effectiveness of the program in achieving its goal of reducing poverty. Therefore, it is important for the government to continue to improve the data collection and distribution system so that non-cash food assistance really reaches those in need, so that it can maximize its impact in reducing the vulnerability of poverty in the community.

#### **4. CONCLUSION**

Analysis of the level of vulnerability to poverty in the Lampung region shows that areas with high vulnerability, such as East Lampung, Tanggamus, and South Lampung, are influenced by various structural factors such as limited access to infrastructure and public services, minimal economic opportunities, and dependence on the agricultural sector. These factors are exacerbated by low levels of education and limited access to credit, which further worsen the economic conditions of the community. The number of household members, age of the head of household, education, gender, regional classification, access to credit, savings, employment status, and non-cash food assistance all contribute to the level of vulnerability; increasing the number of household members and the age of the head of household increase the likelihood of vulnerability, while higher education is also associated with increased risk. Male heads of households and urban areas are less likely to experience poverty vulnerability, while access to credit, savings, employment status, and non-cash food assistance can reduce the risk of poverty. Therefore, interventions are needed that focus on improving infrastructure and access to public services, developing local economic empowerment programs, and expanding access to education and credit. The government needs to prioritize infrastructure development in vulnerable areas, such as East Lampung, Tanggamus, and South Lampung, to improve connectivity and accessibility to basic services, in line with the Lampung Provincial Government's program to improve production efficiency and regional connectivity. In addition, the development of local economic empowerment programs through job skills training and support for micro, small, and medium enterprises (MSMEs), as well as expanding access to credit for rural communities, is important to support economic diversification, create new jobs, and increase community income, thereby significantly reducing vulnerability to poverty.

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