

**THE UNEMPLOYMENT ISSUE AND ITS IMPACT ON SUMATERA ISLAND****<sup>1</sup>Kartini, <sup>2</sup>Yolanda, <sup>2,\*</sup>Herry Wira Wibawa, <sup>2</sup>Pudji Astuty and <sup>3</sup>Syofria Meidona**<sup>1</sup>Postgraduate Student at Borobudur University, Jakarta Indonesia<sup>2</sup>Lecturer at Borobudur University, Jakarta, Indonesia<sup>3</sup>Lecturer at the University of West Sumatra, IndonesiaReceived 12<sup>th</sup> April 2023; Accepted 20<sup>th</sup> May 2023; Published online 30<sup>th</sup> June 2023

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**Abstract**

This study aims to examine the effect of unemployment on poverty and the human development index in 8 selected Sumatran provinces. For this reason, this study uses panel data, namely cross-section data (8 provinces on the island of Sumatra) and time series data (2007-2020). The methodology of this study uses two econometric models, namely Model 1 of unemployment in relation to poverty, and Model 2 of unemployment in relation to the human development index. In this study, we will use descriptive statistics, correlations, and linear regression. The empirical findings of this study indicate that unemployment has a positive and significant relationship with poverty, and the effect of unemployment on the human development index is positive and significant. Model 2 contradicts theory and many other research results, where unemployment has a negative effect on the human development index. This is due to the many government assistance programs for the unemployed, so they deserve to live.

**Keywords:** Unemployment, Poverty, Human Development Index, Random Effect Model

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**INTRODUCTION**

The paradigm of economic development, the population is considered a resource that influences economic growth. High population and population growth can cause problems in the economic development of a country, especially the problem of unemployment. The problem of unemployment is actually a classic problem that is still difficult to overcome in many countries, especially poor countries, because theoretically people who are unemployed mean they don't have jobs and income, and by not having income these people cannot meet their needs. Because unemployment is a major problem in the economic development of a country, efforts are needed to suppress/reduce it, as stated (Cristescu, 2017). The availability of employment is lower than the growth of the labor force resulting in unemployment. High unemployment growth can encourage a number of social problems, for example, according to (Rafiq, Ahmad, Ullah, & Khan, 2008) that unemployment causes crime, suicide, and poverty levels.

The natural rate of unemployment is between 2-3 percent with the economy at full employment (Sadono Sukirno, 2008) and this happened in developed countries. Unemployment can be indicated by the large availability of labor compared to the demand or need for labor, which in turn causes many to be out of work. The large number of workers who do not get the opportunity to work will cause problems in a country's economy, so government policies are needed because they will have an impact on poverty and the population is not prosperous. Besides that, unemployment causes people to be trapped in poverty, and not prosperous and a country's economic development will be further away from progress. According to (Suryawati, 2005), poverty is living in a lack of

money and low-income levels, health levels, low education levels, and powerlessness in determining their own way of life. Meanwhile (Kuncoro, 2004) states that we can measure the level of welfare with the Human Development Index (HDI), which includes three important components, namely the life expectancy index, the education index, and the index of decent living standards. Based on the explanation about unemployment above, there are many articles from research that explain unemployment which results in poverty and a person's welfare, including (Meo *et al.*, 2018) about the relationship between unemployment and poverty in Pakistan, (Pohlan, 2019) about the causal relationship between unemployment and various dimensions of social marginalization in Germany, (Lindemann and Gangl, 2019) on the adverse effects of parental unemployment case studies in Germany, (Sessu, 2020) on the positive and significant relationship between unemployment and poverty in Indonesia, (Morrish and Medina-Lara, 2021) about the high level of loneliness due to unemployment in higher income western countries, (Bai, 2021) about the relationship between unemployment and strong and positive credit risk in A, (Choirur *et al.*, 2021) about the relationship between open unemployment and poverty significant and positive, (HailuDemek, 2022) regarding the effect of youth unemployment on political instability in IGAD member countries. And many others. This article discusses unemployment on the island of Sumatra in Indonesia. Sumatra Island is in a position between 6°N-6°S and 95°W-109°E, to the north it is bordered by the Bay of Bengal, to the east by the Malacca Strait, to the south by the Sunda Strait and to the west with the Indian Ocean. It has an area of 443.065,8 km<sup>2</sup> and a population of 58,6 million at the end of 2021. The description of the island of Sumatra is as follows:

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This island consists of 8 provinces on the mainland and 2 island provinces. The provinces on the island of Sumatra are Aceh, North Sumatra, Riau, West Sumatra, Jambi, Bengkulu, South Sumatra, Lampung, Riau Islands and Bangka Belitung Islands. An overview of unemployment for 8 provinces in Sumatra can be seen in the following table:

**Table1. Unemployment data in 8 Provinces on the Island of Sumatra**

Province	Years / Growth (%)				
	2016	2017	2018	2019	2020
Aceh	7,6	6,6	6,4	6,20	6,6
Sumatera Utara	5,8	5,6	5,6	5,41	6,9
Sumatera Barat	5,1	5,6	5,6	5,33	6,9
Riau	7,4	6,2	6,2	5,97	6,3
Jambi	4,0	3,9	3,9	4,19	5,1
Sumatera Selatan	4,3	4,4	4,2	4,48	5,5
Bengkulu	3,3	3,7	3,5	3,39	4,1
Lampung	4,6	4,3	4,1	4,03	4,7
Sumatera	5,27	5,04	4,9	4,88	5,8
Indonesia	5,6	5,5	5,3	5,23	7,1

Table 1 above shows the unemployment rate in Indonesia as well as the average for the island of Sumatra and the 8 provinces in Sumatra, which are above natural unemployment (3 percent). This shows that unemployment that occurs can have an impact on many things in the Indonesian or regional economy. The magnitude of the unemployment rate that occurs cannot be ignored and needs to be handled by the government or policymakers.

Based on these data, the author wants to know to what extent unemployment has an impact on poverty and social welfare as a proxy for the Human Development Index in 8 provinces on the island of Sumatra. Statement of the form of the hypothesis as follows:

1. Unemployment has a positive and significant impact on poverty in 8 provinces in Sumatra.
2. Unemployment can have a negative and significant impact on the Human Development Index in 8 Provinces in Sumatra
3. Determining the greatest/lowest potential for poverty and the Human Development Index of unemployment from 8 provinces in Sumatra.

## LITERATURE REVIEW

Unemployment is an institutional error in government and private agencies which has an impact on market, demographic, legal and regulatory arrangements (Linbeck, 1999). (Mankiw, 2003) states unemployment is the amount of labor supplied exceeds the amount of labor demanded, (Sukirno, 2006) states unemployment is a condition where a person belongs to the labor force and wants to get a job but they have not gotten it, International Labor Organization (ILO) defines unemployment as the number of people who do not have a job, are looking for work, people who have lost their jobs and those who voluntarily leave work. From the definition above, it can be concluded that the unemployed are people who do not have a job with various causes. Unemployment is a problem in the economy and the causes are very complex and the effects are also very complex.

Poverty, illustrated by low income to meet basic needs. According to the Indonesian Central Bureau of Statistics, in determining poverty criteria, the basic needs approach is used Basic needs approach to determine poverty using: (1) Headcount Index, (2) Poverty Gap Index. (3) Poverty Severity Index. The Headcount Index is used to measure absolute needs which consists of two components, namely the food poverty line and the non-food poverty line. The Poverty Gap Index is a measure of the average expenditure gap of each poor population against the poverty line. Where the higher the index value, the farther the average population expenditure is from the poverty line, and the Poverty Severity Index is a measure of the weighted sum of the poverty gap (as a proportion of the poverty line), where the weight is the proportion of the poverty gap itself. In addition, poverty can be measured from the dimensions of income and non-financial factors. This income dimension explains that the inability to pay for basic needs and is assumed to have no income or be unemployed/not working. The causes of poverty from an economic perspective are (1) unequal pattern of resource ownership which results in unequal distribution of income, (2) differences in the quality of human resources, (3) differences in access to capital. The relationship between unemployment and poverty has been explained, including (Akwara *et al.*, 2013), (Mahmud *et al.*, 2020), and (Kiaušienė, 2015).

The Human Development Index (HDI), published by the United Nations Development Program (UNDP) through the Human Development Report in 2010 made changes to measurements with indicators: 1. Aggregation of Literacy Rates (AMH) to Aggregation of Average Years of Schooling (RLS) and Old Expectations School (HLS); 2. Per capita Gross Domestic Product is converted into per capita Gross National Product (GNP). Classification of the Human Development Index (HDI) assessment can be grouped into (a) HDI <60 (low); (b)  $60 \leq \text{HDI value} < 70$  (medium); (c)  $70 \leq \text{HDI value} < 80$  (high); d)  $\text{HDI} \geq 80$  (very high). According to (Sulistyowati, Sinaga, & Novindra, 2017), and (Vikash, 2019), an increase in the human development index describes the number of people who can access development in obtaining basic needs (income, health, education) evenly. The calculation of a country's HDI value describes the availability of job opportunities (Irmayanti, 2017) and benchmarks for achieving quality human development (Yolanda, 2017). The determinants of the human development index were examined including (Arisman, 2018), (Ningrum, Khairunnisa, & Huda,

2020), (Faizin, 2021), (Wahyuningrum and Soesilowati, 2021), (Sumarni *et al.*, 2021) and (Sari, 2022).

**METHODOLOGY**

This research is explanatory in nature, namely research that intends to test and explain the relationship between the independent variable (Unemployment) and the dependent variable (Poverty, Human Development Index). The data in this study is secondary data that comes from BPS, and is pooled the data, namely a combination of time series (2007 – 2020) and cross sections (8 Provinces of Sumatra Island).

One way to find out the characteristics of the data used is descriptive statistics. The description of the data used based on descriptive statistics is:

**Table 2. Descriptive Statistics**

Unemployment	ACEH	BENGKULU	JAMBI	LAMPUNG	RIAU	SUMBAR	SUMSEL	SUMUT
Mean	8,240714	4,040000	4,844286	5,417143	7,091429	6,844286	5,869286	6,822857
Median	8,540000	3,905000	4,550000	5,175000	6,865000	6,885000	5,570000	6,580000
Maximum	10,12000	5,080000	8,390000	7,580000	9,790000	10,31000	9,340000	10,31000
Minimum	6,200000	2,900000	3,450000	4,030000	4,830000	5,090000	4,230000	5,410000
Std. Dev.	1,430199	0,732666	1,283815	1,137037	1,397425	1,349614	1,568019	1,297296
Skewness	-0,166153	0,052904	1,546659	0,560628	0,286788	1,028557	0,877130	1,381758
Kurtosis	1,521701	1,486885	5,161115	2,142461	2,230087	4,195743	2,768367	4,729254
Poverty								
Mean	876,2557	320,0886	275,9643	1259,702	513,1036	399,1543	1124,628	1441,461
Median	857,5600	318,4550	280,0400	1141,860	499,2900	378,5700	1102,355	1421,675
Maximum	1083,700	370,6000	311,5600	1661,700	574,5000	529,2000	1331,800	1768,500
Minimum	809,7600	298,0000	241,6000	1041,480	481,3000	343,0900	1042,000	1260,500
Std. Dev.	70,52415	20,17039	17,41077	217,7911	32,67158	55,44399	78,21099	135,0775
Skewness	2,012020	1,292787	-0,179869	0,804883	0,909055	1,034626	1,634106	0,922313
Kurtosis	6,483426	4,042040	3,256843	2,012525	2,317450	3,126511	4,790373	3,539308
HDI								
Mean	70,11571	69,88786	69,95857	68,19857	72,26143	71,09286	69,05786	70,79571
Median	70,47500	70,29500	70,32000	68,63500	72,11500	71,48500	69,12500	70,87500
Maximum	71,99000	72,92000	72,74000	71,42000	76,07000	73,78000	72,95000	74,19000
Minimum	67,45000	65,96000	66,14000	64,20000	68,90000	67,81000	65,12000	67,34000
Std. Dev.	1,528502	2,253166	2,094075	2,282421	2,380206	1,964678	2,591677	2,252382
Skewness	-0,450000	-0,340405	-0,404238	-0,336326	0,215429	-0,275420	0,036623	-0,018555
Kurtosis	1,898670	1,855106	1,963487	1,911191	1,811181	1,731862	1,764548	1,776727

Sources: EViews processed data

Table 2 explains the variables for unemployment, poverty, and HDI in 8 provinces in Sumatra, the data is normal with skewness values ranging between -2 and 2 (Ghozali, 2016a, 2016b). The standard deviation values of the unemployment, poverty, and HDI variables are smaller than the mean values, this illustrates that the variation in the data used is low. To provide certainty that the resulting regression equation has accuracy in estimation is consistent, and is not biased, the Classical Assumption Test is used. The classic assumption tests include the Normality test, Heteroscedasticity test, and Autocorrelation test. (Basuki and Prawoto, 2017) states that the panel regression model consists of the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). To obtain the best regression equation, the Chow test (FEM vs. CEM) is used, the Hausman test (Fixed Effect Model vs. Random Effect Model), and the Breusch Pagan – Lagrange Multiplier test, (CEM vs. REM) (Gujarati &Porter, 2015).

Assessing the impact of unemployment on poverty and the Human Development Index, the econometric specifications are as follows:

$$Y_{it} = \alpha + \beta X_{it} + \epsilon_{it}$$

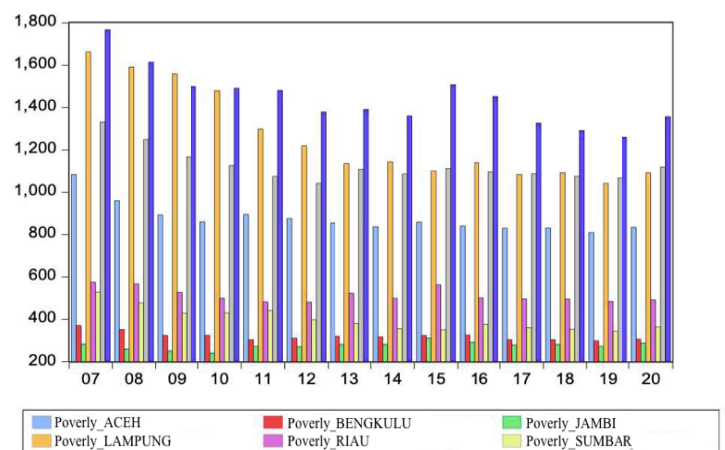
$$\text{LnPoverty}_{it} = \beta_1 + \beta_2 \text{Ln Unemployment}_{it} + \epsilon_{it}$$

$$\text{LnHDI}_{it} = \beta_1 + \beta_2 \text{Ln Unemployment}_{it} + \epsilon_{it}$$

To determine the effect of independent variables on the dependent variable. (Gujarati &Porter, 2015) states that if the p-value is compared to the significance level ( $\alpha$ ) of 5%, where the p-value  $< \alpha = 5\%$  the independent variables have a significant effect on the dependent variable and vice versa. And to measure how far the model's ability to explain the variation of the dependent variable with a determination coefficient value is  $0 < R^2 < 1$  (Ghozali &Ratmono, 2013).

**RESULTS AND DISCUSSION**

Unemployment in 8 provinces in Sumatra can be seen in table 1 above, while the poverty rate and Human Development Index can be seen in the picture below:



**Figure 1. Poverty in the 8 Provinces of Sumatra**

Within 14 years the lowest poverty was Jambi and the highest was North Sumatra. The cause of poverty according to (O'Campo *et al.*, 2015) is the limited number of jobs available causing unemployment and having a direct impact on high poverty, and (Todaro, Michael P., C. Smith, 2011) is the minimum wage. To find out human The development index of the 8 provinces on the island of Sumatra can be seen in Figure 2 below:

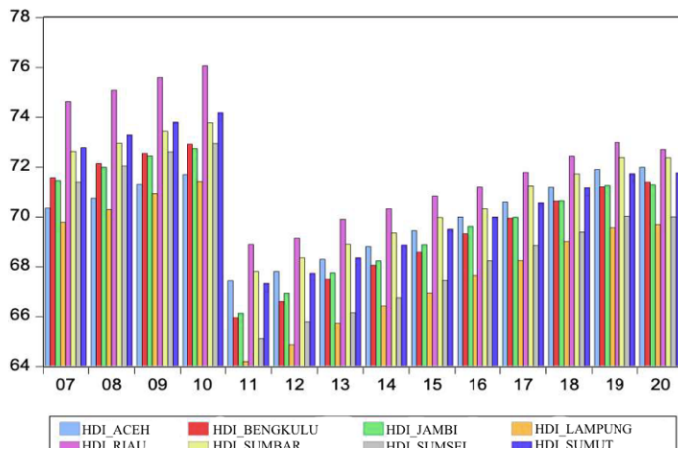


Figure 2. Human Development Index in 8 Provinces of Sumatra

Figure 2 shows that from the period 2007 -2010 all provinces had a high human development index score compared to the period 2011-2020. The decline in the value of this human development index can be influenced by attention related to programs for the poor who are lacking. Related programs for the poor are those related to education, health, and income distribution.

Model 1: Unemployment Against Poverty.

Table3. Common Effect Model, Fixed Effect Model and Random Effect Model

Common Effect Model :				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Unemployment?	3,295460	0,041339	79,71850	0,0000
R-squared	-1,460187	Durbin-Watson stat		0,310937
Adjusted R-squared	-1,460187			
Fixed Effect Model:				
C	4,611987	0,192582	23,94817	0,0000
Unemployment?	0,756947	0,107937	7,012846	0,0000
R-squared	0,815011	F-statistic		56,72359
Adjusted R-squared	0,800643	Prob(F-statistic)		0,000000
S.E. of regression	0,223861	Durbin-Watson stat		1.858076
Random Effect Model :				
C	4,585608	0,230902	19,85952	0,0000
Unemployment?	0,771822	0,106287	7,261689	0,0000
R-squared	0,842789	F-statistic		52,91211
Adjusted R-squared	0,838651	Prob(F-statistic)		0,000000
S.E. of regression	0,223480	Durbin-Watson stat		1,781038

Sources: EViews processed data

The table above explains that the results of panel data processing with EViews obtained 3 models, namely the Common Effect Model, Fixed Effect Model, and Random Effect Model. To get the best model to predict the relationship between the two variables, the Chow test and Hausman test must be carried out. The results of the two tests are:

Table 4. Election Results Panel Data Regression Model

Selection Test Method	Model Result Testing	Model Used
Chow test, selection:	Common Effect vs Fixed Effect, F Prob = 0,0000 < $\alpha = 0,05$	Fixed Effect Model (FEM)
Hausman test, selection:	Fixed Effect vs Random Effect, where Prob,0,4289 > $\alpha = 0,05$	Random Effect Model (REM)

Sources: EViews processed data

Based on the table above, it is explained that the best model with the Chow and Hausman test is the Random Effect Model.

Random Effect Model It is necessary to test the classical assumption with the results of the random effect model. The selected data are normally distributed, free from heteroscedasticity and autocorrelation.

MODEL 2: Unemployment Against Human Development Index

Table 5. Common Effect Model, Fixed Effect Model and Random Effect Model

Common Effect Model :				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Unemployment?	2,118853	0,020016	105,8555	0,0000
R-squared	-0,650515	Durbin-Watson stat		0,328108
Adjusted R-squared	-0,650515			
Fixed Effect Model :				
C	2,269053	0,097922	23,17200	0,0000
Unemployment?	0,872392	0,054883	15,89554	0,0000
R-squared	0,863143	F-statistic		81,20105
Adjusted R-squared	0,852513	Prob(F-statistic)		0,000000
S.E. of regression	0,113826	Durbin-Watson stat		1,754473
Random Effect Model :				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2,240003	0,088907	25,19487	0,0000
Unemployment?	0,888773	0,048484	18,33120	0,0000
R-squared	0,754387	F-statistic		337,8582
Adjusted R-squared	0,752154	Prob(F-statistic)		0,000000
S.E. of regression	0,113519	Durbin-Watson stat		1,775672

Sources: EViews processed data

Based on the results of panel data processing with EViews, 3 models were obtained, namely the Common Effect Model, Fixed Effect Model, and Random Effect Model. To get the best model for the purpose of predicting the relationship between the two variables, the Chow test and Hausman test must be carried out. The results of the two tests are:

Table 6. Election Results Panel Data Regression Model

Selection Test Method	Model Result Testing	Model Used
Chow test, selection:	Common Effect vs Fixed Effect, F Prob = 0,5242 > $\alpha = 0,05$	Common Effect Model (CEM)
Hausman test, selection:	Fixed Effect vs Random Effect, where Prob,0,5422 > $\alpha = 0,05$	Random Effect Model (REM)

Sources: EViews processed data

The best model based on the Chow test and Hausman test is the Random Effect Model. Selecting the Random Effect Model as the best model, it is necessary to test the model with the classical assumption. Based on the classical assumption test, the data obtained are normally distributed, free from heteroscedasticity, and autocorrelation, so that the regression equation formed from the selected model has accuracy in estimation, is consistent, and is not biased. Based on testing the selected model to produce a regression equation that has accuracy in estimating, consistent and unbiased from both models is the random effect model. The form of the regression equation of the two models is:

Model 1 :

$$LnPoverty_{it} = 4,5861 + 0,7718 LnEmployment_{it}$$

The regression equation model 1 is formed from Table 3 and this regression equation explains that: (1). A constant value of 4,5861 means that if unemployment does not change or is constant, the poverty value is 4,5861 and this constant value

is significant and positive. (2) The regression coefficient of unemployment is 0,7718, which means that if the unemployment rate increases by one unit, then poverty is 0,7718. This explains that the increase in unemployment is relatively small compared to the increase/change in unemployment, so the relationship that occurs is inelastic. (3) The magnitude of the variation in the effect of unemployment on poverty is 0,842789 or 84,28 percent and the rest is influenced by variables not examined in this study, namely 14,72 percent. The results of this study are in line with the results of research conducted by (FitzRoy & Jin, 2018), (Anderu, 2021), (Feriyanto, El Aiyubbi, & Nurdany, 2020) and (Fajriah, 2021) which state that unemployment has a positive and significant effect on poverty.

## Model 2 :

$$\ln HDI_{it} = 2,2400 + 0,8888 \ln Employment_{it}$$

The regression equation model 2 is formed from table 5 above. Regression model 2 equation: (1) Has a constant of 2,2400. This value explains that if the unemployment variable does not change, then the HDI value is 2,2400. This constant value is significant at a prob value of 0,0000 and a t test of 25,1949. (2) The regression coefficient of the unemployment variable is 0,8888. Based on the regression coefficient, it can be calculated the elasticity of unemployment against HDI. The HDI elasticity value is 0,8888, which means that every 1 unit increase in unemployment will increase the Human Development Index by 0,8888 units or is called inelastic and the effect is significant and positive. (3) In Table 5. It can also be seen that the value of the coefficient of determination for the regression between the unemployment variable and the Human Development Index is 0,754387. This value explains that 75,44 percent of the unemployment variable is able to explain the Human Development Index (HDI), while the remaining 24,66 percent is influenced by other variables not included in this research model. The results of this study are in line with research (Primandari, 2019), (Susilo, Kholilurrohman, & Hasan, 2020), (Hussain, Nasiri, Akram, & Zahra, 2020) and (Syaputro, 2022).

## Conclusions and Recommendations

The results of the research above explain that unemployment has a positive and significant effect on poverty. The results of this study explain that high unemployment will cause the poverty rate to increase. Poverty in many countries is a social problem that is difficult to describe, and for that, we need appropriate policies to overcome it. One of the root causes of the problem is unemployment. The dominant cause of unemployment is the insufficient availability of jobs for the population to work and earn income. In this regard, it is hoped that policymakers will provide jobs for the unemployed population through laborintensive investment. Unemployment has a positive and significant effect on the Human Development Index. The results of this study contradict the existing theory, where the increase in unemployment and the Human Development Index also increases. Policies related to the human development index are related to government policies regarding population control. As the population increases, the government must increase the budget for the education and health sectors, especially for infrastructure development in the education and health sectors. While the unemployment policy relates to the availability of jobs and

affects the income to be received. In this case, what must be done is that the increase in education and health costs must be balanced by the availability of employment opportunities for the community so that it will affect per capita income and many programs carried out by the government for the welfare of the community through all aid funds are only in the form of temporary problem solving.

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