



Please cite this article as: Mohd Darus, R., Haryadi, Achmad, E., & Omar, M. (2023). Determinants of The Human Development Index During the Covid-19 Pandemic: A Case Study for Regencies/Municipalities In Jambi Province. *The Asian Journal of Professional & Business Studies*, 4(1), 24-34. <https://doi.org/10.61688/ajpbs.v4i1.54>

DETERMINANTS OF THE HUMAN DEVELOPMENT INDEX DURING THE COVID-19 PANDEMIC: A CASE STUDY FOR REGENCIES/MUNICIPALITIES IN JAMBI PROVINCE

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Received 30 April 2023, revised 20 May 2023, accepted 31 May 2023, published 30 June 2023

ABSTRACT

This study examines the determinants of the human development index (HDI) in the regencies/municipalities of Jambi Province during the COVID-19 pandemic. The analysis uses panel data for 11 regencies/municipalities from 2017 to 2021, with economic growth, poverty rate, unemployment rate, and income distribution inequality as explanatory variables. A pre-post comparison is used to assess changes before and during the pandemic, while a panel regression with a fixed effects model is used to estimate the determinants of HDI. The results show that the COVID-19 period was associated with significant changes in economic growth, poverty, and unemployment, but not in income distribution inequality. The panel regression results indicate that the poverty rate has a significant negative effect on HDI, whereas the unemployment rate has a significant positive effect on HDI. Economic growth and income distribution inequality were not statistically significant in this study. These findings imply that poverty reduction remains central to improving HDI in Jambi Province.

Keywords: human development index, poverty rate, unemployment rate, economic growth, and income distribution

1. INTRODUCTION

The United Nations Development Programme (UNDP) introduced the human development index (HDI) in 1990, and it is now routinely published in the Human Development Report. The HDI can be used to assess the level of human development in the Human Development Report. The HDI is used to assess the quality of life in each region. The HDI has three components: health, education achieved, and standard of living, frequently called economic. These three elements are important in determining the level of regional ability to increase the HDI (Central Bureau of Statistics, 2021). According to the UNDP, human development is the process of expanding people's choices. In this instance, the population is the focus, while human development efforts are seen as producing a better standard of living. A better life can be seen

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from the economic progress of each occupant of the country (Feriyanto, 2014). Development is a country's goal. Human Development is a means to create a prosperous society. One way to improve welfare is through economic development, a set of conditions implemented by the government across all sectors of society to achieve a better life.

The Indonesian Constitution in the Preamble to the 1945 Constitution explicitly recognizes this by calling the government's main task of the Republic of Indonesia "to promote social fairness for all, educate the populace, and improve the public welfare for all Indonesians". Citizens are an asset to a country and must be continually improved in a positive direction. The development of human resources, whether physical or non-physical, increases the population's capacity for development, as it is necessary to expand opportunities to participate in development efforts (Septajaya, 2014). Efforts can be made to improve the population's health, knowledge, and skills so that their economic activities in a country are productive. Effectiveness in raising the HDI is the primary consideration when choosing a plan of action and development tools.

The UNDP created an index called the HDI to assess the extent of human development and well-being in a nation. A region ' or nation's welfare rate is measured using the HDI, which is based on three components (Ramadan, 2017). The HDI measures are as follows: 1) Life expectancy at birth, with a dimension indicator of the life expectancy index, which indicates a long and healthy life. 2) Knowledge, as shown by the Mean Years of Schooling (MYS) and Expected Years of Schooling (EYS) with the Education Index dimension indicator. 3) Gross National Income (GNI) per capita (PPP \$) with the dimension Indicator of GNI Index is used to measure a decent standard of living. Human development is a paradigm that views people as the center of attention and the goal of all developmental efforts, including gaining control over resources (money to lead a decent life), enhancing health (long, healthy lives), and improving education. [Regional Body for Planning and Development (2020), Indonesia: Badan Perencanaan Pembangunan Daerah, BAPPEDA].

According to CBS (2021), HDI is a gauge of development progress based on a few fundamental aspects of quality of life. The life expectancy rate, which measures success in the health sector; the literacy rate and average length of schooling, which measure success in the field of education; and the capacity of the purchasing power of 14 people, which is seen from the average quantum of per capita expenditure as an income approach, which measures success in the field of deprivation, are the four factors that go into calculating the HDI. The HDI has increased as computed for the old and new systems. Indonesia's HDI is lower than that of Malaysia, Singapore, Thailand, and Brunei Darussalam. This shows that there is still a need for hard work to improve Indonesians' quality of life amid transnational competition and presents the HDI for Jambi Province for the period 2017 to 2021. Based on data published by CBS Jambi, Jambi Province's HDI has increased rapidly over time. From 2017 to 2022, these growth rates ranged from 69.99 to 71.63, reflecting medium-to-high HDI values, which are considered standard HDI values. The standard value ranges from 0 to 100 and is grouped into four orders, namely, $HDI < 60$ as Low, $60 \leq HDI < 70$ as Medium, $70 \leq HDI < 80$ as High, and $HDI \geq 80$: veritably High HDI.

In 2017, the HDI for Jambi Province was 69.99. In 2018 and 2019, the HDI increased to 70.65 and 71.26, respectively. The HDI in Jambi Province increased to 71.29 in 2020 and 71.63 in 2021. Economic growth, poverty rate, unemployment rate, and income distribution inequality may be factors related to the increasing HDI in Jambi Province.

COVID-19 was established in 2019. It is a type of contagious viral strain that causes respiratory tract infections, similar to those caused by Middle East Respiratory Syndrome coronavirus (MERS-CoV). COVID-19 has spread to several countries and continents, becoming a pandemic. Its prevalence has surpassed the average state that is currently present in numerous countries and all parts of the world with a significant population. It has quickly and widely spread after the early reporting of cases in Wuhan, China, in late December 2019. COVID-19 has had disastrous repercussions. Regarding the complaint's factual significance, the World Health Organization (WHO) declared a global public health emergency on March 11, 2020. (not policy measures). By the end of 2020, there were 83.9 million and 1.8 million independently documented COVID-19 cases and deaths. (Coronavirus Resource Center, 2020).

Since the end of 2019, the coronavirus outbreak has shaken the world. To deal with COVID-19, many governments have implemented measures to reduce transmission by restricting movement, implementing regulations such as physical distancing, scaling back social restrictions, encouraging working from home and online schooling, and shutting down the operations of goods and services. Critical sectors are allowed to operate with limited hours. Community activity restrictions have severely affected the retail, wholesale, distribution, and trade/business sectors. A cross-boundary ban has been enforced, and the government has prohibited all kinds of social programs and socialization, such as parties, gatherings, sports and recreation, and council meetings/seminar gatherings.

COVID-19 entered Indonesia in early March 2020, with a growing number of infections across a widespread area, which was finally declared a public disaster. In taking measures to prevent the invasion, Indonesia closed its borders to curb

COVID-19 transmission and prevent outbreaks in the country from worsening. One of the nations in the globe with a notably high COVID-19 case transmission rate is Indonesia. The Indonesian government has implemented large-scale social restrictions and community activity restrictions enforcement to break the COVID-19 transmission chain. [Indonesia : Pemberlakuan Pembatasan Kegiatan Masyarakat (PPKM) dan Pembatasan Sosial Berskala Besar (PSBB)]. These regulations, which differ depending on the region, include limitations and inspections of activities in popular areas, such as marketplaces, tourist hotspots, and houses of worship. These limitations restrict access into and out of the community and the implementation of health regulations, such as work-from-home (WFH) and home-schooling (SFH), allowing the government to implement public policies to control and restrict the spread of COVID-19 (Ministry of Health, 2020).

The implementation of the new normal has a significant effect on the decline in sociocultural values in society. The implementation of the PSBB and PPKM programs also affects the changing patterns of sociocultural interaction in the community. Every society's socialization among citizens of the community is limited not only to society in general but also to the environment of family, friends, and relatives. Activities that could previously be carried out regularly face-to-face have been moved online (Asmariati, 2021). State-level policy responses to COVID-19 focus on minimizing infection risks through quarantine, testing, contact policing, inspection of schools and workplaces, development of personal protective equipment (PPE) as a specific defensive outfit, and vaccinations. Similar actions have a significant positive influence on the global COVID-19 infection rate (Ghosal et. al., 2020). However, the influence varies depending on the metric, location, and social class. Additionally, measures have considerable financial, social, physical, internal health, and political consequences.

The COVID-19 pandemic has impacted Indonesia's human development. This is evident from the slower growth of the HDI in 2020 compared to previous years. The expansion of the HDI has slowed. The retardation in HDI growth in 2020 was attributed to the drop in each adjuster's average per capita expenditure (BPS, 2021). Numerous economic activities have been limited, restricted, or even suspended due to regulations implemented to combat the spread of COVID-19 and efforts to break the chain of transmission. This has led to an increase in unemployment, a decline in individual and corporate productivity, and the appearance of new poor people, who collectively increased the number of poor people (Izzati, 2020). The COVID-19 pandemic has led to a rise in the proportion of persons living in poverty in most provinces in Indonesia. BPS data states that in June 2020, approximately 22 of the 34 provinces were affected (Herman, 2020). The greatest impact occurred in Java and Bali, successively in the provinces of DKI Jakarta, DI Yogyakarta, West Java, Central Java, East Java, Bali, and Banten.

As streamlined in 2019 by the Governance Bureau of the Region Secretary of Jambi Province, Jambi Province consists of nine regencies and two municipalities. Jambi is the capital and largest municipality of Jambi Province (BPS 2022). The borders of the regency of Jambi Province are Batang Hari, Bungo, Merangin, Kerinci, Muaro Jambi, Sarolangun, Tanjung Jabung Barat, Tanjung Jabung Timur, and Tebo, and the municipalities are Jambi and Sungai Penuh. The first case of COVID-19 in Jambi Province was announced on March 23, 2020, and the first positive case of COVID-19 death in Jambi Province was reported on July 6, 2020. As of March 2021, the total number of verified COVID-19 cases in Jambi Province was 4,543 (Jambi Protocol Public Relations, 2021). In Jambi Province, infection prevention techniques such as social seclusion, social mobility limits, hand washing, and access to PPE were implemented. Although lockdowns may have slowed the spread of the infection, they have further weakened the original food systems by preventing people from accessing their fields, compromising their ability to obtain inputs (such as fertilizers) due to broken food chains and increased costs, and limiting labor accessibility. (Béné, 2020 et Farcas et al., 2021).

On December 31, 2021, the Presidential Decree of the Republic of Indonesia (Keppres) Number 24 of 2021 concerning the Determination of the Factual Status of the Coronavirus Disease 2019 (COVID-19) Pandemic in Indonesia was signed by the President of the Republic of Indonesia, Joko Widodo. It states that the coronavirus disease 2019 (COVID-19) pandemic, which is a global pandemic according to the World Health Organization (WHO), still occurs and has not ended in Indonesia. Based on Presidential Decree Number 11 of 2020 concerning the Determination of Corona Virus Disease 2019, Presidential Decree Number 24 of 2021 is a response to the pandemic and spread of COVID-19, which the WHO declared a global pandemic on March 11, 2020. (COVID-19) Public Health Emergencies and Non-nature Disasters based on Presidential Order Number 12 of 2020 regarding determining non-nature disaster being a national emergency that has not yet subsided, the coronavirus disease 2019 (COVID-19) outbreak has an impact on several areas in Indonesia, including the country's economy, social structure, and public health. (Ministry of State Apparatus Empowerment and Bureaucratic Reform, 2022)

The post-COVID-19 epidemic impact affects the economic sector, especially the decline in people's income situation. This influences the low purchasing power of the people, which causes precarious conditions to become unstable, and the

perpetuation of the new normal weakens trade. Indeed, Indonesia's export sector has also weakened (Nasution et al., 2020). Based on the vast effects of the pandemic on the world in general and particularly in Indonesia, how about economic growth, poverty rate, unemployment rate, and income distribution inequality during the pandemic in the regencies/municipalities of Jambi Province? The line chart statistical information about Jambi Province's economic growth from 2017 to 2021, the growth over time experienced fluctuations. In 2017, Jambi Province's economic growth was 4.60%. Economic growth prolonged to 4.69% in 2018, and in the year 2019, economic growth diminished to 4.35%. Economic growth in Jambi Province dropped significantly to a negative 0.46% in 2020. This severe drop was due to the economic crisis caused by the effects of the COVID-19 pandemic. The mopping impacts of COVID-19-related shutdowns and force chain backups caused all economic sectors to erode. In 2021, economic growth increased again to 3.66%, but was still a lower amount, 0.7%, than the year before. The pace of global economic growth and pressures on global financial markets cause uncertainty for the government and society. Indonesia in 2020 has the potential to be lower if the COVID-19 outbreak continues to spread and is not controlled. This situation prompts the government to implement a stricter social distancing policy than other countries. In 2021, Indonesia was still facing this outbreak due to the virus's ability to mutate; however, the introduction of antiviral treatments and vaccines has successfully curbed the need for global lockdowns and movement controls in Indonesia.

Poverty is a common problem experienced by every nation on Earth, especially developing countries. The COVID-19 pandemic has worsened poverty by increasing the poverty level among people (Wijaya, 2021). The poverty rate in Jambi Province shows a downward trend from 8.19% in 2017 to 7.58% in 2020. In 2018 and 2019, the poverty rates were 7.92% and 7.6%, respectively. Theoretically, a reduction in the poverty rate should increase the HDI in Jambi Province. However, the decline in poverty occurs only in a few regions of Jambi Province; therefore, the uneven reduction in poverty will have no impact on the HDI rate in Jambi Province. In 2021, the poverty rate in Jambi Province increased to 8.09%. This is suspected to be due to the impact of the COVID-19 pandemic, which increased the number of scarcities. The unemployment rate in Jambi Province has fluctuated from 2017 to 2021. In 2017 and 2018, the unemployment rate in Jambi Province was constant at 3.87%. In 2019, the unemployment rate increased to 4.19%, and it reached 5.13% in 2020. The increase may have occurred because of the COVID-19 pandemic, which led to many workers being laid off. Then the unemployment rate in 2021 slightly dropped to 5.09 percent.

The ratio of open unemployment to the total labor force is known as the unemployment rate. Similar to poverty, this rate of open unemployment affects people's purchasing power, causing economic growth to stagnate or even decline. Therefore, the problem of unemployment must be solved to spur the acceleration of economic growth (Nurulita Meita Putri and Sri Muljaningsih, 2022). The Gini ratio indicator is used to measure the overall position of income inequality in a region. The range of values for the Gini coefficient, which measures overall inequality, is 0 to 1, indicating perfect equality to perfect inequality.

In Jambi Province, the Gini ratio shows a fluctuating trend from 2017 to 2020, with a downward trend. In 2017, the Gini ratio in Jambi Province was 0.334, slightly increasing to 0.335 in 2018. In 2019 and 2020, the Gini ratio in Jambi Province decreased to 0.324 and 0.320, respectively. In 2021, the Gini ratio increased to 0.319. Based on data from the BPS Indonesia survey of 2020, the Gini ratio has decreased every year. In 2015, the Gini ratio was 0.402; in 2016, it was 0.394; in 2017, it was 0.391; in 2018 and 2019, it was 0.384 and 0.380, respectively; and in 2020, it continued to decline to 0.385 (Julia Delmasari and Nur Ari Sufiawan, 2022).

The statistical data on the HDI for BPS Jambi Province 2022 show opposition to the determinants of the HDI during COVID-19 and also contradict economic theory and previous studies. The HDI in Jambi Province increased from 69.99 to 71.63 between 2017 and 2021, while most HDI determinants fluctuated and even fell below zero. There is a gap that occurred between the theory and the real data from BPS Jambi Province. A case study should be conducted to answer the research question and the stated problem regarding the determinants of the HDI during the COVID-19 pandemic for regencies/municipalities in Jambi Province.

The increase in Jambi Province's HDI is not in line with the increase in economic growth. Based on the data, economic growth in Jambi Province has fluctuated from 2017 to 2019, then plunged sharply into negative territory in 2020, with a slight uptick in 2021. Jambi Province's HDI continues to increase from 2016 to 2021. This is inconsistent with Todaro (2011), who argued that economic growth increases per capita output growth. Per capita output growth is related to GDP per capita. This changes people's consumption patterns and increases their purchasing power. The increase in people's purchasing power influences the growing HDI because one of the HDI's compound indicators, known as income indicators, measures people's purchasing power.

The data show that the poverty rate tends to decrease from 2017 to 2020, from the range of 8.19% to 7.58%, over time in a downslope pattern, and in the year 2021, the poverty rate in Jambi Province shows a 0.51% increase, while the HDI continues to increase over time from 2017 to 2021. This is inconsistent with the theory that people with low incomes can benefit from both income growth and an increase in HDI (Dewi, 2017).

The data show that the unemployment rate in Jambi Province remained at 3.87% for two consecutive years, 2018 and 2019. The unemployment rate increased sharply by nearly 1 percentage point (0.94 percentage points) in 2020 compared to 2019. The data also showed a consistent percentage in 2020 and 2021, at 5.13% and 5.03%, respectively. The HDI of Jambi Province continues to rise, even though the unemployment rate increased in 2020. This contradicts Sukirno's (2006) assertion that severance hurts people's income, which in turn lowers the position of substance and well-being that a person has attained. The likelihood of being caught in low-HDI countries will undoubtedly increase because of the decline in people's well-being caused by unemployment, as their needs will not be met by their incomes.

The Gini ratio declined from 2017 to 2020 (trending towards perfect equality); however, it remained in the range of 0.334 to 0.320. The Gini value increased in 2021 by 0.012 to 0.332. This case study uses HDI data from 2017 to 2021 and shows a consistent increase in HDI. This condition is inconsistent with Huda's (2013) research, which found that HDI variables are associated with inequality and have an adverse correlation. Accordingly, if the HDI score rises as a result of the HDI score rising, income distribution inequality will decrease, and vice versa.

Based on the above description, an increase in HDI could be influenced by economic growth, poverty rate, unemployment rate, and income inequality. This study will examine the extent to which several factors, such as economic growth, poverty rate, unemployment rate, and income distribution inequality, influence the HDI across regencies/municipalities in Jambi Province. In addition to the above description, the research entitled "Determinants of Human Development Index during the COVID-19 pandemic. A case study for regencies/municipalities in Jambi Province" posed research questions.

2. LITERATURE REVIEW

Research with two categories requires testing different methods for paired data when evaluating a particular treatment on the same sample across two different research periods. This differential test model was used to analyze a pre-post research model of the COVID-19 pandemic. A Paired Sample t-Test was used to assess the condition of economic growth, poverty, unemployment rate, income distribution inequality, and HDI in regencies/municipalities in Jambi Province during the pre-and post-COVID-19 pandemic periods, from 2017 to 2021. Data processing is done using the usage of Statistical Package for the Social Sciences (SPSS) Version 22.

A quantitative approach was used to answer the third research question in this study. It combines the observation of time-series data with cross-sectional or panel data. Data processing will be done by the usage of EViews 9.0. In this study, the tested data were panel (time series) and (cross-section). The panel data regression model is as follows:

$$HDI_{it} = \beta_0 + \beta_1 EG_{it} + \beta_2 PR_{it} + \beta_3 UR_{it} + \beta_4 IDIR_{it} + e$$

Information:

HDI (Y) = Human Development Index of the Jambi Province.

i online regencies/two regencies/two regencies/ 2 municipalities).

t = Year of obser2017–2021ta (2017-2021).

Bo = Constant

B₁ to B₄ = Coefficient Regression Value

EG_{it} = Economic Growth (percent)

PR_{it} = Poverty Rate (percent)

UR_{it} = Unemployment Rate (percent)

IDIR_{it} = Income Distribution Inequality Rate (Gini ratio)

e = error term

3. RESULTS OF RESEARCH AND DISCUSSION

3.1. Condition Of Economic Growth, Poverty Rate, Unemployment Rate, Income Distribution Inequality and Hdi In Jambi Province During The (Pre-Post) Covid-19

Quantitative descriptive analysis, in which the resulting data are in the form of numbers. From the data obtained, an analysis was carried out using SPSS and Eviews 9 software, which was explained as follows:

Table 1
Difference test with t-statistics

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Economic Growth - Impact of the Pandemic	3.20491	2.78697	.37579	2.45149	3.95833	8.528	54	.000
Pair 2	Poverty Rate - Impact of the Pandemic	7.37364	2.70124	.36423	6.64339	8.10388	20.244	54	.000
Pair 3	Unemployment rate - impact of the pandemic	3.63436	1.83533	.24748	3.13820	4.13052	14.686	54	.000
Pair 4	Income Distribution Inequality - Impact of the Pandemic	-.09709	.50223	.06772	-.23286	.03868	-1.434	54	.157
Pair 5	HDI - Impact of the Pandemic	69.64455	3.60577	.48620	68.66977	70.61932	143.242	54	.000

Source: Processed data (2023)

The economic situation in the Province of Jambi during 2017–2019 was typical; however, the COVID-19 pandemic, which had a significant impact on the economy, caused a decline in 2020–2021. The overall weakness of the economy has resulted in a sharp decline in economic activity. Based on this, researchers conducted a study to determine whether the pandemic had different impacts on economic growth, poverty rate, unemployment rate, income distribution inequality, and HDI in Jambi Province, using a dummy variable indicator. Dummy variable 0 represents the period prior to the outbreak of the pandemic, specifically 2017 to 2019, and dummy variable 1 refers to the pandemic period of 2020 and 2021. A paired-samples test was used to address this issue, as shown in table below.

Based on the results of the calculation presented in Table 5.7, it is known that the difference test between the variable conditions of economic growth and the impact of the COVID-19 pandemic has a significance value of $0.000 < 0.05$, meaning that there is a positive impact of the COVID-19 pandemic on economic growth in Jambi Province. The poverty rate variable, with the impact of the COVID-19 pandemic, has a significance value of $0.000 < 0.05$, indicating a positive impact of the COVID-19 pandemic on the poverty rate in the Jambi Province. There is a positive influence of the COVID-19 pandemic on the unemployment rate in Jambi Province, as indicated by the unemployment rate variable, with the impact of the pandemic significant ($p=0.000 < 0.05$). The COVID-19 pandemic has no negative impact on income distribution inequality in the Jambi Province, as indicated by the income distribution inequality variable, which has a significant value of $0.157 > 0.05$. The COVID-19 pandemic had a positive impact on the human development index (HDI) in Jambi Province, as indicated by the HDI variable, with a significance value of $0.000 < 0.05$.

Panel data regression was estimated using pooled OLS, Fixed Effect Model (FEM), and Random Effect Model (REM). Model selection was based on the Chow and Hausman tests, which indicated that FEM was the most appropriate specification. FEM was selected to control for unobserved time-invariant heterogeneity across regencies/municipalities. The dataset consists of 11 regencies/municipalities, observed annually from 2017 to 2021, for a total of 55 observations.

3.2. Effect Of Economic Growth, Poverty Rate, Unemployment Rate, And Income Distribution Inequality on the HDI of Jambi Province For 2017-2021

Panel data regression is used to examine the impact of economic growth, poverty, unemployment, and income inequality on the province of Jambi's HDI. Cross-sectional data from 2017 to 2021 encompass 11 regencies/municipalities: Kerinci, Merangin, Sarolangun, Batanghari, Muaro Jambi, East Tanjung Jabung, West Tanjung Jabung, Tebo, Bungo, Jambi City, and Sungai Penuh. Time series data are from the same years. The significance level for this study was set at 95%, or alpha of 0.05 percent. The panel data regression equation is created using the selected FEM.

Table 2. FEM panel data estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	75.23406	2.191918	34.32340	0.0000
EC?	-0.005485	0.039568	-0.138617	0.8904
PR?	-0.619886	0.269794	-2.297628	0.0269
UR?	0.234878	0.084608	2.776077	0.0083
IDIR?	-4.286967	2.927519	-1.464368	0.1509
Fixed Effects (Cross)				
_KRC--C	0.797371			
_MRG--C	-0.348444			
_SRL--C	0.128034			
_BTH--C	0.867004			
_MJ--C	-3.879806			
_TJT--C	-3.339644			
_TJB--C	-0.559411			
_TB--C	-1.640634			
_BNG--C	-1.645125			
_KJ--C	7.699162			
_KSP--C	1.921493			
Effects Specification				
Cross-section fixed (dummy variables)				
Weighted Statistics				
Root MSE	0.479431		R-squared	0.975724
Mean dependent var	78.53003		Adjusted R-squared	0.967228
S.D. dependent var	20.33292		S.E. of regression	0.562183
Sum squared resid	12.64200		F-statistic	114.8380
Durbin-Watson stat	1.451908		Prob(F-statistic)	0.000000
Unweighted Statistics				
R-squared	0.981189		Mean and dependent var	70.04455
Sumsquaredresid	13.38723		Durbin-Watson stat	1.312854

Source: Processed data, (2023)

The regression equation is as follows:

$$\text{HDI} = 75.23406 - 0.005485 \text{ EG} - 0.619886 \text{ PR} + 0.234878 \text{ UR} - 4.286967 \text{ IDIR}$$

According to the FEM estimates, if there are changes in the variables of economic growth, poverty rate, open unemployment rate, and income distribution inequality, both within and between regions/municipalities, and over time, the constant value is 75.23406 points, which means that the HDI increases by 75.23406 points if these variables are held constant.

The regression coefficient estimation results are as follows: The economic growth regression coefficient is -0.005485, which suggests that for every 1% increase in economic growth, the HDI will fall by 0.005485 points. The poverty rate's regression coefficient is equal to -0.619886, which means that for every 1% increase in poverty, the HDI will fall by 0.619886 points. The open unemployment rate has a regression coefficient of 0.234878, which means that for every 1% increase in the open unemployment rate, the HDI will increase by 0.234878 points. The income distribution inequality regression coefficient is -4.286967, suggesting that for every 1-point increase in income distribution inequality, the HDI falls by 4.286967 points.

3.3. F Statistic Test

Testing the influence of independent variables on dependent variables is conducted using the F-test. To determine the value of table F, namely $55-4-1=50$, the table F value with a significance level of 95% ($\alpha =0.05$) was obtained as 2.40. If the value of Prob (F-statistic) is smaller than α , it can be concluded that the entire set of free variables together affects the dependent variable significantly. In the estimation results, it is known that the prob value of $0.00000 < 0.05$ or statistical $F 114.8380 > F$ Table 2.40; therefore, H_0 is rejected and H_1 is accepted, indicating that the variables of economic growth, poverty rate, open unemployment rate, and income distribution inequality together have a significant effect on the HDI of regencies/municipalities in Jambi Province.

3.4. T Statistik Test

The t-test was used to test the individual influence of the independent variables on the dependent variables. To determine the table t value of $55-4=51$, the table t value with a significance level of 95% or $\alpha 0.05\%$ was 2.00758. If the value of Prob (t-statistic) is smaller than α , it can be concluded that the independent variable has a significant effect on the dependent variable. Conversely, if the value of Prob (t-statistic) is greater than α , it can be concluded that the independent variable has no significant effect on the dependent variable. Based on the results of the estimated panel data regression, the results were processed as follows:

Table 3
Partial statistical t-test on FEM

Variable	t statistik	Prob	table	Alfa	Information
EG	-0.138617	0.8904	2.00758	0.05	Not significant
PR	-2.297628	0.0269	2.00758	0.05	Significant
UR	2.776077	0.0083	2.00758	0.05	Significant
IDIR	-1.464368	0.1509	2.00758	0.05	Not Significant

Source: Processed data, (2023)

Based on Table 3, it can be explained that the economic growth variable 's t-value is $<$ from the t table ($0.138617 < 2.00758$) or the prob value $>$ of α ($0.8904 >$ indicating that H_0 is accepted and H_1 rejected; in other words, economic growth has no significant effect on the HDI of regencies/municipalities in Jambi Province in 2017–2021. The poverty rate variable is known to have a t-value $>$ from the t table ($2.297628 > 2.00758$) or a prob value $<$ of α ($0.0269 < 0.05$), indicating that H_0 is rejected and H_1 is accepted; in other words, the poverty rate has a negative and significant effect on the HDI of regencies/municipalities in Jambi Province in 2017–2021. The open unemployment rate variable has a t-value of $>$ from the t table ($2.776077 > 2.00758$) or a prob value $<$ of α ($0.0083 < 0.05$), indicating that H_0 is rejected and H_1 is accepted; in other words, the open unemployment rate has a positive and significant effect on the HDI of regencies/municipalities in Jambi Province in 2017–2021. The income distribution inequality variable has a t-value of $<$ from the t table ($1.464368 < 2.00758$) or a prob value $>$ of α ($0.1509 > 0.05$), indicating that H_0 is accepted and H_1 is rejected; in other words, income distribution inequality does not have a significant effect on the HDI of regencies/municipalities in Jambi Province in 2017–2021.

3.5. Coefficient Determination

From the test results, the coefficient of determination was obtained as seen from the R Square value of 0.975724, meaning that 97.57 percent of the human development index of regencies/municipalities in Jambi Province in 2017 - 2021 explained by the variables of economic growth, poverty rate, open unemployment rate and income distribution inequality, while the remaining 2.43 percent was explained by other variables that were not included in this study.

3.6. FEM Intercept

The results of the estimates using the FEM revealed that each regency/municipality in Jambi Province had different intercept values. The effects of the fixed effects are as follows:

Table 4
Regencies/municipalities' interception coefficients on the fixed effects model

REG/Munp	Fixed Effect	Kostanta	Fixed Effect Model
_KRC--C	0.797371	75.23406	76.03143
_MRG--C	-0.348444	75.23406	74.88562
_SRL--C	0.128034	75.23406	75.36209
_BTH--C	0.867004	75.23406	76.10106
_MJ--C	-3.879806	75.23406	71.35425
_TJT--C	-3.339644	75.23406	71.89442
_TJB--C	-0.559411	75.23406	74.67465
_TB--C	-1.640634	75.23406	73.59343
_BNG--C	-1.645125	75.23406	73.58894
_KJ--C	7.699162	75.23406	82.93322
KSP--C	1.921493	75.23406	77.15555

Source: Processed data (2023)

Table 4 shows that the intercept value using the estimation results obtained by the FEM can be explained if there is a change in the variables of economic growth, poverty rate, open unemployment rate, and income distribution inequality both between regencies/municipalities and over time, as follows: Kerinci Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017 – 2021, an increase of 76.03143%. Merangin Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017 – 2021, an increase of 74.88562%. Sarolangun Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017–2021, an increase of 75,36209%. Batanghari Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017 – 2021, an increase of 76.10106%. Muaro Jambi Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017 – 2021, an increase of 71.35425%. East Tanjung Jabung Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017 – 2021, an increase of 71.89442%. West Tanjung Jabung Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017 – 2021, an increase of 74.67465%. Tebo Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017–2021, an increase of 73.59343%. Bungo Regency will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017–2021, an increase of 73.58894%. Jambi City will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017–2021, an increase of 82.93322%. Sungai Penuh City will have a fixed effect on the HDI of regencies/municipalities in Jambi Province in 2017 – 2021, an increase of 77.15555%.

4. CONCLUSION AND RECOMMENDATIONS

In the regencies and municipalities of Jambi Province, the COVID-19 pandemic during 2020 to 2021 affected economic growth, poverty rates, and unemployment rates. Meanwhile, wealth inequality had no impact on the COVID-19 pandemic in the regencies and municipalities of Jambi Province. In contrast to the independent variables of economic growth and income inequality, the results of the panel data regression estimation using an FEM showed that the independent variables of poverty rate and open unemployment rate had a significant impact on the HDI in the regencies/municipalities of Jambi Province.

It is important for the regencies and municipalities in Jambi Province to improve access to basic services for those in need. The main goal of this program is to improve the poor's access to essential services, such as health care, education, and infrastructure. In addition to improving the community's health, this can improve the quality of life for the poor and provide them with a greater sense of fulfilment. To continue to shape and influence a better HDI, efforts must be made to raise the HDI value, specifically by reducing unemployment and poverty rates in each region. It is hoped that the government will be able to uniformly implement pro-poor policies across all provinces.

5. ACKNOWLEDGEMENT

The authors express their sincere gratitude to **the Faculty of Economics, Universitas Jambi, Indonesia**, for providing the resources and support necessary to complete this study. We also thank all participants who contributed their time and insights to this research. Special appreciation is extended to colleagues and peers who offered valuable feedback during the development of this manuscript.

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