Journal of Natural Sciences and Mathematics Research
J. Nat. Scien. & Math. Res. Vol. 11 No. 1 (2025) 47-56
ISSN: 2460-4453 (Online); 2614-6487 (Printed)
Available online at http://journal.walisongo.ac.id/index.php/jnsmr

Analysis of population, poverty, unemployment rate, and Gini Ratio on human development index in Bangka Belitung

Helen Suhendra[1*], Adam Indra Sakti[1], Muhammad Akbar Khaffi[1], Desy Yuliana Dalimunthe[1], Haris Zirtana[2], Ridho Juniar[2], Diah Novita Sari[2], Muhammad Raqi Tama[2], Kristin Verahditiya[3]
[1] Mathematics Study Program, Faculty of Science and Technology, Universitas Bangka Belitung. Indonesia
[2] Badan Pusat Statistik Bangka Barat, Indonesia
[3] Badan Pusat Statistik Pangkal Pinang, Indonesia

* Corresponding author's e-mail: hlnsuhendra@gmail.com

ABSTRACT
The Human Development Index (HDI) is a measure that evaluates achievements in human development based on fundamental components of quality of life which influence individual productivity levels. This study aims to analyze the impact of Population Size, Percentage of Poor Population, Open Unemployment Rate (TPT), and Gini Ratio on the Human Development Index (HDI) in the Bangka Belitung Islands Province from 2018 to 2023. The panel data regression method was employed, combining time series and cross-sectional data to provide more accurate information. The findings reveal that the HDI of the Bangka Belitung Islands Province has increased year-on-year, though it remains below the national average. The selected model was the Fixed Effect Model (FEM) based on the results of the Chow and Hausman tests. Analysis indicates that Population Size has a positive and significant effect on HDI, while the Percentage of Poor Population has a negative and insignificant effect. Additionally, the Open Unemployment Rate (TPT) has a positive and significant effect on HDI, whereas the Gini Ratio has a negative and significant effect. Collectively, the four independent variables contributed 95.44% to HDI. These findings are expected to inform government efforts to improve human development quality, such as through poverty alleviation and highlight the need for careful population management to balance employment opportunities in the region. Furthermore, the government should work to reduce the unemployment rate through policies that focus on job creation, increasing workforce competitiveness, and addressing inequality, as reflected by the Gini ratio. This can be achieved by expanding equitable access to education and healthcare.

Keywords:
Population, Poverty, Unemployment Rate, Gini Ratio, Human Development Index.

Introduction

A country's progress can be evaluated through the Human Development Index (HDI), an indicator designed to improve the quality of human life (Faizin, 2021). HDI serves as a measure that reflects human development achievements based on several fundamental components of life quality, which subsequently influence individual productivity. Since 2010, the HDI of the Bangka Belitung Islands Province has shown consistent annual growth. According to data from BPS (Statistics Indonesia) of Bangka Belitung Islands Province, the region's HDI in 2023 reached 74.09, placing it 16th among all provinces in Indonesia and increasing by 0.59 points from the 2022 value of 73.50. However, this figure is still lower than the national average of 74.39, indicating that several areas within the province continue to lag behind compared to other regions in the country.

In addition to HDI, other indicators that influence human development include the Open Unemployment Rate (TPT) and the Gini Ratio. The Open Unemployment Rate represents the

proportion of the labor force that is unemployed yet actively seeking work. A high unemployment rate may hinder public welfare and reduce income levels, which in turn impacts HDI. Based on BPS data, the TPT in Bangka Belitung Islands Province remains relatively high, posing a challenge in efforts to enhance the region's HDI.

The Gini Ratio reflects the extent of income or wealth inequality within a region. A higher Gini ratio (approaching 1) indicates more concentrated income distribution within certain groups, whereas a lower value (approaching 0) suggests more equitable distribution. Significant inequality can impede human development, as disparities in wealth limit access to education, healthcare, and essential public services, directly affecting overall life quality and community productivity.

This research employs Panel Data Regression to analyze how Population, Poverty Rate, Open Unemployment Rate, and the Gini Ratio influence the HDI in Bangka Belitung Islands Province. Panel data combines time series and cross-sectional observations, thus offering more comprehensive information and greater estimation accuracy than other methods. Panel data regression consists of three primary models: the Common Effect Model, Fixed Effect Model, and Random Effect Model. The Fixed Effect Model utilizes dummy variables to distinguish differences across individuals or time periods, helping to better capture regional or temporal variations in the effects of these predictors on HDI.

This study, conducted by Karonika Sihite (2024) examined the influence of GDP per capita, poverty, the Gini Index, and the Economic Growth Rate on HDI in East Java Province from 2013 to 2022. Using multiple linear regression and secondary data, the study found that GDP per capita has a positive and significant partial effect on HDI. Conversely, the Growth Rate and Gini Index exhibit negative but statistically insignificant effects. These findings provide valuable insights into the determinants of HDI in East Java and may support data-driven development policy formulation for the region.

Subsequently, a study by Oktaviani et al (2024), revealed that average years of schooling (RLS), expected years of schooling (HLS), and life expectancy (AHH) each have a positive and significant impact on HDI. Collectively, these variables contributed 99.85% to the variation in HDI. The study concludes that investment in education plays a vital role in enhancing human development in Papua Province and reflects ongoing efforts to fulfill the goals of special autonomy aimed at improving the population's quality of life.

This study aims to determine the significant effects of Population (x_1), Poverty Rate (x_2), Open Unemployment Rate (x_3), and Gini Ratio (x_4) on the HDI of Bangka Belitung Islands Province from 2018 to 2023. The results are expected to provide valuable insights for the provincial government in its efforts to improve HDI and promote more inclusive human development.

Methods

This research utilizes secondary data sourced from publications issued by the Bangka Belitung Islands Province Bureau of Statistics. The study employs panel data an integration of time-series and cross-sectional observations. The dataset consists of HDI values, population figures, open unemployment rates (TPT), Gini ratios, and the percentage of individuals living in poverty across the seven districts/cities within the Bangka Belitung Islands Province for the period 2018–2023.

Human Development Index (HDI)

The Human Development Index (HDI) reflects progress in human development based on essential components of life quality that influence individual productivity. A nation or region's level of development can be assessed through the HDI, which serves to improve human life quality [6]. Based on data from the Bureau of Statistics of the Bangka Belitung Islands Province, the HDI in this region has shown continual annual improvement, reaching 74.09 in 2023, although this score remains below the national average of 74.39.

Population

Population refers to all individuals residing in the geographical region of Indonesia for six months or more, or those staying for less than six months but with the intent to settle. According to, population size impacts HDI, as a growing population in a region is correlated with a rise in HDI. In 2023, the population in the Bangka Belitung Islands Province was recorded at 1,511,899, distributed across the seven districts/cities(Khairunnisa et al., 2023).

Percentage of Poor Population

Poverty represents the inability to fulfill both food and non-food basic needs, measured by per capita expenditure below the poverty threshold. According to Khairunnisa et al., (2023), poverty significantly affects HDI because essential human development indicators health, education, and purchasing power are often unmet among impoverished groups. This lack of access consequently diminishes human resource quality, leading to lower living standards and reduced productivity.

Open Unemployment Rate (TPT)

The Open Unemployment Rate (TPT) indicates the percentage of the labor force that is unemployed but actively searching for work. TPT can influence HDI since high unemployment may constrain community welfare, decrease income, and hinder access to vital public services—factors that ultimately affect human development. Data from the Bureau of Statistics show that the TPT in the Bangka Belitung Islands Province remains relatively high, making it an important variable in this analysis (Faizin, 2021).

Gini Ratio

The Gini Ratio quantifies income inequality within a region, where values approaching 1 reflect greater inequality and values near 0 indicate a more even distribution (Karonika Sihite, 2024). A high Gini ratio can negatively impact HDI by reducing access to health, education, and basic services for lower-income groups, which are essential to improving human development. The Gini ratio is included in this study to examine its effect on HDI in Bangka Belitung.

Panel Data Regression Analysis

The use of panel data offers several benefits compared to solely applying cross-sectional or time-series data. Panel data generate richer and more diverse information, minimize multicollinearity among variables, increase degrees of freedom, and improve estimation efficiency by capturing effects that cannot be observed through cross-sectional or time-series analyses alone. The model used in this study is formulated as follows (Khairunnisa et al., 2023):

$$IPM = a + GR + JP + PPM + TPT + e \quad (1)$$

where IPM is Human Development Index (HDI), A is constant, GR is Gini Ratio, JP is Population, PPM is Percentage of Poor Population, TPT is Open Unemployment Rate (TPT), and e is error term.

Panel Data Regression Models

Three main models are used for panel data regression: Common Effect Model, Fixed Effect Model, and Random Effect Model (Alfina, 2023).

1. Common Effect Model (CEM): This model combines time series and cross-sectional data using a pooled least-squares approach.
2. Fixed Effect Model (FEM): This model allows for different effects between individuals, which are unknown parameters estimated using the least square variable technique.
3. Random Effect Model (REM): This model, unlike FEM, improves efficiency by conserving degrees of freedom and uses generalized least squares for parameter estimation.

Model Selection Tests

In panel data regression analysis, several statistical tests are employed to determine the most appropriate model specification among the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The Chow test is utilized to compare CEM and FEM, where if the probability value of the Cross-Section Chi-Square is less than 0.05, the FEM is selected; otherwise, the CEM is preferred. Subsequently, the Hausman test is conducted to compare FEM and REM, in which the FEM is chosen if the probability value of the Cross-Section is less than 0.05; conversely, the REM is selected if the probability exceeds this threshold. Finally, the Lagrange Multiplier test is applied to compare REM and CEM, where a probability value of the Cross-Section less than 0.05 indicates that REM is the more suitable model, while a probability value greater than 0.05 suggests that CEM should be adopted. These sequential tests provide a systematic approach to identifying the model that best captures the underlying data structure and relationships within the panel dataset.

Significance and Classical Assumption Tests

In multiple linear regression analysis, several statistical tests are employed to evaluate the relationship between independent variables and the dependent variable. The t-test (partial test) is used to determine the individual effect of each independent variable on the dependent variable, thereby identifying which variables have a statistically significant partial influence. Meanwhile, the F-test (simultaneous test) is used to determine the joint effect of all independent variables on the dependent variable, indicating whether the regression model as a whole is valid and statistically significant. Additionally, the coefficient of determination (R^2) is used to evaluate the proportion of variance in the dependent variable that can be explained by the independent variables, where an R^2 value approaching 1 indicates that the model has strong predictive capability.

Classical Assumption Tests

In regression analysis, several diagnostic tests are conducted to ensure that the model meets the underlying assumptions and provides reliable estimates. The normality test is performed to assess whether the residuals follow a normal distribution, which is a fundamental assumption for valid statistical inference in regression models. The multicollinearity test is employed to check for high correlation between independent variables, typically using the Variance Inflation Factor (VIF) and tolerance values, where high multicollinearity can lead to unstable coefficient estimates and inflated standard errors. The heteroskedasticity test is conducted to ensure that the variance of residuals remains constant across all observations, as the presence of heteroskedasticity violates the assumption of homoskedasticity and can affect the efficiency of parameter estimates. Furthermore, the autocorrelation test, commonly performed using the Durbin-Watson statistic, is utilized to detect correlation between residuals across different time points or observations, which is particularly important in time series or panel data analysis where serial correlation can undermine the validity of statistical inference. These diagnostic tests collectively ensure the robustness and reliability of the regression model's results.

Results and Discussions

The type of data used is panel data, which is a combination of time series and cross-sectional data. The data include HDI, population size, open unemployment rate (TPT), Gini ratio, and the percentage of the poor population across the seven districts/cities in Bangka Belitung Islands Province, covering the years 2018 to 2023, and obtained from publications by the Bangka Belitung Islands Province Bureau of Statistics. The following classification of data can be seen in Table 1.

Table 1. Classification of data

Date	Gini Ratio	Human Development Index (HDI)	Population	Percentage of Poor Population	Open Unemployment Rate (TPT)
2018	0,281	70,67	1.459.873	5,25	3,65
2019	0,269	71,3	1.488.792	4,62	3,62
2020	0,262	71,47	1.455.678	4,53	5,25
2021	0,256	71,69	1.471.787	4,9	5,03
2022	0,236	72,24	1.491.986	4,45	4,77
2023	0,245	72,85	1.511.899	4,52	4,56

Based on Table 1, it is known that the lowest and highest Gini Ratio were 0,236 in 2022 and 0,281 in 2018, respectively. The lowest and highest human development index respectively, were in 2018 at 70.67 and in 2023 at 72,85. The lowest and highest population respectively were in 2020 at 1,4 million and in 2023 at 1,5 million. The lowest and highest Percentage of the Poor Population are, respectively in 2022, it is 4,45, and in 2018 it is 5,25. The lowest and highest levels of Open Unemployment Rate (TPT) were 3,62 in 2019 and 5,25 in 2020, respectively.
In this study, after data collection, the next step is selecting the best model, as follows:

Chow Test

At this stage, the Chow test is conducted to determine the optimal model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). The results of the Chow test are presented in Table 2. Based on Table 2, the Chow test results indicate that the selected model is the Fixed Effect Model (FEM), as the probability result of 0.0000 < 0.05 shows significance.

Table 2. Results of the Chow Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	62.705106	(6,31)	0.0000
Cross-section Chi-square	108.166485	6	0.0000

Hausman Test

After conducting the Chow test and selecting FEM as the preferred model, the Hausman test is then performed to choose between the Fixed Effect Model (FEM) and the Random Effect Model (REM). The Hausman test results are presented in Table 3.

Table 3. Results of the Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	137.343300	4	0.0000

Based on Table 3, the Hausman test results indicate that the best model selected is the Fixed Effect Model (FEM), as the probability result of 0.0027 < 0.05 indicates significance.

Classical Assumption Test

Following the Chow and Hausman tests, it is determined that the most suitable approach is the FEM model. Once the best model has been identified, the classical assumption tests are then conducted as follows:

Normality Test

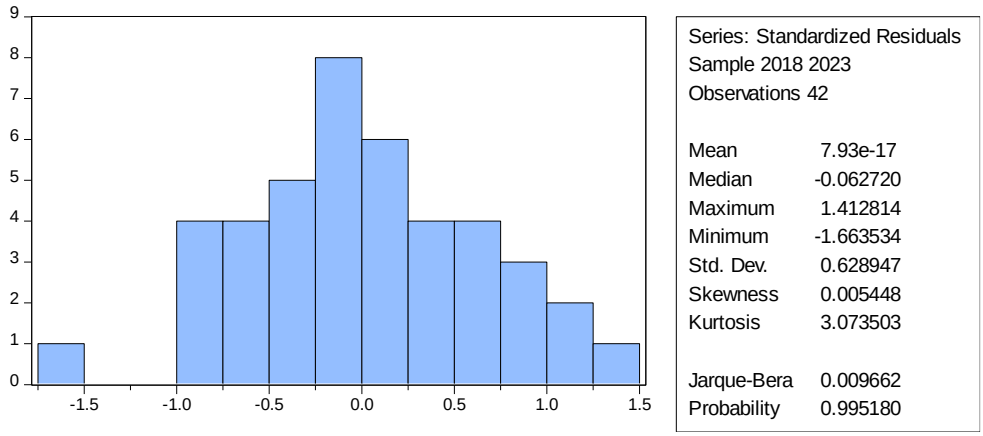

Figure 1. Normality Test Results

One of the requirements for the data used is that it follows a normal distribution, which can be assessed using the normality test (Figure 1). This test employs the Jarque-Bera method. As shown in the figure, the data is normally distributed, indicated by a probability value (0.995180) > 0.05, suggesting that the data is of good quality.

Multicollinearity Test

Table 4. Multicollinearity Test Results

	GR	JP	PPM	TPT
GR	1.000000	0.057990	0.205817	0.095027
JP	0.057990	1.000000	-0.373471	0.489907
PPM	0.205817	-0.373471	1.000000	-0.427809
TPT	0.095027	0.489907	-0.427809	1.000000

Based on the table 4, it can be seen that the regression model does not experience multicollinearity issues. The test results show that all correlation values between independent variables are < 0.90, indicating that the model passes the multicollinearity test.

Heteroskedasticity Test

Table 5. Heteroskedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.622531	3.844814	-0.161914	0.8724
GR	-1.013594	3.291330	-0.307959	0.7602
JP	1.58E-05	1.43E-05	1.105304	0.2775
PPM	-0.321710	0.188307	-1.708436	0.0976
TPT	-0.097578	0.084006	-1.161550	0.2543

Based on the table 5, it is evident that the regression model is free from heteroskedasticity issues. The test results show that all probability values between the independent variables are > 0.05, indicating that the model passes the heteroskedasticity test.

In this study, after conducting and passing the classical assumption tests, panel data regression testing will be carried out using the selected or best model, which is the Fixed Effect Model (FEM).

Table 6. Panel Regression Results Using the Best Method: FEM

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	65.11325	7.944759	8.195749	0.0000
GR	-21.15322	6.801065	-3.110281	0.0040
JP	6.63E-05	2.96E-05	2.239508	0.0324
PPM	-0.699174	0.389110	-1.796856	0.0821
TPT	0.399608	0.173587	2.302059	0.0282
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.965510	Mean dependent var		72.27143
Adjusted R-squared	0.954385	S.D. dependent var		3.386644
S.E. of regression	0.723312	Akaike info criterion		2.410174
Sum squared resid	16.21857	Schwarz criterion		2.865278
Log likelihood	-39.61365	Hannan-Quinn criter.		2.576987
F-statistic	86.78188	Durbin-Watson stat		1.156071
Prob(F-statistic)	**0.000000**			

From the table, the regression equation model for panel data is as follows:

$IPM_{Bangka\ \ Belitung}$ = 65.1132530317 - 21.1532188299*GR + 6.62951541265e-05*JP - 0.699173968508*PPM + 0.39960831078*TPT **+ ε_{it}**

The constant regression coefficient value of 65.11325 indicates that if the values of all independent variables (Gini Ratio, Population, Poverty Percentage, and Open Unemployment Rate) are held constant at zero, the Human Development Index (HDI) would be 65.11325%. The Gini Ratio variable exhibits a regression coefficient of -21.15322, signifying that each one-unit increase in the Gini Ratio would decrease the HDI by 21.15322 units, ceteris paribus. The Population variable demonstrates a regression coefficient of 6.63×10^{-5}, indicating that each one-unit increase in Population would result in a 6.63×10^{-5} unit increase in the HDI, holding other variables constant. The Poverty Percentage variable has a regression coefficient of -0.699174, meaning that each one-unit increase in Poverty Percentage would lead to a 0.699174 unit decrease in the HDI, assuming other variables remain unchanged. Conversely, the Open Unemployment Rate (TPT) variable shows a regression coefficient of 0.399608, suggesting that each one-unit increase in the Open Unemployment Rate would increase the HDI by 0.399608 units, ceteris paribus. The F-test yields a probability value of 0.000000, which is less than the significance level of 0.05, indicating that all independent variables simultaneously exert a statistically significant influence on the HDI in the districts and cities of the Bangka Belitung Islands Province. Furthermore, the coefficient of determination (R^2) of 0.954385 reveals that 95.44% of the variation in the HDI can be explained by the independent variables included in the model, while the remaining 4.56% is attributable to other factors not incorporated in this study.

Discussion

The panel data regression findings reveal that the Gini Ratio variable carries a negative coefficient, and its individual output demonstrates a significant effect on the Human Development Index (HDI) across districts/cities in the Bangka Belitung Islands Province. This indicates that an increase in the Gini Ratio leads to a decline in HDI, assuming all other variables are held constant. The influence of the Gini Ratio on HDI arises from disparities in access to essential services; as income inequality widens, access to healthcare, education, and other vital services becomes more limited ultimately lowering HDI.

The regression results also show that the Population variable has a positive coefficient, with its individual output significantly affecting the HDI in the districts/cities of the Bangka Belitung Islands Province. This suggests that a rise in population contributes to an increase in HDI, provided other variables remain unchanged. The effect of population growth on HDI is linked to the expansion of labor demand in developing industries, which strengthens human resource quality. A larger population boosts the need for employment opportunities, driving economic activity and supporting improvements in HDI.

The panel data regression output demonstrates that the Percentage of Poor Population variable has a negative coefficient, yet its individual output is statistically insignificant in explaining HDI variations across the districts/cities of the Bangka Belitung Islands Province. This means that, ceteris paribus, each additional unit increase in the percentage of poor residents corresponds to a one-unit decline in HDI. The negative coefficient reflects an inverse relationship between poverty levels and HDI. However, because the p-value exceeds the commonly used significance threshold (α), there is insufficient evidence to reject the null hypothesis, indicating that poverty does not have a statistically significant effect on HDI.

The panel data regression results indicate that the Open Unemployment Rate (TPT) variable has a positive coefficient, and the individual output of the Open Unemployment Rate (TPT) variable significantly influences the Human Development Index in districts/cities of the Bangka Belitung Islands Province. This implies that an increase in Open Unemployment Rate (TPT) will increase the Human Development Index, assuming other variables remain constant. The effect of TPT on HDI can be attributed to migration into the productive informal sector, where people may acquire new skills or start micro-businesses that indirectly enhance economic growth. High unemployment also raises awareness of the value of higher education to improve competitiveness. Thus, as education levels rise, HDI improves. Though this impact may not be immediate, with effective interventions and programs, unemployment can transform into opportunities for enhancing quality of life, education, and public health.

Conclusion

Based on the results of this research, it is recommended that the government place more attention on the issues in the Bangka Belitung Islands Province, specifically regarding the development of the Human Development Index (HDI). Poverty alleviation should be prioritized as it is a significant contributor to improving the HDI. Additionally, the government needs to address population growth by creating more job opportunities. By employing a larger portion of the population, income levels can rise, which in turn enhances human resource quality. Furthermore, the government should work to reduce the unemployment rate through policies that focus on job creation, increasing workforce competitiveness, and addressing inequality, as reflected by the Gini ratio. This can be achieved by expanding equitable access to education and healthcare. This study is limited by the six-year research period (2018-2023) and the independent variables used, which only include the Gini ratio, population size, poverty percentage, and the open unemployment rate. The Human Development Index serves as the dependent variable. Therefore, future research should consider a longer study period and include additional variables that could impact the HDI.

Acknowledgments

We would like to express our gratitude to the Central Bureau of Statistics (BPS) of Bangka Belitung Province for providing the data used in this research. Our thanks also go to the BPS of West Bangka Regency for their assistance in the analysis process, which has facilitated the smooth and timely completion of this article.

Conflicts of interest

The authors declare that there are no conflicts of interest.

References

Alfina, W. R. A. (2023). Analisis Regresi Data Panel Produk Domestik Regional Bruto, Tingkat Pengangguran Terbuka, Dan Indeks Pembangunan Manusia Provinsi Bali Tahun 2012 - 2021. *Jurnal Ilmu Ekonomi JIE*, *7*(01), 106–114. https://doi.org/10.22219/jie.v7i01.22627

Abdussamad, S. N., Adityaningrum, A., Rezky, M., & Payu, F. (2024). *Panel Data Regression Analysis For Modeling The Human*. *4*(1), 46–53.

Angin, S. P., Lubis, I., Tanjung, A. A., & Yahya, A. (2023). *Analysis of Village Funds and Gross Regional Domestic Product Impacts Human Development Index in Naggroe Aceh Darussalam Province*. *6*(2), 291–295.

Anoraga, P. (n.d.). *Analisis Faktor-Faktor Yang Mempengaruhi Indeks Pembangunan Manusia (IPM) Kota Semarang*.

Endang Abubakar, L. I. (2023). *Analisis Faktor-Faktor yang Mempengaruhi Indeks Pembangunan Manusia (IPM) Menggunakan Analisis Regresi Spasial di Provinsi Papua Barat Daya*. *23*, 578–589.

Erda, G., Aulia, S. M., & Erda, Z. (2022). *Classifiying The Factors Influencing The Human Development Index In Riau Province Using Principal Component Analysis*. *2*(3), 17–23.

Fadillah, N., & Setiartiti, L. (2021). *Analysis of Factors Affecting Human Development Index in Special Regional of Yogyakarta*. *5*(1). https://doi.org/10.18196/jers

Faizin, M. (2021). *Pengaruh Upah Minimum , Kemiskinan dan Pengangguran pada IPM di Kabupaten / Kota Provinsi Jawa Timur The Influence of Minimum Wages , Poverty and Unemployment on HDI in Regency / City of East Java Province*. *12*(28), 214–227. https://doi.org/10.33059/jseb.v12i2.3027

Farida, Y., Nurfadila, M. R., & Yuliati, D. (2022). *Identifying Significant Factors Affecting the Human Development Index in East Java Using Ordinal Logistic Regression Model*. *6*(3), 476–487.

Halamury, Z., & , H. W. M. Patty, M. S. N. V. D. (2022). *Analisis Indeks Pembangunan Manusia (Ipm) Dengan Menggunakan Analisis Regresi Kuantil Analysis of Human Development Index (IPM) using Quantil Regression Analysis*. *01*(02), 129–138.

Hasan, Z., Rosiana, M., & Putri, N. (2022). *The Effect of Human Development Index and Net Participation Rate on the Percentage of Poor Population : A Case Study in Riau Province , Indonesia*. 24–40. https://doi.org/10.54427/ijisef.964861

Jamaliah, & Elyta. (2022). *The Effect of Human Development Index (HDI) on Poverty and Crime in*. *4*(1), 119–130. https://doi.org/10.15575/ks.v4i1.17159

Karonika Sihite, F. (2024). Faktor-Faktor Yang Mempengaruhi Indeks Pembangunan Manusia (IPM) Di Provinsi Jawa Tengah. *Santri: Jurnal Ekonomi Dan Keuangan Islam*, *2 (1)*(1), 6.

Khairunnisa, I., Yusnita, F., Suryani, I. W., & Panorama, M. (2023). Jumlah Penduduk, Pengangguran, Kemiskinan Terhadap Indeks Pembangunan Manusia (Ipm) Sumatera Selatan Tahun 2018-2022. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, *7*(3), 1735–1750. https://doi.org/10.31955/mea.v7i3.3557

Hafiz, M., & Kurniadi, A. P. (2024). Pengaruh Jumlah Penduduk Dan Pengangguran Terhadap Tingkat Kemiskinan Di Sumatera Barat. *JEBI (Jurnal Ekonomi Dan Bisnis Islam)*, *8*(2), 20–27. https://doi.org/10.15548/jebi.v8i2.864

Mahroji, D., & Nurkhasanah, I. (2019). Pengaruh Indeks Pembangunan Manusia Terhadap Tingkat Pengangguran Di Provinsi Banten. *Jurnal Ekonomi-Qu*, *9*(1). https://doi.org/10.35448/jequ.v9i1.5436

Mayang Dwi Pitaloka, & P.S Prabowo. (2022). Pengaruh Pertumbuhan Ekonomi Dan Kemiskinan Terhadap Ipm 14 Kabupaten Kategori "Sedang" Di Provinsi Jawa Timur. *Jae (Jurnal Akuntansi Dan Ekonomi)*, *7*(2), 1–12. https://doi.org/10.29407/jae.v7i2.17692

Muslihatinningsih, F., Alvidiar, C., & Wilantari, R. N. (2023). *Apakah pengeluaran pemerintah mempengaruhi indeks pembangunan manusia di provinsi jawa timur*. *1996*. https://doi.org/10.29407/jae.v8i1.19806

Natasya, C. A. D., & B, S. R. F. (2024). *Analysis of Factors Affecting the Human Development Index*

in West Sumatera. Atlantis Press International BV. https://doi.org/10.2991/978-94-6463-204-0

Oktania, A., Lubis, P. K. D., Syahbana, E., & Akbar, M. A. (2024). *Unveiling The Path To Prosperity In Papua : An Analysis Of Human Capital Investment Trends In Education (2018-2023)*. *18*(1), 1–11.

Rahim, Z. A., Syofriza Syofyan, & Faculty, L. E. (2022). *The Influence of The Islamic Human Development Index (I-HDI) on Human Development*. *03*, 83–103.

Ramadhani, N., & Utomo, Y. P. (2023). *Analisis Faktor-Faktor Yang Mempengaruhi Indeks*. *3*(2).

Reynaldo, E. C. (2023). *The Influence Of Macroeconomic Factors On Human Development Index And Poverty Rate In*. *02*(10), 2507–2527. https://doi.org/10.59141/jrssem.v2i10.457

Rizal, A., & Yantieka, N. (2022). Analisis Regresi Data Panel Untuk Pemodelan Kemiskinan Pulau Sumatera Dengan Variabel Pendidikan Tahun 2016 – 2021. *ETNIK: Jurnal Ekonomi Dan Teknik*, *1*(7), 518–529. https://doi.org/10.54543/etnik.v1i7.91

Sanusi, U., Yunani, A., & Hidayat, Y. (2023). *The Strategy For Increasing The Human Development Index In The Education Sector In Tapin Regency*. *4*(3), 23–34.

Setiawan, D. R. (2024). *Implementasi Regresi Panel Dalam Analisis Pengaruh Partisipasi Wanita Di Indonesia Terhadap Pengangguran Pasca Pandemi COVID-19*. *4*(1), 6–19.

Tuasela, A. (2023). *Systematic literature review: the effect of human development index (hdi) on economic growth*. *7*, 392–398.

Wahyudi, A. (2024). *Analisis Pengaruh Indeks Pembangunan Manusia terhadap Kualitas Pendidikan di Kabupaten Sekadau Tahun 2022-2023*. *2*(3), 8–9

Zakaria, R. (2018). Pengaruh Tingkat Jumlah Penduduk, Pengangguran, Kemiskinan, Pertumbuhan Ekonomi Dan Belanja Modal Terhadap Indeks Pembangunan Manusia Di Provinsi Jawa Tengah Tahun 2010-2016. *Dspace UII*, 1–19.