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Education and Health Expenditures as Determinants of Human Development in Eastern Indonesia

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Human Development, Education, Health, Eastern Indonesia

ABSTRACT
The persistent Human Development Index (HDI) gap between Eastern Indonesia and the more developed western regions reflects long-standing structural disparities in geography, infrastructure, and public services. This quantitative study uses panel data from 2014–2023 to capture a decade of policy changes and post-pandemic recovery in Eastern Indonesia. Education and health were chosen as primary explanatory variables because they represent core HDI dimensions and fundamental drivers of productivity and human capability. Data were analyzed using multiple OLS regression models, tested for normality, multicollinearity, heteroskedasticity, and autocorrelation, with significance set at 5%. Results show education has a positive and significant partial effect on HDI in Eastern Indonesia. In contrast, the health variable shows no significant partial effect on the HDI. This likely reflects limited variation in health metrics across subregions, reporting gaps, unequal service access and quality, and delayed impacts of health investments on development outcomes. The findings confirm that improving education quality is key to enhancing the human development index in Eastern Indonesia. Meanwhile, health improvements require better service quality and equitable access to translate into real HDI gains. The study's novelty lies in using panel data for Eastern Indonesia from 2014 to 2023, addressing a regional research gap. This contribution enriches subnational human development literature and offers evidence-based guidance for policymakers to prioritize education quality improvements and equitable health services, optimizing the impact of health investments on human development outcomes in Eastern Indonesia.

INTRODUCTION

Human development is a top priority in efforts to create a prosperous, inclusive and sustainable society(Ayonovna, 2024; Musagaliev, Gretchenko, & Tansikbaevna, 2024). One of the indicators used to measure the quality of human development is the Human Development Index

(HDI), developed by the United Nations Development Programme (UNDP)(Alfons, ., & Rahman R, 2024; Lind, 2023). The HDI measures development achievements across three basic dimensions: health, education, and a decent standard of living. This measurement aligns with the Sustainable Development Goals (SDGs) program, which is part of the Sustainable Development Agenda (Hák et al., 2016; Ugwu et al., 2025; UNESCO, 2018). The relationship between HDI and SDGs is very close(Wang & Chen, 2024), where education in the HDI is aligned with SDGs 4, which emphasizes equal access to inclusive and quality education and learning opportunities for everyone (Khan et al., 2022; Saefudin et al., 2025). Meanwhile, the health dimension of the HDI aligns with SDGs 3, focusing on increasing life expectancy, reducing mortality rates, and improving access to quality healthcare services (Dadon Golan & Purcell, 2025; René et al., 2025).

Education and health are two dimensions in determining the achievement of the HDI. Education plays a strategic role in improving the skills, productivity, and competitiveness of human resources through indicators such as literacy rates, average years of schooling, and expected years of schooling, which have a direct impact on quality of life and economic opportunities (Maulana & Nuraini, 2025; Siregar, Erlina, & Sirojuzilam, 2024; Türk, Östh, Toger, & Kourtit, 2021). Meanwhile, good health is supported by the availability of health facilities, adequate nutrition, healthy lifestyles, increased life expectancy, reduced disease burden, and supported community productivity (Kara, 2025; Pereira & Marques, 2022; Shen, Long, & Wu, 2023). The synergy between improving the quality of education and improving health services is the key to accelerating the Human Development Index (HDI) (Nainggolan, Lie, Nainggolan, & Siregar, 2022) especially in areas with geographical challenges, inequality in access to basic servicesand complex socio-economic issues that require special attention (Alimoradi, Griffiths, & Alijanzadeh, 2025; Julistia, Kurniawan, & Hasimi, 2025).

Education in Eastern Indonesia often faces obstacles in the form of low quality teaching staff, minimal facilities and infrastructure, and high dropout rates, especially in remote and island areas (Patandung & Panggua, 2022; Renna, 2022; Siwitomo, Fitriyani, & ..., 2023). Meanwhile, the health sector faces challenges in the distribution of medical personnel, limited basic service facilities, and a high prevalence of infectious diseases and malnutrition. Remote and difficult-to-access geographical conditions worsen the distribution of education and health services, which ultimately impacts the low achievement of the Human Development Index (HDI) (Fahrurrozi, Mohzana, Haritani, Yunitasari, & Basri, 2023; Yeni Yulianti & Siti Qomariah, 2025). Regions such as the provinces of Papua, West Papua, Maluku, West Sulawesi, and East Nusa Tenggara consistently occupy the lowest positions in the National Human Development Index (HDI) rankings (Ministry of National Development Planning/Bappenas, 2024). This inequality reflects the existence of complex structural problems (Arisandi & Syarifuddin, 2023). For the past 10 years, there are numerous policies have been created to face inequality in education and health in Eastern Indonesia. This period will provide enough time to observe long term trends and balance data availability and relevance, and improve statistical and policy relevance.

This study fills a substantive gap in the existing literature by providing ten-year panel evidence on the determinants of human development, specifically in Eastern Indonesia, a region that remains underrepresented in empirical HDI research. Despite extensive national policy interventions, substantial inequality in education and health outcomes persists, signaling that current approaches have not sufficiently addressed long-standing structural disparities. By applying a robust panel data framework. This research generates context for sensitive evidence on how education and health indicators jointly and individually shape provincial HDI outcomes over time. The findings offer clear analytical benefits and practical value for regional development planning, particularly by informing targeted resource allocation, strengthening the design of human capital interventions, and improving the precision of policies aimed at reducing subnational inequality.

METHOD

This study tests the correlation between government spending in education and health on the Human Development Index (HDI) in Eastern Indonesia using an explanatory quantitative panel data design. The reason this study uses panel data is that it combines the strengths of time series and cross-sectional data. This type of data also brings controls for unobserved heterogeneity, increases estimation accuracy, and enables dynamic and complex analysis.

The research location covers the Eastern Indonesia region, consisting of 13 provinces in Eastern Indonesia. The study subjects are provincial level aggregated socioeconomic indicators, focusing on HDI and provincial government expenditure in education and health. Provincial government spending data was obtained from the Directorate General of Fiscal Balance (DPJK Kemenkeu), while HDI data was obtained from the publication of the survey results of the Central Statistics Agency (BPS). All data were collected through documentary analysis of secondary data, meaning that the researcher systematically identified, extracted, and evaluated information from publicly available government documents and statistical reports. This ensures methodological transparency and meets ethical standards for the use of publicly available aggregated government data. The data obtained were then tested through a quantitative approach with a multiple linear regression analysis method using the SPSS application with a significance level or alpha of 5% as the threshold for estimating risk tolerance. This type of analysis can evaluate the effect of several predictors at once, control for confounding variables, provide interpretable results, offer strong predictive ability, and is supported by solid statistical theory. The variables in this study consist of: (1) the dependent variable, namely the Human Development Index (HDI), and (2) the independent variables, namely government spending in education (X1) and government spending in health (X2).

This study focuses on government spending in education and health as the two main explanatory variables influencing the Human Development Index (HDI). The rationale for this selection is grounded in the theoretical framework of UNDP's Human Development concept, which identifies education and health as two of the three core dimensions of human development. Empirically, numerous studies (e.g., Barro & Lee, 2015) have confirmed that public expenditure in these sectors directly enhances human capital through improved access to quality education and healthcare. Methodologically, restricting the model to these two key variables ensures parsimony

and minimizes multicollinearity while maintaining strong explanatory power. Contextually, this focus aligns with national development priorities in developing countries, where fiscal policy in education and health remains the most effective instrument for improving human well-being. The relationship between variables was analyzed using a multiple linear regression model as follows:

$$IPM_{it} = \beta_0 + \beta_1 \ln Educ_{it} + \beta_2 \ln Health_{it} + e_{it}$$

The data analysis technique was carried out in several stages. First, a classical assumption test was conducted, including normality, multicollinearity, and heteroscedasticity tests, to ensure the feasibility of the regression model. Second, a simultaneous F-test was conducted to determine whether education and health variables jointly had a significant effect on the HDI. Third, a partial t-test was conducted to test the significance of each independent variable's influence on the HDI. Furthermore, the coefficient of determination (R^2) was used to determine the extent to which education and health variables were able to explain variation in the HDI.

RESULTS AND DISCUSSIONS

Descriptive Statistical Analysis

Table 1. Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Standard Deviation
Education	130	25	29	27.46	1,050
Health	130	25	28	26.51	.685
HDI	130	57	77	67.86	4.146
N	130				

Source: Secondary Data Processing, SPSS (2025)

The descriptive statistics indicate that, over 130 observations, the average government expenditure on education was 27.46 (ranging from 25 to 29), while health expenditure averaged 26.51 (ranging from 25 to 28). The Human Development Index (HDI) ranged from 57 to 77, with a mean of 67.86 and a standard deviation of 4.146. These figures describe the distribution and variation within the same region over time, rather than implying cross-regional differences. Therefore, the terms “high” or “low” are not interpreted in an absolute sense, but rather as indicators of relative changes and internal dynamics across the observed period.

Inferential Statistical Analysis

a. Classical Assumption Test

Table 2. Classical Assumption Test

Classical Assumption Test	Asymp. Sig (2 tailed)	Deviation from Linearity	Nilai VIF
Data Normality	0.217		
Linearity		0.260	
Multicollinearity			1.336

Source: Secondary Data Processing, SPSS (2025)

The results of the classical assumption tests indicate that the regression model satisfies all key assumptions required for reliable estimation. The normality test shows an Asymp. Sig (2-tailed) value of 0.217, which is greater than the 0.05 threshold, implying that the residuals are normally distributed. This confirms that the model meets the assumption of normality. The linearity test produces a *Deviation from Linearity* value of 0.260, also exceeding 0.05, suggesting that the relationship between the independent variables (education and health expenditures) and the dependent variable (Human Development Index) is linear. Furthermore, the multicollinearity test yields a Variance Inflation Factor (VIF) of 1.336, well below the conventional cutoff of 10, indicating that no multicollinearity problem exists between the explanatory variables. Overall, these results demonstrate that the data fulfill the normality, linearity, and multicollinearity assumptions, confirming that the regression model is statistically sound and suitable for further analysis.

b. Hypothesis Testing

Table 3. Inferential Statistical Analysis

Variables	Coefficient	T count	F count	Significance
Health	-.140	-.215		.830
Education	.965	2,113		.037
Regression			2,860	.062
Constant	44,830	3,043		.003

Source: Secondary Data Processing, SPSS (2025)

Based on the results of SPSS data processing, a multiple linear regression estimation model can be formulated as follows:

$$IPM_{it} = \beta_0 + \beta_1 Educ_{it} + \beta_2 Health_{it} + \varepsilon_{it}$$

$$IPM_{it} = 44.830 + 0.965 Educ_{it} - 0.140 Health_{it} + \varepsilon_{it}$$

Based on the regression estimation model, the following conclusions can be drawn:

a. The constant is positive; this means that if the value of Education (X1) and Health (X2) is 0, then the value of the Human Development Index (Y) is positive, namely 44,830.
b. The regression coefficient of the education variable (X1) is positive at 0.965. If education (X1) increases by 1, the Human Development Index (Y) will increase by 0.965. A positive coefficient means there is a positive relationship between education and the Human Development Index.
c. The regression coefficient of the health variable (X2) is negative 0.140. If health (X2) increases by 1, the human development index (Y) will decrease by 0.140. A negative coefficient means there is a negative relationship between health and the Human Development Index.

Furthermore, based on the results of the hypothesis test, it is known that the Education variable has a positive coefficient (B = 0.965) and is statistically significant (p = 0.037), indicating that education has a positive influence on the HDI. This means that an increase in education indicators tends to be followed by an increase in the HDI. The health variable has a negative coefficient (B = -0.140) and is not significant (p = 0.830), meaning it has no statistically significant influence on the HDI in this model. This could be due to health indicators being relatively stable or not varying significantly across regions. The impact of health investment tends to be indirect and long term, whereas education yields more immediate results. In the context of Eastern Indonesia, health budgets are often allocated to curative activities and infrastructure rather than preventive programs, reducing their measurable influence on human development. Structural constraints such as geographic remoteness, uneven distribution of health services, and limited accessibility could weaken the effectiveness of health expenditure, causing improvements in health outcomes to remain minimal despite budget allocations.

c. Coefficient of Determination (R Square)

Table 4. Model Summary: Effects of Education and Health Expenditures on HDI

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.748[a]	.056	.036	3.86002

a. Predictors: (Constant), Education, Health

The *Model Summary* table shows that the correlation coefficient (R) of 0.748 indicates a moderately strong positive relationship between the independent variables (government spending on education and health) and the dependent variable, the Human Development Index (HDI). The

R^2 value of 0.056 means that approximately 5.6% of the variation in HDI can be explained by changes in education and health expenditures. This implies that these two variables contribute only modestly to explaining variations in human development, while the remaining 94.4% is influenced by other factors not included in the model, such as economic growth, poverty levels, infrastructure development, or institutional quality. A low R^2 of this magnitude indicates that the explanatory power of the model is limited, suggesting that the specification does not fully capture the structural drivers of HDI variation in Eastern Indonesia. In practical terms, this implies that the model is statistically valid but substantively weak, meaning it can still identify significant relationships but is inadequate for prediction or comprehensive policy inference. A more robust model would need to incorporate additional socioeconomic and institutional determinants to improve explanatory adequacy and better reflect the multidimensional nature of human development.

The results of the study indicate that the education variable has a positive and significant effect on the Human Development Index (HDI) in Eastern Indonesia, where the regression coefficient is 0.965 with a significance value of 0.037, indicating that increasing education on the attributes of Average Years of Schooling (RLS) and Expected Years of Schooling (HLS) has contributed to driving the increase in the HDI. This is in accordance with the theory of human development, which emphasizes the importance of education as the basic capital for increasing skills, productivity, and economic opportunities for the community through strengthening human resources (Lubis, Sari, Syahfitri, & Suharianto, 2024; Nainggolan et al., 2022). According to the findings, the higher the educational attainment, the greater the individual's opportunity to improve their quality of life.

The condition of education in Eastern Indonesia still faces structural challenges, such as limited teaching staff, minimal facilities and infrastructure, and high dropout rates in remote and island areas (Patandung & Panggua, 2022). This situation has caused the gap between the Human Development Index (HDI) and other regions to remain glaringly unequal. Therefore, the findings of this study emphasize the importance of improving access to and quality of education as a development priority in Eastern Indonesia. This includes investments in school facilities in remote areas, teacher competency enhancement, and scholarship programs, which can be effective strategies for accelerating human development while narrowing regional disparities.

Unlike the education variable, the health variable did not significantly influence the HDI. The health regression coefficient showed a negative value (-0.140) with a significance level of 0.830, indicating that health indicators did not significantly contribute to variations in the HDI in Eastern Indonesia. This finding aligns with research conducted by the University of Indonesia Julistia et al., (2025) and Ann et al., (2023), Health spending on the HDI is low or has no significant impact on improving human development. One reason is that the health budget is more oriented towards curative spending and physical infrastructure development, resulting in a relatively small impact on increasing life expectancy.

In addition, geographical factors such as remoteness of the region, uneven distribution of medical personnel, and limited public access to basic health services worsen the effectiveness of health programs (Wulandari, Fadilah, Okataviyani, Jabbar, & Desmawan, 2024). As a result,

despite allocations for health spending, health outcomes do not vary significantly across regions, thus limiting their contribution to the Human Development Index (HDI). These results underscore the need for a reorientation of health policy to place greater emphasis on promotive and preventive aspects, such as improving community nutrition, preventing infectious diseases, and equitable distribution of health facilities in remote areas. This will enable the health sector to play a more optimal role in supporting the acceleration of human development in Eastern Indonesia.

Beyond the roles of education and health, the empirical literature consistently highlights several additional determinants that significantly influence human development, particularly income, infrastructure, and governance quality. Income level, reflected in per capita earnings, determines household capacity to invest in education, healthcare, and overall welfare, thereby reinforcing human capital accumulation (Klasen, 2011; Liu et al., 2024). Research on ASEAN countries demonstrates that income generating capacity, supported by economic openness and labor market expansion, is a strong predictor of economic growth and human development (Rahmadani & Setiartiti, 2023). Infrastructure also emerges as a fundamental driver, such as physical, social, and financial infrastructure, collectively supporting mobility, connectivity, and access to essential services. Evidence from Indonesia shows that infrastructure dimensions significantly affect provincial economic performance (Ervianto, 2017; Maqin, 2011). Well-developed infrastructure and social service provision also contribute to regional economic performance and inclusive development in Malaysia (Aznin, Bakar, Hadijah, & Mat, 2017; Tan, Zuo, & Feng, 2014), as well as in the majority of ASEAN countries (Ramadhani & Faridatussalam, 2024).

Governance quality is equally influential, as regions with stronger institutional capacity, more efficient public spending, and transparent service delivery tend to achieve better human development outcomes. Indicators such as government effectiveness, rule of law, and regulatory quality play central roles in determining how public resources are allocated and how efficiently policies are implemented (Nugraha & Marhaeni, 2022). Implementation of good governance has a significant positive effect on growth across ASEAN countries (Addainuri, Abidin, & Suci, 2023). Therefore, good governance enhances the productive effect of human capital and supports more equitable economic outcomes (Sapanang et al., 2024). These findings align with institutional economics theory, which argues that effective institutions reduce uncertainty, strengthen public trust, and improve the efficiency of development programs. Thus, integrating income, infrastructure, and governance into the analytical framework provides a more comprehensive understanding of the structural drivers of human development, particularly in regions where disparities remain persistent.

Comparative evidence from ASEAN countries further illustrates how structural determinants shape human development trajectories. In Vietnam, sustained improvements in human development have been supported by strong public investment in education and institutional reforms, showing that governance quality and human capital expansion significantly enhance development outcomes (Nguyen, 2020, 2021). The Philippines provides a contrasting case, where

governance barriers, such as corruption and low bureaucratic efficiency, can reduce the translation of economic gain into human development (Afandi et al., 2025; Brillantes & Fernandez, 2011). Meanwhile, Thailand demonstrates that long term investment in public health and logistics infrastructure supports HDI progress. Universal Health Coverage (UHC) Policy that implemented by Thailand government, shows significant improvement in national well-being (Sumriddetchkajorn, Shimazaki, Ono, Kusaba, & Kobayashi, 2019; Tangcharoensathien, Patcharanarumol, Suwanwela, & Supangul, 2020).

The comparative cases from ASEAN countries illustrate that Eastern Indonesia faces structural challenges similar to those observed across the region. Patterns in governance quality, infrastructure development, and human capital investment show parallel influences on development outcomes. This alignment indicates that the determinants shaping human development in Eastern Indonesia reflect broader dynamics found throughout ASEAN.

CONCLUSION

Based on the results of this study, it can be concluded that the education variable has a positive and significant effect on the human development index in Eastern Indonesia. This finding confirms that the quality of education is a major factor in improving the quality of human development in Eastern Indonesia. Furthermore, this study found that the health variable does not affect the human development index in Eastern Indonesia. This study suggests the need to improve the quality of health and equitable access in Eastern Indonesia. Although this study has contributions, it also has limitations. First, this study only focuses on Eastern Indonesia, so the results cannot be generalized to wider regions or areas. Second, this study does not include other relevant variables that influence the human development index, so the results have the potential to produce a biased estimation model. Therefore, further research should consider expanding the scope of analysis to include a wider set of regions or a larger temporal dimension to enhance the generalizability of the findings. In addition, subsequent studies are encouraged to incorporate additional relevant determinants of human development, such as economic growth, institutional quality, and other structural variables, to provide a more comprehensive explanatory framework.

REFERENCES

Addainuri, Muhammad Isbad, Abidin, Maulana, & Suci, Lestari Etika. (2023). Analisis Dampak Governance Terhadap Pertumbuhan Ekonomi di Negara Asean. *Jurnal Ilmiah Administrasi Publik Dan Pembangunan*, *14*(2), 155–172. https://doi.org/10.23960/administratio.v14i2.400

Afandi, Syed Agung, Erdayani, Rizki, Afandi, Muslim, Islam, Universitas, Sultan, Negeri, & Kasim, Syarif. (2025). *Open government: key issues in philippines*. *11*(2), 274–285.

Alfons, Marlyn E., . Nursini, & Rahman R, Abd. (2024). Government Expenditure, Human Development Index and Regional Inequality in Indonesia. *Journal of Ecohumanism*, *3*(7). https://doi.org/10.62754/joe.v3i7.4589

Alimoradi, Zainab, Griffiths, Mark D., & Alijanzadeh, Mehran. (2025). Predicting the role of

socio-economic indices for the Human Development Index based on a multivariate regression model. *Discover Public Health*, *22*(1), 182. https://doi.org/10.1186/s12982-025-00587-6

Ann, Danielle, Lantion, S., Musngi, Gabrielle V, & Cabauatan, Ronaldo R. (2023). Assessing the relationship of Human Development Index (HDI) and government expenditure on health and education in selected ASEAN Countries. *International Journal of Social and Management Studies*, *4*(6), 13–26.

Arisandi, Arwini, & Syarifuddin, Syandriana. (2023). Memprediksikan Indeks Pembangunan Manusia di Wilayah Indonesia Bagian Timur Menggunakan Random Forest Classification. *Journal of Mathematics: Theory and Applications*, 1–6. https://doi.org/10.31605/jomta.v5i1.2402

Ayonovna, Azamova Sitora. (2024). In The Context Of Environmental Globalization, The Need For Environmental Education Becomes A Priority. *American Journal Of Social Sciences And Humanity Research*, *4*(7), 30–35. https://doi.org/10.37547/ajsshr/Volume04Issue07-06

Aznin, Nor, Bakar, Abu, Hadijah, Siti, & Mat, Che. (2017). *Infrastructure development and economic growth in Malaysia : An ARDL approach*. 51–55.

Brillantes, Alex B., & Fernandez, Maricel T. (2011). *Restoring Trust And Building Integrity In Government : Issues And Concerns In The Philippines And Areas For Reform*. *12*, 55–80.

Browne, Stephen. (2012). *United Nations Development Programme and System (UNDP)*. https://doi.org/10.4324/9780203806852

Dadon Golan, Zehorit, & Purcell, Wendy M. (2025). Exploring Sustainable Development and the SDGs 3, 4, and 8 Using the Carbon Intensity of Human Well-Being and Longitudinal Multilevel Modeling. *Environments*, *12*(3), 71. https://doi.org/10.3390/environments12030071

Ervianto, Wulfram I. (2017). Tantangan pembangunan infrastruktur dalam proyek strategis nasional indonesia. *Prodsiding Simposium II - UNIID 2017*, (September 2017), 978–979.

Fahrurrozi, Muh, Mohzana, Mohzana, Haritani, Hartini, Yunitasari, Dukha, & Basri, Hasan. (2023). Peningkatan Indeks Pembangunan Manusia Regional Dan Implikasinya Terhadap Ketahanan Ekonomi Wilayah. *Jurnal Ketahanan Nasional*, *29*(1), 70. https://doi.org/10.22146/jkn.83425

Hák, Tomáš, Janoušková, Svatava, & Moldan, Bedřich. (2016). Sustainable Development Goals: A need for relevant indicators. *Ecological Indicators*, *60*, 565–573. https://doi.org/10.1016/j.ecolind.2015.08.003

Julistia, Ira, Kurniawan, Mubashamad, & Hasimi, Diah Mukminatul. (2025). The Relationship Between Education Expenditure, Health Expenditure And Final Education Level Towards The Human Development Index From A Shariah Economic Perspective : Evidence From 10 Provinces With The Lowest HDI In Indonesia. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, *9*(1), 46–75. https://doi.org/10.31955/mea.v9i1.4871

Kara, Bircan. (2025). Health indicators and human development: developing a new health

governance index with the case of Türkiye. *BMC Health Services Research*, *25*(1), 920. https://doi.org/10.1186/s12913-025-13007-x

Kementerian Perencanaan Pembangunan Nasional/Bappenas. (2024). *Buku Metadata Indikator RKP 2024*. 220–234.

Khan, Parvez Alam, Johl, Satirenjit Kaur, Akhtar, Shakeb, Asif, Mohammad, Salameh, Anas A., & Kanesan, Thavamaran. (2022). Open Innovation of Institutional Investors and Higher Education System in Creating Open Approach for SDG-4 Quality Education: A Conceptual Review. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(1), 49. https://doi.org/10.3390/joitmc8010049

Klasen, Stephan. (2011). Economic Growth and Poverty Reduction: Measurement and Policy Issues. *SSRN Electronic Journal*, (246). https://doi.org/10.2139/ssrn.871449

Lind, Niels. (2023). Human Development Index (HDI). In *Encyclopedia of Quality of Life and Well-Being Research* (pp. 3285–3286). https://doi.org/10.1007/978-3-031-17299-1_1342

Liu, Xin, Wang, Zhen, Zhang, Chen, Zhang, Chaoran, Peng, Lixin, & Xu, Haibo. (2024). Effects of Income on Subjective Well-Being in the Elderly: Complete Mediation Roles of Self-Rated Health and Psychological Capital. *Inquiry (United States)*, *61*. https://doi.org/10.1177/00469580241284967

Lubis, Cici Sari Lubis, Sari, Cindi Mutiara, Syahfitri, Tengku Indah, & Suharianto, Joko. (2024). Pengaruh Pengeluaran Pemerintah Sektor Pendidikan dan Sektor Kesehatan Terhadap Indeks Pembangunan Manusia (IPM) di Sumatera Utara Tahun 2019-2022. *Aurelia: Jurnal Penelitian Dan Pengabdian Masyarakat Indonesia*, *3*(1), 738–755.

Maqin, Abdul. (2011). Pengaruh Kondisi Infrastruktur Terhadap Pertumbuhan Ekonomi di Jawa Barat. *Trikonomika*, *10*(1), 10–18.

Maulana, Muhammad Fajar, & Nuraini, Ida. (2025). The Role of Economic, Health, and Educational Facilities and Infrastructure in Community Welfare in Districts and Cities in East Java Province. *Jurnal Ilmu Ekonomi JIE*, *9*(01), 104–110. https://doi.org/10.22219/jie.v9i01.39853

Musagaliev, Ajiniyaz Jumagulovich, Gretchenko, Anatoly Ivanovich, & Tansikbaevna, Jusupova Anjim. (2024). Human Potential as a Strategic Priority for Ensuring the National Security of the Country. *Pakistan Journal of Life and Social Sciences (PJLSS)*, *22*(2), 4748–4758. https://doi.org/10.57239/PJLSS-2024-22.2.00351

Nainggolan, Lora Ekana, Lie, Darwin, Nainggolan, Nana Triapnita, & Siregar, Robert Tua. (2022). How Determinants of the Human Development Index Impact Indonesia. *Indonesian Interdisciplinary Journal of Sharia Economics (IIJSE)*, *5*(2), 688–701. https://doi.org/10.31538/iijse.v5i2.2477

Nguyen, Bach. (2020). The relative importance of regional institutions and external finance for small business investment: Evidence from Vietnam. *Journal of Institutional Economics*, *16*(6), 911–929. https://doi.org/10.1017/S174413742000017X

Nguyen, Bach. (2021). Local institutions, external finance and investment decisions of small businesses in Vietnam. *Economic Systems*, *45*(3), 100880.

https://doi.org/10.1016/j.ecosys.2021.100880

Nugraha, Putu Ananda Devi, & Marhaeni, Anak Agung Istri Ngurah. (2022). Analysis Of Village Fund Management And Community Welfare In Gianyar District, Indonesia. *Eurasia: Economics & Business*, *3*(57), 38–50. https://doi.org/https://doi.org/10.18551/econeurasia.2022-03

Patandung, Yosef, & Panggua, Selvi. (2022). Analisis Masalah-Masalah Pendidikan dan Tantangan Pendidikan Nasional. *Jurnal Sinestesia*, *12*(2), 794–805.

Pereira, Miguel Alves, & Marques, Rui Cunha. (2022). The 'Sustainable Public Health Index': What if public health and sustainable development are compatible? *World Development*, *149*, 105708. https://doi.org/10.1016/j.worlddev.2021.105708

Rahmadani, Fitri, & Setiartiti, Lilies. (2023). Determinant of Economic Growth in ASEAN Countries (Indonesia, Thailand, Malaysia, Singapore, Philippines) *2010-2019*. *7*(2). https://doi.org/10.18196/jerss.v7i2.19551

René, Sylvain, Souza, André, Duarte, Cristina Santos, Yarid, Sérgio Donha, Santos, Charles Souza, Madalena, Maria, & Neta, Anjos. (2025). *Desafios do objetivo de desenvolvimento*. *33*, 1–11.

Renna, Hendrik Ryan Puan. (2022). Konsep Pendidikan Menurut John Locke dan Relevansinya bagi Pendidikan Sekolah Dasar di Wilayah Pedalaman Papua. *Jurnal Papeda: Jurnal Publikasi Pendidikan Dasar*, *4*(1), 7–16. https://doi.org/10.36232/jurnalpendidikandasar.v4i1.1698

Saefudin, Saefudin, Kusnadi, Tri Suwandi, Najira, Rahmat Baharudin, & Hening Triandika Rachman. (2025). Integration of Permaculture to Reinvent Students' Interest in Nature and Environmental Awareness for Quality Education under SDG-4. *Jurnal Pendidikan IPA Indonesia*, *14*(1), 192–201. https://doi.org/10.15294/jpii.v14i1.22122

Sapanang, Baso Aditya, Fitrianti, Retno, Yakub, Andry Irawan, Sopian, Andi, Hasanuddin, Universitas, Indonesia, Bank, & Gorontalo, Universitas. (2024). *The Role of Good Governance for Economic Growth in ASEAN*. *3*(3), 731–744.

Shen, Tzu Tsen, Long, Cheng Yu, & Wu, Ming Ping. (2023). Favorable cervical cancer mortality-to-incidence ratios of countries with good human development index rankings and high health expenditures. *BMC Women's Health*, *23*(1), 284. https://doi.org/10.1186/s12905-023-02423-y

Siregar, Zulpadli, Erlina, & Sirojuzilam. (2024). The Effect of Education, Health and Social Expenditure Allocations on the Human Development Index (HDI) Level of the City District Aceh Province. *Journal of Environmental and Development Studies*, *5*(01), 25–30.

Siwitomo, D. P. A., Fitriyani, N. N., & ... (2023). Kolaborasi Pendidikan: Strategi Inovasi Mengatasi Permasalahan Pendidikan Di Indonesia. *Prosiding Seminar …*, *1*(1), 64–68.

Sumriddetchkajorn, Kanitsorn, Shimazaki, Kenji, Ono, Taichi, Kusaba, Tesshu, & Kobayashi, Naoyuki. (2019). *Universal health coverage and primary care , Thailand*. (October 2018), 415–422.

Tan, Hai Chen, Zuo, Jian, & Feng, Yingbin. (2014). Exploring Critical Success Factors For Developing Infrastructure Projects In Malaysia – Main Contractors ' Perspective. (February). https://doi.org/10.1080/15623599.2012.10773193

Tangcharoensathien, Viroj, Patcharanarumol, Walaiporn, Suwanwela, Waraporn, & Supangul, Somruethai. (2020). Defining the Benefit Package of Thailand Universal Coverage Scheme : From Pragmatism to Sophistication. *International Journal of Health Policy and Management*, *9*(4), 133–137. https://doi.org/10.15171/ijhpm.2019.96

Türk, Umut, Östh, John, Toger, Marina, & Kourtit, Karima. (2021). Using Individualised HDI Measures for Predicting Educational Performance of Young Students—A Swedish Case Study. *Sustainability*, *13*(11), 6087. https://doi.org/10.3390/su13116087

Ugwu, Chinyere Nnenna, Ugwu, Okechukwu Paul Chima, Alum, Esther Ugo, Eze, Val Hyginus Udoka, Basajja, Mariam, Ugwu, Jovita Nnenna, Ogenyi, Fabian C., Ejemot-Nwadiaro, Regina Idu, Okon, Michael Ben, Egba, Simeon Ikechukwu, & Uti, Daniel Ejim. (2025). Sustainable development goals (SDGs) and resilient healthcare systems: Addressing medicine and public health challenges in conflict zones. *Medicine*, *104*(7), e41535. https://doi.org/10.1097/MD.0000000000041535

UNESCO. (2018). *The 2030 Education Agenda : from MDGs, EFA Sustainable Development Goal 4*. (October), 1–200.

Wang, Bing, & Chen, Tianchi. (2024). What do the Sustainable Development Goals reveal, and are they sufficient for sustainable development? *PloS One*, *19*(11), e0310089. https://doi.org/10.1371/journal.pone.0310089

Wulandari, Rahmah, Fadilah, Okataviyani, Mutia Lilian, Jabbar, M. Abdul, & Desmawan, Deris. (2024). Analisis Pengaruh Indeks Kesehatan Dan Indeks Pendidikan Terhadap Indeks Pembangunan Manusia (Ipm) Di Provinsi Jawa Timur Tahun 2013-2022. *Iuris Studia: Jurnal Kajian Hukum*, *5*(2), 241–247.

Yeni Yulianti, & Siti Qomariah. (2025). Indeks Pembangunan Manusia Ilmu Pengetahuan. *CENDEKIA: Jurnal Ilmu Sosial, Bahasa Dan Pendidikan*, *5*(1), 203–213. https://doi.org/10.55606/cendekia.v5i1.3512