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DETERMINANTS OF HUMAN DEVELOPMENT INDEX IN CENTRAL JAVA

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Abstract

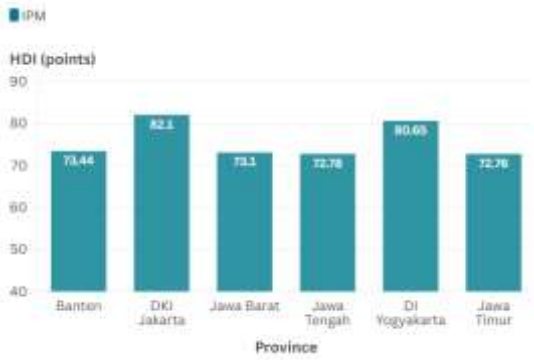
The value of HDI in Central Java has always increased every year, but compared to other provinces in Java Island, it still has the second lowest HDI. The purpose of this study is to analyze the effect of poverty, GRDP per capita, morbidity rate, health insurance and tertiary education on the Human Development Index. This study uses data from 35 districts and cities in Central Java for 2021-2023. With the panel data regression method applied through Eviews 12 and using the Fixed Effect Model (FEM) model. The results of this study indicate that poverty and morbidity have a significant negative effect on HDI, while GRDP per capita, health insurance, and the population who completed tertiary education have a significant positive effect on HDI in Central Java. GRDP per capita has the most dominant influence on HDI in Central Java. The implication of this research is that the government is expected to encourage the improvement of regional development and increase aid assistance programs to all sectors related to the society.

Keywords: Human Development Index, poverty, GRDP per capita, morbidity, health insurance, tertiary education

INTRODUCTION

Development is an activity that refers to various aspects that are lived by the community. Development in these various aspects will always involve human resources as one of the agents of development and the final result for the welfare of the community itself (Putri & Muljaningsih, 2022). Gary S Becker (1960) states that humans are not only resources but also capital, which can be seen from various views such as education, employment, health, income and activities that can support the productivity of these humans (Ramadanisa & Triwahyuningtyas, 2022).

One indicator that is suitable and used to show the quality of human resources is the Human Development Index (HDI). HDI was formed with the aim of presenting a comprehensive perspective related to the development of a country, not limited only to economic growth (Nizhamul *et al.*, 2023). The HDI measure not only reflects the economic condition of a country but also how much people receive basic services that can improve their standard of living (Salsabila *et al.*, 2025). The HDI condition in Java Island in the last 3 years has increased, this can be seen in Figure 1.



Source: Central Bureau of Statistics (2024)

Figure 1. Average HDI of Provinces in Java Island in 2021-2023

Based on Figure 1. the lowest HDI value is located in Central Java and East Java Provinces with a difference of 2 points. Where Central Java occupies the second lowest position after East Java with an average value of 72,78 points. The HDI of city districts in Central Java has a wide variety of values. When compared to the national average HDI of 72,92 points, Central Java's HDI can be grouped into two parts: 20 city districts with HDI values above the national average and 15 districts below the national average. The inequality in HDI values is triggered by various factors, one of which is the difference in economic structure between city districts, especially in the manufacturing industry.

The study of Sidauruk *et al.* (2024), states that when labor productivity increases, which is based on the increase in HDI value, it can reduce the poverty rate because of the achievement of community needs. But in fact, the poverty rate in Central Java Province is significantly greater than that of East Java even though Central Java's HDI value is better. The cause of poverty is based on the theory of the vicious cycle of poverty, namely the lack of quality of human resources owned by the community (Sipahutar & Nasution, 2023). High poverty will prevent people from fulfilling their basic needs such as education and health. The following table shows the poverty rate in the last 3 years in Central Java.

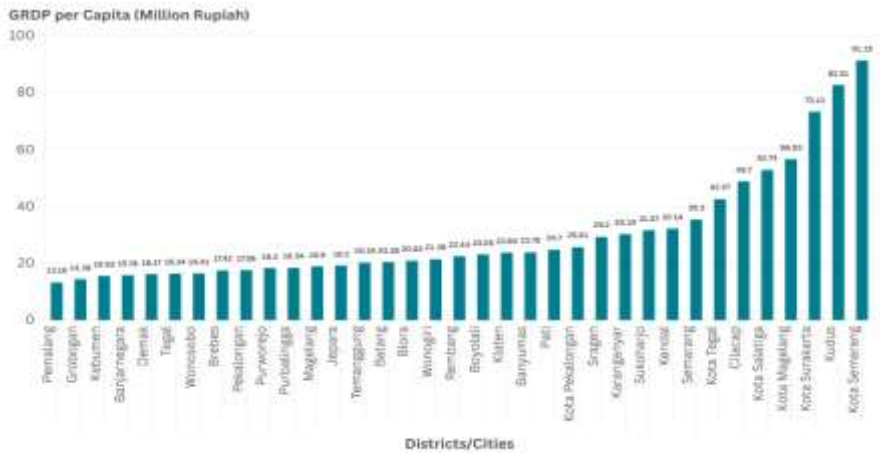
Table 1. Poverty Rate of Central Java Province

Year	Poverty Rate (%)	Number of Poor Population (Thousand)
2021	11,79	4.109,75
2022	10,93	3.831,44
2023	10,77	3.791,50

Source: Central Bureau of Statistics Central Java Province (2024a)

Table 1 shows a gradual decline in the poverty rate. However, when compared to the national average, the poverty rate in Central Java has always been high at over 10% (Sari *et al.*, 2023). The contribution to the poverty rate from each city district in Central Java varies greatly. The highest poverty rate is recorded in Kebumen Regency with an average poverty rate of 16,86%, while the lowest poverty rate is recorded in Semarang City, which only contributes 4,35%.

In the indicators of a decent standard of living, the amount of income will affect community expenditure. The amount of community income can be described through Gross Regional Domestic Product (GRDP) per capita. The higher the GRDP per capita, the greater the income of the local community (Tumaleno *et al.*, 2022). GRDP per capita in Central Java continues to increase from 2021 to 2023. The description of GRDP per capita in city districts in Central Java from 2021-2023 is as follows.

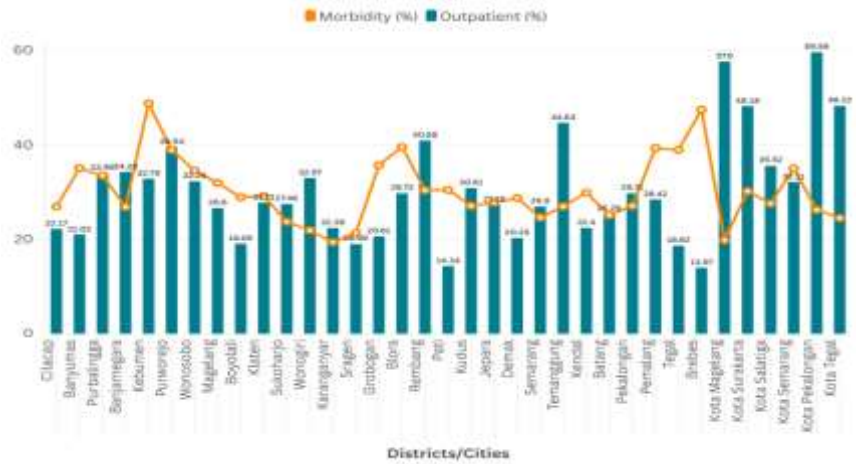


Source: Central Bureau of Statistics Central Java Province (2025)

Figure 2. Average GRDP per Capita of City Districts in Central Java for 2021-2023 (Million Rupiah)

Based on Figure 2, GRDP per capita in city districts in Central Java has various variations, which show that there are still many disparities that exist in each region (Rahmadhana & Utomo, 2020). The disparity that occurs is very significant, Semarang City and Kudus Regency hold the highest average GRDP per capita reaching 91,15 million rupiah per capita and 82,51 million rupiah per capita. This is very different from the average GRDP per capita of Pemalang Regency, which is 13,19 million rupiah per capita. This comparison indicates that economic activity in Semarang City and Kudus Regency is more productive with the utilization of the industrial, trade, service and tourism sectors.

The quality of human capital can also be seen from the aspect of health quality. One of the health services provided by community health centers in supporting community welfare is the provision of outpatient services which are intended as the main step in healing illness. The overview of outpatient care in city districts in Central Java from 2021-2023 is as follows.



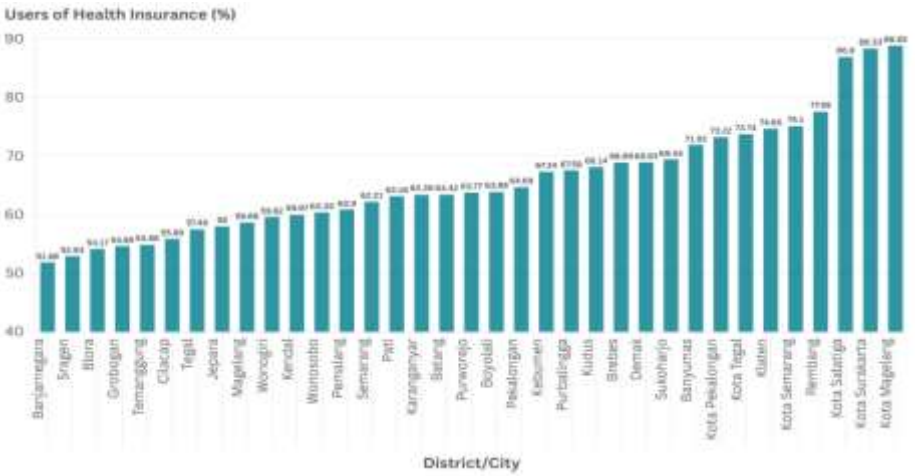
Source: Central Bureau of Statistics Central Java Province (2024)

Figure 3. Average Health Complaints and Outpatient Treatment of City Districts in Central Java in 2021-2023 (Percent)

Based on Figure 3, health center visits for outpatient treatment were highest in Pekalongan City with an average of 59,58%, while the lowest visit rate was recorded in Brebes Regency at 13,97%. When compared with morbidity data, there are 16 city districts with a higher percentage of morbidity than people who perform outpatient care. This means that there are still many people who choose

not to seek treatment when they are sick, even though proper and rapid treatment is needed so as not to hamper activities (I. Amalia et al., 2024).

Good health quality needs to be balanced with equitable access to health services. Health insurance was created as an effort to enable people to access health services that have been provided and improve their health, which has an impact on increasing human capital (Nainggolan & Sitabuana, 2022). The use of health insurance will also increase economic growth and reduce poverty levels because people do not need to spend a lot of money in handling their health problems (Putri & Muljaningsih, 2022).

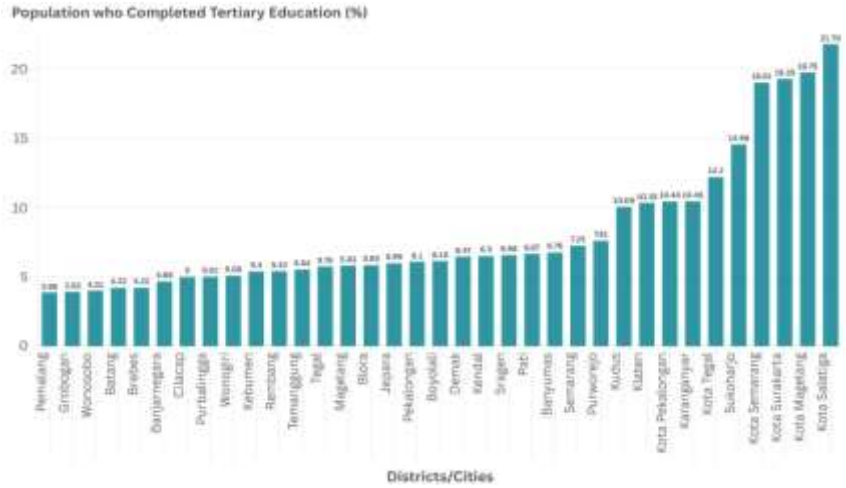


Source: Central Bureau of Statistics Central Java Province (2024)

Figure 4. Average Users of Health Insurance City Districts in Central Java in 2021-2023 (Percent)

Based on Figure 4, the highest percentage of BPJS ownership is in Magelang City with an average user of 88,83%, while the lowest BPJS ownership is located in Banjarnegara Regency with an average user of 51,87%. The increasing number of health insurance users indicates that the community has a great need and desire to access health services (Mustafidah & Indrawati, 2021).

Another factor that affects HDI is education in order to realize quality human resources in a country (UNDP, 2020). A high quality education will support a human being to obtain better opportunities in the future (Putri & Budiman, 2025). Higher education is the last stage to prepare students to become a knowledgeable society so as to improve welfare and national development (Hakim, 2016). The success of education indicators can be measured by the number of people who complete higher education.



Source: Central Bureau of Statistics Central Java Province (2024b)

Figure 5. Average Population that Completed tertiary education Regency Cities in Central Java in 2021-2023 (percent)

Based on Figure 5, the share of the population that completed tertiary education in Central Java shows significant variation between regions. Salatiga City has the highest average at 21.79%, while Pemalang District has the lowest average at only 3.88%. The increase in the population completing higher education indicates that the education system in the area is running well, which in turn will lead to a greater return on investment in education (Amalia & Sugiharti, 2020). Conversely, for regions with low average college completion, it indicates that people do not recognize the value of education.

This study adds education with the proxy of the population who completed tertiary education in city districts in Central Java as a variable in the HDI analysis. The use of this variables provides an inclusive analysis related to equitable access to education, quality of education and human resource development. This study was conducted due to the value of HDI in Central Java which is still in a low position when compared to other provinces on the island of Java and also the disparity in city districts in Central Java. This study was conducted to analyze the influence of poverty, GRDP per capita, morbidity, health insurance and tertiary education completion on HDI in Central Java and also analyze the most dominant variable on HDI.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

Human Capital Theory

The concept of human capital was pioneered by Garry Becker in 1962. The concept arises from the fact that determining economic welfare does not only require physical capital as a support for success, but also requires investment in the individual himself, called human capital. In line with this, stages and efforts are needed to achieve ideal human capital, one of which is by carrying out activities that will actually be useful in the future and attached over time, namely through education and training (Becker, 1962).

Several human capital investments according to Becker (1962, 1993) can encourage economic growth and the impact will be felt in the long term. First, investment in education, as the formal education taken is higher, the individual will have a superior quality of self. Second, investment in health, individuals who pursue education have the awareness of the fact that excellent health will improve performance in carrying out activities. Third, training and experience can improve skills and opportunities in supporting careers for individuals. In addition, social and family support factors are also important as individual motivation in developing their quality. Lastly, government policies in supporting sustainable community empowerment with social assistance will increase the accumulation of human capital.

Human Development Index

The Human Development Index was first introduced through an information publication by the UNDP, the "Human Development Report 1990". Based on the Central Bureau of Statistics (2024a), the HDI is a composite index used as an assessment of achievements in improving the quality of human life. Indonesia applies three dimensions of HDI and its four indicators, namely the dimension of longevity and healthy living with the indicator of Life Expectancy, the dimension of knowledge with the indicators of Length of School Expectancy and Average School Length, the dimension of decent living standards with the indicator of real expenditure per capita. Four breakdowns related to HDI status to provide insight into the development of each region, namely:

a. Low Status with HDI value: <60
b. Medium Status with HDI value: ≤60 HDI <70
c. High Status with HDI value: 70≤ HDI <80
d. Very High Status with HDI value: ≥80

Poverty

According to the Central Bureau of Statistics (2020), poverty refers to the inability of individuals to meet basic needs and minimum basic needs which are the basis for estimating a person to live a decent life. The problem of poverty that occurs in a country is more common in developing countries, this is driven by several factors such as lack of employment, low quality of education, increasing unemployment, infrastructure that is difficult to access and other supporting factors (Sanjaya *et al.*, 2019). Poverty alleviation will lead a society to human development that ultimately contributes to the welfare of society.

The poverty rate has a significant influence on improving the quality of human development. Where, when there is an increase in the population of poor people, it can be an inhibiting factor in improving human development. This is because the poor have limited economic capacity in their purchasing power (Trisno *et al.,* 2022).

Gross Regional Domestic Product (GRDP) per Capita

GRDP per capita is one of the benchmarks used in the context of economic development. GRDP per capita is used as a standard to assess the level of prosperity and achievement in development. In BPS (2020), GRDP per capita is the value obtained from dividing GRDP by the total population in the region according to mid-year.

The existence of GRDP per capita in a region can provide an overview of how capable the average income of each individual is in meeting their basic needs. The fulfillment of the basic needs of each individual is a sign that there is community welfare which is influenced by the equitable distribution of income in a region (Mulia & Putri, 2022). When a person can fulfill their basic needs continuously, it will also encourage increased spending in the education and health sectors, thus affecting the increase in HDI (Ezkirianto & Alexandi, 2018).

Morbidity

The concept of health according to the World Health Organization (WHO) refers to a condition where a person has a balance that includes physical, mental and social aspects, which means that health is not only seen based on someone not having disease or weakness. In order to achieve equitable health development, it is necessary to improve overall public health through health services provided by health infrastructure such as health centers. One of the health services provided is outpatient services. Outpatient care is one of the basic services that is very important and is used by the community in order to improve health, prevent disease, recognize a disease, and cure a basic disease (Nurlina et al., 2021). The aim of improving health services both in quantity and quality is to improve the quality of human resources which will have an impact on the increase in the Human Development Index (Mujibaturrahmah & Silvia, 2023).

Health Insurance

Every community has the right to have protection in ensuring all the continuity of life. In an effort to implement health equity, the government established a legal entity engaged in social security and based on the Law of the Republic of Indonesia Number 24 of 2011 concerning the Social Security Organizing Agency. Then, on January 1, 2014 BPJS Kesehatan began running the National Health Insurance (JKN) program with the aim of increasing health rates nationally (Saputro & Fathiyah, 2022).

Ownership of health insurance is expected to ease the financial burden on the community when accessing health services so that they meet the basic criteria of health (Yusiana *et al*., 2022). Health services provided to health insurance users can be in the form of consultation, examination, and healing using quality techniques and treatments without worrying about costs (Nainggolan & Sitabuana, 2022). Individuals with good health conditions will affect their performance and productivity levels, thus triggering an increase in human capital.

Tertiary Education

Law No. 20/2003 on the National Education System explains that education is a planned effort for students to develop the potential of each individual, so that they can have both academic and moral skills. In terms of economics, education is an important factor in realizing the quality of the human workforce. A person can have thoughts to be able to create and develop productivity where when productivity increases, individual income and national income will increase (Pristiwanti et al., 2022).

People who complete higher levels of education often show better living standards and greater health stability. Therefore, to find out how many people utilize access to education, it can be seen in the indicator of tertiary completion. The number of people who complete the tertiary level is an effort to improve the quality and accessibility of education to be a crucial aspect in order to increase HDI and achieve the targets of sustainable development. Surely, increasing HDI through education needs to be supported by various other factors such as government policies, economic conditions and educational infrastructure (Putri & Budiman, 2025).

The Influence of Poverty on Human Development Index in Central Java

Poverty is a condition of a person's inability to fulfill their life needs. The vicious circle of poverty theory explains that poverty arises due to the lack of income to fulfill people's daily nutritional needs, which impacts on health and productivity levels, resulting in limited output (Rahmawati *et al*., 2022). This increase in poverty ultimately affects human development. A study conducted by Priambodo (2021) stated that the poverty variable had a negative effect on economic growth and HDI in Purbalingga Regency in 2010-2019. Other studies by Simanjuntak *et al.* (2024) showed a negative impact of poverty on HDI in Indonesia in 2018-2022. Therefore, the hypothesis proposed in this study is as follows.

H_{1a}: Poverty has a negative effect on HDI in Central Java

The Influence of GDRP per Capita on Human Development Index in Central Java

GRDP per capita is an economic indicator to consider the economic performance of a region because it reflects the average income of the population. Increased income will increase public consumption, which is closely related to decent living standards in the HDI indicator (Rontos *et al*., 2023). The study conducted by Alayda *et al.* (2022) stated that GRDP per capita had a significant positive effect on HDI in Central Java Province in 2011-2020. Similar results that state GRDP per capita has a positive relationship with HDI were also carried out by Fadillah & Setiartiti (2021) in DI Yogyakarta Province in 2013-2018 and Sihite *et al.* (2024) in East Java Province in 2013-2022. Therefore, the hypothesis proposed in this study is as follows.

H_{1b}: GRDP per capita has a positive effect on HDI in Central Java

The Influence of Morbidity on Human Development Index in Central Java

Outpatient care is one of the health services provided as a fulfillment of health needs for the public. The study of Novitasari *et al.* (2021) states that people who have health complaints and do outpatient care will have a negative effect on HDI in East Java Province in 2015-2018. These findings are supported by the study of Pradana *et al.* (2024) showed a negative effect of health complaints on HDI in Indonesia in 2019-2021. Another study by Putri *et al.* (2022) stated that spending on health needs had a negative effect on HDI in Indonesia in 2015-2022. Therefore, the hypothesis proposed in this study is as follows.

H_{1c}: Morbidity has a negative effect on HDI in Central Java

The Influence of Health Insurance on Human Development Index in Central Java

Health insurance is a program implemented as a form of public health protection, with efforts to fulfill the needs of the community for health services evenly. The study of Nursolihah *et al.* (2023) states that the number of health insurance users has a positive effect on the number of health infrastructure visits in Indonesia in 2019. Another study by Dyahjatmayanti & Nuggroho (2022) showed a positive impact of health insurance on increasing the work motivation of PT Angkasa Pura Lombok during the Covid-19 pandemic. Therefore, the hypothesis proposed in this study is as follows.

H_{1d}: Health insurance has a positive effect on HDI in Central Java

The Influence of The Population who Completed Tertiary Education on HDI in Central Java

The tertiary completion rate reflects the proportion of people who have successfully completed tertiary education. Human capital theory explains that education is the main foundation for individuals to expand their capabilities. Mouwers-Singh & Arendse (2024) found that when tertiary education participation increases, human development also increases with better skill development and career potential. These findings are supported by a study conducted by Neves & Henriques (2020) showing that students who take part in distance education at open universities in Portugal can improve the quality of human development. Therefore, the hypothesis proposed in this study is as follows.

H_{1e}: The population who completed tertiary education has a positive effect on HDI in Central Java

RESEARCH METHODS

Research Design

This type of research is quantitative research so as to produce findings achieved through statistical measures. The data used is secondary data as a type and source of information with the main data sources including the Central Java Provincial Bureau Statistics for data on HDI values, poverty percentage, GRDP per capita, percentage of outpatients, percentage of health insurance ownership and percentage of tertiary education population. The data collection technique uses literature study, which is by reading and recording information from various literatures such as books, scientific journals, and other sources.

Data analysis techniques

The method used is panel data regression analysis method, which combines cross section and time series data. The cross section data covers 35 city districts in Central Java, while the time series data is 2021-2023. This study was conducted to examine the effect of poverty, GRDP per capita, morbidity, health insurance and the population completing tertiary education on the Human Development Index. Data processing was carried out with Eviews 12 software. The panel data regression model used in this study can be formulated as below:

$$IPM_{it} = \beta_0 + \beta_1 TK_{it} + \beta_2 PD_{it} + \beta_3 MORB_{it} + \beta_4 JK_{it} + \beta_5 TE_{it} + e_{it} \quad \text{..... (1)}$$

Where HDI is the Human Development Index (points), β_0 is a constant, β_{1-5} is the regression coefficient, TK is the poverty rate (percent), PD is GRDP per capita (million rupiah), MORB is the morbidity rate (percent), JK is health insurance (percent), TE is tertiary education (percent), i is 35 city districts in Central Java, t is the time period 2021-2023 and e is the random error coefficient.

In practice, a classic assumption test is required so that the resulting regression equation meets the Best Linear Unbiased Estimator (BLUE) criteria, namely by conducting a Multicollinearity Test and Heteroscedasticity Test (Ghozali, 2018). In panel data regression analysis, there are three model approaches used, namely the Common Effect Model, Fixed Effect Model, and Random Effect Model. Determination of the right model can be done through the Chow Test, Hausman Test and Lagrange Multiplier Test (Basuki & Prawoto, 2019). Furthermore, the model feasibility test is carried out, namely the Coefficient of Determination, f test and partial test.

The elasticity test is used to assess which independent variable has the most influence on the dependent variable. The formula used in conducting the elasticity test is as follows (Gujarati & Porter, 2015).

$$E_i = \beta_i \frac{\overline{X_i}}{\overline{Y}} \quad \text{..... (2)}$$

E_i is the elasticity of the independent variable, β_i is the coefficient of the independent variable, $\bar{X}_i$ is the average value of the independent variable and $\overline{\mathrm{Y}}$ is the average of the dependent variable. The indicator used in the elasticity test is Elastic (E>1), a percentage change in the independent variable (i) results in a larger percentage change in HDI (more dominant influence).

RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive statistics are carried out to provide identification and description of each variable studied in the form of data calculations. Descriptive statistical tests will produce mean, median, maximum, minimum, and standard deviation data. The table below shows the descriptive statistical data in this study.

Table 2. Descriptive Statistics

	IPM	TK	PD	MORB	JK	TE
Mean	73,505	10,790	29,970	30,463	65,843	8,2232
Median	72,570	10,620	22,420	27,110	64,090	6,3000
Maximum	84,990	17,830	95,500	82,800	92,660	24,190
Minimum	66,320	4,2300	12,740	5,7800	48,130	3,5100
Std. Dev.	4,4307	3,3631	19,423	17,495	9,9052	4,9314

Source: Results of data analysis using Eviews (2025)

Based on Table 2, shows the data distribution for the variables to be analyzed. The data distribution on the HDI variable in the 2021-2023 period shows a minimum value of 66,320 points, a maximum value of 84,990 points with an average of 73,505 points and a standard deviation of 4,430 points. The poverty variable in the 2021-2023 period shows a minimum value of 4,230%, a maximum value of 17,830% with an average of 10,790% and a standard deviation of 3,363%. The GRDP per capita variable in the 2021-2023 period shows a minimum value of 12,740 million rupiah, a maximum value of 95,500 million rupiah with an average of 29,976 million rupiah and a standard deviation of 19,423 million rupiah. The morbidity variable in the 2021-2023 period shows a minimum value of 5,780%, a maximum value of 82,800% with an average of 30,463% and a standard deviation of 17,495%. The health insurance variable in the 2021-2023 period shows a minimum value of 48,130%, a maximum value of 92,660% with an average of 65,843% and a standard deviation of 9,905%. The tertiary education variable in the 2021-2023 period shows a minimum value of 3,510%, a maximum value of 24,190% with an average of 8,223% and a standard deviation of 4,931%.

Panel Data Regression Analysis

Based on the results of the classical assumption test, namely the Multicollinearity Test and Heteroscedasticity Test, it is known that in this regression equation there are no heteroscedasticity and multicollinearity problems or meet the BLUE criteria. According to the Chow Test and Hausman Test, it is found that among the three models, the best model is the Fixed Effect Model with each probability value ≤0.05. The following table shows the panel data regression results with the FEM model.

Table 3. Result of Panel Data Regression with FEM

Variable	Coefficient	t-Statistic	Probability
C	73,7566	45,9548	0,0000
TK	-0,6966	-8,8583	0,0000
PD	0,1399	5,0615	0,0000
MORB	-0,0043	-1,8767	0,0650
JK	0,0279	2,1124	0,0385
TE	0,1658	4,1231	0,0001

Source: Results of data analysis using Eviews (2025)

Based on table 3, a regression equation is formed with the selection of the best model Fixed Effect Model (FEM) as follows.

$$IPM_{it} = 73{,}756 - 0{,}696TK_{it} + 0{,}139PD_{it} - 0{,}004MORB_{it} + 0{,}027_{it} + 0{,}165TE_{it}$$

The TK variable has a regression coefficient of -0.6966 with a probability value of 0.0000. This shows that poverty has a significant negative effect on HDI in Central Java. The PD variable has a regression coefficient of 0.1399 with a probability value of 0.0000. This shows that GRDP per capita has a positive and significant effect on HDI in Central Java. The MORB variable has a regression coefficient of -0.0043 with a probability value of 0.0650. This indicates that morbidity has a significant negative effect on HDI in Central Java. The JK variable has a regression coefficient of 0.0279 with a probability value of 0.0385. This indicates that health insurance has a positive and significant effect on HDI in Central Java. The TE variable has a regression coefficient of 0.1658 with a probability value of 0.0001. This shows that tertiary education has a positive and significant effect on HDI in Central Java.

Elasticity Test

The elasticity test is used to determine which independent variable has the most dominant influence on HDI in Central Java. With the calculation of elasticity as follows.

a. Poverty :

$$E_{TK} = -0{,}696 \times \frac{10{,}790}{73{,}505} = -0{,}102$$

b. GDRP per capita :

$$E_{PD} = 0{,}139 \times \frac{29{,}976}{73{,}505} = 0{,}056$$

c. Morbidity :

$$E_{MORB} = -0{,}004 \times \frac{30{,}463}{73{,}505} = -0{,}001$$

d. Health insurance :

$$E_{JK} = 0{,}027 \times \frac{65{,}843}{73{,}505} = 0{,}024$$

e. Tertiary Education :

$$E_{TE} = 0{,}165 \times \frac{8{,}223}{73{,}505} = 0{,}018$$

Based on the calculation value above, the GRDP per capita variable has the largest elasticity value when compared to other independent variables. Therefore, it can be concluded that the variable that has the most influence on HDI in 35 city districts in Central Java is GRDP per capita.

The Influence of Poverty on Human Development Index in Central Java

In accordance with the panel data regression results, it is found that poverty has a negative and significant effect on HDI in 35 city districts in Central Java in 2021-2023 so that $\mathrm{H_{1a}}$ is accepted. This finding states that when poverty decreases, it will affect the increase in HDI, which is caused by the limitations of the community in accessing their life needs. Poverty will affect people's ability to fulfill the supporting components of HDI, including education, health and a decent standard of living.

This research shows that when a region has the highest poverty rate, the HDI value will be lower when compared to other city districts. For example, Brebes Regency with a poverty rate of 16,42% has the lowest HDI value of 67,1 points and Pemalang Regency with a poverty rate of 15,55% has an HDI value of 67,26 points. This happens because poverty brings many obstacles both personally and as a whole. Poverty prevents individuals from fulfilling their needs, including accessing education and health because of economic limitations in accessing these facilities and infrastructure. The results of this study are in line with a study conducted by Priambodo (2021) which states that poverty has a negative and significant effect on HDI in Purbalingga Regency. This study explains that when poverty, which includes social and economic inequality, occurs, the fulfillment of the basic needs of the society cannot be realized, which causes a decrease in economic growth due to decreased production of goods and services and a decrease in HDI due to weak productivity levels due to uneven human development.

The Influence of GDRP per Capita on Human Development Index in Central Java

Based on the panel data regression results, it is found that GRDP per capita has a significant and positive effect on increasing HDI in 35 city districts of Central Java in 2021-2023 so that $\mathrm{H_{1b}}$ is accepted. This finding shows that city districts that have GDRP per capita growth will contribute to an increase in HDI value. For example, Semarang City with the highest GRDP per capita of 91.15 million rupiah can achieve a very high HDI value of 84.43 points and Kudus Regency with GRDP per capita of 83.44 million rupiah recorded an increase in HDI value of 76.71 points. This proves that when an increase in income occurs, the purchasing power of the community will increase, which at the same time encourages an increase in the quality of life.

One factor that explains the effect of GRDP per capita on increasing HDI is when maximizing access to facilities and infrastructure that can stimulate economic activity, such as the development of leading sectors, namely agriculture, industry, tourism and MSMEs through the concept of creative economy. The results of this study are in line with studies conducted by Alayda *et al.* (2022), Fadillah & Setiartiti (2021), and Sihite *et al*. (2024) which state that the GRDP per capita variable has a positive influence on HDI. Since every increase in GRDP per capita reflects better economic growth, which has a direct impact on people's purchasing power and ability to access their basic needs, including meeting better education and health needs.

The Influence of Morbidity on Human Development Index in Central Java

Based on the panel data regression results, it is found that morbidity has a significant negative effect on HDI in 35 city districts of Central Java in 2021-2023 so that $\mathrm{H_{1c}}$ is accepted. This finding states that an increase in morbidity in the community, meaning that the number of people who suffer from diseases and perform outpatient care, will reduce the value of HDI. Improper handling of the disease will cause complexity that actually worsens the condition of someone who

initially has a mild disease, as a result the potential to improve human quality will be hampered. Health allocation needs to be improved, one of which is with adequate health access and easily accessible to all levels of society, which needs to be supported by the quantity and quality of proper health. Without the development of proper health quality, health service activities will be hampered and in turn will affect people's decisions to access health services.

The results of this study are in line with a study conducted by Novitasari *et al*. (2021) which states that when someone suffers from illness and requires medical treatment, it will have a negative impact on HDI growth because people who have diseases will affect the decrease in life expectancy. Moreover, if health infrastructure and services are not freely available to the community, it will worsen the conditions and people's interest in accessing health. Therefore, the government needs to ensure that health allocations are available to all regions and all levels of society, and people need to be aware of the importance of health for survival.

The Influence of Health Insurance on Human Development Index in Central Java

Based on the panel data regression results, it is found that health insurance has a significant positive effect on increasing HDI in 35 city districts in Central Java in 2021-2023 so that $\mathrm{H_{1d}}$ is accepted. Health insurance includes expanding access to health that is more affordable for the community in using facilities to health services in it, so it has an important role in improving living standards through understanding of health. This research shows that the city districts with the most health insurance will be able to make a large contribution to increasing the HDI value. For example, Surakarta City with 92,66% health insurance coverage has a very high HDI value of 83,54 points. The addition of social security illustrates the equalization of health access that is easier for all people to enjoy. By optimizing health access, the community can obtain health services until the recovery period and can reduce the risk of poverty due to the burden of large health costs.

The results of this study are in line with studies conducted by Dyahjatmayanti & Nuggroho (2022) and Nursolihah *et al*. (2023) which show that health insurance contributes positively to HDI development. Where, this research confirms the importance of health insurance that can be used as a form of individual encouragement in conducting medical treatment and can also be used as work motivation that provides protection to the workforce during the working period. Healthy individuals will have better stamina and endurance, the main activities such as education and work will not be hampered due to illness so as to increase productivity.

The Influence of the Population who Completed Tertiary Education on HDI in Central Java

Based on the panel data regression results, it is found that the population who completed tertiary education has a positive and significant influence on the increase in HDI in 35 city districts in Central Java so that $\mathrm{H_{1e}}$ is accepted. This finding is in line with human capital theory, which states that higher education allows a person to have knowledge, skills and high competitiveness in supporting development in each region. This research shows that people with a high education level will have a major influence on increasing HDI values.

Salatiga City, for example, with a 21,70% tertiary education attainment rate, has a very high HDI of 84,99 points. This proves that investment in education, especially at the higher education level, is directly proportional to the improvement of human quality. This finding is in line with the study results of Mouwers-Singh & Arendse (2024) and Nelsi *et al.* (2024) which also states that high educational participation will create superior human resources so that the contribution of future work will be greater. The achievement of education is to create individuals who have competitiveness so that they can increase work opportunities, productivity, and living standards which ultimately have an impact on economic growth and human development progress.

The Most Influential Variable on the Human Development Index in Central Java

Based on the results of the elasticity test, it is found that the GRDP per capita variable has the greatest influence on the increase in HDI when compared to the variables of health insurance and

tertiary education graduation. This is indicated by the results of the calculation of the largest elasticity of GRDP per capita, which is 0,056 compared to other variables. This proves that GRDP per capita plays the most dominant role in driving the increase in HDI in 35 city districts in Central Java in 2021-2023.

GRDP per capita as a reflection of the average income of the community provides an overview of how much spending or purchasing power individuals can do to fulfill their welfare. The higher the ability to fulfill their lives, the greater the human quality that is formed, which allows an increase in HDI. An increase in GRDP per capita also plays a role in external improvements such as economic growth by creating more jobs, reducing unemployment, and encouraging income equality. City districts with relatively high GRDP per capita tend to have stronger economic capabilities due to optimal utilization of the business sector. Regions with high GRDP per capita will try to fulfill other needs such as in the education and health sectors. For example, Magelang City has an education scholarship program and shuttle buses for students in remote areas, while Tegal City also has health programs such as free health checks.

CONCLUSION

Conclusions

Based on the results of the data processing and discussion above, the following conclusions are obtained:

1. Variables of GRDP per capita, health insurance and population who completed tertiary education statistically have a positive and significant influence on the Human Development Index in Central Java.
2. Variables of poverty and morbidity statistically have a negative and significant influence on the Human Development Index in Central Java.
3. The most influence variable on the Human Development Index is the GRDP per capita variable with an elasticity calculation result of 0.056.

Implication

1. The high level of poverty will weaken the economic sector and will clearly affect the level of public consumption, expansion of social inequality and failure to fulfill basic needs. Poverty eradication can be carried out by the government through increasing community income and business training, especially in the use of technology, empowering MSMEs and expanding employment opportunities. In addition, improvements are needed in social assistance programs so that the assistance distributed can be targeted to the people who are more in need.
2. The government can improve human development through GRDP per capita by empowering sectors that have the potential to improve the regional economy. For example, the development of the tourism sector, the government needs to invest in improving tourism infrastructure considering that Central Java has a variety of natural and cultural tourism that can attract tourists. In addition, economic distribution needs to be done through leading sectors like manufacturing and the creative economy so that people do not depend on the traditional economic sector. Improvements in human resources are also needed through investment in education and job training so that workers are ready to compete in the labor market and can increase their productivity and abilities.
3. In improving the health sector, the government needs to ensure that health services can be received and accessed by all levels of society. In this case, the government can make adjustments in the health infrastructure and health services, such as improving access to health centers, providing reliable medical personnel and providing programs that can support public health. In addition, health insurance users must be increased through the use of mobile applications that make it easier for people to access health services and improvements in health

insurance administration services. In particular, the community needs to be aware and have an active role in supporting their own health.

4. Education plays an important role in creating individual competencies to improve human resources. Therefore, it is needed to equalize access to education and the obligation of individuals to undertake education. To support this, the government needs to allocate more funds to the education sector to build educational facilities, provide books and stationery, and provide training for educators so that the knowledge taught can continue to develop. Assistance programs such as KIP and scholarships are essential in preventing students from dropping out of school, so it is necessary to ensure that the programs are well-targeted.

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