



The Effect Of Health Expenditure On Life Expectancy In Bengkulu

Riki Irawan^{1*} and Esti Pasaribu²

^{1,2}Faculty of Economics and Business, Bengkulu University, Bengkulu, Indonesia

Email Address:

*c1a021052.rikiirawan@mhs.unib.ac.id**, *estipasaribu@unib.ac.id*

**Coressponding Author*

Submitted 11-11-2024 Reviewed 28-11-2024 Revised 29-11-2024 Accepted 03-12-2024 Published 06-12-2024

Abstract: This study aims to analyse the effect of health expenditure, access to health services, and poverty on life expectancy in Bengkulu Province from 2014-2023. Using the multiple linear regression method, the results show that health expenditure does not significantly influence life expectancy, which is caused by the budget allocation that is still low and less than optimal. In contrast, access to health services substantially increases life expectancy, whereas people with better access to health services have a higher life expectancy. Poverty was also found to have no significant effect, which may be due to government policies that help people experiencing poverty obtain health services. This study concludes that optimising access to health services is more important than increasing health spending to increase life expectancy.

Keywords: Health Expenditure; Access to Health Services; Poverty; Life Expectancy.

Abstract: Penelitian ini bertujuan untuk menganalisis pengaruh anggaran belanja kesehatan, akses layanan kesehatan, dan kemiskinan terhadap angka harapan hidup di Provinsi Bengkulu selama periode 2014-2023. Dengan menggunakan metode regresi linear berganda, hasil penelitian menunjukkan bahwa anggaran belanja kesehatan tidak memiliki pengaruh signifikan terhadap angka harapan hidup, yang disebabkan oleh alokasi anggaran yang masih rendah dan kurang optimal. Sebaliknya, akses layanan kesehatan memiliki pengaruh signifikan terhadap peningkatan angka harapan hidup, di mana masyarakat dengan akses yang lebih baik terhadap layanan kesehatan memiliki harapan hidup yang lebih tinggi. Kemiskinan juga ditemukan tidak berpengaruh signifikan, yang mungkin disebabkan oleh adanya kebijakan pemerintah yang membantu masyarakat miskin mendapatkan layanan kesehatan. Penelitian ini menyimpulkan bahwa untuk meningkatkan angka harapan hidup, optimalisasi akses layanan kesehatan lebih penting dibandingkan hanya meningkatkan belanja kesehatan.

Keywords: Belanja Kesehatan; Akses Layanan Kesehatan; Kemiskinan; Angka Harapan Hidup.

INTRODUCTION

Community well-being is one of the main goals in any development effort, as it reflects ideal social and economic conditions for every individual. In a broader context, community well-being focuses not only on material aspects, but also includes interrelated social, psychological and environmental dimensions. This confirms that community well-being encompasses the ability to live in decent conditions, beyond just access to essential services such as education and health. It also includes the quality of life and productivity of individuals, which are important indicators for assessing the progress of a nation.

In the context of economic development, community well-being is an important benchmark for assessing progress. A prosperous society not only enjoys better living conditions, but also contributes significantly to national economic growth. Thus, community welfare is an important pillar for sustainable development in a region.

One of the fundamental components of well-being is health, which directly impacts individuals and broadly affects the productivity and capability of the national economy.



Good health enables individuals to reach their full productivity potential, thereby increasing economic output. Conversely, poor health characterized by high rates of disease and low life expectancy can hamper national productivity and destabilize the economy. The COVID-19 pandemic is a clear example of this relationship; it disrupted mobility, supply chains and consumption, leading to a sharp contraction in Indonesia's economic growth.

Sustainable development becomes difficult to achieve when serious health problems persist and limit productivity (Morina et al., 2022; Radmehr & Adebayo, 2022). Therefore, strengthening the national health system is essential to achieve comprehensive health development (Gedikli et al., 2019). The government should increase the health budget and improve infrastructure and services across regions. However, realizing an ideal health system often faces challenges such as budget constraints, inadequate infrastructure, and a shortage of skilled labor.

Effective system improvement requires appropriate and sustainable budget allocations and supporting policies that reach all levels of society (Septriani et al., 2020). Life expectancy is a key indicator to assess public health and quality of life in a country. Life expectancy reflects the average age that individuals in a population can reach. Many studies use life expectancy as a measure of social welfare and the effectiveness of local health policies.

The Human Capital Theory proposed by Gary S. Becker underscores the importance of health in economic development. The theory states that human capital-including health and education-is essential for long-term growth. By investing in health, countries can increase the productivity of their workforce, thereby promoting sustainable economic progress (Gandhi et al., 2022). In this context, government spending on health is seen as an investment in human capital that aims to improve the quality of life and well-being of individuals.

Grossman's theory supports this perspective by stating that increased health spending will improve access to health services. This in turn will increase life expectancy and productivity. This improvement is in line with the goal of sustainable economic development: a healthier population will be more productive and able to contribute to economic growth while reducing social inequality and poverty (Aprilia & Sugiharti, 2022).

This study offers a fresh perspective by examining the effects of health expenditure, access to healthcare services, and poverty on life expectancy within the specific context of Bengkulu Province, which has received limited attention in prior research. Most existing studies focus on broader, national-level analyses or more developed regions, potentially overlooking the unique socioeconomic and policy challenges faced by smaller provinces like Bengkulu. This research fills a gap by integrating these three critical variables in a localized setting, leveraging recent data from 2014 to 2023. By doing so, it aims to provide region-specific insights that can guide policymakers in optimizing resource allocation and healthcare strategies, particularly in underfunded areas.

In 2023, the Indonesian government has allocated a health budget of IDR42.1 trillion. This budget aims to ensure equitable utilization across regions while meeting urgent health service needs such as stunting reduction and infectious disease management. Understanding the trend of this budget is crucial to analyze its impact on life expectancy across provinces.

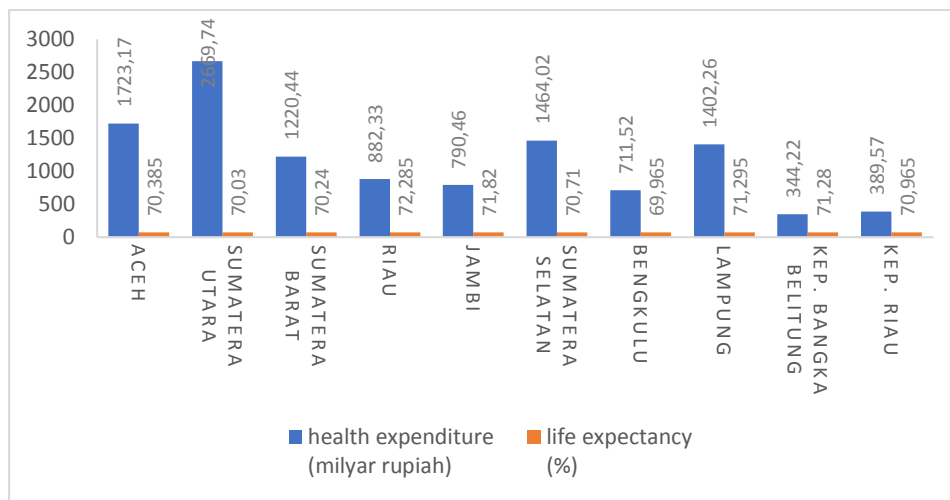


Figure 1. Health Expenditure & Life Expectancy in Sumatra Island
 Source: bps.go.id, djpb.kemenkeu.go.id

Figure 1 illustrates the relationship between health expenditure and life expectancy across all provinces on the island of Sumatra. Notably, Bengkulu Province stands out with the lowest health budget at 7.180 trillion rupiah, contrasting sharply with North Sumatra Province, which boasts the highest health budget in the region. This disparity is not only evident in funding but also reflected in life expectancy figures; Bengkulu Province has the lowest life expectancy compared to other provinces on Sumatra.

The difference in funding allocation can be attributed to fiscal decentralization, which grants regions the autonomy to allocate their health budgets. This autonomy enables local governments to prioritize spending based on the unique needs and conditions of their respective areas. In the case of Bengkulu, this has resulted in a lower allocation for health services, which correlates with its lower life expectancy. The dynamics surrounding health budget allocations in Bengkulu mirror broader trends observed throughout Indonesia, where disparities in health funding often lead to significant differences in health outcomes.

Despite these challenges, it is encouraging to note that the growth trend of health expenditure in Bengkulu Province has been increasing annually. This upward trajectory suggests a recognition of the importance of investing in health as a means to improve overall well-being and productivity. As local governments continue to navigate the complexities of budget allocation under fiscal decentralization, it will be crucial for them to focus on strategies that effectively address healthcare needs while maximizing the impact of their expenditures on life expectancy and public health outcomes.

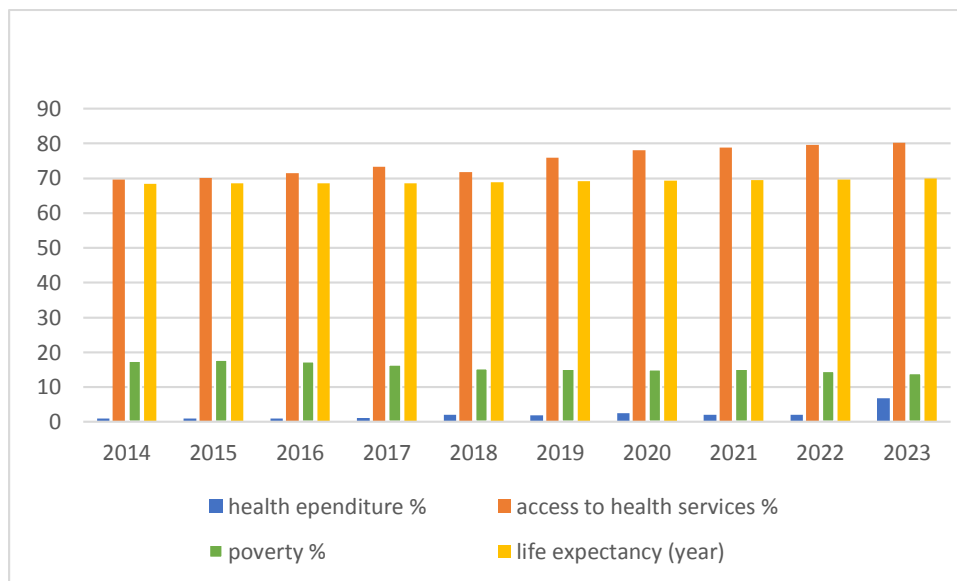


Figure 2. Health Expenditure, Access to Health Services, Poverty & Life Expectancy in Bengkulu Province

Source: bps.go.id, djpb.kemenkeu.go.id

Figure 2 illustrates the trend of health expenditure in Bengkulu Province from 2014 to 2023, revealing a consistent increase each year. However, this growth has not been without fluctuations, particularly in the years 2019, 2021, and 2023. These variations in health expenditure can significantly influence the effectiveness of local government initiatives aimed at improving life expectancy among the population. Notably, access to health services in Bengkulu has risen dramatically from 69.710 percent to 80.280 percent during this period, while the poverty rate has shown a steady decline.

The interplay between health expenditure, access to health services, poverty levels, and life expectancy forms the core focus of this study. According to Grossman's theory, an increase in health expenditure should enhance access to health services, which subsequently leads to improved life expectancy. Nevertheless, persistent economic disparities particularly poverty continue to pose substantial barriers for many individuals in accessing adequate healthcare. These inequalities contribute to lower life expectancy among impoverished populations and underscore the necessity for equitable health budget allocations from the government.

Life expectancy serves as a crucial reference point for evaluating the impact of health policies within a region. In Bengkulu Province, life expectancy has gradually increased from 2014 to 2023; however, this improvement is not as pronounced compared to other regions that benefit from larger health budget allocations. For instance, research conducted in West Java Province indicates that health expenditure has a positive and significant impact on life expectancy (Sihaloho, 2019). This disparity highlights the variability in health budget policies and priorities across provinces in Indonesia, including Bengkulu (Azwar, 2022).

Given these dynamics, it is imperative to investigate how government health expenditure influences life expectancy in Bengkulu Province. This study aims not only to assess the effectiveness of health spending but also to examine the impacts of access to healthcare services and poverty on life expectancy outcomes within the province.

The findings of this study are anticipated to provide valuable insights for local governments in crafting more effective and equitable health budget policies aimed at enhancing the quality of life and productivity of the population. Improved health outcomes are expected to bolster economic strength and promote sustainable growth in Bengkulu Province. By addressing these interconnected factors health expenditure, service access, poverty levels, and life expectancy policymakers can develop strategies that foster a healthier populace and contribute to long-term economic resilience.

THEORITICAL REVIEW

The intricate and multifaceted relationship between health and sustainable development is prominently highlighted in the Rio Declaration of 1992, which underscores the necessity of health as a foundational pillar for societal advancement. Health transcends its role as a mere source of community welfare; it emerges as a critical determinant in enhancing income levels and economic prosperity. When health standards improve, the subsequent rise in productivity not only benefits individuals but also catalyzes broader economic development, ultimately fostering a more vibrant and resilient society (Sihaloho, 2019).

Human Capital Theory. At the heart of this discussion lies the Human Capital Theory, developed by the esteemed economist Gary S. Becker, which articulates the vital importance of human resources in driving economic growth. Within this framework, government expenditures directed toward the health sector are regarded as strategic investments in human capital that can significantly enhance both the quality of life and the overall welfare of the community. Health, as a fundamental component of human capital, plays a pivotal role in shaping individuals' abilities to contribute meaningfully to the economy, thereby reinforcing the link between health and economic vitality (Folland et al., 2024).

From an economic standpoint, the welfare of communities within a region is meticulously measured using a diverse array of indicators, including economic growth rates, gross regional domestic product (GRDP) per capita, and the Human Development Index (HDI) (Syam et al., 2021). In the context of health, life expectancy stands out as a primary benchmark within the HDI framework, serving as an essential tool for evaluating the effectiveness of government policies aimed at enhancing the welfare of the population (Sinaga et al., 2020).

Life expectancy serves as a critical reflection of public health outcomes, encapsulating the average age that individuals can expect to attain based on the prevailing mortality conditions within their communities. A low life expectancy in a specific area often signals that health development initiatives have not achieved their intended goals, whereas a higher life expectancy serves as a testament to the success of health interventions and initiatives within that region. This makes life expectancy not just a statistic but a significant indicator of community health and well-being.

H1: Health expenditure has a positive effect on life expectancy

Health expenditure is a type of local government budget that is used to buy good facilities such as hospitals, subsidize drugs or pay hospital or posyandu workers or anything in the health sector in the district or city (Amru & Sihaloho, 2020).

Health expenditure plays an important role in improving quality of life and life expectancy in Indonesia. Research shows that increased health spending is directly correlated with improved health outcomes, thus extending life expectancy (Wulandari & Rambe, 2024). This relationship underscores the importance of allocating more funds to the health sector, which can improve the quality and accessibility of health services, ultimately benefiting population longevity (Nasution & Hasibuan, 2018).

Health development is aimed at improving the degree of public health. The state of public health can be determined by life expectancy, mortality, morbidity, and nutritional status. Achieving health development goals is a matter of serious concern for health workers and stakeholders at all levels in Indonesia (Ahyuni & Sutjipto, 2023).

Government spending aimed at the poor significantly affects overall welfare improvement. This pro-poor approach to health financing not only improves access to necessary services, but also has a positive impact on life expectancy (Rambe et al., 2024).

A study comparing the efficiency of health spending among leading Asian economies found that effective health spending is associated with longer healthy life expectancy, especially in non-OECD countries such as Indonesia. Research on HDI in Indonesia revealed that life expectancy, educational attainment and per capita expenditure are significant determinants of human development, suggesting a strong relationship between economic investment in health and overall quality of life (Vitona et al., 2024).

However, as each region has its own policy on health spending, this will certainly lead to differences in how effectively health spending affects life expectancy in different regions (Sihaloho, 2019).

H2: Access to health services has a positive effect on life expectancy

Access to health services is an output of health expenditure. In this context, investments in public infrastructure in the health sector and improved access to health services have been shown to play an important role in improving people's health and well-being (Setyadi et al., 2023). When health expenditure increases, access to health services will also increase. This is in line with the findings of Muhammad (2024) who showed that access to health services significantly positively affects life expectancy. In addition, effective allocation of funds in the health sector can improve public health and extend life expectancy (Sri Devi et al., 2024).

An increase in the health budget serves not only to improve physical facilities such as hospitals and health centers, but also to improve the quality of services provided. According to the Ministry of Health of the Republic of Indonesia 2023, proper budget allocation can ensure that primary and referral health services are accessible to all levels of society. With this increased access, it is expected that there will be a decrease in mortality rates and an improvement in the quality of life of the community.

Health infrastructure covers various aspects, including the availability of medical facilities, trained medical personnel, and accessibility of services. physical and non-physical infrastructure greatly affects public health development (Husada & Yuniansi, 2020). The availability of facilities such as adequate hospitals and clinics is an important indicator in determining the extent to which people can access the necessary health services.

Access to health services has a significant impact on life expectancy. Individuals who have better access to health services tend to have higher life expectancy (Muhammad, 2024). This is due to their ability to obtain necessary medical care in a timely manner, as well as disease prevention through promotive and preventive programs.



H3: Poverty has a negative effect on life expectancy

Poverty. Central Bureau of Statistics defines as the inability of individuals in meeting the minimum basic needs for a decent life, furthermore, poverty is a condition that is below the standard value line of minimum needs, both for food and non-food which is called the poverty line. Poverty is one of the fundamental problems, because poverty concerns the fulfillment of the most basic the most basic needs in life and poverty is a global problem because poverty is a problem faced by many countries (Adelia Suryani, 2023).

Poverty is one of the main barriers that prevent people from getting the health services they need (Dara Haura Dharana et al., 2024). This lack of access is particularly concerning as it correlates with a negative impact on life expectancy, with higher levels of poverty associated with reduced life expectancy. The relationship between poverty and health outcomes is complex and multifaceted, influenced by various social determinants of health (Adhitya et al., 2022).

Poverty directly limits an individual's ability to access health services due to financial limitations. Individuals living below the poverty line often struggle to afford health insurance, medications, and necessary medical procedures (Liu et al., 2024).

Although existing evidence suggests a link between poverty and poor health outcomes, some experts argue that improving access to healthcare can mitigate the negative effects of poverty on life expectancy (Ginting, 2020). Grossman's health demand model posits that when access to healthcare increases-regardless of income level-individuals may still receive adequate medical attention. This perspective posits that if low-income individuals can access quality health services, they may achieve health outcomes comparable to those in higher income brackets.

METHODS

This research was conducted in Indonesia, specifically in Bengkulu Province. The analysis process will be conducted by testing the effect of several independent variables on one dependent variable. The independent variables used in this study include government spending on the health sector (percent), access to health services (percent), and poverty level (percent). Meanwhile, the dependent variable analyzed is life expectancy (years). In addition, this study uses a quantitative approach to process the data obtained. The data used in this research is secondary data. All data in this study were taken from the Central Bureau of Statistics and the Ministry of Finance..

The data used in this study is secondary data. Secondary data is information that has been collected based on pre-existing sources. All data in this study were taken from the Central Bureau of Statistics and the Ministry of Finance.

The variables applied in this study include independent variables and dependent variables. Dependent variables are variables that are influenced or can be explained by independent variables, while independent variables influence or explain other variables. This study uses one dependent variable and three independent variables. The dependent variable analysed is life expectancy by district and city in Bengkulu Province from 2014 to 2023. Meanwhile, the independent variables in this study include government spending on health, access to health services, and poverty levels in Bengkulu Province from 2014 to 2023.

This study uses multiple linear regression models to analyse the effect of government health expenditure on life expectancy in Bengkulu Province. Multiple linear regression was chosen because this model effectively predicts the relationship between the dependent variable and several independent variables. This method is also ideal for time series data, where multiple regression can identify the influence of each variable over a long period. In addition, multiple linear regression can be used in socio-economic research, especially in measuring the effect of economic variables such as government spending or welfare indicators on social outcome variables such as life expectancy (Nugraha, 2022).

Multiple linear regression models test the relationship between the dependent and several independent variables. This model is formulated as follows:

$$LE = \beta_0 + \beta_1 HE + \beta_2 AHS - \beta_3 PVT + \epsilon \dots \dots \dots (1)$$

referring to the above equation, LE will represent life expectancy, β_0 will represent a constant, β_1 will represent the regression coefficient of health expenditure, then HE will represent health expenditure, then β_2 will represent the regression coefficient of access to health services, then AHS will represent access to health services, then β_3 will represent the regression coefficient of poverty, followed by PVP which will represent poverty, and finally ϵ will represent error.

Multiple linear regression analysis was conducted to identify the influence of each independent variable on life expectancy. Some of the steps taken in this analysis are the Multicollinearity Test, Normality Test, Heteroskedasticity Test, and Autocorrelation Test. The multiple linear regression model will be evaluated based on several criteria, including the t-test, Coefficient of Determination (R^2), Significance of Coefficient, and f-test.

RESULTS

The **Multicollinearity Test (VIF test)** was used to determine the presence of high intercorrelation between independent variables in the regression model.

Table 1. Multicollinearity Test Results

Variable	Centred VIF
C	NA
Health Expenditure	5.812
Access to Health Service	5.803
Poverty	7.856

Table 1 shows that the Variance Inflation Factor (VIF) values for all independent variables are below the threshold of 10,000, the health expenditure variable has a VIF value of 5,812, the access to health services variable has a VIF value of 5,803 and finally the poverty variable has a VIF value of 7,586. These results indicate that there is no substantial correlation among the independent variables included in the model, thus fulfilling the assumptions of the multicollinearity test. Therefore, it can be concluded that the model has passed the multicollinearity test, which indicates that multicollinearity is not a problem and the regression coefficients can be estimated reliably and accurately.

The Normality Test determines whether the data in a distribution follows a regular distribution pattern.

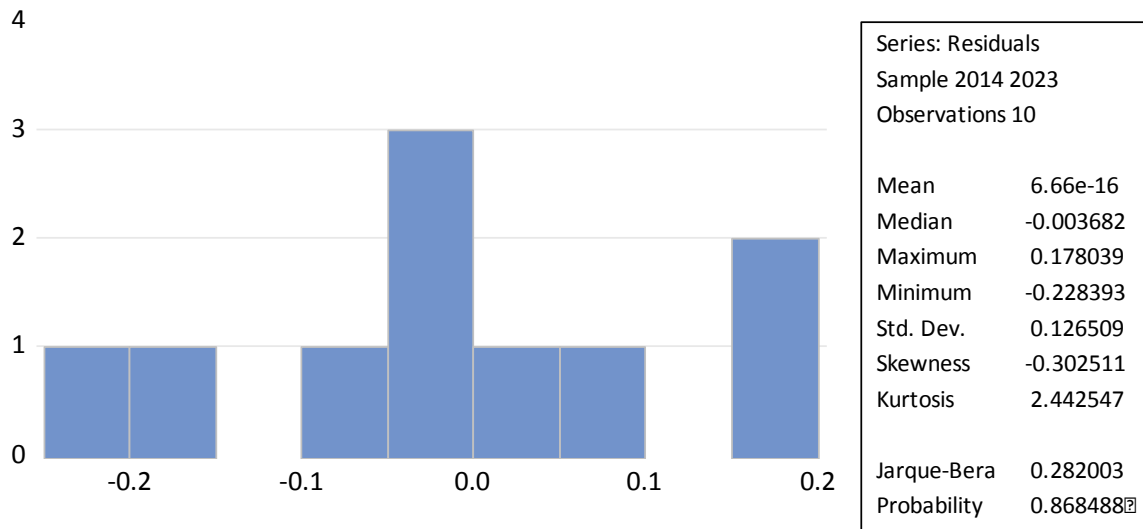


Figure 3. Normality test Results
Source: eviews program

Figure 3 shows that the Jarque-Bera probability value is 0.868, which exceeds the threshold of 0.050. This indicates that the probability value is high enough to suggest that the residual data is symmetrically distributed around the mean and has no significant skewness or kurtosis. Therefore, it can be concluded that the data follows a normal distribution, fulfilling the assumptions required for the normality test. These results support the validity of using parametric statistical methods, as the assumption of normality has been well met.

The Heteroskedsticity Test is used to determine whether the residual variance of the regression model is constant across the entire range of independent variable values.

Table 2. Heteroskedsticity Test Results

F-statistic	0.179	Prob. F(3,6)	0.906
Obs*R-squared	0.823	Prob. Chi-Square(3)	0.843
Scaled explained SS	0.213	Prob. Chi-Square(3)	0.975

In **Table 2** it is noted that the observed probability value of R-squared is 0.843, which is greater than the threshold of 0.050. This indicates that there is no sign of heteroscedasticity in the model, thus fulfilling the assumption required for the heteroscedasticity test. Therefore, it can be concluded that the model has passed the heteroscedasticity test, indicating that the error variance is constant and the regression model can be interpreted accurately without any heteroscedasticity disturbances.

Autocorrelation Test. used to detect a relationship between residuals at different times in the regression model.

Table 3. Autocorrelation Test Results

Prob. F(2,4)	0.466
Prob. Chi-Square(2)	0.204



Table 3 shows that the observed probability value of R-squared is 0.204, which exceeds the threshold of 0.050. This result shows that there are no significant signs of autocorrelation in the model residuals, indicating that the assumptions of the autocorrelation test have been met. Therefore, it can be concluded that the model has passed the autocorrelation test, which implies that the residuals are independent and the validity of the regression analysis is maintained without any complications arising from autocorrelation.

T-test is used to test the difference in means between two groups or between one group and a standardised value.

Table 4. T-test Results

Variable	t-Statistic	Prob
C	17.543	0.000
Health Expenditure	0.554	0.599
Access to Health Service	3.003	0.023
Poverty	-0.776	0.467

Table 4 shows that the Health Expenditure Variable shows a statistical value of 0.554, accompanied by a significance probability value of 0.599, which is significantly greater than the usual threshold of 0.050. This indicates that the relationship between the Health Expenditure variable and the dependent variable Life Expectancy is not statistically significant. As a result, we can conclude that Health expenditure does not have a considerable effect on Life expectancy variable . This finding suggests that changes in Health expenditure are unlikely to lead to meaningful variations in Life expectancy, implying that other factors may play a more critical role in influencing Life expectancy.

The Access to Health Service variable shows a t-statistic value of 3.003, with a significance probability value of 0.023, which is significantly smaller than the conventional threshold of 0.050 This indicates that the relationship between Access to Health Service variable and the dependent variable Life expectancy is statistically significant. Thus, it can be concluded that the Access to Health Service variable has a meaningful influence on the variable Life expectancy. This finding implies that changes in Access to Health Service are likely to cause substantial variations in Life expectancy, which highlights the importance of Access to Health Service in the model.

The Poverty variable displays a t statistical value of -0.776, along with a significance probability value of 0.467, which is greater than the conventional threshold of 0.050. This result indicates that there is no statistically significant relationship between the Poverty variable and the dependent variable Life expectancy. Consequently, it can be concluded that the Access to Health Service variable does not have a significant effect on variable Life expectancy. This finding suggests that variations in Access to Health Service are unlikely to produce meaningful changes in Access to Health Service, implying that other factors may be more influential in determining the outcome of Life expectancy.

Coefficient Significance was tested using the t-test to determine whether the independent variable significantly affects the dependent variable.

$$LE = 63.370 + 0.122*HE + 0.091*AHS - 0.085*PVT \dots\dots\dots (2)$$

The constant value obtained is 63.370, which represents the intercept of the regression equation. In the context of a regression analysis, the constant (often denoted as



the intercept) indicates the expected value of the dependent variable (Life expectancy) when all independent variables (Health expenditure, Access to health service, and Poverty) are equal to zero. This means that if the independent variables do not contribute any value, the dependent variable Y would still be expected to take on the value of 63.370.

The regression coefficient value for variable Health expenditure is positive at 0.122, signifying a direct relationship between Health expenditure and the dependent variable Life expectancy. This means that for every one-unit increase in Health expenditure, the value of Life expectancy is expected to increase by 0.122 units, assuming all other variables remain constant; conversely, a decrease in Health expenditure will lead to a proportional decrease in Life expectancy. The positive coefficient indicates that Health expenditure and Life expectancy move in the same direction, suggesting that improvements or increases in Health expenditure can result in better outcomes for Life expectancy. While the magnitude of this effect may not be exceedingly large, it is statistically significant enough to imply that changes in Health expenditure can meaningfully impact Life expectancy. In practical terms, if Health expenditure represents a specific factor such as investment in education or healthcare, stakeholders can infer that increasing this investment would likely lead to improvements in Life expectancy, which could reflect economic growth or quality of life.

The regression coefficient value for variable Access to health service is positive at 0.091, indicating a direct relationship between Access to health service and the dependent variable Life expectancy. This implies that for every one-unit increase in Access in health service, the value of Life expectancy is expected to rise by 0.091 units, assuming all other variables remain constant; conversely, if Access in health service decreases, Life expectancy will also decrease by the same amount. This positive coefficient signifies that Access in health service and Life expectancy move in tandem, suggesting that enhancements or increases in Access in health service can lead to better outcomes for Life expectancy. Although the magnitude of this effect is relatively modest compared to other variables, it remains statistically significant enough to suggest that variations in Access in health service can have a meaningful impact on Life expectancy. In practical terms, if Access in health service represents a specific factor such as access to healthcare services or educational opportunities, stakeholders can infer that increasing this factor would likely result in improvements in Life expectancy, reflecting advancements in areas such as economic performance or overall quality of life..

Meanwhile, the regression coefficient value for variable Poverty is negative at -0.0850, indicating an inverse relationship between Poverty and the dependent variable Life expectancy. This suggests that for every one-unit increase in Poverty, the value of Life expectancy is expected to decrease by 0.085 units, assuming all other variables remain constant; conversely, if poverty decreases, Life expectancy will increase by the same amount. The negative coefficient signifies that Poverty and Life expectancy move in opposite directions, implying that an increase in Poverty may lead to poorer outcomes for Life expectancy. While the magnitude of this effect may seem modest, it is statistically significant enough to suggest that changes in Poverty can have a meaningful impact on Life expectancy. In practical terms, if Poverty represents a specific factor such as levels of poverty or unemployment, stakeholders can infer that an increase in this factor could likely result in a decline in Life expectancy, which may reflect deteriorating economic conditions or reduced quality of life.

The F-test is used to test the overall significance of the regression model.



Table 5. F-test Results

F-statistic	36.419
Prob(F-statistic)	0.000

Table 5 shows that the F-statistic value is 36.419, with an F-statistic probability value of 0.000, which is smaller than the significance level of 0.050.. This strong statistical evidence allows us to conclude that the independent variables (health expenditure, access to health services and poverty) have a simultaneous significant effect on the dependent variable (life expectancy). In other words, this model shows that the combination of independent variables collectively contribute to explaining the variation in life expectancy. The high F-statistic value indicates that the independent variables included in the analysis are jointly significant, reinforcing the idea that they have a meaningful impact on the dependent variable. This finding emphasizes the importance of considering the combined effect of the independent variables, rather than just analyzing them separately, to understand their overall influence on life expectancy. As such, this result supports the validity of the regression model and its ability to capture the relationship between variables, as well as highlighting the relevance of the independent variables in shaping the outcome represented by life expectancy.

The Coefficient of Determination (R²) is used to measure the comparison of variations in the dependent variable that the independent variable can explain.

Table 6. Coefficient of Determination Results

R-squared	0.947
Adjusted R-squared	0.921

Table 6 shows the results of the determination test for the R-squared value of 0.947 and the Adjusted R-squared value of 0.921. The R-squared value, also known as the coefficient of determination, indicates that approximately 94.794 percent of the variance in the dependent variable (life expectancy) can be explained by the independent variables included in the regression model. This high R-squared value suggests that the model fits the data very well and that the independent variables have a strong explanatory power regarding the variations observed in life expectancy.

DISCUSSION

The effect of Health Expenditure on Life Expectancy. Based on a series of regression analyses, it can be concluded that partially, the health expenditure variable does not have a significant influence on life expectancy in Bengkulu Province. This result is supported by statistical testing which shows a probability value of 0.599 which is significantly higher than the 0.050 significance level. In addition, the regression coefficient of 0.122, although positive, is not significant, indicating that fluctuations in health expenditure, whether increasing or decreasing, do not directly impact on life expectancy in Bengkulu Province.

One of the primary reasons for this finding is the low realization of health expenditure from 2014 to 2022, which ranged from only 1 percent to 2 percent per year. Despite an increase in the health budget for 2023, this has not translated into improvements in life

expectancy. The limited budget severely restricts the government's capacity to provide adequate health services to the residents of Bengkulu Province. This aligns with findings from (Amru & Sihaloho, 2020), who emphasize that health expenditure is crucial for acquiring necessary facilities and services within the healthcare system. Additionally, the effectiveness of health spending in enhancing public health conditions has not been optimal; despite increased allocations, inefficient utilization of these funds remains a significant barrier to improving life expectancy.

The results of this study illustrate that health spending alone without concurrent efforts to enhance the quality and effectiveness of budget utilization will not yield significant improvements in life expectancy within a region. This finding contradicts research conducted by Sihaloho in West Java Province, which indicates that government health expenditure has a significant effect on life expectancy (Sihaloho, 2019). The disparity can be attributed to differences in budget scale and execution between Bengkulu and West Java, where higher budget realizations enable more effective optimization of health spending's impact on public welfare and life expectancy.

From this analysis, it can be concluded that the relatively small size of the health budget has implications for the minimal impact on increasing life expectancy. Therefore, to achieve real improvements in life expectancy, the government needs to increase health spending and ensure that it is appropriately directed and effectively managed. This includes improving health infrastructure, providing medicines, and health programs that target the neediest.

This study provides important insights that increased health spending must be accompanied by measures to ensure effective use of the budget. The provincial government of Bengkulu can learn from other regions that have successfully improved the quality of health services with larger budgets and more efficient utilization. Only then can investments in the health sector have a real impact on the welfare of the community and improve life expectancy in Bengkulu Province.

The Effect of Access to Health Services on Life Expectancy. Following the results of the regression analysis, it can be concluded that the variable of access to health services has a significant influence on life expectancy in Bengkulu Province. This conclusion is supported by the multiple linear regression analysis, which indicates a significance probability value of 0.023, lower than the significance level of 0.050. The positive regression coefficient of 0.091 further reinforces the assertion that a positive relationship exists between access to health services and life expectancy.

The positive regression coefficient suggests that improvements in life expectancy are directly associated with enhanced access to health services. This relationship implies that increases in the availability of health facilities, the number of medical personnel, and the proximity to healthcare services will positively impact public health and subsequently increase life expectancy. These findings align with previous research conducted by (Muhammad, 2024), which established that access to health services significantly influences life expectancy in Central Java. This supports the argument that improving access to health services is crucial for enhancing community quality of life and welfare.

As highlighted by (Setyadi et al., 2023), investments in public infrastructure within the health sector play a vital role in improving people's health and well-being. An increase in the health budget not only enhances physical facilities such as hospitals and health centers but also improves the quality of services provided. According to the Ministry of Health of the Republic of Indonesia, proper budget allocation ensures that primary and referral health

services are accessible to all societal levels. With increased access, it is anticipated that mortality rates will decline, and community quality of life will improve.

Furthermore, effective allocation of funds in the health sector is essential for enhancing public health outcomes (Sri Devi et al., 2024). The availability of adequate medical facilities, trained personnel, and accessible services are critical components of a robust health infrastructure (Husada & Yuniansi, 2020). Individuals with better access to these services tend to experience higher life expectancy due to timely medical care and effective disease prevention through promotive and preventive programs.

To illustrate this point, improved access to healthcare enables individuals to receive timely medical interventions and engage in preventive measures, significantly reducing mortality rates. Therefore, interventions aimed at enhancing healthcare access such as constructing facilities in underserved areas, increasing medicine availability, and training more medical personnel are essential for improving community quality of life and overall life expectancy.

The results suggest that prioritizing healthcare access should be a fundamental component of public health policy. Concrete actions must be taken to ensure that all segments of society, particularly those in disadvantaged areas, have adequate access to essential health services. This approach not only enhances life expectancy but also fosters sustainable social and economic growth in Bengkulu Province.

Moreover, these findings provide a crucial basis for the government of Bengkulu Province to consider increasing budget allocations for the health sector. Enhancing access to healthcare facilities and medical personnel, along with ensuring equitable distribution of these resources, is projected to improve community welfare significantly and extend life expectancy. Policies that promote increased access to health services will also support achieving sustainable development goals related to public health and welfare.

In summary, this analysis underscores the importance of effective investment in healthcare infrastructure as a means to enhance access to services, improve public health outcomes, and ultimately increase life expectancy within Bengkulu Province. By learning from successful practices in other regions that have effectively utilized larger budgets for healthcare improvements, Bengkulu can make strides toward achieving better health outcomes for its population.

The Effect of Poverty on Life Expectancy. The results indicate that the poverty variable does not significantly impact life expectancy in Bengkulu Province. This is evident from the multiple linear regression test results, which show a significance probability value of 0.467, more significant than 0.050, and a negative regression coefficient of -0.085. Although the regression coefficient is negative, an increase in poverty tends to be followed by a decrease in life expectancy. The effect is not statistically significant. This means that changes in Bengkulu Province's poverty levels do not directly impact life expectancy.

This is due to the complexity of the relationship between poverty and life expectancy, where poverty does not directly determine the quality of people's health but rather through other mechanisms, such as access to health services, education, and nutrition. In the context of Bengkulu Province, other variables, such as the quality of health services, are more dominant in influencing life expectancy than the poverty rate itself.

This finding is in line with the theory human capital put forward by Grossman, which states that poverty does not always affect life expectancy. This happens because of an increase in access to health services. With much access to health services, people below the poverty line will still get adequate health care.

However, this result does not align with research conducted by Ginting, who found that poverty is a barrier for people who want health services (Ginting, 2020). This research shows that individuals who are below the poverty line often face financial obstacles to obtaining proper medical care. This difference can be explained by differences in access to health services in each region, where in some areas, access to health services is adequate and readily available for free.

In addition, the low effect of poverty on life expectancy is also due to the existence of social policy interventions that can reduce the negative impact of poverty on health, such as health insurance programs for the poor. Such policies can minimise the direct effect of poverty on access to health services, making the relationship between poverty and life expectancy insignificant.

Thus, although poverty is often considered a factor negatively correlated with life expectancy, the results of this study show that in Bengkulu Province, other factors are more significant in influencing life expectancy.

Overall, the results of this study suggest that the factor that most determines life expectancy in Bengkulu Province is access to health services. Although low government health expenditure and poverty remain significant issues, access to health services is a balancing factor that facilitates the impact of both variables. The low health expenditure does not significantly impact life expectancy, as the limited budget allocation has not been directed efficiently to expand access to health services. On the other hand, the insignificance of poverty can be explained by the existence of policy interventions that make health services affordable for people experiencing poverty.

The relationship between these three variables suggests that despite low health expenditure and poverty, access to health services remains crucial in improving life expectancy. This emphasises the importance of the government not only increasing the budget allocation for health spending but also ensuring that the services are genuinely accessible to all levels of society, especially the most vulnerable (Bunyaminu et al., 2022). Optimising access to health services could be a more optimal strategy for increasing life expectancy in Bengkulu Province without relying too much on the size of the health budget or poverty status (Pasaribu, 2021).

In essence, health expenditure plays a crucial role in development at every level of government, both local and central. The human capital theory developed by Becker states that human capital is an important asset in stimulating economic growth, and investment in education and health is a form of human capital investment. In the context of health, government spending in the health sector is considered an investment in human capital to improve individuals' quality of life and well-being. When health expenditure is high, the health services accessible to the public become more adequate, resulting in increased individual productivity. Grossman also emphasises that health is one of the main components of human capital that affects an individual's ability to contribute to the economy. Increased health expenditure allows people to access better health services, increasing life expectancy and community productivity. Research conducted by (Alqawi et al., 2024). shows a positive relationship between health and labour productivity. However, in Bengkulu Province, the health expenditure budget is still relatively low, so the impact on increasing life expectancy is less than optimal.

One of the leading indicators used to assess the success of health development in a region is life expectancy. Therefore, the government of Bengkulu Province needs to consider increasing the budget allocation in the health sector more optimally. With a more



extensive and efficiently managed budget, access to health services is expected to be more widespread, improving life expectancy in Bengkulu Province.

CONCLUSION

The conclusion of this study shows that the allocation of health expenditure in Bengkulu Province has no significant effect on life expectancy. This is due to the low budget allocated and the suboptimal realization of health expenditure in supporting improvements in the quality of public health. In contrast, access to health services is proven to have a significant influence on life expectancy. The better the community's access to health facilities, the higher their life expectancy. This finding underscores the importance of the availability of health infrastructure and services for the community as a key driver of improving quality of life. On the other hand, poverty did not show a significant effect on life expectancy in Bengkulu. It is likely that the government's policy of providing health facilities for the poor has played a role in reducing the impact of poverty on access to health services, so poverty is not a significant determining factor.

Recommendations. From these findings, several recommendations can be suggested. The provincial government of Bengkulu should increase the health budget and ensure that the allocated funds are used effectively. Optimization of this budget can be focused on improving access to health services in remote areas that may not have been reached so far. In addition, as access to health services has been shown to have a significant impact on life expectancy, the government should also expand health infrastructure by adding facilities such as puskesmas and clinics, as well as increasing the number of medical personnel. These steps are expected to provide more equitable access to health for all levels of society, especially those living in rural areas. Not only increasing access, health education that includes the importance of disease prevention also needs to be improved to encourage a healthy lifestyle that will ultimately extend life expectancy.

Advice. Further research needs to be conducted to explore other factors that may influence life expectancy, such as environmental quality, health education and lifestyle. In addition, regular monitoring and evaluation of health budget policies is also very important so that each budget allocation can be truly utilized to improve public health welfare. Cooperation between the local government, private sector and non-governmental organizations also needs to be developed to support better financing and delivery of health services in Bengkulu Province. The implementation of these measures is expected to lead to significant improvements in the quality of life for the people of Bengkulu and help the government achieve more optimal health and welfare targets for its people.

REFERENCES

- Adelia Suryani. (2023). Pengaruh Kemiskinan Terhadap Pertumbuhan Ekonomi Di Provinsi Sumatera Selatan. *Jurnal Riset Rumpun Ilmu Sosial, Politik Dan Humaniora*, 2(1), 48–56. <https://doi.org/10.55606/jurrish.v2i1.661>
- Adhitya, B., Prabawa, A., & Kencana, H. (2022). Analisis Pengaruh Pendidikan, Kesehatan, Sanitasi dan Rata-Rata Jumlah Anggota Keluarga Per Rumah Tangga terhadap Kemiskinan di Indonesia. *Ekonomis: Journal of Economics and Business*, 6(1), 288. <https://doi.org/10.33087/ekonomis.v6i1.501>
- Ahyuni, S., & Sutjipto, H. (2023). Efektivitas mandatory spending fungsi kesehatan dan dampaknya terhadap derajat kesehatan masyarakat di Provinsi Papua. *Social, Ecology*,



- Economy for Sustainable Development Goals Journal*, 1(1), 24–42.
<https://doi.org/10.61511/seesdgj.v1i1.2023.158>
- Alqawi, D., Ali, H., & Fauzi, A. (2024). *Determinasi Produktivitas Tenaga Kerja Melalui Motivasi : Analisis Lingkungan Kerja, Disiplin, Keselamatan dan Kesehatan Kerja (K3) Terhadap Tenaga Kesehatan RS.Satria Medika Bekasi*. 5(3), 367–380.
<https://doi.org/https://doi.org/10.31933/jemsi.v5i3.1827>
- Amru, D. S., & Sihaloho, E. D. (2020). *Pengaruh Pengeluaran Per Kapita Dan Belanja Kesehatan Terhadap Angka Kesakitan Di Kabupaten / Kota Se-Pulau Jawa*.
<https://doi.org/10.32812/jibeka.v14i1.135>
- Aprilia, R., & Sugiharti, R. R. (2022). Pengaruh Pendidikan, Tenaga Kerja dan Kesehatan terhadap Kemiskinan (Studi Kasus pada Provinsi Bali). *JIEP: Jurnal Ilmu Ekonomi Dan Pembangunan*, 5(2), 637–651. <https://doi.org/10.20527/jiep.v5i2.6638>
- Azwar, A. (2022). Analisis Dinamis Dampak Desentralisasi Fiskal Terhadap Efisiensi Belanja Kesehatan Dan Kesejahteraan: Studi Kasus Kabupaten/Kota Di Sulawesi Selatan. *Info Artha*, 6(1), 49–62. <https://doi.org/10.31092/jia.v6i1.1621>
- Bunyaminu, A., Mohammed, I., Yakubu, I. N., Shani, B., & Abukari, A. L. (2022). The effect of health expenditure on average life expectancy: does government effectiveness play a moderating role? *International Journal of Health Governance*, 27(4).
<https://doi.org/10.1108/IJHG-03-2022-0027>
- Dara Haura Dharana, Rezqita Asharizah Arbani, & Ichsan Fauzi Rachman. (2024). Membangun Kualitas Hidup Melalui Literasi (Analisis Kasus Masyarakat Sunda). *Jurnal Kesehatan Masyarakat Indonesia (JKMI)*, 1(3), 79–86.
<https://doi.org/10.62017/jkmi.v1i3.1257>
- Folland, S., Goodman, A. C., Stano, M., & Danagoulian, S. (2024). The Economics of Health and Health Care, Ninth Edition. In *The Economics of Health and Health Care, Ninth Edition*. <https://doi.org/10.4324/9781003308409>
- Gandhi, E. A., Pasaribu, E., Ekaputri, R. A., & Febriani, R. E. (2022). Investasi Asing Langsung dan Pertumbuhan Ekonomi: Perbandingan Empiris Indonesia dan Singapura. *Ecoplan*, 5(2). <https://doi.org/10.20527/ecoplan.v5i2.563>
- Gedikli, A., Erdoğan, S., Kirca, M., & Demir, İ. (2019). An analysis of relationship between health expenditures and life expectancy: The case of turkey and turkic republics*. *Bilig*, 91. <https://doi.org/10.12995/bilig.9102>
- Ginting, A. L. (2020). Dampak Angka Harapan Hidup dan Kesempatan Kerja Terhadap Kemiskinan. *EcceS (Economics, Social, and Development Studies)*, 7(1), 42.
<https://doi.org/10.24252/ecc.v7i1.13197>
- Husada, P. Y., & Yuniansi, A. F. (2020). Analisis Spasial Angka Kematian Neonatal di Pulau Jawa Tahun 2020 (Spatial Analysis of Neonatal Morortality Rates in Java Island 2020). *Seminar Nasional Official Statistic 2022*, 2020, 207–216.
<https://doi.org/10.34123/semnasoffstat.v2022i1.1273>
- Liu, L., Wen, W., Shrubsole, M. J., Lipworth, L. E., Mumma, M. T., Ackerly, B. A., Shu, X. O., Blot, W. J., & Zheng, W. (2024). Impacts of Poverty and Lifestyles on Mortality: A Cohort Study in Predominantly Low-Income Americans. *American Journal of Preventive Medicine*, 67(1), 15–23. <https://doi.org/10.1016/j.amepre.2024.02.015>
- Morina, F., Komoni, A., Kilaj, D., Selmonaj, D., & Grima, S. (2022). The Effect of Health Expenditure on Life Expectancy. *International Journal of Sustainable Development and Planning*, 17(5). <https://doi.org/10.18280/ijstdp.170502>
- Muhammad. (2024). *Analysis study : pengaruh faktor AHH (angka harapan hidup) pada masyarakat Provinsi Jawa Tengah tahun*. 1(1), 11–22.





- <https://doi.org/10.61511/jekop.v1i1.2024.744>
- Nasution, Y., & Hasibuan, L. S. (2018). *Analisis Pengaruh Belanja Sektor Kesehatan Terhadap Angka Harapan Hidup*. 18(1), 79–92. <https://doi.org/10.30596/ekonomikawan.v18i1.2155>
- Nugraha, B. (2022). *Pengembangan uji statistik: Implementasi metode regresi linier berganda dengan pertimbangan uji asumsi klasik*. Pradina Pustaka.
- Pasaribu, E. (2021). *Analisi Kinerja Keuangan Pemerintah Kota Bengkulu: Pendekatan Derajat Desentralisasi Fiskal*. AKUNTABILITAS. <https://doi.org/10.29259/ja.v15i1.12054>
- Radmehr, M., & Adebayo, T. S. (2022). Does health expenditure matter for life expectancy in Mediterranean countries? *Environmental Science and Pollution Research*, 29(40). <https://doi.org/10.1007/s11356-022-19992-4>
- Rambe, R. A., Anitasari, M., & Febriani, R. E. (2024). *Local Government Pro-Poor Growth Spending Efficiency And Their Determinants In Indonesia*. 30(4), 8574–8584. <https://doi.org/10.53555/kuey.v30i4.1633>
- Septriani, Armelly, Ekaputri, R. ., & Pasaribu, E. (2020). Analisis Fenomena Flypaper Effect Pada Kinerja Keuangan Kota Bengkulu. *AKUNTABILITAS*, 14(1), 33–56. <https://doi.org/10.29259/ja.v14i1.10718>
- Setyadi, S., Kustanto, A., & Widiastuti, A. (2023). Life Expectancy in Indonesia: The Role of Health Infrastructure, Political, and Socioeconomic Status. *Iranian Economic Review*, 27(3), 965–1005. <https://doi.org/10.22059/ier.2023.329904.1007259>
- Sihaloho, E. D. (2019). Pengaruh Belanja Kesehatan Terhadap Angka Harapan Hidup Kabupaten Kota Di Jawa Barat. *Ekspansi: Jurnal Ekonomi, Keuangan, Perbankan Dan Akuntansi*, 11(1), 117. <https://doi.org/10.35313/ekspansi.v11i1.1308>
- Sinaga, S. P., Wanto, A., & Solikhun, S. (2020). Implementasi Jaringan Syaraf Tiruan Resilient Backpropagation dalam Memprediksi Angka Harapan Hidup Masyarakat Sumatera Utara. *Jurnal Infomedia*, 4(2), 81. <https://doi.org/10.30811/jim.v4i2.1573>
- Sri Devi, Arini Aisyahfira Wijaya, Indah Doanita Hasibuan, Putri Dina, & Adelia Andina. (2024). Analisis Efektivitas Penggunaan Anggaran Pendapatan Dan Belanja Daerah Terhadap Kualitas Pelayanan Kesehatan Di Puskesmas Simalingkar. *Jurnal Abdi Nusa*, 4(2), 108–119. <https://doi.org/10.52005/abdinusa.v4i2.256>
- Syam, R., Sukarna, S., & Nurmah, N. (2021). Analisis Tingkat Kesejahteraan Masyarakat di Provinsi Nusa Tenggara Barat Menggunakan Model Regresi Multivariat. *Journal of Mathematics Computations and Statistics*, 3(2), 97. <https://doi.org/10.35580/jmathcos.v3i2.19189>
- Vitona, D., Fitrianto, A., & Aliu, M. A. (2024). *Analisi Faktor yang Mempengaruhi Indeks Pembangunan Manusia di Indonesia Menggunakan Model Regresi Logistik Biner*. 5(2), 903–912. <https://doi.org/10.46306/lb.v5i2.634>
- Wulandari, F., & Rambe, R. A. (2024). *Impact of the Human Development Index , Economic Growth , Investment , and Government Expenditure on the poverty of districts and cities in Bengkulu Province*. 12(1), 569–578. <https://doi.org/10.37676/ekombis.v12i1.4913>

