Life Expectations: Impact of Health Services Access, Educational and Social Status

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Abstract. Three important factors, namely health, education, and poverty, influenced economic growth. To create a healthy and educated population, the government must be able to provide access to health services to the community in proportion to the population and learning opportunities. A healthy and educated population will be more productive so that they are free from poverty and the life expectancy index will improve. The goal of this research was to look into the impact of health-care access, health-care financing, educational attainment, and social standing on life expectancy. The research method used is quantitative research with a longitudinal study design. We got the research data from the report of the National Central Statistics Agency (NCSA) and the Ministry of National Health. We conducted the study in 34 provinces in Indonesia from 2015 to 2019Panel data regression analysis was employed in the data analysis. The study's findings revealed that health services, including the ratio of hospital beds and the ratio of doctors, influenced life expectancy. Education also shows that the average length of schooling and literacy influence life expectancy and social factors, including the Gini ratio index and the poverty depth index, have a significant effect on life expectancy. Simultaneously, access to health services, educational status, and social status affect life expectancy. The provincial government should increase the rate of public health and education and decrease the poverty rate at the same time.

Keywords: Educational status; Life expectancy; Social status

1 Introduction

One of the most significant priorities in achieving sustainable development is health development goals. We can realize this agenda through the active participation of the community in the success of the Healthy and quality Indonesia program [1]. The government socializes this program through the development of healthy living behaviors and increasing the economic growth of the community to reach quality health services. They effects increase the life expectancy index [2].

We often link life expectancy to the level of progress of an area, because underdeveloped areas show a low life expectancy and, conversely, developed areas show a high life expectancy [3]. We cannot do the instant resolution of health problems, given the limitations in terms of budget and facilities. Under such circumstances, it is appropriate to develop a special program in the health sector. Based on the problem of limitations related to the current budget and availability of health facilities in Indonesia, It is vital to do study in order to determine the

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elements that influence life expectancy (LE) in Indonesia in terms of health-care access, education, and social status [4].

The availability of health-care facilities and the appropriateness of the health-care ratio workers in hospitals strongly influenced access to excellent health services. The ideal service facilities and health worker adequacy ratio is the availability of beds and health workers that are proportional to the total population in an area [5]. Likewise, the allocation of education costs to support national health programs must affect increasing life expectancy, which is driven by the increasing quality of education. The problem of the unequal allocation of education in all regions in Indonesia currently causes a gap in participatory public education, which causes low awareness of healthy living in the community, which affects decreasing life expectancy [6].

Besides these two variables, social status such as poverty and the level of family welfare calculated from the Gini ratio is also a concern of the government to increase the life expectancy index. To increase economic development, the government seeks to eradicate poverty by increasing the income Gini ratio of the population through economic growth in all sectors, including the health sector. We assure that the decreasing infant mortality rate marks the success of development in the health sector and increases the life expectancy of the population.

Life Expectancy (LE) is related to the socio-economic development of a region, the higher the life expectancy of a region shows more advanced socio-economic development [7]. Ayuni (2017) conducted a study on the feed-forward neural network method was used to model life expectancy in East Java Province which reported that the low life expectancy in some areas was because of the suboptimal health development programs and social programs at the provincial level in Indonesia [8].

Sugiantari & Budiantara (2013) also researched the factors that determine East Java's life expectancy using semi-parametric regression [9]. Ardianti et al., (2015) revealed the factors that influence life expectancy in Jember Regency using the multiple linear regression analysis methods which state that there is an influence of economic development and social status on life expectancy [10].

In the last five years, Indonesia's economic growth has experienced a slowdown in line with the trend of the poverty rate in several regions in Indonesia which is still positive, especially in underdeveloped areas where it is difficult to get access to education and health [11]. In contrast to previous research, Novelty's study is broader with a focus on analyzing the effect of access to health services, education status, and social status on life expectancy and their impact on economic growth in Indonesia

2 Methods

The research method is quantitative research with a longitudinal research design. Longitudinal research is a type of [12] A type of social study that compares changes in research participants over time. We used this style of study for long-term studies on purpose, because it takes a long time and, in this study, the data used are secondary data from 2015 to 2019. The research data uses secondary data got from the National Central Statistics Agency (NCSA) Report and the Ministry of National Health. Data analysis used panel data regression. The selection of panel data is because this study uses a period of several years and also many regions. First, the use of time-series data is intended because this study uses a period of 5 years. Then the use of a cross-section as a province in Indonesia, which comprises 34 provinces that are used as research samples.

The research objectives, namely to see the impact of access to health services, which include the ratio of hospital beds and health workers, education status; average years of

schooling and literacy rates, and social status; Gini ratio index and poverty severity index, the conceptual framework of this research can be described:

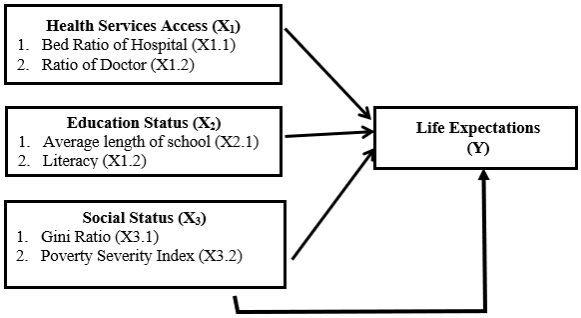

Fig.1. Research Concept Framework

Based on the chart above, we can write the regression equation as follows:

$$Y_{it} = \alpha + \beta_{1.1}X_{1.1} + \beta_{1.2}X_{1.2} + \beta_{2.1}X_{2.1} + \beta_{2.2}X_{2.2} + \beta_{3.1}X_{3.1} + \beta_{3.2}X_{3.2} + e \quad (1)$$

Where:

Y_{it} = Life Expectancy Index
α = Constant
β = Regression coefficient of each independent variable
$X_{1.1}$ = Bed Ratio of Hospital
$X_{1.2}$ = Doctor Ratio
$X_{2.1}$ = Average length of school
$X_{2.2}$ = Literacy
$X_{3.1}$ = Gini Ratio
$X_{3.2}$ = I Poverty Severity Index
ε = *Error term*
t = Time
i = Province

In analyzing data using panel data regression, the first step that needs to be done is to determine which model is the best for data analysis to be used. The selection of the best model in the panel data regression test with Eviews comprises three test selections, namely Common Effect, Fixed Effect, and Random Effect.

Model of Common Effects

The Common Effects model is the most straightforward way to model panel data. This is because this model only uses the Ordinary Least Square (OLS) technique to estimate time series and cross-section data. We assumed that the behavior of provincial data is predictable because this model ignores time and individual variables the same in various periods. Because it ignores the dimensions of time and individuals, we can write the equation of this model as:

$$Y_i = \alpha + \beta X_{it} + \varepsilon_{it} \quad (2)$$

Model with a Fixed Effect

This concept presupposes that there are disparities between individuals that can be accommodated the intercept value. In this analysis, we consider each individual to have unknown parameters. Thus, a dummy variable technique is needed to capture differences in intercepts between provinces regarding time. The difference in intercept occurs because of the difference in the period. This technique is often also called Least Square Dummy Variable (LSDV). The measured effects include the effects of each individual and systemic time, through the addition of a dummy variable in the model. We can write this model with the following equation:

$$Y_{it} = \alpha + \beta X_{it} + \alpha_{it} + \varepsilon_{it} \quad (3)$$

Where, α_{it} it is a fixed effect at time for unit cross section *i*.

Random Effect Model

The analysis of this model calculates variable data through panel regression by assuming that something does not interrelate the existing disturbance variables over between individuals and throughout time Unlike the fixed effect model, this one considers each individual's special effect as part of the random error component and ignores the observable explanatory variables. This model has the advantage of being able to eliminate heteroscedasticity. If the error component is homoscedasticity and there is no symptom of cross-sectional correlation, we generalize another word for this Model Least Square (LS). This model's formulation is as follows:

$$Y_{it} = \alpha + \beta X_{it} + w_{it}, \text{ where } w_{it} = \varepsilon_{it} + u_i \quad (4)$$

The quantitative research was carried out at PT XYZ in Jakarta. Contract/outsourcing personnel at PT XYZ are the characteristics in sample. The total number of employees in this study was 81. This study took samples of outsourced employees in the office of PT XYZ, which is one of the private upstream oil and gas companies in Indonesia. The selected respondents are considered to have the knowledge to understand the questions posed in the research questionnaire. The sampling The census approach was employed in this investigation, or saturated sampling. With a population of 81, all of them will be used as respondents.

3 Results

The ratio of Health Workers and the availability of hospital bed services per population shows how many health workers are available and the coverage of services provided with the availability of adequate bed services to provide quality health services to the population. The World Health Organization (WHO) claims that (WHO), the ideal condition for doctors to provide services is 1:2,500 population, where one doctor to serve 2,500 residents. The regulation also states that the ideal condition for non-doctoral health workers, especially midwives, is 1:1,000 and nurses, which is 1:855, which means one midwife to serve 1,000 residents and one nurse to serve 855 residents. The higher the ratio of availability of health workers, it is expected that the distribution of Access to health services will be improved, which will have a positive impact an impact on increasing life expectancy [13].

Education as a fundamental factor in increasing knowledge, skills, skills, attitudes, and productivity of a country is expected to produce a quality and productive workforce which affects the level of income (earnings) of a person or group which affects reducing the poverty index, increasing welfare and life expectancy [14]. They interrelate these three important variables to economic development, namely access to services, education, and social status [15], [16].

For more details, in the panel data regression test, we carried these three variables out first to determine the right model for the analysis data to be tested using the CEM, FEM, and REM tests. We carried the determination of the first model out to choose the most suitable model between FEM and CEM with the Chow test. The following result from the Chow test.

Table 1. Chow Test

Effects Test	Sta tistic	d.f.	Prob.
Cross-section F	1515.147321	(33,130)	0.0000
Cross-section Chi-square	1012.322409	33	0.0000

The table above reveals that the chi-square cross-section p-value is 0.000 =0.05, indicating that H0 is rejected and that the fixed effect model is superior than the common effect model. Which model is the best between REM and FEM will be determined using the Hausman Test. The following result from the Hausman test.

Table 2. Hausman Test

Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	16.247436	6	0.0125

Based on the table above, demonstrates that H0 is not rejected because the p-value is 0.0125 = 0.05, indicating that the fixed effect model is preferable to the random effect model. Based on the outcomes, of these two tests, the best model for testing data analysis is using the fixed effect or FEM test model. The following result from the panel regression analysis of the FEM model with the log transformation on the Y variable.

Table 3. Regression Results of the Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.252300	0.037523	219.9255	0.0000
$X_{1.1}$	0.004641	0.001259	3.684956	0.0003
$X_{1.2}$	0.009954	0.004313	2.307793	0.0223
$X_{2.1}$	0.026437	0.001679	15.74508	0.0000
$X_{2.2}$	0.005533	0.002790	1.983340	0.0494
$X_{3.1}$	-0.051070	0.012041	-4.241481	0.0000
$X_{3.3}$	-0.069179	0.004405	-15.70643	0.0000
Effects Specification				
Fixed cross-section (dummy variables)				

Weighted Statistics			
R-squared	0.770517	Mean dependent var	10.47529
Adjusted R-squared	0.762070	S.D. dependent var	5.540289
S.E. of regression	0.003136	Sum squared resid	0.001279
F-statistic	91.21537	Durbin-Watson stat	1.956100
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.231308	Mean dependent var	8.481979
Sum squared resid	0.231308	Durbin-Watson stat	1.924872

Based on the data table above, the estimation results using the fixed effect model got the following regression equation:

$$\text{Log Y} = 8.252300 + 0.004641X_{1.1} + 0.009954X_{1.2} + 0.0264377X_{2.1} + 0.005533_{2.2} - 0.051070X_{3.1} - 0.069179X_{3.2} + \varepsilon$$

We can explain the partial interpretation of the model that access to health services (ratio of hospital beds and doctors) has a strong and favorable impact on life expectancy Index. This means that every time there is an increase in the ratio of hospital beds to decimal units, the life expectancy index will increase by 0.004641%. Likewise, every one decimal increase in the ratio of doctors can increase life expectancy by 0.009954% with the assumption of ceteris paribus.

The education status variable also revealed that the average length of schooling and literacy rate had a major and positive impact on the Life Expectancy Index which showed that every time there was an increase in the average length of schooling, it would increase the Life Expectancy Index 0.0264377% and every increase in literacy rate also affects increasing life expectancy by 0.005533% with the assumption of ceteris paribus.

Likewise, social status variables reveal that the Gini Ratio Index and the poverty severity index have a negative and significant effect on the Life Expectancy Index, where every increase in the Gini Ratio Index and the Poverty Severity Index will cause a decrease in the Life Expectancy Index by 0.051070, respectively% and 0.069179% assuming ceteris paribus.

Simultaneously, the 0.7621 is the adjusted R-Squared value. This suggests that the factors of access to health services (ratio of hospital beds and doctors), educational status (mean length of school and literacy rate), and social position may explain 76.21 percent of the Life Expectancy Index (Gini ratio index and severity index). Outside of this study, other variables can explain 23.8 percent. As a result, there is a strong link between health access and socioeconomic status services, educational status, and social status on the life expectancy index.

4 Discussion

4.1 Effect of Access to Health Services on Life Expectancy

The Effect of Bed Ratio on Life Expectancy

The The study's findings found that the ratio of hospital beds had an effect on life expectancy, with a t value of 3.684956 at a significance level of 0.0003. According to the

findings, the ratio of hospital beds had a substantial impact on life expectancy. Sinvani (2020) stated that we cannot separate the implementation of integrated health services from the availability of hospital facilities and resources, one of which is the availability of bed facilities that meet the ratio of community needs in an area.

Currently, the ratio of hospital beds in Indonesia is estimated at 1.17 per 1,000 population, where it is projected that there is only one hospital bed to meet the needs of health services per 1,000 population. This figure is very far when compared to South Korea, which has approximately 11 hospital beds per 1,000 population [17]. Conceptually, the higher the ratio of hospital bed availability per population, the greater the index of the health level of its citizens. A high public health index certainly affects a higher life expectancy, because one indicator to calculate the life expectancy of a community in an area is to look at the proportion of hospital beds available to the overall population.

Usually, in developed areas, there will be more hospitals in underdeveloped areas. This large number of hospitals certainly also provides excellent health services for its citizens, because the ratio of beds to health care available in hospitals can meet the needs of the community. Therefore, it can be found that poor or underdeveloped areas have a low life expectancy compared to developed areas that already have adequate health services.

This study is in line with Kim et al(2019) .'s findings, which indicated that the bed availability ratio indicator strongly influenced the efficiency of hospital inpatient services. A hospital that has a high bed ratio will provide excellent health services to the community in its working area [18]. Marino et al. (2019) stated that the factors that affect the efficiency of bed utilization include external factors and hospital internal factors.

However, the factors that play a significant role in the efficiency of bed utilization are hospital internal factors, which include input factors and service process factors. Meanwhile, the external factor of the hospital is the condition of the patient. Thus, the internal factors of the hospital become an important variable in improving the public health index. With the availability of inpatient bed ratios under the needs of the community, hospital health services will be optimal. This condition will certainly affect the fulfillment of public health needs in an area. Meeting public health needs, Economically, certainly affects productivity and high life expectancy [19].

Bloom, et al (2019) mentions that the productivity and high life expectancy of the people directly affect the productivity, economic production, and income per capita of the community. The World Health Organization (WHO) defined health in 1948 as "a state of physical, mental, and social well-being." [20]. In law, N0. 23 of 1992, health is a state of well-being of the body and society that enables everyone to live socially and economically productive lives. Health efforts are every activity to maintain and improve health carried out by the government, one of which is providing adequate hospital services for all its citizens. A healthy and prosperous body is ultimately able to increase people's life expectancy which is an important indicator in measuring health development.

Gibson (2020) There is a link between the two, according to study health spending for bed availability and life expectancy in West Java Province [21], where health spending in this sector has increased from 2015 to 2016 which also affects the increase community life expectancy. The largest increase in life expectancy was in Tasikmalaya Regency by 0.18 and the lowest was in Cimahi City, with an increase of only 0.01. Overall, 8 Kota Regency areas have a higher life expectancy compared with the life expectancy rate in West Java Province, while the other 19 Kota Regency areas are lower [22].

Nationally, the ratio of the number of beds to the total population (in Indonesia is 1.21:1,000. This means, per 1,000 population, only 1.21 treatment beds are available in

hospitals. Currently, with a population of around 260 million, in Indonesia, there are about 310,000 hospital beds. The World Health Organization (WHO), although it does not have a set of ideal ratios, recommends that every country have a bed-to-population ratio of 5:1,000, or 5 hospital beds for every 1,000 population.

4.2 The Effect of Doctor Ratio on Life Expectancy

The The study's findings demonstrated that the doctor-to-patient ratio had an impact on life expectancy. The t-count of 2.307793 with a significance level of 0.0223, based on the results of the t-test reported in table 4.15 above. This indicates that the probability value exceeds 0.05 (0.02330.05). We can deduce from these findings that the doctor-to-patient ratio is significant effect on life expectancy. Similar to the calculation of the bed ratio, the availability of health resources in this case doctors and health workers in hospitals must be optimal to meet the needs of public health services in an area.

According to WHO (2010), the ratio of health workers in hospitals per population shows the availability of health workers and the coverage of services provided. The World Health Organization (WHO) claims that (WHO), the ideal condition for doctors to provide services is 1:2,500 population. One doctor was just allocated to serve 2,500 residents. The regulation also states that the ideal condition for non-doctoral health workers, especially midwives, is 1:1,000 and nurses, which is 1:855, which means one midwife to serve 1,000 residents and one nurse to serve 855 residents. The higher the ratio of availability of health workers, it is expected that the distribution of There will be more access to health services, which will have a positive impact an impact on increasing life expectancy, as well as being supported by adequate health financing by the government.

In this study, it turned out that the ratio of health workers had a significant and positive effect on life expectancy. This is because the number of disease cases in Indonesia nationally in the 2015-2019 range did not increase so although the ratio of health workers in Indonesia is still not ideal, the health service factor can still provide good services. At least since 2015-2019 cases of the disease in Indonesia have decreased. The findings show that there is an influence between the ratio of health workers and life expectancy, one of which is the success of the government in controlling the trend of decreasing disease cases in the community.

Based on the Central Statistics Agency's data (BPS), the population morbidity rate from 2015 to 2019 shows a morbidity rate of 29.33 percent. About 29.33 percent of the national population has health complaints regardless of chronic or not. This figure shows a decrease compared to the previous which reached 30.18 percent. This shows that the population's health is in good shape getting better, although the ratio of health workers to doctors in Indonesia is still not ideal. Another influence that can balance health services is the factor of traditional medicine. This alternate treatment at least contributes to supporting the performance of health workers in providing health services so that their performance affects life expectancy.

Although the availability of doctors is not ideal, Indonesian people have their uniqueness in maintaining their health, including alternative medicine. The success of several alternative treatments has contributed to the success of the public health index, which influences increasing life expectancy. This also supports the performance of health workers in providing health services to the community optimally, which is supported by infrastructure factors such as the availability of facilities and infrastructure the success of the Healthy Indonesia program, and the success of alternative medicine.

This study is consistent with the findings of Kabir (2008) who reported that the ratio of health workers had a substantial impact on life expectancy We did this research in poor nations and discovered that the number of medical workers per 100,000 people has no good or

substantial impact on the health of the population the increase in population life expectancy. Likewise, the results of Setyadi et al. (2021) on the analysis of the ratio of health workers to the quality of population health revealed that the ratio of health workers had a significant effect on life expectancy. Through path analysis, information was got that the ratio of health workers to doctors has a significant direct effect on the life expectancy of the people of districts/cities in Aceh Province. Likewise, the ratio of non-physician health workers has a significant direct effect on life expectancy [23].

Furthermore, Delavari, et al (2016) found a positive The number of doctors per 10,000 people has a relationship and life expectancy in Iran [24]. The same thing was also found by Wardhani et al. (2019) where the variable number of doctors and the number of beds in hospitals had a positive effect on increasing life expectancy in Indonesia. Research in eleven-A study conducted by van den Heuvel et al (2017) on member countries of the Organization for Economic Cooperation and Development (OECD) demonstrates that increasing the number of medical workers has a significant impact on reducing infant mortality [25]. Similarly, Lu Zhi-Chen et al. (2017) discovered that number of medical personnel per 10,000 population has a negative and significant effect on the child mortality rate and infant mortality rate where areas with a low number of medical personnel have a higher risk of child and infant mortality, thus having a lower life expectancy [26].

The ratio of doctors' health workers shows how many doctor's health workers are available for providing health services to the population. The higher the ratio of doctors' health workers, the greater the availability of doctors' health workers in providing health services to the population. This finding concludes that health workers have a fundamental role in achieving a better level of public health. The lack of health workers can affect the lack of health services. The poor quality of population health will affect the population's low life expectancy.

4.3 The Effect of Education on Life Expectancy

Effect of Average Length of School on Life Expectancy

From the proposed analysis, we reveal that the average amount of schooling affects life expectancy in a positive and meaningful way Based on the t-test results, 15.74508 was obtained with a significance level of 0.0000. These findings indicate that the average educational ratio has a considerable impact on life expectancy This study is the same as the research of Manurung et al. (2021) who reported that the average length of schooling affects life expectancy, which affects increasing the Human Development Index (HDI) research in North Sumatra Province [27]. Furthermore, Pamungkasih, et al (2021) reveals that path analysis shows the average length of schooling which also affects the human development index (HDI) in East Nusa Tenggara Province influences that life expectancy [28].

The calculation of the Education Index includes two indicators, namely the Expected Length of Schooling (ELS) which is defined as the number of years of education that we expect children to attend at a given age in the future. We assume that the probability that the child will remain in school at the following ages is the same as the probability of the population attending school per population for the same age. We calculate the Years of schooling expected for residents aged 7 and up. ELS can assess the state of the education system's development at several levels, as specified in the lengthy form of education that each child is obliged to complete each year.

The calculation of the average length of schooling can determine the state of the education system's development at various levels, as stated in the long form of education that each child is expected to complete. Average The number of years spent in formal education by the population is measured in years of schooling (AYS). Calculated population coverage For

residents aged 25 and up, the average length of schooling is five years. The average number of years spent in education in provinces in Indonesia has a positive trend every year from 8.02 in 2015, moving to 8.13 in 2016, then 8.26 in 2017, to 8.37 in 2018 and continues to increase to 8.54 in 2019.

Overall, the average increase of schooling provinces in Indonesia is 8. 26, so the expected length of schooling for children at a certain age (7 years and over) in the coming year is 8.26 years in the next five years. This finding shows that the average length of schooling of the population is still far from the maximum value, which is 15 years. This shows that there are still areas in the Province of Indonesia that could not complete the minimum education target of Elementary School because the construction of educational facilities is oriented in limited urban areas and rural areas.

The government's target for 12 years of compulsory education has not been achieved. When this target is achieved, the average length of schooling will increase and life expectancy will also increase along with the increase in HDI. Economic growth is the thing that is most often associated with human development, both in the field of education and in the health sector, because economic growth is always a reference in development.

4.4 The Effect of Literacy Rate on Life Expectancy

Based on the findings of panel data analysis, we know that the literacy rate influences life expectancy. It showed from the t-count We conclude that the literacy rate has a significant effect on literacy with a value of 1.983340 and a significance level of 0.0494 where the probability value is larger than = 0.05 life expectancy in Indonesia. Education is one element in science, skills, attitudes, and behavior can be in a school environment or formal education. But not only formal education, through education, but individuals will also develop themselves to achieve a better life, in looking at the level of formal and non-formal education, we can see it from one of the literacy rates.

The literacy rate can also be an indicator of the education development of the population. The higher the literacy rate, the higher the quality and quality of human resources. They assume people who can read and write to have the ability and skills because they can absorb information both verbally and in writing (BPS, 2011). Luly et al (2019) reveals that education is the advice or assistance provided by adults to the growth of children in order for them to reach maturity and be capable of carrying out their life tasks without the assistance of others. Education also means an effort made by a person or group of people to achieve a higher level of quality of life both from the level of health and welfare, which impacts improving life expectancy [15].

The results are consistent with the results of research by Assuri (2008) which revealed that there is an effect of literacy rates on life expectancy [6]. Thus, it is hoped that the literacy rates will continue to increase so that the number of poor people in the province of West Sumatra can be suppressed. With success in reducing poverty, it will affect the level of community welfare, which is influenced by high productivity, income, and improved health status. These factors also affect the better life expectancy of the people in West Sumatra. Another study also reported the same findings, namely Zaninotto (2020) revealed that health will be correlated with education, which affects the level of productivity of the population and workers. Improved health will prolong the working life and endurance, which is influenced by a high life expectancy and the ability to increase the output of goods produced [16].

This research is also consistent with the findings of Gilbert et al (2018) which reveals that life expectancy has a significant effect on literacy rates compared to the number of poor people [29]. This shows that life expectancy will decrease if the number of poor people decreases and

vice versa, meaning that the poverty factor is the most dominant factor influencing literacy rates, which affects people's life expectancy in Indonesia.

4.5 Effect of Social Status on Life Expectancy

The Effect of the Gini Ratio Index on Life Expectancy

The results of panel data analysis reveal that the Gini Ratio Index has a significant effect on Life Expectancy. Table 1.3 shows that the t-count value is -4.241481 with a significance level of 0.0000, based on the results of the t-test. This demonstrates that the Gini index ratio has an impact on life expectancy. The negative sign indicates that the Gini ratio index is decreasing, which has an impact on improving life expectancy. The Gini ratio index is a technique for measuring population distribution inequality. It is based on the Lorenz curve, which is a cumulative expenditure curve that compares the distribution of a given variable (for example, income) to a uniform distribution indicating the population's cumulative percentage. The Gini ratio is a measure of general inequality that ranges from zero (perfect equality) to one (extreme disparity).

The Gini ratio is also the indicator to calculate the level of income inequality or poverty [30], these two indicators have a pragmatic relationship, because with empirical results from actual conditions in society that both have a positive relationship, in another perspective that the dimensions of poverty can be seen from the side of the gap where inequality occurs in a community group, especially in groups belonging to the poor with other communities [31].

As previously explained, the results of Muhtar‘s (2021) reveal that the biggest and most significant negative effect on the number of poor people is education. Higher education can reduce the rate of poverty, and will affect the level of community welfare, which is influenced by high productivity, income, and improved health status [32]. Seran (2019) revealed the number of poor people strongly influenced life expectancy. This shows that life expectancy will get worse if the number of poor people increases and vice versa. This means that the poverty factor is very dominant in influencing the life expectancy of people in Indonesia [33].

The results of the study support the findings of Dwi Atmojo (2019) who measures the factors that affect the Gini ratio, human development index, population to poverty, and life expectancy in West Java province in 2012-2016 which reports that the Gini Ratio index has a strong and favorable impact on poverty levels. This affects life expectancy and HDI in West Java Province, with a high level of income inequality, the poverty rate will increase and life expectancy decreases [34].

4.6 Effect of Poverty Severity Index on Life Expectancy

The findings of the panel data analysis that have been carried out reveal the results that there is an effect of the Poverty Severity Index on Life Expectancy with a significance level of 0.000 and a t value of -15.70643. The length of one's life. The negative sign indicates that the lower the poverty severity index, the longer one can anticipate to live. On a micro level, life expectancy refers to the predicted average number of years a person can live in his or her lifetime including health as the basis for work productivity and capacity to learn in school. At the macro level, a population with good health is an important input for reducing poverty, promoting economic growth, and long-term economic development.

From the research results, the regression coefficient of the poverty severity index shows a negative number of -0.069179, so a 1 percent decrease in the Poverty Severity Index will increase the Life Expectancy of the Population by 0.069179 percent, ceteris paribus. In the regression results in this research model, life expectancy has a negative relationship and significantly affects the poverty severity index. The lower the poverty severity index, the higher

the life expectancy of an area. With a healthy population, productivity will also increase. Increasing the population's productivity from an economic point of view, their income increases, increasing the welfare of the region. This is under research conducted by Seran (2019) and Gibson (2020) who concluded that the poverty severity index has a negative and significant effect on life expectancy [33], [21] .

One important aspect to support The availability of accurate poverty data is critical to poverty reduction measures. The government can determine what to do with the data once it is released. Furthermore, the government can use the statistics to compare poverty rates from year to year. Along with the presentation of data on the number and proportion of poor individuals, the poverty profile is also significant information. Policymakers urgently want information on the poverty profile in order to address the problem of poverty Thus, efforts to empower the poor can run efficiently and well on target.

Based on the results of the analysis, we can conclude that there are still many provinces in Indonesia that have a high depth index, severity index, and percentage of poor people. This finding reveals that both the depth index, severity index, and the percentage of poor people who are still high in Indonesia today influence the difficulty of improving life expectancy.

5 Conclusion

From the research findings and discussion, we concluded that partially and simultaneously access to health services with the sub-variable ratio of hospital beds and the ratio of doctors, educational status with the sub-variables of the average length of school and literacy rate and social status with sub-variables of the Gini index. The poverty severity ratio and index affect people's life expectancy with a contribution of 0.9759 or 97.56%.

While the remaining 2.44% Other factors outside the independent variables influence the value of the dependent variable in this study. The provincial government always increases the positive rate of public health, especially to meet the ratio of the availability of beds and doctors, so that public health services are guaranteed. In addition, in addition, in the education sector, the provincial government is advised to open up job opportunities widely and open to all educated workers, through various strengthening of the creative economy in order to overcome educated unemployment which has an impact on poverty.

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