



## The Regional Human Development and Covid-19 in Aceh

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### Article Information    Abstract

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The world faced a new disease in 2019 called Covid-19, which hit worldwide countries, including Indonesia, and impacted the economic and development obstruction. Human Development Index (HDI) is as one of the development success measurements. This paper analyzes the locally-generated revenue, regional GDP, health spending, and poverty influence on the human development index in the twenty-three districts/cities in Aceh Province using the fixed effect model parameter estimation panel data regression analysis from 2011 to 2020. The results showed that the locally-generated revenue, regional GDP, and poverty increases have caused HDI increases before and during Covid-19. Meanwhile, the government spending on health increased effect only increased the HDI in the years before Covid-19. Health expenditure did not have an impact on HDI during the pandemic because the Covid-19 pandemic spread led to an increased death risk. Therefore, this study recommends the government focuses on providing programs to improve malnutrition and implement clean and healthy living behaviors after the pandemic as to increase the human development quality. Furthermore, the government should update the data on the poor populations and those who are vulnerable to poverty because they have a hard time in rising after the pandemic, so that they are more eligible to receive social assistance.

## INTRODUCTION

The Global confronted new diseases in 2019 when there was a report from the Chinese Centers for Disease Control and Prevention that mentioned the first stage plague of a new coronavirus which is called SARS-CoV-2, and the World Health Organization (WHO) referred to it as Covid-19 (Guan *et al.*, 2020; Zhu *et al.*, 2020). This disease causes pneumonia series cases in Wuhan (China) (Lopes *et al.*, 2021). On March 11, 2020, WHO declared Covid-19 as a Global Pandemic, and confirmed that there were 719,758 Covid-19 cases as 33,673 passing away at the end of March worldwide. This pandemic has hit over 200 countries worldwide, including Indonesia, and has affected various aspects of life. Indonesia also conducted a mass screening in March 2020, and the Indonesia President decided to execute a large-scale social distancing in each province (Rinaldi *et al.*, 2022; Setiati and Azwar, 2020). Republic of Indonesia President Decree No. 12 of 2020 declares that Covid-19 is a national disaster.

The pandemic impacted the economic and development obstruction in various sectors. The recession due to COVID-19 hit various countries in the world (Rinaldi *et al.*, 2022; Setiati & Azwar, 2020) and it was the worst economic recession in the last 50 years in the history of the economic world (Muhyiddin and Nugroho, 2021). The Indonesian economy in 2020 was not less bleak than the economic world. In the first quarter of 2020, Indonesian economic growth grew positively by 2.97 %, but in the following quarters dramatically fell into minus 5.3 %, minus 3.49 %, and minus 2.17 % respectively (Muhyiddin and Nugroho, 2021; Statistics Indonesia, 2020).

The development discussion is not only about per capita income growth (Arisman, 2018). The human development is also one of the primary considerations that measures the country development level (Sarkar, Sadeka and Sikdar, 2012). The human development concept is the basis for achieving the prosperity as a development goal (Fernandes and Putra, 2022). The human development must be the next goal

of human action: to make life healthier, longer, and more complete (Ranis *et al.*, 2000; Ülengin *et al.*, 2011; Anand and Sen, 2000). The measurement of development success uses several instruments, and the most popular at this time is the Human Development Index (HDI) (Fernandes and Putra, 2022). Several studies have shown a significant and direct relationship between HDI and Covid-19 incidents (Lopes *et al.*, 2021; Maciel *et al.*, 2020).

The United Nations Development Program (UNDP) initiated the HDI in 1990, which aims to make the countries more focus on improving human capabilities and becomes the primary criterion for assessing a country development, looking not just at increasing of economic growth. HDI also can be used in formulating the national policies. Because, there could be two countries that get similar Gross National Income (GNI) per capita but it is different levels of human development (Arisman, 2018).

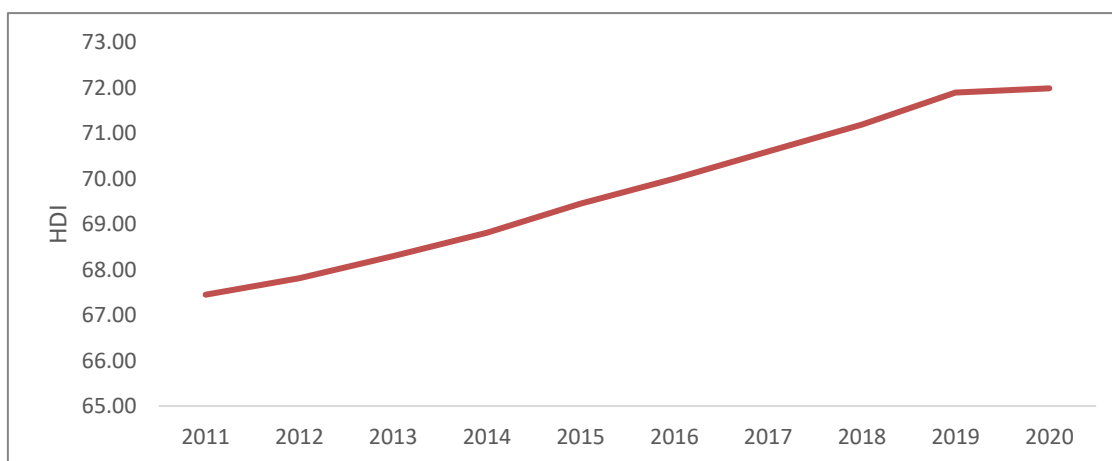
Measurement of HDI in activities for the welfare population was first set on four parameters that describe a long life and healthy, knowledge, and a decent living standard (Fernandes and Putra, 2022; Arisman, 2018). The Human development index calculates the normalized geometric index average for three aspects: health, education, and standard of living. Health means life expectancy at birth. The education is appraised by the average length of schooling for adults over 25 and the expected school years for children entering school age. The living standard is measured by GNI per capita. HDI uses the logarithm of income to illustrate the importance increasing of income as GNI increases (Arisman, 2018; Ruseva *et al.*, 2015). A development in a country is required to be able to provide tangible results, that is Pro-Growth, Pro-Poor, Pro Job, and Pro-Environment, which means fostering economic growth, opening up job opportunities, decreasing poverty, and preserving the environment so that, people's welfare is achieved (Fernandes and Putra, 2022).

The HDI score for Indonesia in 2019 is 0.718, placing it in 107th out of 189 nations in the world and it is the high human development

category. The ranking is shared with Bolivia and Philippines. The increase between 1990 to 2019 can be seen in Indonesia's HDI value increasing from 0.523 to 0.718, or the value increased by 37.3 %. The expectancy of life at birth in Indonesia raised about 9.4 years, the schooling length average elevate by 4.9 years, the expected school years augmented by 3.5 years, and GNI per capita raised to 172.7 % (Human Development Report, 2020). Indonesia HDI also experienced the growth; however, it continued to

be slow in 2020 (71.94) from the previous year, 2019, because the cases of Corona disease continued to soar (Statistics Indonesia, 2021).

Aceh Province is one of the provinces located at the western end of Indonesia which has a human development index level that continues to increase from year to year and even in 2020 the Aceh Province HDI (71.99) scored above the national average (71.94). Below is the Aceh HDI development based on data from Statistics Indonesia.



**Figure 1.** Aceh Human Development Index 2010-2020

Source: Aceh Province Statistics (2022)

Figure 1 shows the HDI of Aceh Province, which continues to increase from 2011 to 2020, and from 2016 until now, Aceh human development has entered the "high" status category where the value is equal to 7.00 or more (Statistics Indonesia, 2020). Although Aceh HDI has been upward in the last two years, the increase is not as sharp as in the years before the Covid-19 pandemic entered Indonesia in 2020. Aceh's HDI growth experienced an obstruction in 2020. Around 8,746 positive Covid-19 cases were reported in Aceh, as many as 7,551 were confirmed to have recovered, and 350 people died (Tsunami Disaster Mitigation Center (TDMRC) Unsyiah, 2020; Government of Aceh, 2020). Aceh human development index was ranked in 11th out of 34 provinces in Indonesia starting from 2013 to 2020, which was previously ranked in 10th (2012). Many factors influence the cause of the increase in HDI, and one of the factors that influence it is locally-generated

revenue, gross regional domestic product, government spending on health, and poverty (Patadang, Rotinsulu and Rorong, 2021).

The human development index can be used as a measuring tool to achieve a development in an area. One way to show whether the action has been carried out or not is by following what has been determined. The source of funds needed for regional development which comes from locally-generated revenue. The independence of a region in the financial sector can be seen in how big the contribution of locally-generated revenue (LOCREV) to regional income is, and it indicates that locally-generated payment can defray the development of the area (Hobrouw *et al.*, 2021; Patadang *et al.*, 2021; Purnamawati and Hudaya, 2020). Aceh locally-generated revenue continues to increase annually. In 2011, it was 797 billion, and in 2020 it grew to 2 trillion (Ministry of Finance Republic of Indonesia, 2020).

The Aceh government dependence on the central government is an evident of the LOCREV small proportion in the structure of the regional revenues and expenditures budget in Aceh. The data which is obtained from the Ministry of Finance of the Republic of Indonesia (2020) that shows the realization of Aceh's Regional Revenues and Expenditures Budget received from transfer income (89.10 %) is still significant, if it is compared to the total realization of LOCREV from the Aceh Government which is only IDR 3.35 trillion or 10.64 % of total regional income. This shows that the local government still cannot explore and maximize the potential of LOCREV to defray the needs of public services, such as supporting health facilities, education and, improving the welfare of the population. (Fernandes and Putra, 2022; Purnamawati and Hudaya, 2020).

HDI is the leading indicator in measuring the success of efforts to improve human life quality. This index can reveal that a significant increase in income or high growth can have a small role in the human development framework. This triggers low-income areas not only to focus on development priorities on pursuing growth but also become more attentive to the aspects of education and health. One of the factors that can influence HDI is Gross Regional Domestic Product (GRDP) Domestic Product (GRDP) (Mokodongan and Santoso, 2022). People's purchasing power in consuming the goods is also closely related to HDI. An increase or decrease in GRDP in an area indicates a change in people purchasing power, affecting regional human development (Handayani and Woyanti, 2021). Oil and Gas constant prices as Aceh GRDP showed a decrease from 2019 (132,074 trillion) and 2020 (131,585 trillion) to 489 billion. This decline was due to the implementation of the lockdown, social restrictions, and work from home (WFH) policies due to the ongoing deployment of Covid-19, which resulted in declining business activity (Bank Indonesia, 2021).

One of the main aspects influencing the human development is the aspect of health and education. Improved social indicators in many

developing countries have been accompanied by a rise in public expenditure on health and education (Gupta, et al., 1998). However, investments in the human capital devoted to primary education and preventive health care accelerate the human development significantly (Gupta, Clements, and Tiongson, 1998; Ranis, 2004).

The health sector plays an essential role in improving the population's health, which will also impact people's welfare, reduce health and income disparities, and supports economic growth ultimately (Charlesworth et al., 2021). Therefore, reducing the government spending on health can harm the population's health. It supposes that the government spending on health has a contraction, for example, due to a crisis. In that case, it can exacerbate health risks caused by intended household spending reduction to support public health (Liang and Tussing, 2019).

Health expenditure in Aceh in the 2011 to 2020 APBD fluctuated. A significant increase occurred from 2011 (IDR798 billion) to 2014 (IDR1,971 trillion). A sizeable decline occurred in 2015 (IDR1,536 trillion) to 2016 (IDR1,377 trillion). Then it again increased in 2019 (IDR2,369 trillion) and decreased in 2020 (IDR2,019 trillion). The budget decline in 2020 was due to a reduction in the regional budget (APBD) revenue source as a result of the Covid-19 pandemic, which disrupted economic activities. However, health spending in 2020 was still the third largest expenditure after spending on public services and education out of nine expenditures by function in the 2020 APBD realization. This was because the government's budget funds were focused on health spending in dealing with the Coronavirus pandemic disaster (Ministry of Finance Republic of Indonesia, 2020; Salman and Rasyidin, 2020; Bank Indonesia, 2021).

Poverty is a complex and really important social problem in human life (Ruseva, Genova, and Jekova, 2015). HDI can be used as a benchmark for poverty conditions in a region, and The strategies contained in human development describe how to overcome poverty (Arimah, 2004). Based on Statistics Indonesia, as

of September 2020, the poverty position in Aceh was 15.43 % higher than the previous year (15.01 %), so Aceh got the highest poverty rate in Sumatra (10.22 %) and Indonesia (10.19 %). In addition, Covid-19 caused an economic contraction in Aceh. The unemployment rate increased from the previous year and was a poverty booster (Bank Indonesia, 2021).

The empirical studies, which are in line with the conducted research, only look at the impact of locally-generated revenue, regional GDP, health spending, and poverty on HDI in various regions, but these studies do not compare the impact before and during the occurrence of Covid-19 in the Aceh Province (Hobrouw *et al.*, 2021; Patadang *et al.*, 2021; Purnamawati and Hudaya, 2020; Mokodongan and Santoso, 2022; Handayani and Woyanti, 2021; Ranis, 2004; Mutiha, 2018; Fernandes and Putra, 2022; Nur and Yuliansyah, 2020). Based on the background explained, the research purpose is to analyze the influence of locally-generated revenue, regional GDP, government spending on health, and poverty on the human development index and Covid-19 in Aceh. the Empirical evidence of the research results is expected to be the central and local governments consideration and evaluation for in formulating various program policies and appropriate allocations to improve community's welfare.

## RESEARCH METHODS

This research uses a quantitative data approach by utilizing the secondary data in twenty three districts/cities in Aceh from 2011 to 2020. This research model uses a panel data analysis method because it combines time series data with a cross section to examine the influence of locally generated revenue, regional GDP, health spending, and poverty on the human development index and Covid-19 in Aceh. The data panel, commonly recognized as longitudinal data, observes individual micro units over time. The panel data consists of a group of cross sectional units (individuals, households, companies, districts/cities, provinces, countries)

observed over time (Hill *et al.*, 2011; Hsiao, 2014).

There are several benefits of applying the panel data because it can control individual heterogeneity, learn dynamic adjustments, provide informative data, and has many variabilities. In addition, it can also find and measure the impact that cannot be detected in data pure cross section or pure time series, it has less collinearity between variables, it has more degrees of freedom, and it is efficient. Furthermore, this model makes it to be possible to test more complex behavioral models than cross sectional data or pure time series (Klevmarken, 1989; Hsiao, 2014; Baltagi, 2005). The general mathematical model for the panel data regression is (Baltagi, 2005):

$$y_{it} = \alpha + X'_{it}\beta + u_{it} \quad i = 1, \dots, N; \\ t = 1, \dots, T \dots \dots \dots (1)$$

In which *i* denotes the individual, the regency/municipality, the province, the country, etc., *t* represents the time, and the subscript *i* indicates the cross-section dimension. In contrast, *t* means the time series dimension,  $\alpha$  is the scalar,  $\beta$  is the Kx1 and  $X_{it}$  is the *i*th observation on K explanatory variables. The mathematical equation used in this study is as follows:

$$HDI_{it} = \alpha + \beta_1 LOGLOCREV_{it} + \\ \beta_2 LOGGRDP_{it} + \beta_3 LOGHEALTHEXP_{it} + \\ \beta_4 POV_{it} + \epsilon_{it} \dots \dots \dots (2)$$

In which  $i=1,2,3,\dots, N$ ,  $t=1,2,3,\dots, T$  (N represents regency and municipality panels, while T represents year). HDI represents the Human Development Index (dependent variable). LOCREV, GRDP, HEALTHEXP, and POV represent the locally-generated revenue, the regional GDP, the health expenditure, and the poverty (independent variables).  $\alpha$  is a constant,  $\beta$  is the coefficient of the regression variable on HDI, and  $\epsilon$  is the error terms. All independent variables except POV were is transformed into logarithms so that the data is normally distributed (Arisman, 2018).

Data analysis can be estimated by utilizing three-panel regression methods. The first is the Pooled Ordinary Least Square (POLS), the second is the Fixed Effects (FE) model, and the third is the Random Effects (RE) model (Arisman, 2018; Fatimah *et al.*, 2021). This study utilizes the panel regression with the fixed effect model because the assumption of intercept is not constant. The following are some of the stages: first, running an estimate uses fixed effects; then, testing a chow test to select POLS or FE model;

and third, performing a Hausman test on the random effect model to choose between the FE model and RE model (Arisman, 2018).

Following the prior literature, this study uses five variables. the table 1 shows a list of variables and data sources used. The dependent variable represents the human development index; The independent variables that become the explanatory variables are locally-generated revenue, gross regional domestic product, health expenditure, and poverty %age (table 1).

**Table 1.** Variables Definition and Data Source

Variable	Definition	Unit	Data Sources
HDI	Human Development Index	Points	Statistics of Aceh Province
LOCREV	Locally-Generated Revenue	IDR	Statistics of Aceh Province
GRDP	Gross Regional Domestic Product with Oil and Gas (Constant 2010)	IDR	Statistics of Aceh Province
HEALTHEXP	Government expenditure on health	IDR	The Ministry of Finance
POV	Percentage Age of poor people	%	Statistics of Aceh Province

Source: Data Processed, 2022

## RESULTS AND DISCUSSION

Statistical descriptive analysis helps provide an overview of the data of all the variables that play a role. Then the average of each variable is calculated to obtain the standard deviation, the minimum and maximum values of the data being used.

The table 2 shows that all variables have an observation range of 230. GRDP obtained the highest average value of IDR 4,546,658 million

with a standard deviation of IDR 3,670,198 million. HDI obtained an average value of 67.05 with a standard deviation of 4.88, in the highest HDI was in Banda Aceh City in 2020. Subulussalam City had the lowest HDI (59.34) in 2011 and the lowest LOCREV in Aceh was IDR 6.099 million (2012).

The highest poverty rate was in Bener Meriah Regency in 2011, which was 25.50 %, while the lowest POV was in Banda Aceh in 2020, which was 6.90 %.

**Table 2.** Descriptive Statistical Test

Variables	Obs	Mean	Std. Dev.	Min	Max
HDI	230	67.05	4.88	59.34	85.41
LOCREV (Million IDR)	230	87,364	67,656	6,099	388,252
GRDP (Million IDR)	230	4,546,658	3,670,198	335,526	18,151,766
HEALTHEXP (Million IDR)	230	147,408	90,654	14,461	457,851
POV (%)	230	17.32	3.96	6.90	25.50

Source: Data Processed, 2022

All variables show a standard deviation smaller than the mean value, it means that there is a good data distribution, and there is not big enough gap between the lowest and highest, so that it can explain the entire data.

The results of the data analysis include three static panel models, namely the Pooled Ordinary Least Square Model or Common Effect Model (CE), the Fixed-Effect Model (FE), and the Random Effect Model (RE). Table 3 shows the best model of the three static models.

**Table 3.** Estimation Results for Panel Data Test

Independent Variables	Model		
	CE	FE	RE
LOGLOCREV	5.804237 (0.0000)***	1.504107 (0.0000)***	1.546764 (0.0000)***
LOGGRDP	-2.801208 (0.0003)***	6.544467 (0.0000)***	1.461381 (0.2120)
LOGHEALTHEXP	-4.952204 (0.0007)***	0.514513 (0.1617)	0.639912 (0.0770)*
POV	-0.540938 (0.0000)***	0.320376 (0.0000)***	0.180447 (0.0006)***
C	103.6997 (0.0000)***	-42.36340 (0.0228)**	21.83564 (0.1158)*
R-squared	0.431101	0.977886	0.215316
Adjusted R-squared	0.420987	0.975054	0.201366
F-statistic	42.62515	345.2633	15.43493
Prob(F-statistic)	(0.000000)***	(0.000000)***	(0.000000)***

Note: Significance level in parentheses for each regression, \*\*\* 1%; \*\* 5% and \* 10%.

Source: Data Processed, 2022

The next step is testing the model specifications to determine which model more suitable is. This research conduct Chow Test and

Hausman Test to determine the most suitable model, the result of Chow Test and Hausman Test are explained below:

**Table 4.** Chow Test and Hausman Test

Effects Test	Prob.	Conclusion
Chow Test	(0.0000)***	FE Model
Hausman Test	(0.0000)***	FE Model

Note: Significance level in parentheses for each regression, \*\*\* 1%; \*\* 5% and \* 10%

Source: Data Processed, 2022

The Chow test is the most practical test to determine FE or CE model in estimating panel data (table 4). Based on the results of the redundant FE test on the model, chi-square probability value is  $0.0000 < \alpha$ , so the correct model is the fixed effect model (Fiskal and Wardani, 2020; Ekananda, 2016; Purnamawati and Hudaya, 2020).

The ideal model between FE and RE models is determined by using the Hausman test

(table 4). the test results show a significance value of less than alpha ( $< \alpha$ ). Thus, the selection of random effects on the null hypothesis is rejected; the conclusion is that the FE reflects the best or better data conditions (Fatimah *et al.*, 2021; Ekananda, 2016). Based on the model specification test, the regression model that is used is the Fixed Effect.

**Table 5.** The Fixed Effect Model Regression Results Before and During Covid-19

Independent Variables	Before Covid-19	During Covid-19
LOGLOCREV	1.403190 (0.0000)***	1.504107 (0.0000)***
LOGGRDP	5.517899 (0.0006)***	6.544467 (0.0000)***
LOGHEALTHEXP	0.600462 (0.0927)*	0.514513 (0.1617)
POV	0.309467 (0.0000)***	0.320376 (0.0000)***
C	-29.22819 (0.1184)	-42.36340 (0.0228)**
R-squared	0.980667	0.977886
Adjusted R-squared	0.977875	0.975054
F-statistic	351.1786	345.2633
Prob(F-statistic)	(0.000000)***	(0.000000)***

Note: Significance level in parentheses for each regression, \*\*\* 1%; \*\* 5% and \* 10%

Source: Data Processed, 2022

The results shows that the locally-generated revenue, regional GDP, health expenditure, and poverty can explain their relationship with the human development index, which is 98.07 % (before Covid-19) and 97.79 % (during Covid-19). Meanwhile, the remaining 1.93 % (before Covid-19) and 2.21 % (during Covid-19) are described by other variables that are not included in this analysis.

Based on the results of the table 5, it can be shown that the locally-generated revenue variable shows a positive and statistically significant response to the human development index both before and during Covid-19. This indicates that an increase in locally-generated revenue of 1 % will increase HDI by 1.40 before Covid-19 and 1.50 during Covid-19. The finding line up with studies conducted by Mutiha (2018), Hobrouw et al. (2021), Fernandes and Putra (2022), Arispen et al. (2021), Nur and Yuliansyah (2020), Purnamawati and Hudaya (2020).

The higher locally-generated revenue describes the capability of local governments to explore local financial sources, such as local taxes, levies, and others, and to serve the community through adequate public service facilities. The increase in LOCREV is in line with the pace of development. If the management of LOCREV resources is carried out effectively, it

will facilitate the expenditure process for the building of public facilities. If the quality of public services increases, the human development index can also increase (Mutiha, 2018; Arispen et al., 2021). Therefore, the local financial performance of governments has a positive and significant effect on HDI (Anggraeni and Kiswanto, 2018). However, these results differ from Patadang et al. (2021) and Indramawan (2018), which state that local revenue does not significantly affect HDI.

Gross regional domestic product (GRDP) or regional GDP has a positive relationship with HDI both before and during Covid-19. The increase in the GRDP value by 1 % will increase the Aceh Province HDI by 5.52 (before Covid-19) and 6.54 (during Covid-19). Previous research from Mokodongan and Santoso (2022) also shows a positive and significant connection between GRDP and HDI in the Bolalang Monggodow Raya area in 2015-2019. In line with Hussain et al. (2020), who state that the higher of the increase in GDP in a country, the greater the funds needed to defray the human development.

Government expenditure on health has a positive influence on HDI in the years before the onset of Covid-19 in Aceh. The HEALTHEXP coefficient shows an effect of 0.09 at a



significance level of 10 %, so if there is an increase in health expenditure of about 1 %, it will make an increase in HDI of 0.60. This finding matches with that proposed by Mailassa'adah *et al.* (2019), which states that the health sector expenditure provides a positive and significant relationship to HDI in Central Kalimantan, because the health expenditure is an investment made by the government in the development process. A health status can be seen in life expectancy, infant and maternal mortality, the number of sick people, and the status of several diseases. A health is a basic human need; people can carry out activities to fulfill their needs with a healthy body.

However, during the Covid-19 outbreak, the health expenditure does not significantly influence HDI. The spread of Covid-19 causes an increase in the risk of death. Although, in general, a life expectancy, which is one of the indicators for measuring HDI, is increasing, it is still below the national life expectancy. Moreover, Aceh life expectancy growth is not also as high as before Covid-19. In 2018 the growth was 0.17 %, and in 2019 it was 0.33 %, but during the pandemic, in 2020, the growth was only 0.09 %. As a result, there was a decrease in the growth of the life expectancy of the Acehnese population, which was minus 0.24 % in 2020 compared to 2019 (0.16 %) (Statistics of Aceh Province, 2020), despite the government budget is refocusing to deal with the Covid-19 pandemic, which is used for handling health and safety (Bank Indonesia, 2021). Gomez-Gonzalez and Reyes (2017) said that the effectiveness of health expenditure is not less important than the amount of spending, so that it can improve health status.

The poverty influenced HDI before and during Covid-19 in Aceh positively and significantly. This is different from other studies' results (Arimah, 2004; Fiskal and Wardani, 2020). This shows that an increase in poverty of 1 % will affect the increase in HDI by 0.31 before Covid-19. The effect is even more significant during Covid-19, which is 0.32. A decent standard of living, one of the dimensions of human development in the HDI, can be

measured by using an indicator of people's purchasing power for a number of basic needs as it is indicated in the average per capita expenditure. In 2020, Aceh population per capita expenditure decreased from IDR9,603,000 (2019) to IDR9,492,000 (Statistics of Aceh Province, 2020).

During the Covid-19 pandemic, household consumption was reduced due to layoffs from declining business activities. The Ministry of Manpower and The Workers Social Security Agency (BPJS) reported that around 7,449 informal businesses went bankrupt from the beginning of the year to October 2020, and 4,267 workers were laid off. The decline in the performance of real sector performer impacted on people's purchasing power. Weakened on purchasing power during the pandemic makes people tend to hold back on purchasing the secondary necessities. The decline in the income of the poor population in Aceh was accompanied by an increase in inflation from 0.14 % in 2019 to 0.295 % in 2020. This increased poverty in Aceh was from 15.01 % in 2019 to 15.43 % (2020). As a result, Aceh has the highest poverty rank in Sumatra (Bank Indonesia, 2021; The Ministry of Finance: Directorate General of Treasury, 2020).

To ease the burden due to the Covid-19 pandemic, which directly impacts on people's incomes, the government has created National Economic Recovery (PEN) programs in social protection clusters. They are the Family Hope Program (PKH), Cash Social Assistance (BST), Pre-Employment Cards, and Staple Food Cards (BPNT) (The Ministry of Finance: Directorate General of Treasury, 2020; Bank Indonesia, 2021; Statistics Indonesia, 2021). Even though Aceh's poverty rate has increased from various economic problems, which is faced by the people during Covid 19, the HDI value during the pandemic has increased as a result of the government intervention through various program policies to increase various HDI components including in the educational dimension such as providing internet quota subsidies and others (Kemendikbud, 2020).

## CONCLUSION

The world faced a new disease in 2019 called Covid-19, which hit more than 200 worldwide countries, including Indonesia, and affected various aspects of life. Indonesia also conducted a mass screening, and in March 2020, Covid-19 was declared as a national disaster. The pandemic impacted on the various sectors in economic and development. One of the measurements of development success is the Human Development Index (HDI) instrument. Several previous studies have shown a direct and significant relationship between the HDI and the incidence of Covid-19, as well as several parameters that can affect the HDI. Therefore, this paper analyzes the effect of the locally-generated revenue, regional GDP, health spending, and poverty on the human development index in twenty-three regencies and municipalities in Aceh by using the Fixed Effect Model parameter estimation data panel regression analysis from 2011 to 2020.

The results shows that the locally-generated revenue and regional GDP variables has a positive and statistically significant influence on the human development index both before and during Covid-19 in Aceh, so if there is an increase in the locally-generated revenue and regional GDP, the HDI will also increase.

Furthermore, government expenditure on health shows a positive and statistically significant response to the human development index in the years before the onset of Covid-19. Still, during the pandemic, health expenditure does not significantly influence the human development index, where the spread of the Covid-19 pandemic lead to an increased risk of death. As a result, there has been a decline in the life expectancy of the Acehnese population in 2020. Although there has been a refocusing of the government's budget to tackle the Covid-19 pandemic, which is used for health and safety management, it is essential to pay attention to the effectiveness of health expenditure so that it can improve health status. Therefore, local governments should emphasize health spending policies on disease prevention activities, such as providing the programs that can support public

health, improving malnutrition, and implementing clean and healthy living behaviors after the Covid-19 pandemic.

The poverty positively influences to the human development index before and during Covid-19. This shows that an increase in poverty will affect the increase in HDI before Covid-19 occurs, and the effect will be even more significant during Covid-19. One measurement of the dimensions of achieving decent living development in the HDI is to use the indicators of people's purchasing power as indicated in the average per capita expenditure. In the era of the pandemic, there was a decline in household consumption due to the layoffs resulting from declining business activities. The decrease in the income of the poor Acehnese, was accompanied by an increase in inflation, created the poverty in Aceh in 2020 which increased from the previous year and received the highest poverty rating in Sumatra. The government's National Economic Recovery Program (PEN) aims to ease the burden due to the Covid-19 pandemic, which directly impacts on people incomes. Although Aceh per capita expenditure has decreased, other HDI indicators have increased. Researchers provide the policy recommendations to the government, so that in the future, they will update the data of the poor and vulnerable poor population who are more eligible for social assistance and have a hard time on rising after Covid-19 so that aid does not overlap.

This study has limitations. It observed only the Covid-19 pandemic first year. Hence, the study results require further analysis to increase the number of observations in the year of Covid-19 and add some control variables to the regression model. It is recommends for further researches to examine the health spending effectiveness through prevention and health care programs in significantly influences the future health expenditure projections and their effect on human development.

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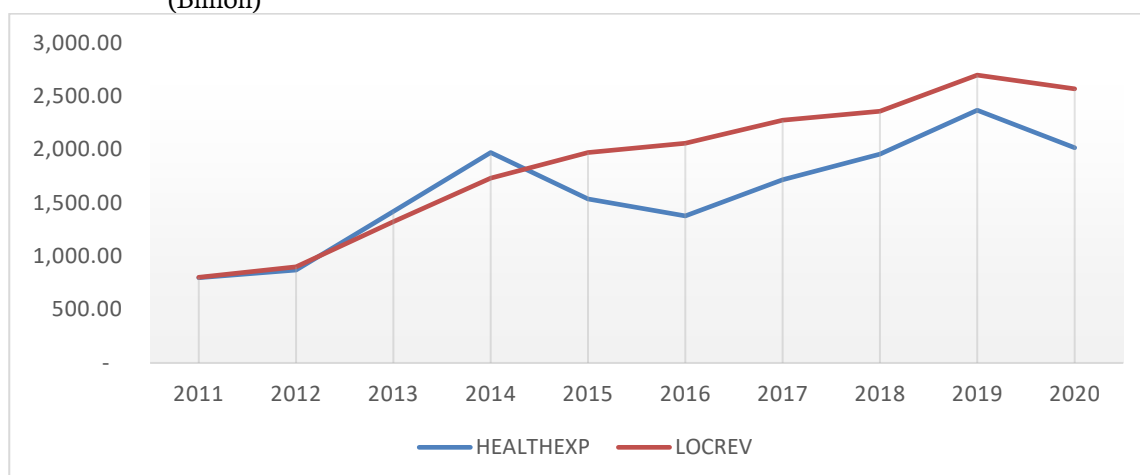
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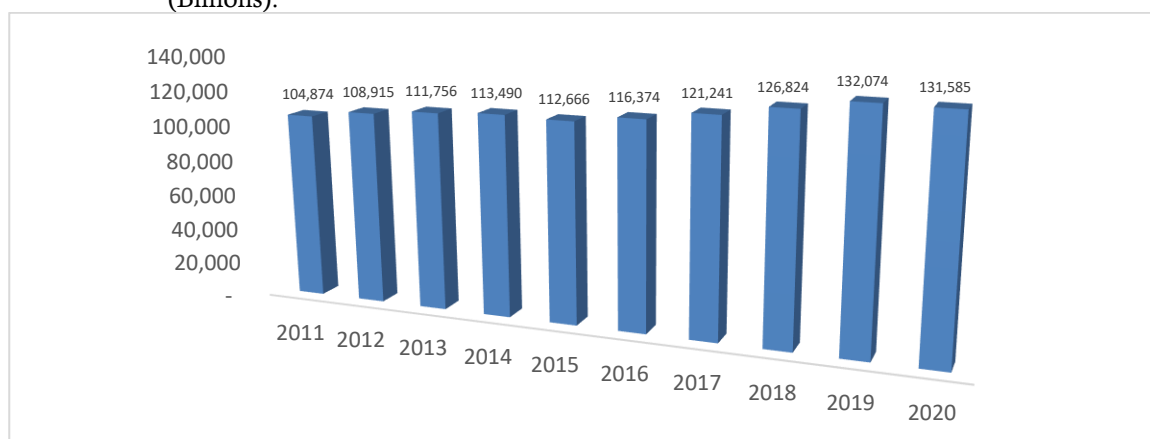
## APPENDIX

**Appendix 1.** Locally-generated revenue and government health expenditure on in Aceh Province (Billion)



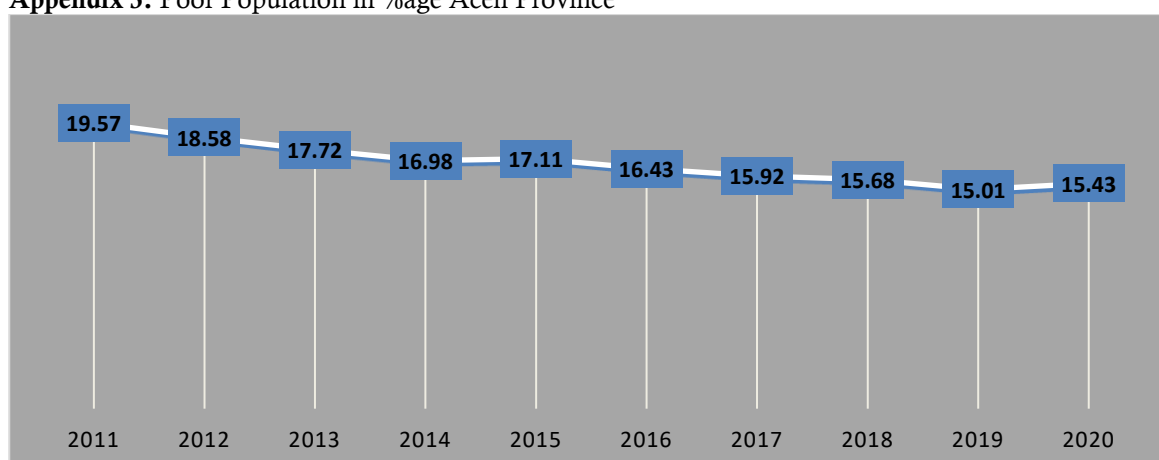
Source: Finance Republic of Indonesia Ministry, 2020

**Appendix 2.** Gross regional domestic product at with oil and gas constant prices in Aceh Province (Billions).



Source: Aceh Province Statistics, 2021

**Appendix 3.** Poor Population in %age Aceh Province



Source: Aceh Province Statistics, 2021