# The Impact of Covid-19 on Economic Growth

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**Abstract**. The Covid-19 pandemic in Indonesia since March 2020 has had an impact on negative economic growth for two quarters, namely minus 5.2 percent in the second quarter and minus 3.49 percent in the third quarter (yoy). Likewise, the economic growth of the Kulon Progo Regency is expected to experience a drastic decline in 2021, after 2019/2019 had the highest growth reaching 18 percent. This article aims to analyze the impact the Covid-19 pandemic has on the economic growth of the Kulon Progo Regency per economic sector. This article also projections Kulon Progo's economic growth until 2024 using eleven projection methods. From the results of the projections carried out, the Gross Regional Domestic Product (GRDP) of Kulon Progo Regency in 2020 is predicted to slow down due to the Covid-19 pandemic case which affects almost all sectors. However, this decline only occurred in 2020, because in the following year several sectors are predicted to increase in line with the improving situation and operation of infrastructure projects. Several sectors will increase, such as the transportation and warehousing sectors, due to normal activities at Yogyakarta International Airport (YIA). Based on the optimistic, moderate, and pessimistic scenario, Kulon Progo Regency's economic growth will continue to grow positively. There are two contributions of this research, firstly analyzing the impact of the pandemic and projecting the impact for the next 4 years and secondly, the projection is carried out using the best model of eleven methods.
*Keywords: economic growth, covid-19, Kulon Progo, sectoral, trend.*

## Introduction

COVID 19 or Novel Corona eruption has taken control in most of the world's countries and has affected the daily lives of billions of people worldwide (Bouey, 2020). The medical experts report that the total number of new infections from a single infected person is more than five times that of the seasonal. Thus, the outbreak of Novel Corona has affected, as at present, the usual work of a person, household, village, community, province, nation, area, and that of the whole globe (Nunkoo, Seetanah, Jaffur, Moraghen, & Sannassee, 2020). As time goes by and

the level of problems in regional development is increasingly complex, the paradigm of regional economic development theory has shifted (Patel et al., 2020). On one hand, poverty management functions to alleviate the immediate hardships of poverty to preserve life and quell social disruption (Baker, Evans, & Hennigan, 2020). The presence of covid-19 in low- and middle-income countries (LMICs) is raising important concerns about effective pandemic response and preparedness in the context of fragile health systems and the pervasiveness of misinformation (Lau et al., 2020). In regional economics, covid-19 disrupted supply chains after disasters, which often results in substantially reduced production (Lu, Wu, Peng, & Lu, 2020). In terms of corporate continuity, war is the degree to which a company, by its leadership, strategizes to retain or immediately restore business operations in the event of a significant interruption (Kalemli-Ozcan, Gourinchas, Penciakova, & Sander, 2020). Crucially, corporate owners must now make swift choices to face future setbacks, as the disease is spreading rapidly (Suzana Raja Kasim, Shahzad, & Suzanna Aafanii Adeeba Wan Ibrahim, 2020).

The economic development in Kulon Progo Regency shows positive growth. This can be seen from the trend that has continued to grow over the past 6 years. The highest development was in 2019 at 13.49%, an increase from 2018 which was 10.62%. This very significant development was influenced in part by the construction of a new airfield. So that this has implications for the high development of the Construction Zone which reaches 69.8%, and the Transportation and Warehousing Zone is 10.48%.

Thus, the outbreak of Novel Corona has affected the usual work of a person, a household, a village, a district, a province, a nation, a region,
and that of the entire globe as it currently exists (Ranasinghe, Karunarathna, & Pradeepamali, 2020). With global transport delays and limitations put on certain countries due to the pandemic outbreak, Sri Lanka's tourism industry will be significantly affected (Liu & Wu, 2019). Based on the data of the Sri Lankan Tourist Planning Authority, tourist arrivals dropped below 30 percent compared to the previous year in the first quarter of 2020 and will continue to decline to almost zero as foreign arrivals are halted for more than a month (Palomino, Rodriguez, & Sebastian, 2020). The economic effect of tourism has given researchers many study opportunities, such as one that underpins the study into the relationship between tourism and economic growth (Nunkoo et al., 2020).

It is understood that the tourism industry is global and very competitive. Small disparities in the capital and/or cultural structures are likely to have significant short- and long-term implications in this sense(Antonescu, 2020). The aim is to use the tourism sector as a case study for studying the results of professional governance, considering its features and peculiarities. May we foresee a slight difference around the board (Detotto, Giannoni, & Goavec, 2021). Such economies expose underutilized output factors that are incompatible with the expectation of fully working production factors with a normal competitive advantage (Croes, Ridderstaat, Bąk, & Zientara, 2021). It attempts to assess the importance of innovation for economic growth by investigating whether the level of innovation has contributed to economic growth or whether innovation expansion is simply a result of rapid economic growth (Maradana et al., 2019).


# Theoretical Review

In the modern theory of economic growth, there is an immediate need for new models of economic growth that are politically valid and contribute to histories of progress and failure in

economic development. The neoclassical school, meanwhile, has overlooked the government's position in trying to build a competitive edge. It has also opted to neglect how businesses are developed, how technology is obtained, and how industries are created. The competitive potential theory of economic growth that has been established here assigns businesses a key role in economic growth, but also a major role in governance (Sainsbury, 2020).

According to the theory of economic growth, is the product of growth drivers and technical advancements. First of all, the accumulation of money, technological growth, and innovation must be the product of spending. In order to boost performance, technical advancement will be accomplished by the acquisition of machinery and technology patents contained in capital spending (Ru, Liu, Wang, & Wei, 2020).

In the well-known exogenous models, new hypotheses of the first century are introduced. On the model of the Solow-Swan. Per capita income, which forms the basis of the modern growth theory, increases by investing in physical capital and a resulting increase in one employee's capital capacity until it enters a stationary state in which GDP per capita is stagnant and GDP can only arise due to population expansion (Thach, 2020).

The theorists of classical growth shared the general inference that inevitably asymptotically, the global development mechanism would result in a state of stagnation (the "stationary state"). It was falsely believed that population increase would sustain incomes at the cost of subsistence, resources would only be accumulated from income, and the land was assumed to be the key factor in development (Kawalec, 2020).

One possibility is to "force" people to pay their taxes by establishing a deterrence policy. In line with the economics-of-crime approach based on the expected utility maximization calculus (Torgler, Schneider, & Schaltegger, 2010). Thanks to definitional ambiguities, tourist scams were often ignored. By initially concentrating on conceptual differences between a family of similar words and incorporating the philosophy of social interaction, we treated tourist scams as a research package (Xu, Pearce, & Chen, 2021).

Since 1983 Indonesia has implemented the Self-Assessment System (SAS) as a pioneer program of tax reform. This system, however, did not substantially elevate the tax compliance performance in Indonesia. The implementation of SAS does not guarantee the taxpayer's compliance with their obligations (Darmayasa & Aneswari, 2016). The central government granted provincial autonomy to city councils, planning for their respective municipal governments. So it's hoped local governments won't be overly dependent on central government funding. To raise national revenues, each government must be able to exploit national opportunities in the form of taxation, levies, and other valid local revenues (Salim, 2018). There is increasing interest in the value and management of intangible assets, particularly in brands, as the business environment is becoming more complex than ever (Ökten, Okan, Arslan, & Güngör, 2019).

# Methodology

This analysis method is useful for projecting the macroeconomic indicators of the Kulon Progo Regency by using trend analysis. The data used in the study during the 2014-2019 period, which forecasts are carried out to project macroeconomic variables in the 2020-2024 period, which is useful for the government in determining economic policies in promoting inclusive economic growth. In the macroeconomic forecasting of Kulon Progo Regency, linear and non-linear regression methods will be used. This method uses the time variable as the independent variable.

The linear regression model that can be used is the linear trend method. Meanwhile, the non-linear regression method that will be used for forecasting is exponential and polynomial regression and others.

Alternative Forecasting Methods With Time Trends. Method of Eq

(1) Linear $Yt = \beta_0 + \beta_1 T$

(2) Logarithmic $Yt = \beta_0 + \beta_1 \ln(T)$

(3) Inverse $Yt = \beta_0 + \beta_1 / T$

(4) Quadratic $Yt = \beta_0 + \beta_1 T + \beta_2 T^2$

(5) Cubic $Yt = \beta_0 + \beta_1 T + \beta_2 T^2 + \beta_3 T^3$

(6) Compound $Yt = \beta_0 \beta_1^T$

(7) Power $Yt = \beta_0 T^{\beta_1}$

(8) S $Yt = e^{(\beta_0 + \beta_1 / T)}$

(9) Growth $Yt = e^{(\beta_0 + \beta_1 T)}$

(10) Exponential $Yt = \beta_0 e^{\beta_1 T}$

(11) Logistic $Yt = (1 / u + \beta_0 \beta_1^T)^{-1}$

**Note**: Yt = Variable predicted; T = Year; ln = natural logarithm; e = number 2.718282; u = upper bound value (upper bound) used in the logistic regression equation. The upper bound specification is positive and must be greater than the largest data value on the dependent variable. The default value for the upper bound is infinity, so $1 / u = 0$ and is excluded from the logistic equation. If we do not enter an upper bound value, we specify an upper bound with an infinite value.

In determining the use of one of these methods, namely by using a scatter diagram of the observation data. If the scatter diagram shows a linear increase, then we will use the linear trend regression method. However, if the scatter diagram is in the form of a parabola, either open up or open down, then the suitable method for use is the polynomial non-linear regression method. Likewise, if the scatter diagram does not show that it is neither linear nor parabolic, then pay attention in detail to whether the increase is multiplied or first calculate the logarithm of the original data and draw it. And if it turns out that after this has been done it shows a linear form, then the suitable method to be used for this data is exponential non-linear regression.

## Result And Discussion

For projection using eleven projection methods, the best results with the highest R square value are the cubic method (0.969) and the quadratic method (0.917).

**Table 1. Best Projection Model**

| Equation | Model Summary | | | | |
|----------|----------|--------|-----|-----|------|
|          | R Square | F      | df1 | df2 | Sig. |
| Linear   | ,637     | 12,299 | 1   | 7   | ,010 |
| Logarithmic | ,409  | 4,838  | 1   | 7   | ,064 |
| Inverse  | ,213     | 1,889  | 1   | 7   | ,212 |
| *Quadratic* | *,917* | *33,094* | *2* | *6* | *,001* |
| *Cubic*  | *,969*   | *52,073* | *3* | *5* | *,000* |

| Compound | ,696 | 16,013 | 1 | 7 | ,005 |
|---|---|---|---|---|---|
| Power | ,469 | 6,191 | 1 | 7 | ,042 |
| S | ,259 | 2,452 | 1 | 7 | ,161 |
| Growth | ,696 | 16,013 | 1 | 7 | ,005 |
| Exponential | ,696 | 16,013 | 1 | 7 | ,005 |
| Logistic | ,696 | 16,013 | 1 | 7 | ,005 |

Source: Processed data

From the projection results using eleven methods, it is found that eight methods are significant below 5 percent and three methods have not fulfilled the significance. Of the eight methods, the best methods used to perform projection are the quadratic method and the cubic method. The comparison between these methods can be seen in the following figure.
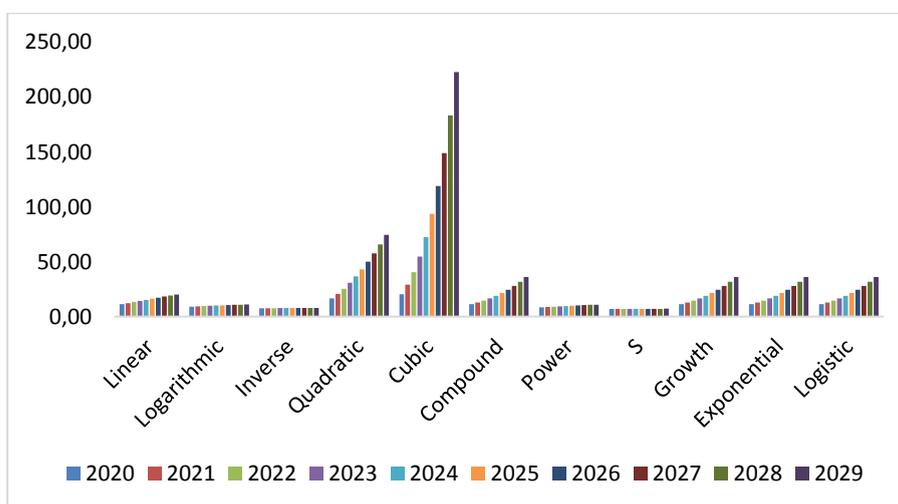


Source: Processed data
**Figure 1. Comparison of Best Methods for Economic Growth Projections**

From the projection results of Gross Regional Domestic Product at current prices (PDRB-ADHB), the economic growth of Kulon Progo Regency is predicted to decline significantly in 2020 to 0.81% from 13.49% in 2019. Despite a significant decline in 2020, but the graph of the increase will occur from 2021 to 2024. Based on the growth chart, the pattern of economic growth in the Kulon Progo Regency is relatively more stable. Specifically for 2021, 3 scenarios were made to see economic growth in Kulon Progo Regency. There are Optimistic, Moderate, and Pessimistic scenarios, each of which sees the pattern of economic growth in each sector in 2020 related to the Covid-19 pandemic. Economic growth for the optimistic scenario in 2021 is 7.10%, then for the medium scenario it is 5.87% and the pessimistic scenario is 5.26%. The moderate scenario is used as a reference for projecting economic growth in the years 2022-2024.

Gross Regional Domestic Product at constant prices (PDRB ADHK) growth in 2020 also experienced a slowdown at 5.69% down 10.78% from 2019 amounting to 16.46%. Likewise, from 2021 to 2024, it is estimated that it will continue to show an increase of up to 10.06% in 2024. The decline in ADHB GRDP growth in 2020 was caused by the construction sector which experienced a significant decline reaching -31.12%. The accommodation and food and beverage provision sector also experienced a decline in growth at -1.64%. Meanwhile, the Health Services

and Social Activities sector was the sector with the highest increase reaching 246.47%. The communication and information sector also increased significantly by 35.57%. Other sectors that have experienced an increase will not have significant growth. This is because the economy will still focus on efforts to restore the people's purchasing power, which has dropped dramatically due to the Covid-19 pandemic case.

**Table 2. Kulon Progo Economic Growth Projection in 2020**

| Code | Field Category | 2020 |
|---|---|---|
| A | Agriculture, Forestry, and Fisheries | 0,10 |
| B | Mining and excavation | -3,61 |
| C | Processing industry | 0,74 |
| D | Procurement of Electricity and Gas | 5,22 |
| E | Water Supply, Waste Management, Waste and Recycling | 3,86 |
| F | Construction | -35,00 |
| G | Wholesale and Retail Trade; Car and Motorcycle Repair | -1,94 |
| H | Transportation and Warehousing | 38,00 |
| I | Provision of Accommodation and Food and Drink | -4,67 |
| J | Information and Communication | 30,00 |
| K | Financial Services and Insurance | 1,13 |
| L | Real Estate | -1,17 |
| M, N | Company Services | -2,79 |
| O | Mandatory Government Administration, Defense, and Social Security | 2,02 |
| P | Education Services | 3,04 |
| Q | Health Services and Social Activities | 218,25 |
| R,S,T,U | Other services | -0,65 |
| **PDRB** | | **0,81** |

Source: Proceed Data.

The year 2022 has the potential for an increase in economic growth to reach 7.59%. This is due to the economic activity starting to run normally and the multiplier effect caused by the Covid-19 pandemic case will be cut off in 2020. So that economic growth will be better compared to 2021 which is still affected by the Covid-19 pandemic case. Meanwhile, in 2023 and 2024, growth will run more stable because the impact of several strategic projects has begun to be felt by the community.

When viewed per sector that forms economic growth in Kulon Progo in 2020, almost all sectors experience a decline in growth, except for the Health Services and Social Activities, Transportation and Warehousing, and Information and Communication sectors. The central government's budget reallocation policy of at least 50% has a significant effect on the economic structure in Kulon Progo Regency. The budget will be focused on handling the settlement of the Covid-19 pandemic case so that several strategic regional projects have to be postponed or rescheduled.

The results of the analysis of economic growth projections in the Kulon Progo Regency show that the Covid-19 pandemic has a significant impact on the economy of the Kulon Progo Regency, especially on economic growth. These results are in harmony with (Lu, Wu, Peng, & Lu, 2020), (Suzana Raja Kasim, Shahzad, & Suzanna Aafanii Adeeba Wan Ibrahim, 2020), and (Kalemli-Ozcan, Gourinchas, Penciakova, & Sander, 2020).
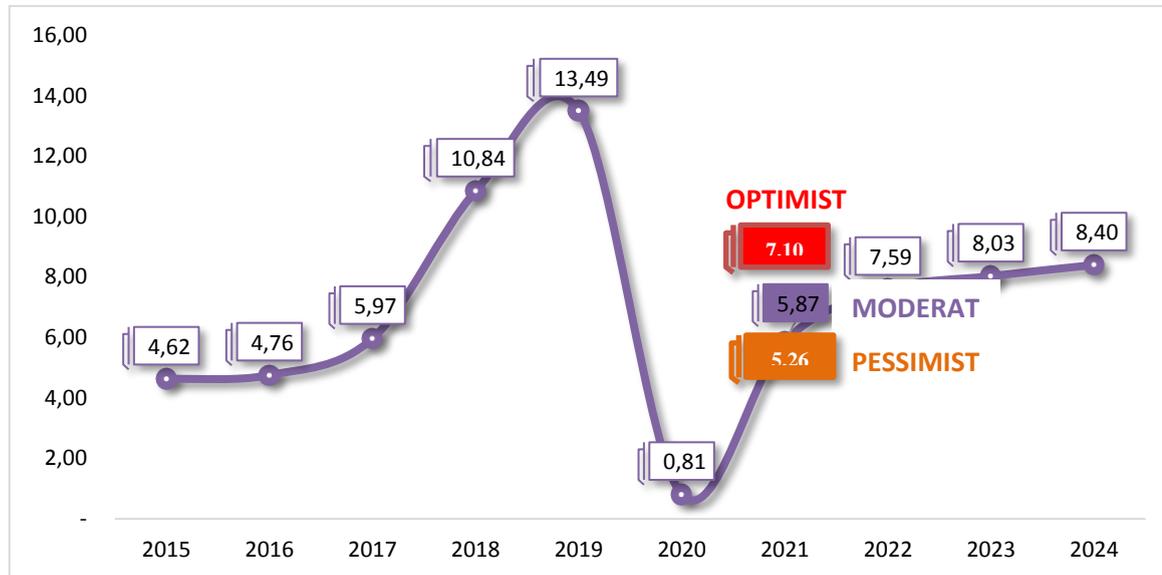
Source: Proceed Data.

**Figure 1. Economic Growth of Kulon Progo Regency in 2015-2019 and Projection for 2020-2024**

The health service sector and social activities, for example, will experience a very significant percentage increase of 218.25% compared to 2019. This is due to the reallocation of the regional budget for health and distribution of social assistance to community groups affected by the Covid-19 pandemic case. The Transportation and Warehousing sector will also increase significantly by 38% because YIA airport has started operating even though it has not fully run normally during the Covid-19 pandemic. The number of passengers who will arrive at YIA Airport will not reach the ideal target due to government policies that limit community mobility and also the implementation of the Covid-19 health and safety protocol, especially in semester 1, but it is estimated that by semester 2 YIA airport can operate optimally.

Meanwhile, the sectors supporting construction growth also experienced a decline such as mining and quarrying which fell -3.61%. The sector that was also heavily affected by the restrictions on access related to Covid-19 was the provision of accommodation and food and drink, which fell to -4.67%. Also, sectors with minus growth were real estate at -1.17%, corporate services at -2.79%, and other services at -0.65%. The case of the Covid-19 pandemic has indeed contracted all sectors that form economic growth in Kulon Progo Regency so that growth can decrease by 12.69% in 2020 to 0.81% from 13.49% in 2019.

Another sector that will also increase significantly is the information and communication sector. This sector is predicted to increase by 30%. One of the reasons is the use of access to information via the internet due to community activities carried out online. The Covid-19 pandemic case has indeed directed people to work and study from home by using internet access. The sector that experienced the highest decline was the construction sector, which was predicted to decline by -20%. The reason is that the construction phase of the YIA airport construction project is almost complete and has entered the finishing stage. The high contribution of this project at the beginning of its construction was enough to boost the construction sector so that when this project is completed, it will certainly have a lot of impact on the decline in the construction sector.

**Table 3. Economic Growth Projection Kulon Progo Regency 2020–2024 (Billion Rupiah)**

| Category | Business field | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|
| A | Agriculture, Forestry and Fisheries | 0,10 | 0,94 | 1,53 | 1,94 | 1,75 |
| B | Mining and excavation | -3,61 | 1,00 | 13,91 | 7,25 | 8,58 |
| C | Processing industry | 0,74 | 6,75 | 8,21 | 9,13 | 12,53 |
| D | Procurement of Electricity and Gas | 5,22 | 5,52 | 11,30 | 7,46 | 7,40 |
| E | Water Supply, Waste Management, Waste and Recycling | 3,86 | 6,25 | 4,62 | 0,76 | 5,42 |
| F | Construction | -35,00 | 10,00 | 8,00 | 6,18 | 1,78 |
| G | Wholesale and Retail Trade; Car and Motorcycle Repair | -1,94 | 8,81 | 10,68 | 7,63 | 6,78 |
| H | Transportation and Warehousing | 38,00 | 8,96 | 10,97 | 12,26 | 19,29 |
| I | Provision of Accommodation and Food and Drink | -4,67 | 8,92 | 10,16 | 16,62 | 19,98 |
| J | Information and Communication | 30,00 | 5,00 | 3,51 | 9,79 | 10,40 |
| K | Financial Services and Insurance | 1,13 | 1,87 | 9,09 | 10,54 | 10,37 |
| L | Real Estate | -1,17 | 2,61 | 13,77 | 5,50 | 5,62 |
| M,N | Company Services | -2,79 | 1,44 | 9,35 | 9,54 | 5,12 |
| O | Mandatory Government Administration, Defense and Social Security | 2,02 | 4,75 | 6,69 | 8,37 | 6,83 |
| P | Education Services | 3,04 | 3,99 | 7,57 | 10,16 | 6,41 |
| Q | Health Services and Social Activities | 218,25 | 5,00 | 6,45 | 3,30 | 5,05 |
| R,S,T,U | Other services | -0,65 | 2,24 | 5,75 | 11,81 | 6,72 |
| | **PDRB** | 0,81 | 5,87 | 7,59 | 8,03 | 8,40 |

Source: Proceed Data.

Then 2021 is predicted to be the year of economic recovery after the Covid-19 pandemic. The projection results under the optimistic scenario of 7.10% growth based on the assumption that development, especially physical development, which was previously delayed, can resume operations so that the construction sector is estimated to grow 15% at the same time the highest. Likewise, in the moderate and pessimistic scenario, construction is also a sector that is estimated to grow by 10%. Also, sectors which are predicted to grow quite significantly are Wholesale and Retail Trade; Repair of Cars and Motorcycles, Transportation and Warehousing, and Provision of Accommodation and Food and Drink. In each scenario, it is projected that the sector will grow 7% -10% based on returning to normal economic activity coupled with the operation of YIA as a booster for economic activity in the Kulon Progo Regency.

## Conclusion

1. From the results of the projections carried out, the GRDP of Kulon Progo Regency in 2020 is predicted to slow down due to the Covid-19 pandemic case which affects almost all sectors. However, this decline only occurred in 2020, because in the following year several sectors are predicted to increase in line with the improving situation and operation of infrastructure projects.
2. Macroeconomic developments in Kulon Progo Regency have shown quite good results. The value of PDRB at the Current Price resulting from the production of goods and services during 2018 in the Kulon Progo Regency is IDR 10,318.26 billion. The PDRB value has increased by 13.88 percent when compared to the previous year. Then in 2019, the value of all goods and service production activities in the Kulon Progo Regency increased significantly to IDR

12,016,934.51 billion or an increase of 16.46 percent from 2018. The economic structure in Kulon Progo Regency is supported by 3 main sectors, namely: Construction Sector (19.95%), Agriculture, Forestry and Fisheries Sector (15.86%); Wholesale and Retail Trade; Car and Motorcycle Repair (12.36%). In the sense that these three sectors can contribute 48.17% of the total economy of Kulon Progo Regency in 2019.

3. Several sectors that will increase, such as the transportation and warehousing sectors, due to normal activities at YIA airport. The wholesale trade and manufacturing sectors will also increase along with the operation of infrastructure projects. Kulon Progo Regency will be an area with a lot of population mobility between provinces. Based on the optimistic, moderate, and pessimistic scenario, Kulon Progo Regency's economic growth will continue to grow positively.

## Acknowledgment

## Limitation

The projections in this article are strongly influenced by the Covid-19 pandemic, which results in economic growth up to 2024 depending on a very drastic decline in economic growth in 2020. In addition, projections of economic growth cannot confirm how long the impact of this pandemic will be on the economy. thus allowing bias in the projection of economic growth.

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