

LOOKER STUDIO DASHBOARD FOR VISUALIZING AND ANALYZING POST-COVID-19 ECONOMIC GROWTH IN LAMPUNG PROVINCE REGENCIES AND MUNICIPALITIES

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ABSTRACT

This study aims to develop a Looker Studio dashboard for visualizing and analyzing post-COVID-19 economic growth across regencies and municipalities in Lampung Province and to identify regional economic recovery patterns during the 2019–2024 period. The research method employed was a descriptive quantitative approach using secondary data obtained from the Central Statistics Agency (BPS) of Lampung Province and all regencies/municipalities through dynamic tables and official publications. The collected data were processed through cleaning, validation, integration, and visualization stages using Google Looker Studio. The results show that the developed dashboard successfully provides interactive visualizations of economic growth rates and Gross Regional Domestic Product (GRDP) contribution shares across regions. The analysis reveals that all regencies and municipalities experienced economic contraction in 2020 due to the COVID-19 pandemic, followed by gradual recovery during 2021–2024. Bandar Lampung Municipality consistently recorded the highest economic growth rates during the recovery period, indicating strong urban economic resilience, while Central Lampung Regency demonstrated the greatest economic stability due to the dominant role of the agricultural sector. In contrast, East Lampung Regency experienced the deepest contraction because of its dependence on the oil and gas sector. The findings also indicate that post-pandemic economic recovery occurred unevenly across regions, reflecting differences in economic structure and adaptive capacity. In conclusion, the Looker Studio dashboard is an effective tool for visualizing and analyzing regional economic growth, providing a comprehensive understanding of post-COVID-19 economic recovery patterns and supporting evidence-based regional development planning and policymaking in Lampung Province.

Keywords: Economic Growth, Gross Regional Domestic Product (GRDP), Lampung Province, Looker Studio Dashboard, Post-COVID-19 Recovery

INTRODUCTION

The COVID-19 pandemic, which first emerged in 2019 in Wuhan, Hubei Province, had a significant impact on global economic growth [1]. The effects of the pandemic were also felt in Indonesia, including Lampung Province. Mobility and social restrictions caused a slowdown in economic activities across various sectors and even led to economic contraction. This economic pressure was reflected in the economic growth of Lampung Province, measured through the Gross Regional Domestic Product (GRDP), which contracted by 1.66 percent in 2020 [2]. The policies implemented in Lampung Province contributed to the economic recovery process. Official data from the Central Statistics Agency indicate that post-pandemic economic growth has gradually moved toward a positive trend, and currently, Lampung's economic growth is approaching pre-pandemic conditions. In 2023, the economic growth of Lampung Province, measured through GRDP, increased by 4.55 percent and further strengthened to 4.57 percent in 2024 [2]. This condition reflects the recovery of economic activities supported by improvements in several sectors, such as household consumption, transportation, industry, and services. However, the post-crisis recovery process did not occur

uniformly across regions. Each regency and municipality has different economic characteristics, leading sector structures, and adaptive capacities in accelerating economic growth. As a result, post-COVID-19 economic growth rates varied among regions, both in terms of recovery speed and their contribution to the overall economy of Lampung Province. Visualization of economic growth data from 2019–2024 shows a sharp decline in 2020 across almost all regencies and municipalities.

Recent studies have highlighted the important role of data visualization in supporting economic analysis and decision-making processes. Interactive dashboards enable users to transform large volumes of statistical data into visual information that is easier to understand and interpret. Several researchers have demonstrated that dashboard-based visualization can improve the monitoring of socioeconomic indicators, facilitate comparative regional analysis, and support evidence-based policymaking [3]. Furthermore, the adoption of business intelligence and data visualization platforms has increased significantly following the COVID-19 pandemic, as governments and organizations require efficient tools to monitor recovery performance and regional development trends [4]. Previous studies have applied dashboard technologies to visualize public sector data, economic indicators, and regional statistics. However, most of these studies focused on national-level data, sectoral performance, or general statistical monitoring [5]. Research specifically examining post-COVID-19 economic growth at the regency and municipality level through an interactive dashboard remains limited, particularly in Lampung Province. Consequently, policymakers and stakeholders still face challenges in obtaining a comprehensive visual representation of regional economic recovery patterns and disparities among local governments.

The presentation of data through visualization is important because it simplifies the complexity of economic data across time and regions. Through visualization, patterns of decline and recovery, as well as differences in contributions among regencies and municipalities, can be understood more intuitively and comprehensively [6]. This approach not only assists researchers in conducting analyses but also supports policymakers in formulating more targeted region-based development strategies. Therefore, this study addresses the identified research gap by implementing a Looker Studio dashboard to visualize and analyze economic growth and Gross Regional Domestic Product (GRDP) contributions across all regencies and municipalities in Lampung Province during the 2019–2024 period. Unlike previous studies that generally focused on aggregate economic indicators, this study emphasizes regional-level economic dynamics and comparative analysis among local governments. The objective of this study is to develop an interactive visualization dashboard and analyze post-COVID-19 economic growth patterns in Lampung Province. It is expected that the resulting dashboard will provide a clearer understanding of regional economic recovery processes and support data-driven regional development planning and policymaking.

RESEARCH METHODS

Data Collection

Data collection was conducted by accessing the official websites of the Central Statistics Agency (BPS) of each regency/municipality and the Central Statistics Agency of Lampung Province. The data were obtained through two methods: (1) dynamic tables and (2) publication features. In the dynamic table method, the researchers accessed the website of each regency/municipality BPS office, selected the dynamic table feature, and entered keywords related to the required data, such as GRDP distribution and GRDP

growth rate at constant prices for the 2019–2024 period. In the publication method, the researchers downloaded publications from the official websites of each regency/municipality BPS office and searched using the keyword Gross Regional Domestic Product (GRDP), for example, Gross Regional Domestic Product (GRDP) by Industrial Origin of Bandar Lampung Municipality 2019–2024.

Before visualization, the collected data underwent a preprocessing stage to ensure consistency and accuracy. This process included data cleaning, validation, and integration. Data cleaning was performed by removing incomplete records, standardizing regional names, and ensuring consistency in numerical formats across datasets obtained from different regencies and municipalities. Subsequently, the datasets were validated by comparing values from dynamic tables and official publications issued by Statistics Indonesia (BPS). After validation, all datasets were integrated into a single Microsoft Excel file to facilitate dashboard development and analysis. The dashboard was developed using Google Looker Studio as the primary visualization platform. The integrated Excel dataset was connected to Looker Studio as a data source. Several visualization components were then designed, including line charts for economic growth trends, bar charts for GRDP contribution analysis, and interactive filters to enable users to explore data by year and region. The dashboard was designed to provide a comprehensive overview of regional economic performance and facilitate comparative analysis among regencies and municipalities in Lampung Province.

The visualization process focused on two key indicators: economic growth rates and GRDP contribution shares. Economic growth rates were visualized using line charts to identify temporal trends and recovery patterns before, during, and after the COVID-19 pandemic. Meanwhile, GRDP contribution shares were presented through bar charts to illustrate the relative economic importance of each regency and municipality within Lampung Province. The resulting visualizations were analyzed descriptively to identify regional disparities, economic resilience, and post-pandemic recovery dynamics.

The datasets obtained from each provincial website were then selected based on the variables used in the study and merged into Microsoft Excel format. For data analysis and visualization, the researchers utilized the Looker Studio dashboard platform (lookerstudio.google.com). The stages of the research process were as follows: (1) Start; (2) Data Collection; (3) Data Cleaning; (4) Looker Studio Dashboard Implementation; (5) Results Analysis; and (6) Finish.



Figure 1. Research Framework

The process began with data collection from the official websites of Statistics Indonesia (BPS) of Lampung Province and 15 regencies/municipalities. The collected data were then prepared through cleaning, validation, and integration processes to ensure consistency and accuracy. After preprocessing, the datasets were compiled into a Microsoft Excel database and connected to Google Looker Studio for dashboard development. The dashboard was designed to visualize economic growth and GRDP contribution data across regions, sectors, and years. Finally, the visualized data were analyzed and interpreted to identify regional economic recovery patterns in the post-COVID-19 period, leading to the formulation of research conclusions.

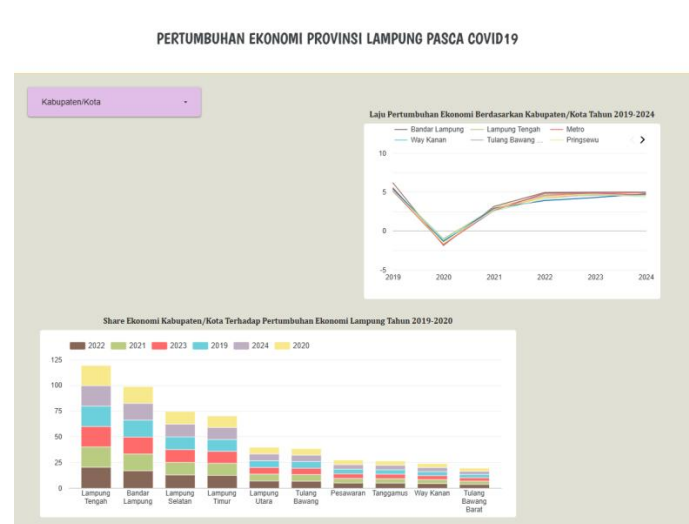
RESEARCH RESULTS AND DISCUSSION

Dashboard Implementation

A dashboard was developed using Google Looker Studio to visualize economic growth and GRDP contribution data for all regencies and municipalities in Lampung Province. The dashboard integrates economic indicators from 2019 to 2024 into an interactive interface that allows users to explore trends and compare regional performance. The main visualization components include a line chart displaying annual economic growth rates and a bar chart illustrating the contribution of each regency and municipality to the provincial economy. Interactive filtering features were also implemented to enhance user exploration and analysis of regional economic data

Economic Growth Visualization

After the visualization process using Looker Studio was completed, a dashboard display was generated as shown in Figure 2. The dashboard presents two main components: (1) a line chart illustrating the economic growth of each regency/municipality in Lampung Province during the 2019–2024 period, and (2) a bar chart showing the distribution of Gross Regional Domestic Product (GRDP) shares of each regency/municipality toward the economy of Lampung Province.



Figures 2. Economic Growth of Lampung Province in the Post-COVID-19 Period

The analysis of economic growth across all regencies/municipalities in Lampung Province is presented annually as follows. In 2019, Bandar Lampung Municipality recorded the highest economic growth rate at 6.17 percent, exceeding the provincial average of 5.26 percent. Metro Municipality ranked second. Among the regencies, West Pesisir Regency achieved the highest growth rate at 5.47 percent [2] . The economic growth of other regencies/municipalities was generally around 5 percent.

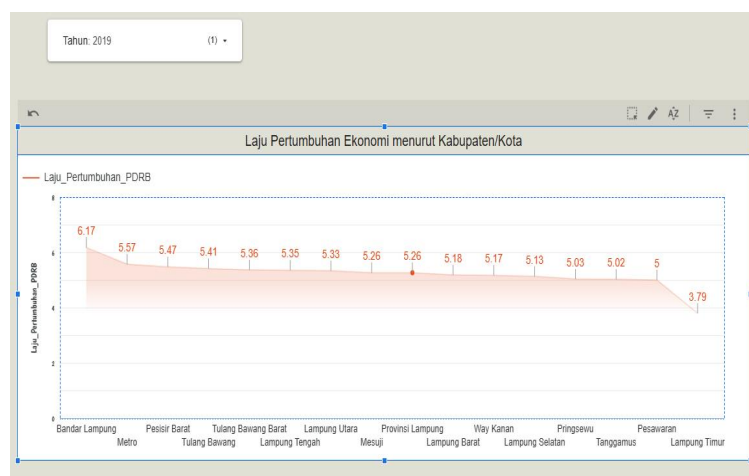


Figure 3. Economic Growth of Regencies and Municipalities in Lampung Province, 2019

In 2020, all regencies/municipalities in Lampung Province experienced economic contraction due to the COVID-19 pandemic. Lampung Province as a whole contracted by -1.66 percent. East Lampung Regency experienced the deepest contraction at -2.26 percent, while Central Lampung Regency recorded the mildest contraction at -1.02 percent. Way Kanan Regency and West Lampung Regency both recorded the same contraction rate of -1.16 percent [5].

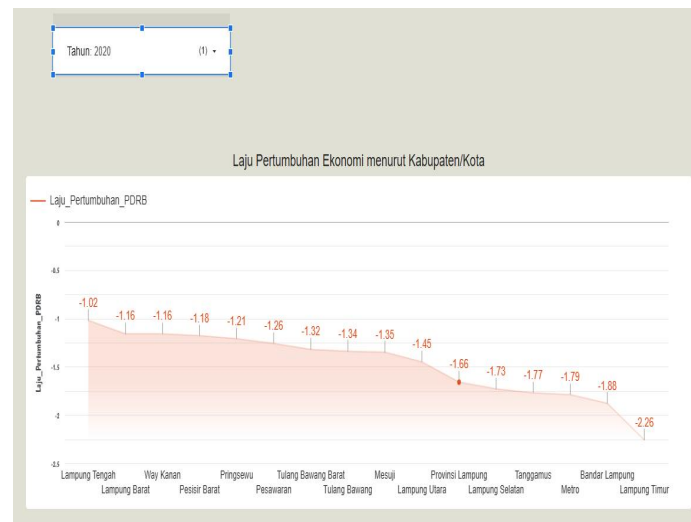


Figure 4. Economic Growth of Regencies and Municipalities in Lampung Province, 2020

In 2021, all regencies/municipalities showed signs of recovery. Lampung Province grew by 2.77 percent. Bandar Lampung Municipality again recorded the highest growth at 3.12 percent, followed by Pringsewu Regency at 2.91 percent and Metro Municipality at 2.90 percent. West Pesisir Regency recorded the second-lowest growth at 2.06 percent.

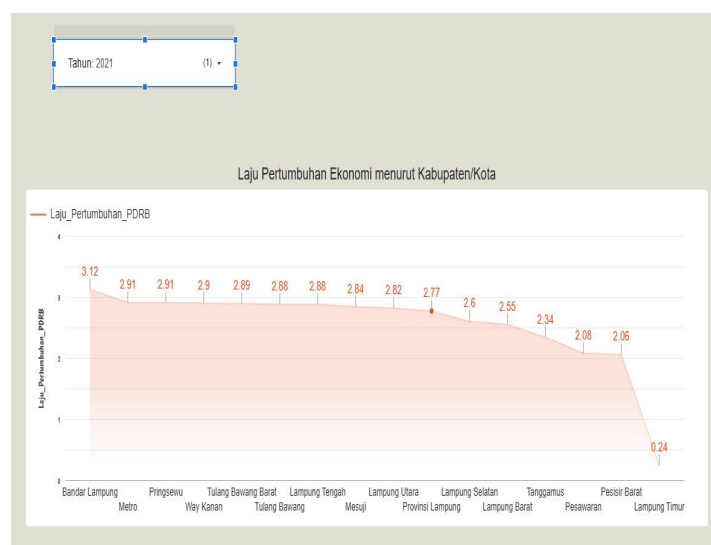


Figure 5. Economic Growth of Regencies and Municipalities in Lampung Province, 2021

In 2022, South Lampung Regency emerged as the regency with the second-highest growth rate at 4.81 percent, slightly below Bandar Lampung Municipality at 4.92 percent. Central Lampung Regency rose to third position with 4.65 percent growth. Metro Municipality ranked fifth with 4.51 percent [6]. West Pesisir Regency remained among the two lowest-performing regions with growth of 2.82 percent.

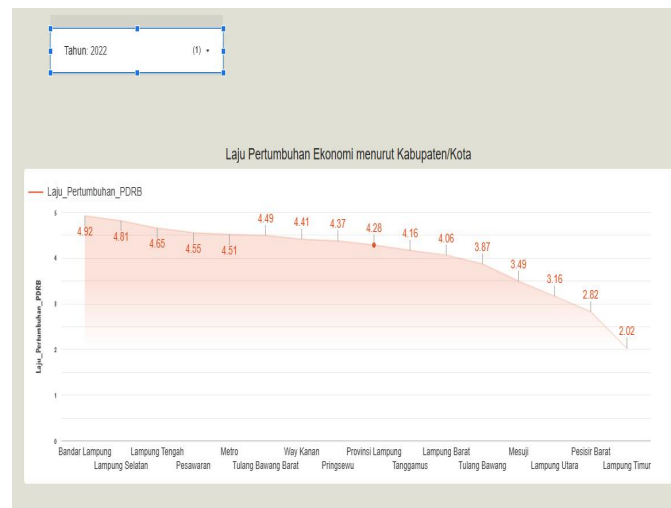


Figure 6. Economic Growth of Regencies and Municipalities in Lampung Province, 2022

In 2023, Bandar Lampung Municipality maintained its position as the highest-growing region at 4.96 percent. Metro Municipality returned to second position with 4.86 percent growth. Pringsewu Regency increased to fourth position with 4.78 percent growth after previously ranking eighth in 2022.

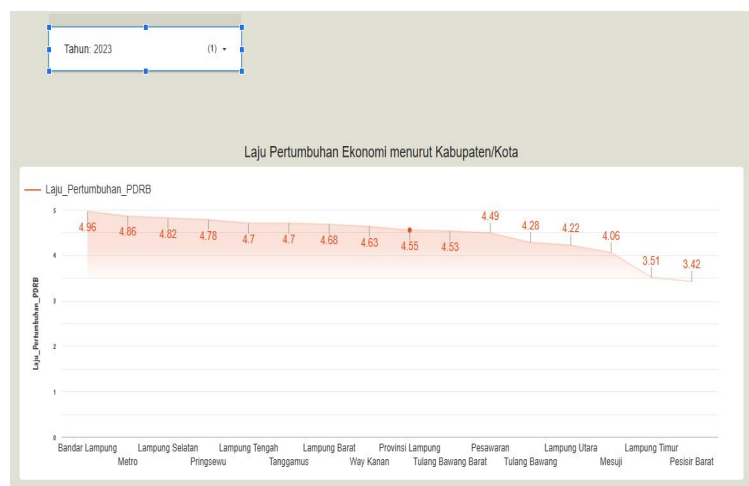


Figure 7. Economic Growth of Regencies and Municipalities in Lampung Province, 2023

In 2024, Bandar Lampung Municipality continued to lead with economic growth of 4.97 percent, followed by Metro Municipality at 4.88 percent. Tulang Bawang Regency rose to third position with 4.75 percent growth, while Way Kanan Regency ranked fourth with 4.65 percent growth. South Lampung Regency declined to seventh position with 4.62 percent growth.

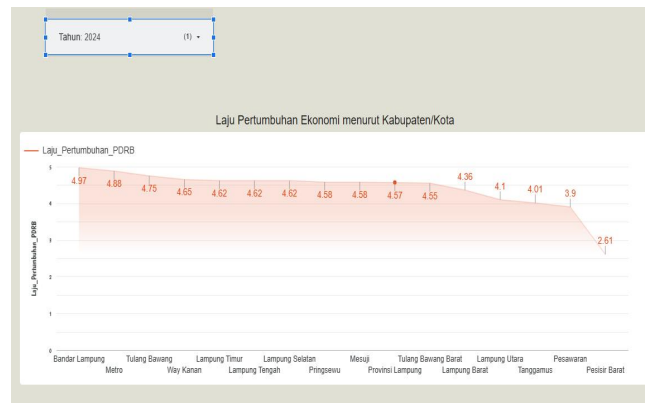


Figure 8. Economic Growth of Regencies and Municipalities in Lampung Province, 2024

In 2024, Bandar Lampung Municipality continued to lead with economic growth of 4.97 percent, followed by Metro Municipality at 4.88 percent. Tulang Bawang Regency rose to third position with 4.75 percent growth, while Way Kanan Regency ranked fourth with 4.65 percent growth. South Lampung Regency declined to seventh position with 4.62 percent growth.



Figure 9. Economic Growth Trends in Lampung Province, 2019–2024

Consistency of Bandar Lampung Municipality as the Growth Engine

Throughout the 2019–2024 observation period, Bandar Lampung Municipality consistently ranked first in economic growth rates in Lampung Province. This achievement is closely related to the economic characteristics of Bandar Lampung as a center of services, trade, and household consumption. The service and trade sectors tend to be more responsive to fiscal policies and economic stimulus compared to natural resource-based sectors. Although Bandar Lampung also experienced one of the deepest contractions during the pandemic (-1.88 percent in 2020), its recovery process was the fastest, recording the highest growth rate in 2021. This phenomenon indicates that urban economic resilience is stronger than that of regencies that are highly dependent on primary sectors.

Resilience of Central Lampung Regency: The Role of the Agricultural Sector

Central Lampung Regency recorded the mildest economic contraction in Lampung Province in 2020 (-1.02 percent). This condition is directly associated with the economic structure of Central Lampung, which is dominated by the Agriculture,

Forestry, and Fisheries sector [2]. The agricultural sector is relatively inelastic to social mobility restrictions because primary production activities did not completely cease during the pandemic. Supported by extensive agricultural land and the presence of agro-industrial companies processing commodities such as sugarcane and pineapple, Central Lampung was able to maintain its economic activities. These findings are consistent with the argument that regions with agriculture-based economic diversification possess a natural buffer against mobility-centered crises.

Vulnerability of East Lampung Regency: Dependence on the Oil and Gas Sector

In contrast to Central Lampung, East Lampung Regency recorded the deepest economic contraction at -2.26 percent in 2020. The Central Statistics Agency (BPS) of East Lampung Regency reported two growth figures: with oil and gas (-2.26 percent) and without oil and gas (-0.33 percent). This significant gap confirms that the oil and gas sector was the primary source of economic vulnerability in East Lampung. Dependence on the oil and gas sector, whose prices fluctuate according to global market conditions and experienced severe pressure during the pandemic, caused East Lampung's contraction to be substantially deeper than that of other regions. This condition highlights the importance of economic sector diversification in regions that rely heavily on extractive natural resources.

Asymmetric Recovery Pattern: Urban versus Rural Areas

The data visualization demonstrates that post-COVID-19 economic recovery in Lampung Province did not occur uniformly. Urban areas, particularly Bandar Lampung and Metro, exhibited a more stable and consistent recovery pattern, whereas regencies experienced significant ranking fluctuations from year to year. West Pesisir Regency represents the most contrasting example: it recorded the highest growth among regencies in 2019 (5.47 percent), but later dropped to one of the two lowest positions in 2021 (2.06 percent) and remained fluctuating until 2024 (2.61 percent). This instability indicates that newly developing regencies still possess limited adaptive capacity and relatively fragile economic foundations in responding to external shocks.

Dominance of Central Lampung Regency in GRDP Contribution: Policy Implications

Although Central Lampung Regency did not always occupy the highest position in terms of economic growth rate, its contribution to the GRDP of Lampung Province remained the most dominant throughout the observation period (approximately 19.8 percent). This finding emphasizes the distinction between growth rate and contribution size—two indicators that should be interpreted simultaneously in regional development planning. Development policies in Lampung Province aimed at promoting overall economic growth should therefore consider both dimensions: encouraging regions with smaller contributions to achieve faster growth while maintaining stable growth in regions that already serve as the backbone of the provincial economy.

CONCLUSION

The implementation of a Looker Studio dashboard successfully visualized and analyzed post-COVID-19 economic growth across regencies and municipalities in Lampung Province during the 2019–2024 period. The dashboard effectively presented regional economic growth trends and GRDP contribution shares through interactive visualizations,

enabling a comprehensive understanding of regional economic performance. The findings indicate that all regencies and municipalities experienced economic contraction in 2020 due to the COVID-19 pandemic, followed by gradual recovery from 2021 to 2024, with provincial economic growth reaching 4.57 percent in 2024. Bandar Lampung Municipality consistently recorded the highest growth rates throughout the recovery period, reflecting strong urban economic resilience, while Central Lampung Regency demonstrated the greatest economic stability and remained the largest contributor to Lampung Province's GRDP. Conversely, East Lampung Regency experienced the deepest contraction due to its dependence on the oil and gas sector. The study also reveals that post-pandemic economic recovery occurred unevenly across regions, indicating differences in economic structure, sectoral composition, and adaptive capacity. Therefore, the Looker Studio dashboard serves as an effective tool for supporting data-driven regional economic analysis and evidence-based policymaking in Lampung Province.

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