THE IMPACT OF PER CAPITA GRDP, INFLATION, UNEMPLOYMENT, AND FOOD PRICES ON FOOD SECURITY IN BANYUMAS REGENCY DURING THE COVID-19 PANDEMIC

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ABSTRACT

This study aims to determine the influence of economic factors on food security in Banyumas Regency during the COVID-19 pandemic. The pandemic has intensified vulnerabilities in Banyumas, where economic challenges, such as declining GRDP per capita, rising unemployment, and fluctuating food prices, have heightened the risk of food insecurity. As a region reliant on agriculture and local markets, Banyumas struggles to maintain food accessibility and affordability amid disrupted supply chains and reduced income levels. The research uses a descriptive analytical approach, utilizing secondary data from official reports, economic surveys, and government databases. Economic variables such as GRDP per capita, inflation, unemployment rate, and food prices are examined using a multiple linear regression model to assess their influence on food security. The analysis revealed that GRDP per capita (p = .037), unemployment rate (p = .007), and the pandemic (p = .003) significantly affect food security, while inflation approaches significance (p = .065). Interestingly, the price of staple foods, like medium rice, shows no statistically significant effect (p = .875), suggesting stabilizing measures, such as subsidies or price controls, may mitigate price volatility. With an adjusted R-squared value of 0.922, the model demonstrates

strong explanatory power. The findings highlight that GRDP per capita and unemployment rates critically influence food security in the region. The study recommends that the government prioritize improving food accessibility and availability by enhancing local food production, expanding distribution channels, and bolstering food security networks.

INTRODUCTION

Food security, as defined by the Food and Agriculture Organization (FAO), refers to the availability, access, and utilization of sufficient, safe, and nutritious food to meet the dietary needs and preferences for an active and healthy life. It is a critical global issue affecting human well-being, safety, and livelihoods. According to FAO et al., (2021), approximately 9% of the global population (over 700 million people) are hungry, with billions more facing malnutrition, leading to long-term health consequences. Ensuring the long-term viability of robust food supply chains is crucial for addressing hunger and attaining the United Nations Sustainable Development Goals (SDGs), which prioritize eradicating hunger and enhancing nutrition for individuals (FAO et al., 2022).

Food security is a critical issue that affects health and humanitarian concerns and plays a substantial role in influencing economic stability, social resilience, and overall social stability (Devereux et al., 2020). At the global level, fragile food supply chains can trigger social disruption and conflict when uncertainties in supply arise, emphasizing the importance of maintaining robust and resilient systems (Tukamuhabwa et al., 2017). Furthermore, issues of unequal access to food can exacerbate existing economic and social inequalities, underscoring the need for equitable distribution and access (Pollard & Booth, 2019). The interconnectedness of global food supply chains makes food security a critical issue that requires collaboration across national and international levels to effectively address challenges (Carthy et al., 2018).

The COVID-19 pandemic has significantly impacted food security worldwide, including in Indonesia, where disruptions to food supply chains, decreased economic activity, and public health concerns have posed severe challenges to food availability and access (Hirvonen et al., 2021). In particular,

the economic repercussions of the pandemic, such as decreased income and rising unemployment, have further hindered access to adequate food, exacerbating food insecurity in many regions (Laborde et al., 2020). In Banyumas Regency, Central Java, these global disruptions are mirrored by local challenges, with the pandemic highlighting existing vulnerabilities in the region's food systems.

Banyumas Regency, a region with a firm reliance on agriculture, particularly smallholder farms producing rice, corn, and vegetables, has historically faced food security challenges due to its dependence on local markets and limited infrastructure. The COVID-19 pandemic has exacerbated these issues, making it even more difficult to maintain food accessibility and affordability. Movement restrictions and lockdown policies severely disrupted agricultural production cycles, food distribution networks, and market access, reducing food availability and increasing the risk of food insecurity (Hossain, 2020). In addition, Banyumas's reliance on traditional markets, which were temporarily closed, worsened the situation. The economic downturn has also diminished purchasing power, particularly among vulnerable populations such as children, the elderly, and low-income households, all at greater risk of hunger and malnutrition (Keeley et al., 2019). This has made long-standing issues of poverty and inequality in Banyumas more pronounced, intensifying the region's food security challenges.

This analysis underscores the importance of addressing food security in Banyumas Regency as part of a broader global effort to ensure that all communities can access nutritious and sufficient food during times of crisis and stability. By aligning local strategies with global initiatives and focusing on the region's unique economic, logistical, and social challenges, Banyumas can work towards building a more resilient food system. Ensuring food security in this context requires targeted interventions that enhance food availability and accessibility, particularly for the most vulnerable populations, thereby supporting the overall health and well-being of the community.
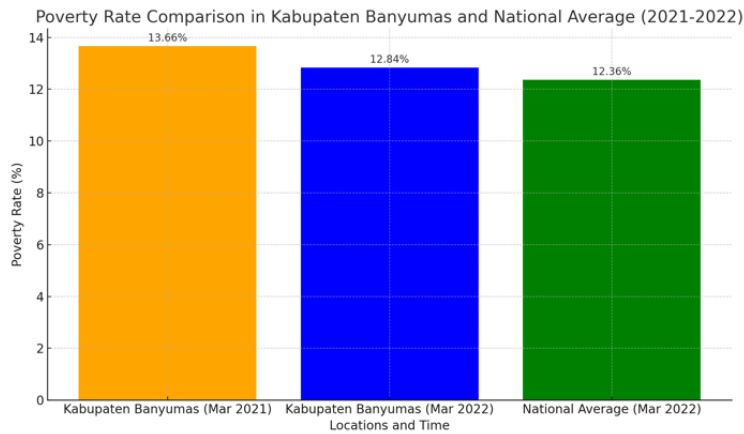
Figure 1.

Poverty Rate Comparison in Regency Banyumas and National Average

The percentage of poor people in Banyumas Regency in March 2022 was 12.84%. This figure decreased by 0.82% compared to March 2021 (BPS Kabupaten Banyumas, 2022). However, the poverty rate in Banyumas Regency is still higher than the national average of 12.36% (BPS Indonesia, 2022). These statistics highlight the ongoing challenges in reducing poverty within the region. The study aims to examine the underlying factors contributing to this persistent poverty and develop targeted strategies to address them. By understanding the specific economic and social dynamics at play, policymakers can implement more effective interventions to reduce the poverty rate further and improve the overall well-being of the community in Banyumas Regency.
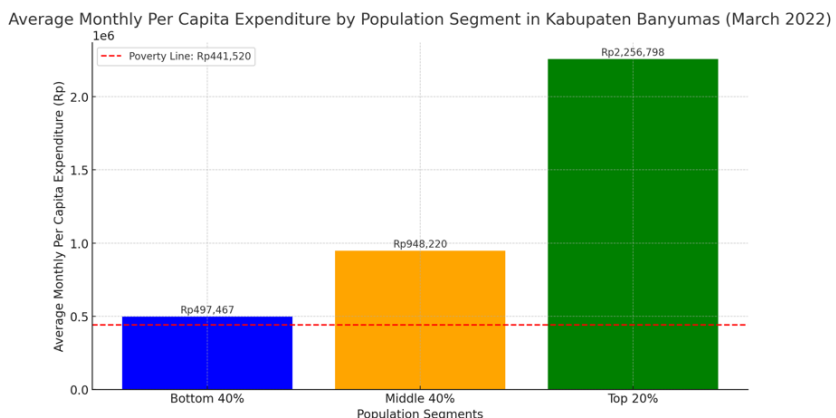

Figure 2.

Average Monthly Per Capita Expenditure by Population Segment in Banyumas Regency

Based on the results of the March 2022 Susenas, the average monthly per capita expenditure of the bottom 40% of the population was Rp497,467, while the middle 40% was Rp948,220, and the top 20% was Rp2,256,798 per capita per month. This figure shows that the per capita expenditure of the top 20% of the population is about 4.53 times that of the bottom 40%. Compared to the Banyumas poverty line, the average expenditure of the bottom 40% is only Rp55,947 higher than the poverty line (BPS Kabupaten Banyumas, 2022). Thus, it is critical to carry out this research to identify the economic variables that may impact Banyumas Regency degree of food security.

Economic variables considerably impact food security since they are a fundamental driver of family and individual access to adequate and nutritious food (Pingali & Sunder, 2017). Several economic factors, such as inflation, income, food prices, and economic inequality, can substantially impact food security (Erokhin, 2017). Low incomes can hamper individuals' ability to afford food, while high prices can make healthy food unaffordable. According to the yearly report "The State of Food Security and Nutrition in the World" by FAO, IFAD, UNICEF, WFP, and WHO, economic factors are often identified as a significant cause of food security worldwide (FAO et al., 2021). Addressing these economic determinants is essential for developing effective strategies to enhance food security and ensure that nutritious food is accessible and affordable. This analysis underscores the importance of targeted economic policies to alleviate food insecurity and promote sustainable development.

Numerous studies consistently indicate a robust relationship between individual income and the assurance of food access. Annestrand et al., (2016); Vaitla et al., (2017) discovered a pattern wherein greater income levels corresponded with diminished instances of food insecurity. This observation is reinforced by Pawlak & Kołodziejczak (2020), who observe that despite enhancements in per capita food production, the advancement in food security remains minimal. Additionally, Chavas (2017) highlights the cost of food and the costs related to food poverty, emphasizing how vital income is to ensuring food security.

Inflation significantly affects food security, particularly in developing nations where a large portion of the populace is susceptible to fluctuations in food prices (Erokhin & Gao, 2020). This challenge is further compounded by the association between inflation and unemployment, which can decrease food security (Poltorak et al., 2023). To lessen the effects of rising food prices, nations like Pakistan have introduced cash transfer initiatives to assist impoverished households (Nawaz & Iqbal, 2020). Various strategies have been suggested to tackle the issue of escalating food prices, including enhancing productivity, reducing post-harvest losses, and directing investments towards agriculture (George, 2020).

Unemployment significantly influences food security, especially in developing nations (Etana & Tolossa, 2017; Haini et al., 2023). This link is further exacerbated by inequalities in income, with high unemployment rates compounding the detrimental consequences of economic inequality on food security (Haini et al., 2023). The duration and recurrence of unemployment also contribute, as extended joblessness heightens the likelihood of food insecurity (Hsuan & Tzu, 2015). However, social safety nets might reduce these risks since increased spending on social protection initiatives can lessen the effect that rising unemployment and declining income have on food insecurity (Loopstra et al., 2016).

Food costs and food security are significantly correlated, according to several research.(Loopstra et al., 2019; Mathini et al., 2017) both concluded that elevated food prices are linked to heightened food insecurity, particularly among low-income households. Headey & Martin (2016) provide a more nuanced viewpoint, proposing that while increased food prices may bolster wages for rural communities, they could also exacerbate poverty and food insecurity among urban populations. Fischer et al., (2014) demonstrate that the relationship between food prices and food security varies based on the type of food, with specific price increases improving food security, further complicating this understanding. These results highlight the complex and multidimensional relationship between food prices and security.

Despite extensive research on the relationship between economic factors and food security, the specific dynamics in regions like the Banyumas Regency, especially during the COVID-19 pandemic, still need to be explored. While previous studies have focused on global or national trends, little attention has been given to how localized economic variables influence food security in agricultural regions like Banyumas. This study provides a unique contribution by examining the specific economic factors, such as GRDP per capita, inflation, and unemployment, that have directly affected food access and availability during the pandemic—a time of unprecedented socio economic disruption. The novelty of this research lies in its focus on a region heavily dependent on smallholder agriculture and local markets, which were particularly vulnerable to supply chain disruptions and economic downturns caused by the pandemic. By analyzing the role of these economic variables alongside government interventions and local agricultural practices, this study fills a critical gap in the existing literature. It offers valuable insights into how regional economies with similar characteristics can mitigate the adverse effects of economic instability on food security during crises like COVID-19.

RESEARCH METHOD

The primary method employed in this research is a descriptive-analytical method. This study focuses on Banyumas Regency, which was selected

purposively due to its significant food security challenges that demand serious attention. Banyumas, located in Central Java Province, feature diverse geographical characteristics, including lowlands, hills, and mountains. Despite being recognized as one of Central Java's key food-producing areas, the region faces substantial food security issues. The period from 2017 to 2022 was chosen for this study as it allows for the analysis of both pre-pandemic and pandemic conditions, which are crucial for understanding how food security dynamics shifted during these times.

The data used in this study are secondary data obtained from the Central Bureau of Statistics at the district and provincial levels and other relevant sources. The selection of variables is based on their relevance to food security, including GRDP per capita, inflation, the open unemployment rate, and food prices, with rice (IR 64 medium) specifically chosen as the indicator for food prices. Rice is a staple food in Banyumas, making it a critical determinant of food security. While other food items could also influence food security, rice was prioritized due to its dominant role in the local diet and its sensitivity to economic fluctuations.

The statistical analysis employed is multiple linear regression, a technique suitable for examining the relationship between one dependent variable and multiple independent variables (Alita et al., 2021). This approach is ideal for this study because it allows for assessing how economic factors simultaneously influence food security. The choice of a linear regression model is based on its simplicity and effectiveness in identifying linear relationships, which aligns with the study's aim of determining the direct impacts of economic variables. However, it is acknowledged that linear regression has limitations, such as assuming linearity and not accounting for complex, non-linear interactions, which are potential limitations of this approach. The regression equation in this study is:

$$Y = \beta_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + e$$

Where **Y** is the level of food security in the form of poverty percentage, **β_0** is a constant, b is a regression coefficient, **X_1** is GRDP per capita, **X_2** is inflation, **X_3** is the unemployment rate, **X_4** is the price of food (rice ir 64 medium), and **X_5** is a Dummy variable (0) Before the COVID-19 Pandemic and (1) During the COVID-19 Pandemic, e is the error term. The dummy variable is included to capture the impact of the COVID-19 pandemic on food security. By distinguishing between pre-pandemic and pandemic periods, the analysis can explore how the relationships between economic variables and food security may have changed due to the pandemic. Additionally, interaction terms could be incorporated to analyze further how these effects vary across different periods, providing deeper insights into the temporal shifts in food security dynamics in Banyumas.

RESULT AND DISCUSSION

The Banyumas Regency, located in the southern part of Central Java, Indonesia, is known for its rich natural resources, including fertile agricultural land and abundant water sources from rivers and mountains. Spanning approximately 1,335 square kilometers, the region is primarily rural, with agriculture as the dominant sector, particularly the cultivation of rice, corn, and horticultural crops. Despite its agricultural potential, Banyumas faces significant challenges related to food security, especially in the context of the COVID-19 pandemic and ongoing social and economic transformations. The region`s economy largely depends on smallholder farming, traditional markets, and local supply chains, which have been vulnerable to disruptions. Understanding the role of economic variables in ensuring food security is critical, particularly given Indonesia's rapid economic expansion and diverse socio economic landscape, which affect regions like Banyumas differently compared to urban centers. Previous studies, such as those by Pingali & Sunder (2017); Erokhin (2017), have highlighted the critical impact of economic factors like per capita income, inflation, unemployment rates, and food prices on food security.

Additionally, reports by FAO et al. (2021) the global significance of these variables. Thus, this study aims to investigate the relationship between food security in Banyumas Regency and economic factors, including per capita income, inflation, unemployment rate, food prices, and the effects of the COVID-19 pandemic. By understanding these dynamics, policymakers can develop more effective strategies to enhance food security and improve the community's welfare in Banyumas Regency. Table 1 presents the findings of a multiple regression analysis examining the economic factors influencing the degree of food security in Banyumas Regency.

The impact of the COVID-19 pandemic on food security in Banyumas Regency is significantly correlated with the economic factors (per capita income, inflation, and unemployment rate) as revealed by the multiple regression analysis. The computed F value (27.085) derived from the regression was determined to be bigger than the F table value (4.390) in the F test. This finding suggests that differences in the degree of food security in Banyumas Regency may be significantly explained by the regression model taken as a whole.

This study uses secondary data collected from the Central Bureau of Statistics at the district and provincial levels and other relevant sources. The data includes the percentage of poverty, Gross Regional Domestic Product (GRDP) per capita, inflation rates, open unemployment rates, and food prices, precisely the price of medium IR 64 rice, collected every semester from 2017 to 2022. These data points provide a comprehensive overview of the economic landscape during this period, allowing for a detailed analysis of their impact on food security.

Table 1.   Multiple Regression Analysis of Economic Factors That Influence The Level of Food Security in Banyumas Regency

Variables	Unstandardized Coefficient	t	Sig.
Constant	4.515	3.775	.009
GRDP per capita (X_1)	.244	-2.661	.037***
Inflation (X_2)	.033	-2.255	.065**
Unemployment rate (X_3)	.793	4.055	.007***
Price of food (rice ir 64 medium) (X_4)	.004	.164	.875
COVID-19 pandemic (*Dummy variable*) (X_5)	.734	-4.958	.003***
Adjusted R^2	.922		
F	27.085		
F Table	4.390		
Significance F	.000b		
t table	1.943		
α	0.050		

It is essential to explore the contribution of each economic variable in predicting the level of food security. In this case, according to Bozsik, et al., (2022), the economic variables can be interpreted as important indicators in determining food accessibility and availability for the people of Banyumas. For example, increased per capita income may signal an increase in purchasing power and welfare, which can help improve access to food (Candelise et al., 2021). Conversely, a rise in inflation or unemployment can exacerbate the strain on food accessibility, particularly for low-income households (Hadley et al., 2012).

In addition, the significant F-test results also provide a solid basis to policy implications. By knowing that economic factors jointly contribute to food security, local governments and other stakeholders can formulate policies more targeted and responsive to the prevailing economic dynamics (Candel, 2014). This could include efforts to increase people's income, control the inflation rate, and create new jobs to reduce the unemployment rate, all to improve food security in Banyumas Regency (Akter & Basher, 2014; Nord et al., 2014).

Overall, the multiple regression analysis's F-test results that indicate significance emphasize how important economic factors are in determining Banyumas Regency degree of food security. By enhancing comprehension of this correlation, deliberate actions may be implemented to enhance the food security and well-being of communities within the area.

GRDP per Capita

With a significance value of 0.037, the analysis's findings demonstrate that the per capita income variable significantly affects the degree of food security. This finding suggests that the accessibility and availability of food for the residents of Banyumas are significantly impacted by changes in per capita income (Maja & Ayano, 2021; Matkovski et al., 2020). This finding aligns with other research indicating that per capita income is a primary determinant of food security (Ecker, 2018; Shebanina et al., 2018).

According to Shete & Rutten (2015), through a number of factors, a rise in per capita income can positively affect levels of food security. First, higher incomes give individuals and households greater purchasing power, to meet better their food needs (De Vries, 2013). This can reduce hunger and food insecurity among more economically vulnerable populations (Barrett, 2021). In addition, higher incomes can also enable investment in the resources and infrastructure needed to increase local food production, as well as improve access to sustainable agricultural technologies and practices (Dizon et al., 2021; Tanjung et al., 2022)

However, it is crucial to remember that not all societal levels get the same benefits from per capita income regarding food security. Research has shown that wide income gaps can result in disparities in access to food, even in countries with high national incomes (Leroy et al., 2023). Consequently, while boosting per capita income can significantly enhance overall food security, it is also critical to take initiatives to lessen economic disparity and enhance food availability for impoverished individuals (Gassner et al., 2019).

Understanding the link between per capita income and food security in the context of Banyumas Regency can serve as a solid basis for creating policies and intervention initiatives meant to increase food security in the area. For example, the local government can take steps to increase people's income through local economic development and improved access to decent work opportunities (MacNaughton & Frey, 2015). In addition, targeted social assistance programs can help protect the most vulnerable from the impact of economic uncertainty, thereby reducing food insecurity in these communities (Kalkuhl et al., 2016).

Therefore, the finding that the level of food security in Banyumas District is significantly influenced by per capita income highlights the importance of improving the local economy and community well-being as a comprehensive strategy to increase food security and reduce socio economic inequality. Collaboration between the government, commercial sector, and civil society is necessary to support these efforts and establish a favorable climate for inclusive and sustainable growth (FAO, 2020).

Inflation

The regression analysis reveals that the inflation variable has a marginally significant effect on food security, as indicated by its p-value of 0.065, slightly above the conventional threshold of 0.05. Although this value does not meet the strict criteria for statistical significance, it suggests that inflation plays a notable role in influencing food security in the Banyumas Regency. The term "fairly significant" acknowledges that while the effect is not definitively significant under the 0.05 threshold, it is still relevant and warrants attention, especially in developing countries where inflation is known to impact food availability and access heavily. This finding is consistent with prior studies that emphasize the importance of inflation in shaping food security, particularly in regions where a large portion of the population is sensitive to changes in food prices. However, the near-threshold p-value indicates that the relationship may be more complex, potentially influenced by other interacting factors such as government interventions, subsidies, or the availability of locally produced food that cushions the impact of inflation (Adom, 2014; Akter & Basher, 2014).

Rising food costs and the overall cost of living brought on by an increase in the inflation rate may make it more difficult for people to achieve their nutritional demands. This particularly impacts low-income households, which can be trapped in a spiral of poverty and greater food insecurity (Bhattacharya & Jain, 2020). In addition, high inflation can also reduce people's overall purchasing power, reducing food consumption and resulting in nutritional deficits (Komarek et al., 2018).

However, it is essential to recognize that the impact of inflation on food security differs depending on the circumstances. Factors such as market structure, government policies, and local economic dynamics can also influence how much inflation affects access to food in a region (Erokhin, 2017; Pinstrup & Watson, 2011). Therefore, the analysis shows a notable correlation between inflation and food security in the Banyumas district. More research is necessary to have a more comprehensive grasp of the processes and other factors that can affect this association.

Understanding the connection between inflation and food security in the context of Banyumas Regency provides critical insights for developing effective policies and interventions to enhance food security in the area. Unlike many regions where rising food prices directly correlate with increased food insecurity, Banyumas exhibit unique conditions that may mitigate this relationship. The region's firm reliance on local agricultural production, coupled with government support mechanisms like price controls and subsidies, likely plays a role in buffering the impact of inflation on food prices. Additionally, Banyumas is known for its diverse geographical landscape, which includes lowlands and fertile agricultural zones, allowing for more stable food production that may offset market fluctuations. Given these local factors, the relatively muted effect

of food prices on food security in Banyumas highlights the importance of considering regional characteristics when designing interventions. For example, while inflation still poses a risk, its impact might be more effectively managed through targeted local strategies. The local government could control inflation through context-appropriate monetary and fiscal policies while enhancing transparency and accountability in food price management (Grimm et al., 2023). In addition, targeted social assistance programs can help protect the most vulnerable from the effects of inflation, thereby reducing food insecurity in these communities (Abay et al., 2022).

Given the marginal significance of the inflation variable, it is crucial to conduct further analysis to understand its nuanced impact on food security in the Banyumas area. This may involve examining sub-components of inflation, particularly food prices, to understand better how inflation affects food accessibility and availability. Recognizing the complexity of local economic dynamics, it is essential to incorporate targeted measures that address these specific aspects of inflation as part of a comprehensive strategy to enhance food security and improve regional community welfare (Hendriks et al., 2020).

Unemployment Rate

A significance value of 0.007 in the regression analysis indicates that the unemployment rate variable significantly affects the degree of food security. This finding suggests that changes in the unemployment rate greatly impact how easily accessible and readily available food is for Banyumas people throughout the epidemic. This is consistent with the existing research that shows how the unemployment rate significantly affects food security, especially in periods of economic uncertainty like a pandemic (Elbehri et al., 2022; Endris & Kassegn, 2022).

During the COVID-19 pandemic, a rise in the unemployment rate might have several detrimental effects on food security. One of them is a decrease in people's purchasing power due to job loss or reduced working hours, which can reduce their ability to purchase sufficient and nutritious food (Hirvonen et al., 2021). In addition, unemployment can also reduce access to food through other mechanisms, such as reducing households' ability to meet their own food needs or pay transportation costs to find affordable food (Haini et al., 2023).

However, it is crucial to remember that unemployment can have psychological and social effects on food security in addition to economic ones. Unemployment can cause stress and anxiety that can disrupt diets and affect people's mental health, which in turn can exacerbate food security issues (Sanz et al., 2023). In addition, unemployment can also affect the social structure and social support in the community, which can also impact access to food (Blustein et al., 2020).

Understanding the connection between unemployment rates and food security in the context of Banyumas Regency may be very helpful in developing policies and designing intervention programs that would improve food security in the face of the COVID-19 epidemic. For instance, local governments can think about implementing initiatives to boost employment prospects through job development and training programs and offering financial support to people who have lost their work due to the epidemic (Schneider, 2022). Additionally, by shielding the most vulnerable from the adverse effects of unemployment on food security, tailored social assistance programs can help lower the degree of food insecurity in these areas (Rasheed et al., 2021).

Consequently, the discovery that the unemployment rate significantly influences the degree of food security in Banyumas Regency during the COVID-19 pandemic emphasizes the need to consider economic factors when addressing food security concerns during emergencies. A comprehensive plan to enhance food security and community welfare in the area should include initiatives to lower unemployment and broaden access to quality work.

Price of Food

A significance value of 0.875 in the regression analysis findings indicates that the food price variable, especially IR 64 rice, does not significantly influence the degree of food security. This finding suggests that, in the specific context of Banyumas Regency during the COVID-19 pandemic, the price of IR 64 rice did not impact the community's capacity to purchase and consume food. This is in line with previous research that highlights the impact of other factors, such as income, inflation, and unemployment rates, which may have a more significant impact on food security during emergencies like pandemics (Erokhin & Gao, 2020; Leininger et al., 2021).

The finding that the price of IR 64 rice does not significantly affect food security is surprising and challenges common assumptions about the role of food prices, especially rice, in determining food security. This could be attributed to the specific context of Banyumas Regency during the pandemic, where other factors might have mitigated the expected impact of rice prices. Additionally, it suggests the need to explore different food price indices or broader food categories to understand the dynamics at play better. For instance, other variables not included in the regression model, such as social, environmental, or policy-related factors, may have a more substantial influence on food security than those examined in this study (Gorton et al., 2010). Furthermore, the relatively stable distribution and prices of IR 64 rice during the COVID-19 pandemic might have reduced its sensitivity to price fluctuations, leading to unexpected results (Mobarok et al., 2021).

It is important to note that this finding does not diminish the importance of food prices, including rice prices, in the context of food security in general.

Stable and affordable food prices remain essential in ensuring food accessibility and availability for all levels of society, especially during a global health crisis such as the COVID-19 pandemic (Laborde et al., 2020). Therefore, although the price of IR 64 rice has no significant effect in this analysis, attention to overall food prices remains vital in designing policies and intervention programs to improve food security in Banyumas Regency and other regions.

In interpreting these results, it is important to note several limitations and implications. First, the use of IR 64 rice to represent food prices may only partially reflect the broader variation in food prices in the community. In addition, the food price variables in this study may also be influenced by external factors not measured in this analysis, such as government pricing policies or unique local market conditions. Therefore, further research that considers additional factors and uses more detailed data may be needed to understand better the relationship between food prices and food security during the COVID-19 pandemic in Banyumas Regency and other regions.

COVID-19 Pandemic

One of how the COVID-19 pandemic is affecting food security is through disruption to food supply chains. Travel restrictions, closure of traditional markets, and increased transportation costs are several factors that can disrupt food distribution and result in significant increases in food prices (Aday & Aday, 2020; Headey & Martin, 2016). This directly affects food accessibility for households, especially those economically vulnerable. In addition, the economic impacts caused by the pandemic, such as reduced incomes and increased unemployment rates, may also exacerbate food security problems by making more people vulnerable to hunger and malnutrition (Kakaei et al., 2022; Laborde et al., 2020; Pujiyanto, 2021).

It is crucial to remember that the COVID-19 epidemic directly affects the economy and health and has a broader influence on social structures and community support networks. School closures, social restrictions, and self-isolation can disrupt eating patterns and food availability for children and families, which can affect food security levels (Pérez et al., 2020). In addition, the pandemic can also result in reduced access to health and nutrition services, which can worsen nutritional conditions and increase the risk of malnutrition in vulnerable populations (Headey & Martin, 2016).

In the context of Banyumas Regency, the finding that the COVID-19 pandemic significantly affects food security underscores the need for integrating public health considerations into food and economic policy planning. The pandemic caused widespread disruptions that directly and indirectly influenced critical economic factors, ultimately impacting food security. For instance, movement restrictions and lockdowns led to decreased agricultural productivity, disrupted supply chains, and limited market access, collectively

reducing food availability in the region (Alderman & Harjoto, 2021). Additionally, the economic downturn triggered by the pandemic resulted in job losses and reduced income levels, directly affecting purchasing power and access to food, especially for vulnerable populations. Inflation and unemployment, already critical factors in food security, were further exacerbated by the pandemic. The rapid rise in unemployment due to business closures and reduced economic activity strained household finances. At the same time, inflationary pressures on food prices made it even more difficult for low-income communities to access essential food items. These combined effects highlight the interconnection between health crises and economic stability, emphasizing the importance of a multisectoral approach involving health, food, and economic stakeholders in planning interventions.

To mitigate the adverse effects of the pandemic on food security, concrete measures should be implemented, such as providing emergency food aid, closely monitoring food prices, and deploying targeted social assistance programs (Béné et al., 2021; Laborde et al., 2020). These interventions should be designed with a clear understanding of the pandemic's impact on different food security components, such as availability, access, and stability. For instance, emergency food aid can address immediate food shortages, while monitoring food prices can help stabilize markets and prevent price spikes. Targeted social assistance can ensure that the most vulnerable populations receive adequate support to maintain their food security despite economic challenges.

Thus, the finding that the COVID-19 pandemic situation has significantly impacted the level of food security in Banyumas Regency emphasizes the need for a holistic and evidence-based response to this global health and economic crisis. Improving food security in the future will require collaboration across sectors and stakeholders, as well as the development of responsive and inclusive policies that take into account society's vulnerability to various threats, including pandemics and climate change (FAO et al., 2020; Laborde et al., 2020).

After analyzing the economic elements that impact food security in Banyumas Regency, we have identified numerous policy proposals that the government might adopt to enhance community food security. Considering the evidence that per capita income strongly affects food security, the government should contemplate implementing policies that focus on boosting household income, particularly for those with low or vulnerable income levels. Implementing strategies such as raising minimum wages at the regional level, offering social assistance, and initiating local economic development programs can effectively enhance individuals' ability to afford food (Harris et al., 2022).

Given the enormous impact of inflation on food security, the government should prioritize price stabilization and inflation control strategies to ensure that food remains readily available and accessible to the population. Market intervention, price control, and food subsidy programs are effective measures to

safeguard society against the adverse effects of inflation on food prices (Javed et al., 2020).

Considering the substantial impact of the unemployment rate on food security, the government should prioritize initiatives focused on generating employment and enhancing work prospects for the community. Investments in skills training, infrastructure development, and job creation programs can help reduce unemployment rates and increase community economic independence (Faidi et al., 2023).

Given the discovery that the COVID-19 pandemic has a substantial influence on food security, the government must implement specific measures to safeguard the population from the pandemic's repercussions on food availability. This includes strengthening food distribution systems, providing emergency food assistance, and improving access to health and nutrition services (Devereux et al., 2020).

In order to enhance food security sustainably, the government should bolster cross-sector collaboration and forge partnerships with diverse stakeholders, such as the commercial sector, non-governmental organizations (NGOs), and civil society. These joint efforts can include knowledge and technology exchange, capacity building, and implementing of innovative programs that integrate economic, social, and environmental aspects (FAO, 2020).

By implementing these policy recommendations holistically and sustainably, the Banyumas Regency government hopes to strengthen its community's food security, especially amid complex economic and health challenges such as the COVID-19 pandemic. In the long term, Haddad et al. (2020) argue that this effort can help create a society that is more resilient and empowered to face various threats and crises that may arise in the future.

CONCLUSION AND SUGGESTION

Conclusion

The research findings on economic factors affecting food security in Banyumas Regency indicate that per capita income, inflation, unemployment rates, and the repercussions of the COVID-19 pandemic substantially impact community food security. These findings emphasize the intricate nature of the relationships between economic, social, and health factors in determining the ability, presence, and standard of food for households. In the Banyumas Regency, it is necessary to implement comprehensive and sustainable measures to enhance food security. These measures should focus on boosting income, managing inflation, generating employment opportunities, providing social protection, and fostering collaboration and partnerships across all sectors with various stakeholders.

Suggestion

Based on the completed research, several practical suggestions can be put forward for the community, industry, and government in Banyumas Regency, carefully considering the current economic and social conditions. For the community, enhancing awareness and engagement in local food security initiatives, such as urban agriculture and health-conscious food communities, is a feasible approach to improving access to nutritious food. However, challenges such as limited resources, knowledge gaps, and varying levels of community engagement must be addressed. Community education programs and support from local authorities can help overcome these barriers, ensuring that these initiatives are accessible and sustainable. Local industries can play a crucial role by supporting entrepreneurship and innovation projects within the agricultural sector. This can lead to the creation of sustainable employment opportunities, thereby helping to alleviate unemployment. The feasibility of this recommendation depends on the willingness of industries to invest in local projects and the availability of incentives to encourage such investments. Potential challenges include limited funding and the need for training and development programs to equip entrepreneurs with the necessary skills.

Collaboration between industries, educational institutions, and government agencies can provide the necessary resources and support for these initiatives. The government can implement strategic measures such as inclusive economic programs to raise per capita income, employ appropriate fiscal policies to manage inflation and expand social security programs, particularly for vulnerable communities affected by the COVID-19 pandemic. While these policies are essential, their implementation may face challenges such as budget constraints, administrative capacity, and the need for robust monitoring and evaluation systems to ensure effectiveness. To address these challenges, the government should prioritize transparent and accountable governance, seek external funding or partnerships where necessary, and engage in continuous dialogue with affected communities to ensure policies are responsive to their needs.

Furthermore, enhancing cross-sector cooperation is crucial for the development and execution of comprehensive and enduring food security strategies. Diverse stakeholders, including scholars, non-governmental organizations, and the business sector, can contribute to policy implementation through collaboration strategies. For instance, scholars can provide research-based insights and monitoring frameworks, NGOs can offer grassroots-level implementation and advocacy, and the business sector can drive innovation and provide financial backing. Formal partnerships, joint task forces, and regular communication channels among these stakeholders can facilitate coordinated efforts and ensure that food security initiatives are well-integrated and effective.

ACKNOWLEDGMENT

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