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ANALYSIS OF THE POPULATION DATA OF LOCAL CHICKENS IN THE CITIES OF YOGYAKARTA, BANTUL, SLEMAN, AND KULON PROGO FROM 2019 TO 2022

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Abstract

This study analyzes the population trends of native chickens (Gallus gallus domesticus) in the cities of Yogyakarta, Bantul, Sleman, and Kulon Progo during the period 2019–2022 based on secondary data from the Central Statistics Agency. The method used was quantitative descriptive with a trend analysis approach to observe changes in numbers, growth percentages, and population fluctuation patterns between regions. The results of the study show differences in characteristics: Yogyakarta City experienced a drastic decline due to land limitations and urbanization; Bantul showed consistent growth, making it a potential center for native chicken development; Sleman showed fluctuating patterns influenced by market and environmental dynamics; while Kulon Progo experienced ups and downs, indicating the presence of external factors such as local policies. These findings confirm the role of native chickens as a strategic sub-sector in food security, community economic empowerment, and the preservation of agrarian culture in the Special Region of Yogyakarta. This study is expected to serve as an academic reference and a basis for regional policy planning to maintain the sustainability of the native chicken population.

Keywords: Free-range Chickens; Central Statistics Agency; Food Security; Poultry Population; Statistical Trends

1. INTRODUCTION

The poultry sector is one of the important subsectors in agricultural development in Indonesia, which plays a strategic role in providing animal protein sources for the community. Poultry is a widely developed commodity because it has a relatively fast production cycle, high reproductive capacity, and can be raised on various scales, from household to industrial. One type of poultry that has long been known and raised by the Indonesian people is the native chicken. Native chickens are local chickens that have adapted well to the tropical conditions of Indonesia and have a fairly high genetic diversity. The existence of native chickens not only serves as a source of food in the form of meat and eggs, but also has social, cultural, and economic value for the community, especially in rural areas (Zulfan et al., 2024).

Native chickens have different characteristics compared to commercial breeds. In terms of husbandry, native chickens are generally raised traditionally or semi-intensively, utilizing feed sources available in the surrounding environment, such as kitchen scraps, bran, grains, insects, and forage. This relatively simple husbandry system makes native chickens easy to raise by communities with limited capital. Additionally, free-range chickens are known to have good resistance to various environmental conditions and certain diseases, enabling them to

thrive in low-tech rearing systems. Another advantage of free-range chickens is the quality of their meat, which is considered more flavorful, with a denser texture and relatively lower fat content compared to commercial breeds, making them highly sought after by consumers (Satya et al., 2024).

Demand for free-range chicken products in Indonesia tends to increase year on year. This is influenced by several factors, including population growth, rising incomes, and growing public awareness of the importance of animal protein consumption for health and quality of life. Additionally, the development of the culinary sector and traditional food industry has also contributed to the increase in demand for free-range chicken meat, as many traditional Indonesian dishes use free-range chicken as the main ingredient, such as opor ayam kampung (free-range chicken curry), ayam bakar kampung (free-range grilled chicken), ayam goreng kampung (free-range fried chicken), and various other processed products. This situation indicates that free-range chicken has significant economic value and has the potential to become one of the leading poultry commodities that can be developed more intensively (Zulfan et al., 2024).

On the other hand, free-range chicken farming also plays an important role in increasing the income and welfare of the community, especially small-scale farmers. Many households in rural areas raise free-range chickens as a side business that can provide additional income. The sale of live chickens, free-range chicken meat, and free-range chicken eggs can be a source of income that significantly helps the family economy. In addition, free-range chicken farming can also support the utilization of local resources, such as the use of agricultural waste as alternative feed, thereby increasing efficiency in the farming production system (Sutriyono & Setianto, 2019).

Despite its various potentials and advantages, the development of native chickens in Indonesia still faces various obstacles. One of the main problems is the relatively lower productivity of native chickens compared to purebred chickens, both in terms of growth and egg production. In addition, the traditional farming system that is still widely practiced results in suboptimal feed management, livestock health, and disease control. Limited knowledge among farmers regarding good farming techniques, availability of high-quality breeding stock, and access to farming technology also contribute to the success rate of local chicken farming (Graduate School, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, IPB Dramaga Campus, Bogor 16680 et al., 2016).

Therefore, various efforts are needed to improve the productivity and efficiency of native chicken farming, including through the implementation of better maintenance systems, improved feed quality, the use of superior seeds, and increased knowledge and skills of farmers through extension and training activities. Support from the government, research institutions, and various related parties is also essential in developing the local poultry sector, especially native chickens, so that they can compete and meet the growing market demand. With good management and the appropriate use of technology, native chickens have enormous potential to be developed as a leading poultry commodity that can support national food security and improve the welfare of farmers in Indonesia (Graduate School, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, IPB Dramaga Campus, Bogor 16680 et al., 2016).

The poultry sector is one of the important subsectors in the agricultural system and food security in the Special Region of Yogyakarta. In this region, the layer chicken farming business has grown rapidly and has become the main source of stable egg supply for the local community and contributes to the supply of animal protein in the regional market. Research shows that Bantul Regency, one of the regions in Yogyakarta, has a significant population of laying hens and substantial egg production, thereby strengthening local food security and providing

opportunities for increased income for small and medium-scale poultry farmers who form the economic base of villages and surrounding areas (Devi Radhatul Thoyibah et al., 2025).

2. MATERIALS AND METHODS

This study was conducted based on the need to understand the dynamics of the native chicken population in the Special Region of Yogyakarta, particularly in the city of Yogyakarta, Bantul Regency, and Kulon Progo Regency. Native chickens or free-range chickens are a type of poultry that plays an important role in the community, both as a food source and as part of household economic activities. Therefore, monitoring their population development over time is relevant to see how the smallholder livestock sector is developing amid social and economic changes.

The data used in this study is secondary, meaning that the researchers did not collect data directly in the field, but rather used data that was already available from official institutions. The main source is the annual publication of Special Region of Yogyakarta in Figures published by the Central Statistics Agency (BPS) of DIY Province. In addition, the statistical table "Poultry Population by District/City and Type of Poultry" is also an important reference. By using official data from BPS, this study has a strong foundation and is methodologically accountable.

The research method chosen was quantitative descriptive with a trend analysis approach. This method is appropriate because the purpose of the study is not to test specific hypotheses, but rather to describe the development of the native chicken population from year to year. The data obtained is compiled in tabular form for easier reading and analysis. Through these tables, readers can directly see the changes in the native chicken population in each region during the 2019–2022 period.

Trend analysis is conducted by highlighting the percentage change in population from year to year. Using a time series approach, this study is able to identify patterns of fluctuation, whether the population tends to increase, decrease, or experience inconsistent variations. This type of analysis is important because it can provide an overview of the stability of the native chicken population in urban areas and their surroundings. In addition, the results of the analysis can also be used as a basis for understanding the factors that may influence these changes.

The data processing stage is carried out by calculating the difference in population numbers between years and the percentage change. This calculation provides information about the rate of growth or decline in the native chicken population. For example, if there is a significant increase in a particular year, this may be attributed to government programs, changes in consumption patterns, or favorable environmental factors. Conversely, if there is a decline, it is necessary to consider the possibility of poultry diseases, changes in public preference for other types of poultry, or economic factors that affect the public's ability to raise native chickens.

The interpretation of the analysis results does not stop at statistical figures, but also aims to explain the dynamics of the native chicken population in the socio-economic context of the community. Thus, this study not only provides a quantitative overview but also opens up space to understand broader phenomena, such as the role of native chickens in local food security, their contribution to household economies, and the challenges faced in maintaining the sustainability of this traditional poultry population.

2.1. Study Area

This research was conducted in the city of Yogyakarta, which is the capital of the Special Region of Yogyakarta, Indonesia. The city of Yogyakarta has an area of approximately 32.5 km² and consists of 14 subdistricts (kecamatan). Geographically, Yogyakarta City is located on

lowlands with an altitude of ±100–130 meters above sea level and has a tropical climate with two seasons, namely the rainy season and the dry season.

As an urban area with a high population density, Yogyakarta City has limited land for large-scale livestock farming. Native chicken farming activities in this region are generally carried out on a household or small business scale, scattered across several subdistricts. Urbanization, land use change, and the development of the service and tourism sectors have also influenced the dynamics of the poultry population in this region. Therefore, the city of Yogyakarta was chosen as one of the research locations to analyze the development of the native chicken population in urban areas during the 2020–2024 period.

In addition to the city of Yogyakarta, this study also covers other regencies in the Province of DIY, namely Sleman Regency, Bantul Regency, and Kulon Progo Regency. Sleman Regency, located in the northern part of DIY, has a relatively larger area with a combination of urban, agricultural, and Mount Merapi slope areas, thus supporting the development of free-range chicken farming on a household and semi-commercial scale. Bantul Regency in the south is known to have a fairly large agricultural and rural area, so that the livestock sector, including native chickens, has developed as a source of income for the community. Meanwhile, Kulon Progo Regency in the west of DIY has an agrarian area with sufficient land available for agricultural and livestock activities.

This study highlights the development and distribution of poultry populations, particularly native chickens, in the Special Region of Yogyakarta Province during the period 2020 to 2024. Analysis of data from the Central Statistics Agency shows that the poultry population in DIY has remained significant and relatively stable over the past five years, with native chickens being the dominant type of poultry in almost all districts/cities. This trend illustrates that native chickens play a strategic role in providing animal protein for the community and as an important source of income for household-scale farmers and micro-businesses.

In addition, the distribution pattern of the native chicken population in the cities of Yogyakarta, Sleman, Bantul, and Kulon Progo shows differences in characteristics between urban and rural areas. Areas with more land availability tend to have higher populations and more stable growth, while urban areas face challenges of limited land and urbanization pressures. Overall, these findings emphasize the importance of developing native chickens as a subsector of agriculture that supports local food security, economic stability, and improved community welfare in the Special Region of Yogyakarta.

2.2. Procedures

Sub-procedures-1

The first stage is the collection of secondary data. At this stage, researchers collect data on the native chicken population in Yogyakarta City during the period 2020–2024. The data is obtained from official publications of the Central Statistics Agency (BPS) of the Special Region of Yogyakarta Province. The information used was specifically taken from a table entitled "Poultry Population by Regency/City and Type of Poultry." This data was selected because it is official, verified, and used as a statistical reference in various studies and regional development planning.

Sub-procedures-2

The second stage is data selection and verification. At this stage, researchers conducted a screening process to ensure that the data obtained was truly in accordance with the variables being studied, namely the population of native chickens or free-range chickens in Yogyakarta City. In addition, data consistency between years was also checked so that the data used could form a valid time series from 2020 to 2024. Verification also includes checking the suitability

of the units used, namely heads, and ensuring that all necessary data is available in its entirety so that it can be analyzed continuously.

Sub-procedure-3

The third stage is data processing and analysis. After the data is declared valid and complete, it is then systematically arranged in tabular form to facilitate the analysis process. Next, calculations are made of the changes in the native chicken population from year to year. In addition to calculating the difference in population numbers, researchers also calculate the percentage of population growth or decline in each annual period. The analysis process is carried out using a quantitative descriptive approach, which describes the data numerically so that patterns, trends, and fluctuations in the native chicken population in Yogyakarta City during the research period can be identified.

Sub-procedure-4

The final stage was the interpretation of the results and the preparation of the research report. At this stage, the analysis results obtained were then interpreted to provide an explanation of the development of the native chicken population in urban areas. The researchers also attempted to identify possible factors that could influence these population changes, whether from an economic, environmental, or community farming activity perspective. All analysis and interpretation results were then systematically compiled into a scientific report that followed the applicable academic writing rules and systematics, so that it could be used as a source of information and reference for further research.

2.3. Data analysis

Based on data from the Central Statistics Agency of the Special Region of Yogyakarta in the table Population of Poultry by District/City and Type of Poultry (2019–2022), the population of native chickens in several areas of DIY showed different dynamics during that period. In 2019, the largest population of native chickens was in Bantul District with approximately 966,371 chickens, followed by Kulon Progo District with 803,155 chickens, Sleman District with 550,936 chickens, and Yogyakarta City with 52,063 chickens. In 2020, some regions experienced an increase in population, such as Bantul, which increased to 976,006 chickens, and Sleman, which increased to 563,779 chickens, while Kulon Progo experienced a decrease to 775,124 chickens and Yogyakarta City increased slightly to 52,847 chickens. These changes indicate that the development of the native chicken population is influenced by various factors such as the maintenance system, feed availability, and economic conditions of the community that affect smallholder farming activities in each region.

In the following period, from 2021 to 2022, the native chicken population trend in DIY still showed fluctuations. Bantul Regency remained the region with the highest native chicken population, with approximately 977,981 chickens in 2021 and an increase to 981,386 chickens in 2022. Kulon Progo Regency experienced an increase in 2021 to 786,227 chickens but declined again in 2022 to 762,597 chickens. Meanwhile, Sleman Regency experienced a decline in population from 542,696 in 2021 to 507,469 in 2022, and Yogyakarta City showed a significant decline from 47,562 in 2021 to around 8,361 in 2022. In general, the data shows that the native chicken population in DIY tends to be concentrated in regencies with more land and more developed smallholder farming activities, such as Bantul and Kulon Progo, compared to urban areas such as Yogyakarta City, which has limited land for farming activities.

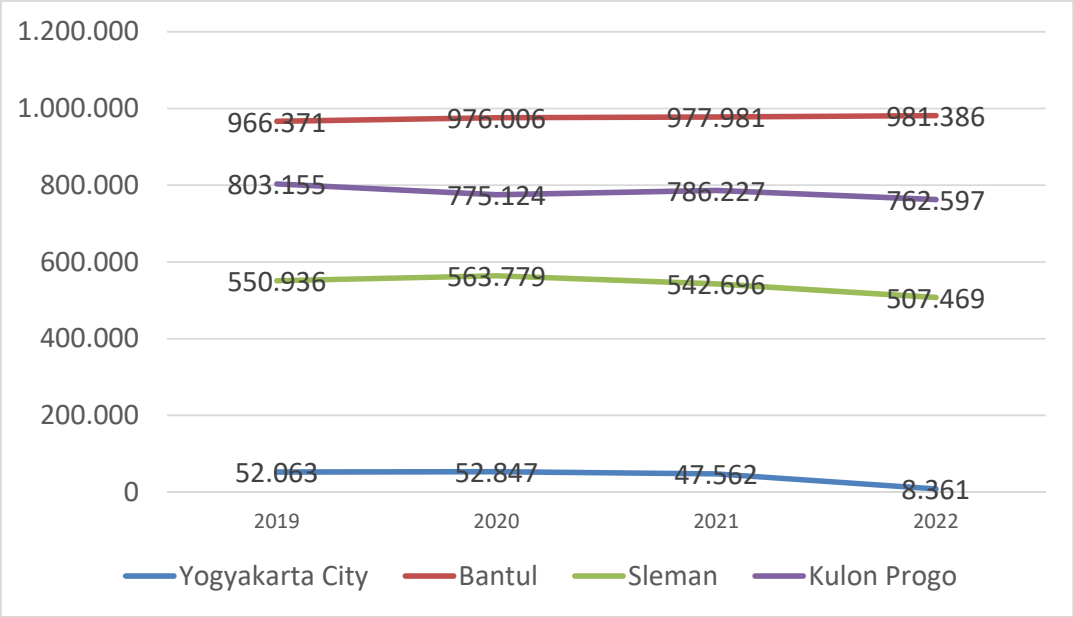

Figure 1. Statistics on Native Chickens

Source: Central Statistics Agency of Yogyakarta Province, table on Poultry Population by Regency/City and Type of Poultry (2019–2022)

2.4. The Philosophical Meaning of Batik in Statistical Modeling of Native Chickens

Figure 2. Batik

The stable line representing Yogyakarta reflects the city's cultural steadfastness. The relatively constant population of native chickens symbolizes the simple yet meaningful daily life of the community. In batik, this line can be interpreted as a straight pattern that emphasizes

consistency, symbolizing the steadfastness of the city's residents in preserving traditions and cultural values. Meanwhile, the rising and falling line of Bantul symbolizes the dynamics of an agrarian society. The fluctuating population of native chickens reflects the hard work of farmers and ranchers in facing natural and economic changes. In batik, this pattern can be realized with wavy or zigzag motifs, signifying the spirit of adaptation and fighting spirit of the people of Bantul.

The winding lines of Sleman represent creativity and innovation. Sleman is known as a center of education and development, so the dynamic population of native chickens can be interpreted as a symbol of the growth of ideas and concepts. In batik, this winding motif can represent the path of knowledge, which is full of challenges but rich in possibilities. Meanwhile, the wavy lines of Kulon Progo reflect the harmony between the mountains and the coast. The free-range chicken population, which moves in tune with the rhythm of nature, symbolizes the balance of community life. In batik, this wavy pattern can be realized as a wave or mountain motif, signifying the community's determination to preserve tradition while being at one with nature.

The overall motif of this batik is a metaphor for how each region has its own unique rhythm of native chicken populations, but when combined, the four lines form a solid agrarian cultural unity in the Special Region of Yogyakarta. This batik is not merely a decoration, but a visual narrative of hard work, perseverance, creativity, and harmony that thrives in the communities of Yogyakarta, Bantul, Sleman, and Kulon Progo. Each line drawn from statistical data symbolizes a journey through history, where numbers are not just figures, but traces of the lives of communities that depend on livestock as part of their household economy and traditions.

Furthermore, this batik teaches us that data and culture can be combined into one beautiful language. Statistics, which are usually cold and rigid, when translated into batik motifs, turn into warm stories about humans, nature, and togetherness. This philosophy emphasizes that science and art do not stand alone, but rather complement each other to strengthen regional identity. Thus, batik based on chicken population graphs becomes a symbol of integration between agrarian tradition, academic modernity, and cultural creativity.

Ultimately, this batik conveys the message that the sustainability of society depends not only on livestock numbers, but also on the ability of humans to preserve traditions, adapt to change, and express these values through art. It serves as a bridge between the past and the future, between data and meaning, between statistical lines and lines of life.

3. RESULTS AND DISCUSSION

Based on available data, there are differences in the population trends of native chickens in four regions of the Special Region of Yogyakarta. The city of Yogyakarta experienced a very significant decline, from 52,063 chickens in 2019 to only 8,361 in 2022. This decline is likely due to limited urban land, urbanization, and the shift of the community to non-livestock businesses. In contrast, Bantul Regency shows a consistent upward trend, from 966,371 birds in 2019 to 981,386 birds in 2022. This indicates stability and great potential for the development of smallholder farming, and shows that Bantul could become a center for native chicken production in the Special Region of Yogyakarta.

Sleman Regency shows a fluctuating pattern. The population increased in 2020 to 563,779 animals, but then declined to 507,469 animals in 2022. This trend may be influenced by market dynamics, feed prices, or environmental conditions. Meanwhile, Kulon Progo shows an unstable pattern: declining in 2020, rising again in 2021, then declining again in 2022, from 803,155 to 762,597. This indicates challenges in livestock management or external factors such as distribution and local policies.

Overall, this analysis shows that each region has different characteristics in terms of native chicken population development. Bantul can be used as a model for sustainable livestock development, while the city of Yogyakarta requires a specific strategy to maintain its population despite limited space. Sleman and Kulon Progo need more adaptive policy interventions to prevent the downward trend from continuing. This data is important as a basis for regional policy planning, both for strengthening food security, empowering the local economy, and preserving native chickens as part of the community's culture and source of protein.

3.1. Results for Yogyakarta City

Based on the "Native Chicken Statistics" graph for 2019–2022, there is a pattern of fluctuation. In 2019, there were 52,063 chickens, then a slight increase in 2020 to 52,847. However, in 2021, the number decreased to 47,562. This decline indicates a significant change compared to the previous two years. In 2022, there was a drastic decline to only 8,361. This sharp change indicates that certain factors have significantly affected the population in the city of Yogyakarta, whether related to changes in environmental conditions, regional management policies, or other factors affecting the population. Overall, the trend in Yogyakarta City shows that after experiencing an increase at the beginning of the observation period, the population then declined quite sharply in the following years.

3.2. Results from Sleman

Unlike the city of Yogyakarta, population growth in Bantul Regency has shown a relatively stable trend with an annual increase. In 2019, the population was recorded at 966,371. Then in 2020, it increased to 976,006. This increase continued in 2021 with a population of 977,981. In 2022, the population figure increased again to 981,386. Although the increase is not too significant each year, this data shows that the population in Bantul Regency tends to experience consistent growth during the observation period. This condition may indicate that the Bantul area has a relatively supportive environment for the sustainability of the population, so that the number can continue to grow gradually from year to year.

3.3. Kulon Progo Results

Population growth in Sleman Regency shows a different pattern compared to Bantul Regency. In 2019, the population was recorded at 550,936. This figure then increased in 2020 to 563,779. However, in 2021, the number decreased to 542,696. This decline continued in 2022 with the number decreasing further to 507,469. Based on this data, it can be seen that despite an increase in 2020, the overall population trend in Sleman Regency has tended to decline in the last two years. This decline indicates changes in conditions that may affect the population in the region, whether from environmental factors, changes in land use, or other factors that influence population sustainability.

3.4. Bantul Results

Meanwhile, population growth in Kulon Progo Regency also showed fluctuating patterns during the 2019–2022 period. In 2019, the population was recorded at 803,155. In 2020, this figure decreased to 775,124. Then in 2021, the population increased again to 786,227. However, this increase did not continue in the following year, because in 2022 the population decreased again to 762,597. This pattern of ups and downs shows that the population in Kulon Progo Regency has not experienced a consistent upward or downward trend, but rather fluctuates from year to year. This condition can be influenced by various factors, such as changes in environmental conditions, regional management dynamics, and other factors that affect the existence and development of the population in the area.

Overall, the development of the native chicken population in Bantul over the last four years shows fairly consistent growth. This indicates that the native chicken farming sector in Bantul is relatively stable and able to maintain production stability compared to several other regions that have experienced sharper fluctuations.

3.5. Discussion

Based on the population data shown in the table for the Special Region of Yogyakarta during the 2019–2022 period, it can be concluded that the population growth in each district/city shows different patterns. Bantul Regency is the region with the highest population and shows a relatively stable upward trend from year to year, from 966,371 in 2019 to 981,386 in 2022. This indicates that conditions in Bantul Regency are relatively conducive to the sustainability and growth of the population. Meanwhile, Sleman Regency shows a downward trend after experiencing an increase in 2020. The population in this region was recorded at 550,936 in 2019, increasing to 563,779 in 2020, then decreasing to 542,696 in 2021 and decreasing again to 507,469 in 2022.

On the other hand, Kulon Progo Regency shows a fluctuating pattern, where the population declined in 2020, then increased again in 2021, but declined again in 2022. This indicates that population growth in the region is unstable and is likely influenced by various environmental and regional management factors. Unlike other regions, the city of Yogyakarta shows quite a striking change. After experiencing a small increase from 2019 to 2020, the population in Yogyakarta City declined in 2021 and declined dramatically in 2022. This condition indicates that the population in urban areas is likely influenced by space limitations, changes in land use, and other factors related to the characteristics of urban areas.

Overall, the data shows that population distribution and growth in the Special Region of Yogyakarta is uneven across districts/cities. Some areas show steady growth, while others experience decline or fluctuations from year to year. These differences in patterns indicate that environmental conditions, regional management policies, and social and economic factors can influence population growth in each region. Therefore, understanding the population dynamics in each region is important as a basis for planning the management and development of related sectors in the future.

Table 1. Data on Native Chickens in Yogyakarta

Year	Yogyakarta City	Bantul	Sleman	Kulon Progo
2019	52.063	966.371	550.936	803.155
2020	52.847	976.006	563.779	775.124
2021	47.562	977.981	542.696	786.227
2022	8.361	981.386	507.469	762.597

Source: Central Statistics Agency (2019 – 2022)

4. CONCLUSION

Data analysis shows that the development of the native chicken population in the Special Region of Yogyakarta has different trends in each region. Based on population data from 2019 to 2022 in the Special Region of Yogyakarta, it can be concluded that the development of the population in each district/city shows different trends. Bantul Regency has the highest population and shows a relatively stable upward trend from year to year. This can be seen from the population that continues to grow from 2019 to 2022. Meanwhile, Sleman Regency shows a downward trend after experiencing an increase in 2020, so that in general, its population has declined in the last two years.

On the other hand, Kulon Progo Regency showed an unstable or fluctuating development pattern, as its population declined, then increased, and declined again the following year. Meanwhile, Yogyakarta City showed the most significant change compared to other regions,

where after experiencing a slight increase in 2020, its population declined in 2021 and experienced a very drastic decline in 2022.

Thus, it can be concluded that the distribution and growth of the population in the Special Region of Yogyakarta during the period 2019–2022 was not evenly distributed across each district/city. These differences indicate that each region has different conditions and dynamics that can affect population growth from year to year.

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