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ANALYSIS OF TRENDS IN INDONESIA'S POPULATION COMPOSITION 2010–2024

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Abstract

This study aims to analyze the demographic composition of Indonesia based on sex, education level, livelihood, and crude birth rate (CBR) over the past 15 years (2010-2024). A descriptive analysis method kuantitative was employed using data from the World Bank, Statistics Indonesia (BPS), and other reliable sources. The results indicate that the population composition by sex is relatively balanced, with males consistently outnumbering females but without a significant gap. In terms of education, there has been a notable increase in the proportion of upper secondary school graduates, accompanied by a decline in those with no schooling. The livelihood structure remains dominated by the agricultural sector, reflecting the Lewis dual-economy model with a slow transition to the modern sector. Meanwhile, CBR shows a declining trend from 20.36 per 1,000 population in 2010 to 16.4 in 2025, influenced by increasing female education, delayed marriage, and the success of the Family Planning program. These findings underscore the need for accelerated livelihood diversification, equitable access to education, and strengthened family planning programs to support quality human resource development and sustainable economic growth.

Key words: Sex, Education, Livelihood, Crude Birth Rate (CBR)

INTRODUCTION

Indonesia's demographic structure shows a relatively balanced gender ratio between men and women, with men slightly outnumbering women. In 2023, the sex ratio at birth reached 102.09, meaning there were 102.09 male births for every 100 female births (Rizaty, 2023). In the 0-49 age group, the number of males is significantly higher, but the trend is reversed in the 50 and older age group, where the number of females exceeds that of males. This phenomenon can be linked to life expectancy, where women's life expectancy is higher than men's and is projected to continue increasing each year (Nisa et al., 2025). The population pyramid remains expansive and dominated by the young, but this has long-term negative implications due to the economic dependence of the vulnerable age group, which is predominantly women, on the working-age population.

Changes in the sex ratio are also interrelated with the CBR (Crude Birth Rate), which is the number of births per 1,000 total population, calculated as a crude figure without accounting for the composition of the reproductive-age population; thus, it reflects the aggregate fertility rate of the entire population (Hakiki, 2025). Data from the Central Statistics Agency (2023) show that the crude birth rate from 1990 to 2020 has declined; this is due to several socio-economic phenomena that are constantly changing, leading many women to delay marriage. While the decline in the birth rate indicates the success of the government's Family Planning (KB) program, it also has negative implications for a country's progress, as a decrease in the working-age population will slow economic growth.

In addition to demographic dynamics, the educational composition of Indonesia's population has also fluctuated, with the proportion of the population classified as elementary school graduates declining in line with developments in the field of education (Central Statistics Agency, 2025). The positive trend toward more equitable education in Indonesia reflects the success of government policies in promoting education, such as the Indonesia Pintar Program (PIP), the Indonesia Pintar Card (KIP) for College, the School Operational Assistance (BOS), and the Operational Assistance for Early Childhood Education (BOP PAUD), which remain the backbone of expanding access to education at all levels (Aziz, 2026).

The composition of Indonesia's population can be seen through the occupational structure of its people. This structure reflects the economic characteristics of a developing country dominated by the primary and informal sectors, with agriculture, forestry, and fisheries being the largest employers, accounting for nearly 25% of the workforce (Central Bureau of Statistics, 2024). The proportion of the workforce has shifted toward the industrial sector, though this shift has been slow. This phenomenon reflects a dual economic model in which a structural transition from traditional to modern sectors is underway.

The theory of demographic transition by Thompson (1929) and Notestein (1945), as cited in Kurniawati & Sugiyanto (2021), can explain demographic phenomena occurring in Indonesia, including fertility, education, and employment patterns. These theories explain that there are four stages of demographic transition: 1. The Pre-Transition Stage, characterized by high mortality and high birth rates, resulting in low population growth; 2. The Early Transition Stage, where mortality declines due to improved access to healthcare, while birth rates remain high, leading to population growth; 3. The Advanced Transition Stage, where birth rates begin to decline; and 4. the Post-Transition Stage, characterized by low birth and death rates and

stable, generally low population growth. Currently, Indonesia is in the third stage, the Advanced Transition Stage, marked by birth rates that are beginning to decline.

Research by Marbun et al. (2025) indicates that the gender composition of the population is relatively balanced and contributes to the local economy; however, this potential has not been fully realized due to the large number of people employed in the informal sector. However, the population's contribution to the local economy is likely to be hampered by a declining birth rate from 2.6 to 2.18 due to women's education, social norms, economic pressures, and the choice not to have children (Fieldo et al., 2025). This complex issue is further exacerbated by the conversion of agricultural land, which drives a shift in livelihoods from the non-agricultural sector to the industrial and commercial sectors (Mahmudah & Daryono, 2016). Previous research has largely addressed demographic aspects such as fertility, education, or livelihood in isolation. However, studies that simultaneously analyze the evolution of Indonesia's population composition by sex, education, livelihood, and crude birth rate remain limited. Therefore, this study simultaneously analyzes the composition of Indonesia's population based on age and sex, education, livelihood, and the crude birth rate within the context of demographic transition theory to formulate policy strategies that optimize the demographic dividend and address economic imbalances.

RESEARCH METHOD

This study employs a quantitative descriptive analysis focusing on Indonesia from 2010 to 2024. It begins by identifying significant issues worthy of factual explanation, such as regional economic conditions in Indonesia, followed by a clear and specific formulation of the research problem to avoid overgeneralization. Quantitative descriptive research was chosen because it provides an accurate and systematic description of a phenomenon and seeks to identify cause-and-effect relationships. Next, the researcher defined the objectives and benefits of the study, conducted a literature review on the topic, and developed a conceptual framework along with research questions or descriptive hypotheses. Data collection was conducted through observation and document analysis. Data were obtained from the Central Statistics Agency (BPS), the World Bank, and GoodStats. The collected data were then analyzed descriptively and presented in the form of tables, graphs, or diagrams to facilitate objective interpretation without implying causal relationships.

Data analysis in this study employs the quantitative analysis technique proposed by Miles and Huberman. According to Miles & Huberman, as cited in Sutama et al. (2024), quantitative data analysis is inductive in nature that is, it is based on the data obtained. This analytical framework is illustrated in Figure 1 below:

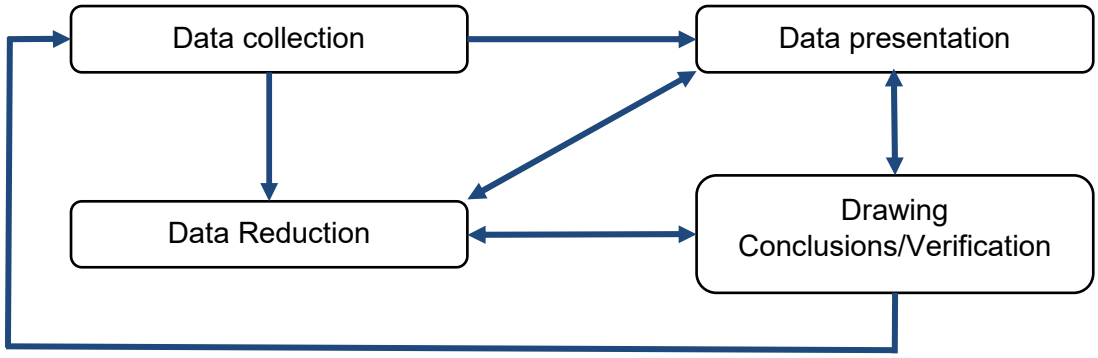


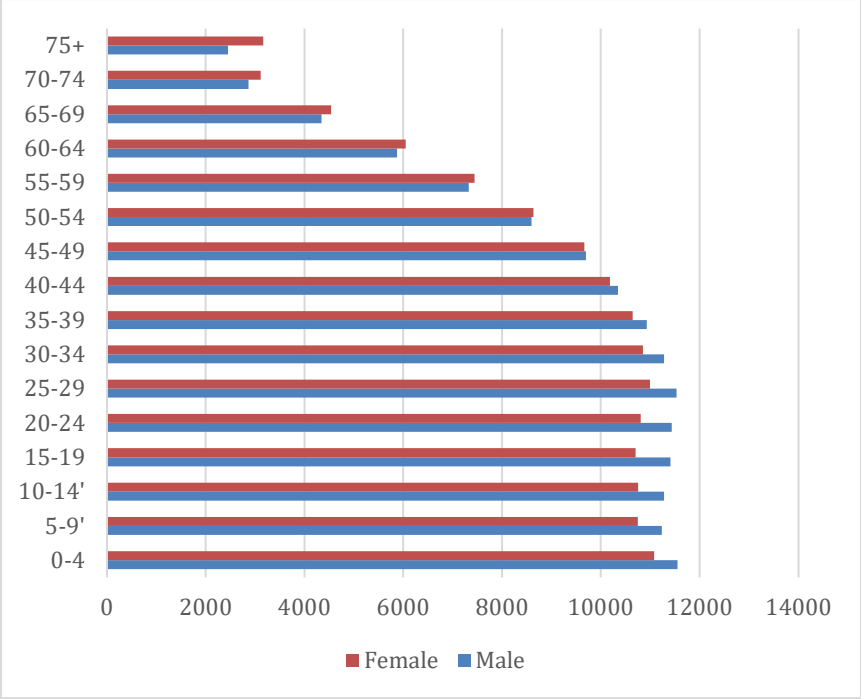
Figure 1. Miles & Huberman's Qualitative Data Analysis Process

The qualitative analysis framework proposed by Miles and Huberman is described in terms of three concurrent processes: data reduction the process of selecting, focusing, simplifying, and transforming raw data from interviews, observations, or documents so that only data relevant to the research is used; data presentation, which aims to enable the researcher to identify patterns, relationships, and meanings within the collected data; and drawing conclusions/verification, which involves summarizing the results of the analysis based on the patterns or findings revealed by the data.

RESULTS AND DISCUSSION

Analysis of Population Composition by Gender

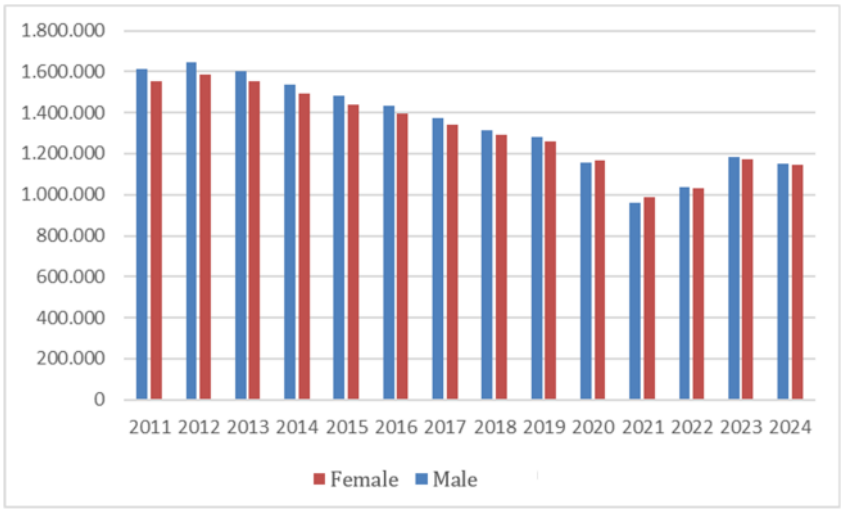
Population composition by sex is one of the basic demographic indicators often used to describe a country's population structure. Data on population size by sex can be used to analyze population growth, sex ratios, and their implications for development planning, employment, education, and social services (Citra & Ridhani, 2024). Based on data from the Central Statistics Agency (BPS, 2025), the number of both male and female residents in Indonesia has shown a consistent upward trend every year. In 2010, the male population increased from 123.641.334 to 142.407.916 in 2024. During the same period, the female population also increased from 122.663.988 to 141.255.767 an increase of 18.416.027. Comparatively, the male population consistently outnumbered the female population throughout the 2010–2024 period. This trend aligns with global demographic patterns, which show that the sex ratio at birth is naturally higher for males than for females, resulting in a larger male population than the female population (Gellatly, 2019). Demographic characteristics can also be described based on the population by age group.



Source: Compiled by the author, 2026

Figure 2. Population by Age Group and Gender in 2024

Based on the 2024 population pyramid shown in Figure 2, Indonesia's population structure is dominated by the working-age population (ages 15–64); this phenomenon is known as the demographic dividend. The working-age population far outnumbers those under 15 and over 64, resulting in a lower dependency ratio (Poetiray et al., 2023). The dominance of the working-age population is a key asset in driving economic activity, increasing productivity, and expanding the labor force (Marbun et al., 2025). This can serve as a foundation for economic development if supported by quality education, skills, and sufficient job opportunities (I. U. Huda et al., 2021).



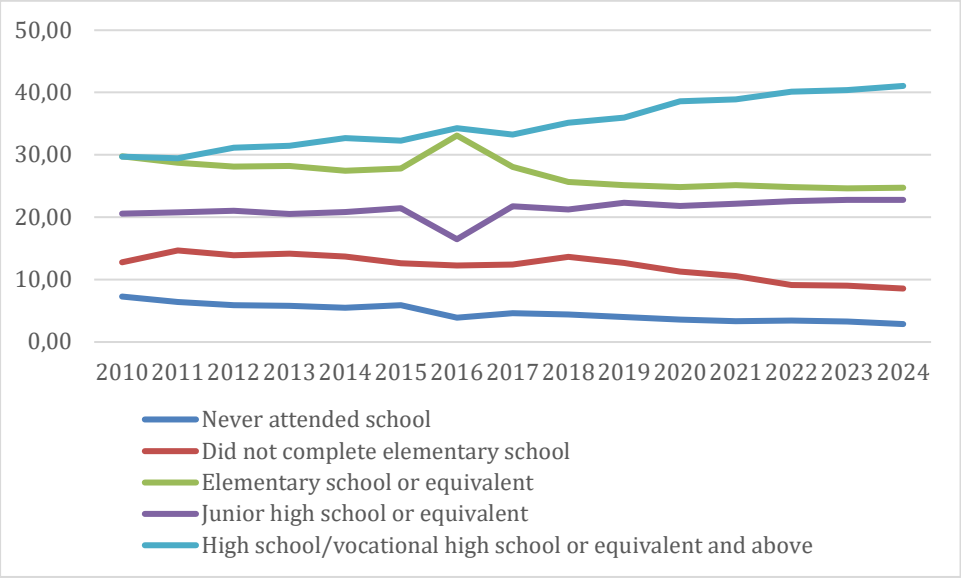
Source: Compiled by the author, 2026

Figure 3. Changes in Population by Gender, 2010–2024

Based on Figure 3, changes in the population by sex during the 2010–2024 period show that both the male and female populations experienced a decline in growth rates through 2021, followed by a rebound in the subsequent period. The sharpest decline in growth rates occurred in 2020–2021. This situation indicates a fairly deep contraction in growth, which demographically can be attributed to an increase in mortality rates as a result of the COVID-19 pandemic's impact on population dynamics (Ridho & Yusuf, 2021). According to data from the Central Statistics Agency (2025), Indonesia's population growth rate was 1.25 percent, declining to 1.11 percent in 2024. This indicates that in recent years, Indonesia has experienced a slowdown in its population growth rate as a result of the success of population control programs through improved access to information and family planning services (Raharja et al., 2021; N. P. Sari et al., 2024). Furthermore, research by Lestari & Abdullah (2024) indicates that education has a negative effect on fertility rates, as individuals with higher levels of education tend to have fewer children and prioritize the quality of their children over their quantity.

Analysis of Population Composition by Education Level

Population composition by education level is one of the key indicators for measuring the quality of a country's population. The highest level of education attained by the population aged 15 and older reflects development achievements in the field of education and serves as the basis for policy planning related to employment, poverty, and enhancing economic competitiveness. The higher the level of education attained, the better the quality of human resources in that country. The Human Capital Theory developed by Becker (1964) emphasizes that education is a form of investment that increases individual productivity, which ultimately impacts economic growth.



Source: Compiled by the author, 2026

Figure 4. Percentage of the Population Aged 15 and Older by Educational Attainment

Based on Figure 4, overall, the low-education categories namely, those who have never attended school, those who did not complete elementary school, and elementary school graduates or equivalent show a long-term downward trend. Furthermore, secondary education such as junior high school and senior high school has shown an upward trend over

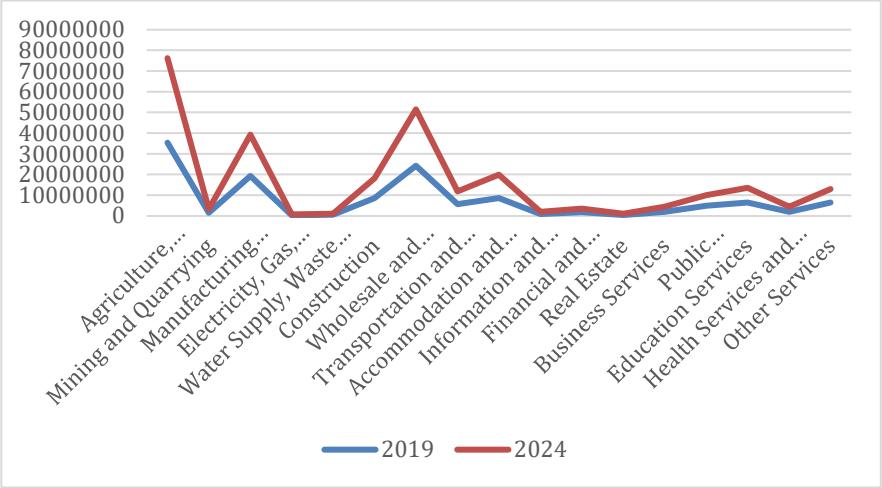
the past 15 years, specifically from 2018 to 2024. This reflects improvements in the quality of human resources and the success of efforts to expand access to education (Arifin, 2023).

One of the factors driving improvements in education in Indonesia is the success of government programs such as the Indonesia Pintar Program (PIP) and the School Operational Assistance (BOS) program, which provide cash and operational assistance (Fadillah et al., 2025). The combination of these two programs has been shown to reduce the risk of students dropping out of school. Furthermore, academic and moral support such as parents' mindset also influences children's educational attainment. If parents have a mindset that is resistant to change and fails to adapt to the evolving times, their awareness of the importance of their children's education will be low (Dewi et al., 2025).

The push to improve education in Indonesia is driven by the urgent need to prepare for the demographic dividend, as the opportunities presented by this demographic dividend can only be fully realized when accompanied by a high-quality workforce, achieved through quality education (Dewi et al., 2025). Therefore, education is the key to capitalizing on the demographic dividend by improving the quality of formal education such as secondary schools and universities as well as non-formal education such as training and courses to produce a high-quality workforce.

Analysis of Population Composition by Occupation

Indonesia is a developing country with the fourth-largest population in the world. Like other developing countries, Indonesia has experienced population growth in recent years. According to data from the Central Statistics Agency (2024), Indonesia's population increased from 255.59 million in 2015 to 284.44 million in 2024. The structure of the population's livelihoods is a fundamental indicator that reflects the socioeconomic characteristics and level of well-being in a region (Hardati et al., 2014). Based on data from the Central Statistics Agency (2024), employment sectors in Indonesia fall into several classifications, ranging from agriculture and manufacturing to modern service sectors such as finance and communications.



Source: Compiled by the author, 2026

Figure 5. Comparison of Livelihoods by Sector in 2019 and 2024

Based on Figure 5, the Agriculture, Forestry, and Fisheries sector remains the sector with the largest workforce in both 2019 and 2024. In addition, the Wholesale and Retail Trade; and Repair and Maintenance of Motor Vehicles and Motorcycles sectors also show relatively high numbers of workers. Meanwhile, the Electricity and Gas Supply sector has the fewest workers in both years. Overall, the number of workers in 2024 tends to be higher than in 2019 in most economic sectors, indicating an increase in national labor market activity.

In 2019, before the COVID-19 pandemic, the agriculture, forestry, and fisheries sectors were the primary sources of employment, absorbing a large workforce and serving as the backbone of household economies, particularly in rural areas (Wartiningsih et al., 2022). This situation is supported by Indonesia's status as a tropical country with abundant natural resources, leading rural communities to rely heavily on the agricultural sector for their livelihoods (Huda, 2022). During the COVID-19 pandemic, the agricultural sector also proved relatively resilient in maintaining employment levels compared to other sectors affected by economic activity restrictions. In contrast, the Electricity and Gas Supply sector has consistently had the lowest number of workers (Central Bureau of Statistics, 2024). The difference in the number of workers across these sectors reflects variations in the nature of economic activities, with the agricultural sector being more labor-intensive, while the Electricity and Gas Supply sector tends to require fewer workers.

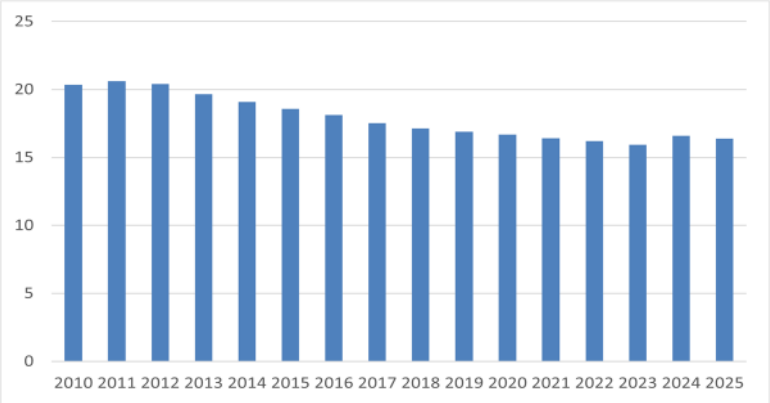
The electricity and gas supply sector is capital-intensive and technology-intensive, requiring a high level of technical competence and specific certifications. As a result, its capacity to absorb labor is very limited compared to the trade or agriculture sectors, which are more labor-intensive (Sumanti et al., 2026). This striking contrast underscores a disparity in Indonesia's labor market: on one hand, it remains trapped in massive traditional sectors, while on the other, there are modern sectors that are highly selective and limited in scope. This is evidenced by the research of Anggraini et al. (2020), which shows that labor absorption in the electricity and gas sector is low; this sector tends to have high productivity but does not absorb many workers because business operations rely heavily on technology, machinery, and large investments, rather than on a large number of workers.

The Theory of Economic Dualism, developed by Arthur Lewis, explains the development process in developing countries through the interaction between two main sectors: the traditional sector (agriculture) and the modern sector (industry). In this model, the traditional sector is considered to have a surplus of labor with marginal productivity approaching zero (Novitas et al., 2026). This means that if a number of workers are drawn from the fields to factories, total agricultural production will not decrease. The gradual shift of labor from the traditional sector to the modern sector means that the modern sector will continue to absorb labor as long as the wages offered are higher than the subsistence income level in rural areas. This theory aligns with current conditions in Indonesia, which still faces limitations in labor absorption within the modern sector (Novitas et al., 2026).

Analysis of Population Composition Based on the Crude Birth Rate

The Crude Birth Rate (CBR) is a demographic indicator used to measure the number of live births in a given year per 1,000 residents during the same period. The CBR is calculated by dividing the number of live births by the total population, thereby providing a general

overview of a population's fertility rate at both the national and regional levels. This indicator is used to examine the dynamics of a country's population growth in the context of social and economic changes (Central Bureau of Statistics, 2023).



Source: Compiled by the author, 2026

Figure 6. Crude Birth Rate (CBR)

Based on Figure 6, Indonesia's crude birth rate (CBR) shows a downward trend over the 2010–2024 period. Based on data from the World Bank (2026) and Hakiki (2025), the highest CBR was recorded in 2011 at 20.61 births per 1,000 population, while the lowest was recorded in 2023 at 15.94 births per 1,000 population. Overall, there was a decrease of 4.67 births per 1,000 population during that period. However, in 2024, there was a slight increase to 16.61 births per 1,000 population. Generally, this downward trend in the CBR indicates an increasingly low birth rate in Indonesia. This situation aligns with the Theory of Demographic Transition proposed by Thompson (1929) and Notestein (1945) as cited in Kurniawati and Sugiyanto (2021), which states that during the advanced transition stage, birth rates decline as a result of social, economic, and demographic changes in society.

There are several factors contributing to the decline in the birth rate. First is the younger generation's preference regarding marriage. Young people of childbearing age tend to put marriage on hold and delay having children due to various considerations, such as career or employment, financial stability, and changes in lifestyle. Research by Hakiki (2025) shows that over the past decade, there has been a decline in the CBR, as having children is no longer a top priority for the younger generation. Consequently, this has a direct impact on the decline in birth rates.

Second, educational factors: the higher a woman's level of education, the more likely she is to delay marriage and increase her use of contraceptives. This is because education enhances reproductive literacy and promotes rational family planning. Research by Fieldo et al. (2025) confirms that access to education and women's participation in the labor market are key factors in reducing fertility rates.

Similar research shows that regions with high levels of education and urbanization, such as DKI Jakarta, have significantly lower fertility rates compared to areas with lower educational levels (Sari & Tamami, 2025). This suggests that the higher the level of education, the lower the tendency to have many children.

Sari & Tamami (2025) also note that economic factors can be one of the primary drivers of the decline in the total fertility rate (TFR). Economic pressures and the rising cost of living, particularly in urban areas, significantly influence decisions regarding childbearing (fertility). Furthermore, the shift in the economic structure from an agrarian to an industrial and service-based economy has led to children no longer being viewed as an economic asset for the family, but rather as dependents requiring significant investment (Gani, 2025).

The final factor is the success of family planning programs, which have encouraged families to limit the number of children to an ideal level. Over the past two decades, Indonesia has begun moving toward a fertility rate approaching the replacement level (approximately 2.1 children per woman), and it is hoped that birth control efforts will be successful (Fieldo et al., 2025).

Meanwhile, in 2024, there was a slight increase in the CBR of 0.669 points, which occurred due to the phenomenon of delayed childbearing. During the COVID-19 pandemic, many couples postponed pregnancy due to economic uncertainty and health concerns. As the situation improved, some of the previously postponed births took place. As explained by Fieldo et al. (2025), global crises, including pandemics, cause economic uncertainty that suppresses fertility; however, in some cases, adjustments may occur once the crisis subsides.

CONCLUSION

Based on the analysis of trends in Indonesia's population composition for the 2010–2024 period, it can be concluded that the population composition by sex is relatively balanced, with a predominance of males in the younger age groups and females in the older age groups. The population's educational level shows an upward trend, marked by a decline in the proportion of people with low educational attainment and an increase in the number of secondary education graduates. In terms of livelihoods, the agricultural sector remains the largest employer, indicating that the primary sector still plays a significant role in Indonesia's economic structure. Meanwhile, the crude birth rate (CBR) has shown a downward trend during the study period, indicating a shift in the fertility patterns of the Indonesian population.

The government is advised to accelerate livelihood diversification through industry-linked vocational training to reduce dependence on the agricultural sector and maximize the demographic dividend of the working-age population, with a target of reducing primary labor force participation to below 25% by 2030. Education programs need to focus on equitable access in underdeveloped regions through the expansion of the Kartu Indonesia Pintar (Smart Indonesia Card) and the digital School Operational Assistance (BOS) program, while also promoting an increase in the expected years of schooling toward 13 years to support high-quality human capital. Additionally, strengthening family planning programs based on reproductive education and economic stability is necessary to control fluctuations in the crude birth rate (CBR) without sacrificing the growth of the productive population, accompanied by monitoring of the sex ratio and gender disparities in national development policies.

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