

# *Analyzing the Shifts in China's Birth Rate: Unraveling the Factors Behind the Changes*

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**Abstract:** In recent years, China has experienced significant changes in its birth rate, showing a downward trend. In 2022, the natural population growth rate even turned negative, indicating a critical moment in China's population development. It becomes crucial to address how to increase the birth rate. To achieve this, it is important to understand the factors influencing the birth rate. This article analyzes the changes and trends in China's birth rate over the past two decades and explores regional variations in birth rates. Finally, it categorizes the influencing factors into four aspects: national fertility policy, social security level, fertility costs, and people's fertility intentions. Based on the research findings, recommendations for increasing the birth rate are proposed. Regularly evaluate and adjust policies to meet changing demographics. Offer incentives like extended parental leave, flexible work arrangements, and improved childcare services. Enhance social security and family-friendly support: Strengthen access to affordable healthcare, education, and housing. Implement family-friendly legislation, and provide financial assistance, tax benefits, and subsidies to ease the economic burden on families. Improve childcare affordability and accessibility: Invest in high-quality and affordable childcare facilities. Expand maternity rooms and breastfeeding support in public spaces and workplaces. Emphasize shared parenting responsibilities and provide resources for both parents.

**Keywords:** birth rate, planning family, social security level, fertility cost, fertility desire

## 1. Introduction

According to the latest statistical data, China's birth rate has fallen below the level required to maintain population stability, showing a persistent downward trend. The data released by the National Bureau of Statistics of China indicates that in 2023, the natural population growth rate has dropped to -0.60‰ [1]. This means that China's birth rate is now lower than the death rate, and if this trend continues, the Chinese population will continue to decline rapidly.

This presents a challenge of low fertility rates for China. The declining birth rate has wide-ranging impacts on Chinese society, affecting aspects such as family structure, the labor market, the education system, and social security.

The social issues stemming from low fertility rates are multifaceted. Firstly, population aging intensifies, placing pressure on social security and healthcare services. Secondly, there is a shortage

of labor supply, which may have negative implications for economic development and social stability.

The changes in birth rates involve numerous complex factors, including family planning policies, the cost of childbirth, the level of social security, cultural transformations, traditional attitudes towards reproduction, women's career anxiety, and family pressures.

Allison pointed out that low fertility rates are a significant demographic challenge for advanced industrialized nations, potentially hindering economic growth [2]. Research suggests that countries with active labor market policies and generous work-family policies tend to have higher fertility rates [2]. Conversely, the presence of employment protection legislation, which regulates hiring and firing, can impede the growth of fertility rates [2]. Zhang found that education level, population dependency ratio, and marital situations have the greatest impact on China's birth rate [3]. The similarities across the eastern, central, and western regions lie in the sensitivity of the birth rate to the burden of an aging population and the influence of fertility policies [3]. However, there are differences: in the eastern region, birth rate is most sensitive to changes in educational development level; in the central region, it is influenced by the degree of urbanization, healthcare level, and women's contraceptive behavior; in the western region, birth rate is most sensitive to changes in healthcare level [3]. Harvey Leibenstein highlighted that the decision of a family to have children is primarily influenced by the costs associated with child production [4]. These costs encompass both direct and indirect aspects [4]. Direct costs refer to the expenses incurred during pregnancy, childbirth, and child-rearing [4]. Indirect costs pertain to the time and effort invested in pregnancy, childbirth, and child-rearing [4]. The research shows the main reasons why many women give up having multiple children are the anxieties that arise during the process of child-rearing, such as caregiving anxiety, educational anxiety, dispersed affection anxiety, career anxiety, and comparative anxiety [5].

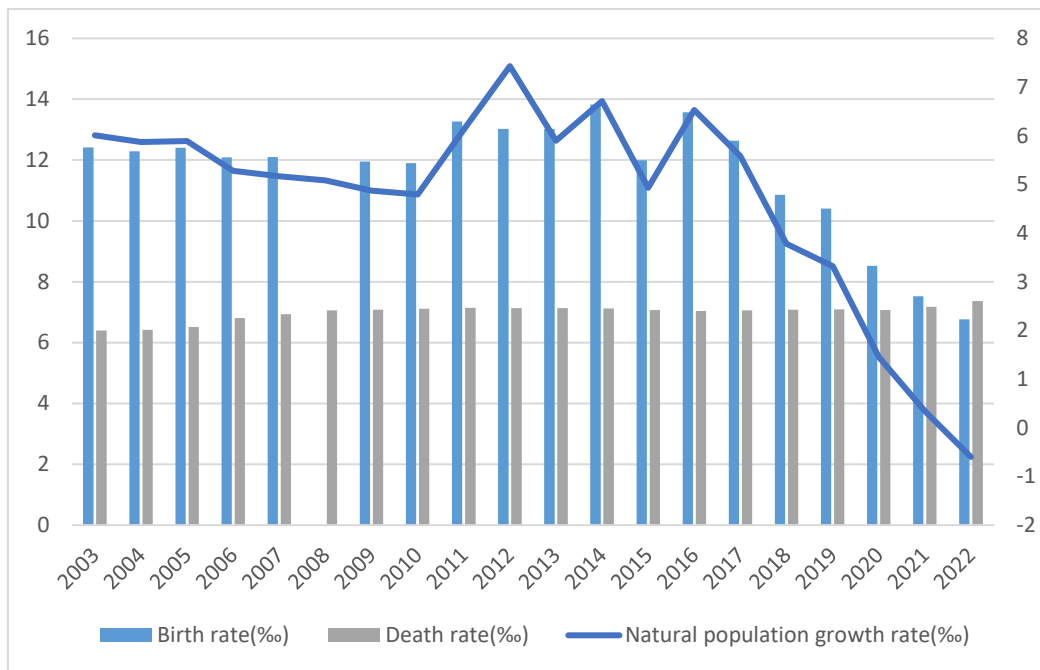
Gaining a deeper understanding of these factors and their impact on birth rates is crucial for better comprehending the societal transformations and future development path of China. This article aims to analyze the current state of China's birth rate, explore the underlying causes, and examine the resulting social issues. By studying the changes in birth rates and the associated social problems, we can provide insights for formulating relevant policies and measures to address the challenges posed by demographic changes and promote sustainable development in Chinese society.

### **1.1. The Changes and Trends in China's Birth Rate**

In this context, the birth rate refers to the annual birth rate, which is calculated using the formula:  $\text{Birth Rate} = \text{Annual Births} / \text{Average Population} * 1000\%$ . In this formula, the number of births refers to live births, which are infants who have shown signs of life, such as breathing or other vital signs, upon separation from the mother's body [1].

Figure 1 illustrates the trends in the birth rate, death rate, and natural population growth rate in China from 2003 to 2022. From 2003 to 2010, both the birth rate remained stable at around 12%. However, starting in 2011, the birth rate exhibited significant fluctuations, followed by a substantial decline.

It is noteworthy that as of 2022, the natural population growth rate has turned negative. These findings suggest a shift in demographic dynamics in China, with a declining birth rate leading to a decrease in the natural population growth rate.



Data from: National Bureau of Statistics of China.

Figure 1: Trends in birth rate, natural population growth rate and death rate in China, 2003~2022.

Huang divided China’s family planning policy since the founding of the country into four historical stages: the “Encouraging Births” stage (1949-1952), the “Flexible Family Planning” stage (1953-1979), the “Strict Family Planning” stage (1980-2012), and the “Optimized Birth” stage (2013-present) [6].

In 2011, China initiated the policy allowing couples where both parents are only children to have two children. From the graph, it can be observed that there was a significant increase in the birth rate between 2011 and 2012. In 2013, the policy officially allowed couples where either parent is an only child to have two children. Initially, there was a brief rise in the birth rate following the implementation of the policy, followed by substantial fluctuations. However, starting in 2016, the birth rate began to decline sharply.

## 1.2. Comparison of Birth Rates by Region

Table 1 Displays the population growth rates of different regions from 2011 to 2021. Between 2011 and 2021, the difference between the highest and lowest birth rates each year ranged from a minimum of 8.9‰ to a maximum of 12.3‰, indicating significant disparities in birth rates among regions.

Table 1: 1 2011-2021 birth rate by region. Unit: ‰

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Beijing	8.3	9.1	8.9	9.8	8.0	9.3	9.1	8.2	8.1	8.2	6.35
Tianjin	8.6	8.8	8.3	8.2	5.8	7.4	7.7	6.7	6.7	5.8	5.3
Hebei	13.0	12.9	13.0	13.2	11.4	12.4	13.2	11.3	10.8	13.0	7.15
Shanxi	10.5	10.7	10.8	10.9	10.0	10.3	11.1	9.6	9.1	10.3	7.06
Inner Mongolia	8.9	9.2	9.0	9.3	7.7	9.0	9.5	8.4	8.2	9.5	6.26

Table 1: (continued).

Liaoning	5.7	6.2	6.1	6.5	6.2	6.6	6.5	6.4	6.5	6.7	4.71
Jilin	6.5	5.7	5.4	6.6	5.9	5.6	6.8	6.6	6.1	5.7	4.7
Heilongjiang	7.0	7.3	6.9	7.4	6.0	6.1	6.2	6.0	5.7	5.7	3.6
Shanghai	7.0	9.6	8.2	8.4	7.5	9.0	8.1	7.2	7.0	7.2	4.7
Jiangsu	9.6	9.4	9.4	9.5	9.1	9.8	9.7	9.3	9.1	9.3	5.7
Zhejiang	9.5	10.1	10.0	10.5	10.5	11.2	11.9	11.0	10.5	10.3	6.9
Anhui	12.2	13.0	12.9	12.9	12.9	13.0	14.1	12.4	12.0	12.4	8.1
Fujian	11.4	12.7	12.2	13.7	13.9	14.5	15.0	13.2	12.9	12.7	8.3
Jiangxi	13.5	13.5	13.2	13.2	13.2	13.5	13.8	13.4	12.6	13.8	8.3
Shandong	11.5	11.9	11.4	14.2	12.6	17.9	17.5	13.3	11.8	11.4	7.4
Henan	11.6	11.9	12.3	12.8	12.7	13.3	13.0	11.7	11.0	12.3	8.0
Hubei	10.4	11.0	11.1	11.9	10.7	12.0	12.6	11.5	11.4	12.0	7.0
Hunan	13.4	13.6	13.5	13.5	13.6	13.6	13.3	12.2	10.4	13.4	7.1
Guangdong	10.5	11.6	10.7	10.8	11.1	11.9	13.7	12.8	12.5	12.5	9.4
Guangxi	13.7	14.2	14.3	14.1	14.1	13.8	15.1	14.1	13.3	15.1	9.7
Hainan	14.7	14.7	14.6	14.6	14.6	14.6	14.7	14.5	12.9	12.9	9.7
Chongqing	9.9	10.9	10.4	10.7	11.1	11.8	11.2	11.0	10.5	11.8	6.5
Szechwan	9.8	9.9	9.9	10.2	10.3	10.5	11.3	11.1	10.7	9.9	6.9
Guizhou	13.3	13.3	13.1	13.0	13.0	13.4	14.0	13.9	13.7	13.9	12.2
Yunnan	12.7	12.6	12.6	12.7	12.9	13.2	13.5	13.2	12.6	13.1	9.4
Tibet	15.4	15.5	15.8	15.8	15.8	15.8	16.0	15.2	14.6	15.2	14.2
Shaanxi	9.8	10.1	10.0	10.1	10.1	10.6	11.1	10.7	10.6	11.1	7.9
Gansu	12.1	12.1	12.2	12.2	12.4	12.2	12.5	11.1	10.6	10.6	9.7
Qinghai	14.4	14.3	14.2	14.7	14.7	14.7	14.4	14.3	13.7	14.2	11.2
Ningxia	13.7	13.3	13.1	13.1	12.6	13.7	13.4	13.3	13.7	13.4	11.6
Xinjiang	15.0	15.3	15.8	16.4	15.6	15.3	15.9	10.7	8.1	15.9	6.2
Max	15.4	15.5	15.8	16.4	15.8	17.9	17.5	15.2	14.6	15.9	14.2
Min	5.7	5.7	5.4	6.5	5.8	5.6	6.2	6.0	5.7	5.7	3.6
Difference	9.7	9.8	10.5	10.0	9.9	12.3	11.3	9.2	8.9	10.2	10.6

Data from: National Bureau of Statistics of China, EPS China data.

The regions with the lowest birth rates were Jilin, Liaoning, Heilongjiang, and Tianjin. Among them, Heilongjiang consistently had the lowest birth rate nationwide for five consecutive years. The regions with the highest birth rates were Shandong, Tibet, and Xinjiang. Notably, Tibet held the highest birth rate in the country for seven out of the ten years.

Calculating the average values, Tibet had the highest average birth rate, followed by Qinghai and then Hainan. On the other hand, Jilin, Heilongjiang, and Liaoning consistently had low birth rates over the years. When comparing the changes in birth rates across regions, Shandong and Xinjiang exhibited the largest differences, while Tibet and Guizhou had the smallest differences.

Through research, it has been discovered that these regions are places where ethnic minorities gather, with relatively low population density and relatively underdeveloped economic and cultural aspects [3]. This also indicates that, apart from population structure and economic development level, the lifestyle habits, reproductive beliefs, and ethnic-religious beliefs of minority populations directly influence their fertility behavior [3].

Heilongjiang, Liaoning, and Jilin have undergone early urbanization, and their level of urbanization is relatively high. According to existing research, it has been proven that areas with higher levels of urbanization tend to have lower fertility rates [7]. This is also associated with population hollowing in the local areas. Due to the severe situation of net emigration, the local population's fertility level naturally decreases [3].

## 2. Factors Affecting the Birth Rate

There are many factors that influence the population birth rate, and they will be analyzed step by step at the national, societal, and individual levels. This paper will discuss national fertility policies, social security levels, the cost of raising children, and individual fertility intentions.

### 2.1. Childbearing Policy

China's childbearing policy has gone through several stages. In the early stages of family planning, the objective was to curb rapid population growth to avoid placing significant pressure on society. Therefore, starting in 1973, China began promoting late marriage, recommended a birth spacing of at least three years, and limited couples to having only two children. In 1978, family planning was first included in the Chinese constitution, encouraging couples to have one or two children. It wasn't until 1980 that the government enacted laws to curb population growth by limiting couples to only have one child. The One-Child Policy was implemented through a range of measures, including incentives, penalties, and strict enforcement. Couples who adhered to the policy were eligible for benefits such as preferential housing, education, and healthcare.

Entering the 21st century, China's population situation underwent significant changes. Issues such as an aging population, gender imbalances, and labor force shortages. To address population issues, China started to gradually relax its family planning policies, by easing the conditions and implementing the Two-Child Policy. This policy allowed couples to have a second child. Eventually, in 2021, China officially opened up the Three-Child Policy.

However, in recent years, even with the relaxation of family planning allowing for two or three children and government subsidies for multi-child families, the birth rate continues to decline. This indicates that birth policies are no longer the primary determining factor for birth rates.

Zhou has proposed that since the socialist market economy entered a stable development stage, the main factors influencing the birth rate have changed to active choices of childbearing-age population [8]. The traditional concept of "more children bring more blessings" still holds some influence in certain regions, but under the pressures of real-life circumstances, this notion is gradually fading from the mainstream perspective [8]. The opening up of the "Two-Child Policy" only allows residents who previously wanted more children but couldn't have them to have a second child [8]. However, it cannot immediately change the reproductive behavior of those who don't desire more children [8].

### 2.2. Social Security Level

Social security includes eight aspects: medical insurance, unemployment insurance, work-related injury insurance, subsistence allowances, social assistance, social insurance, and social welfare (including housing subsidies, child education subsidies, and living subsidies.)

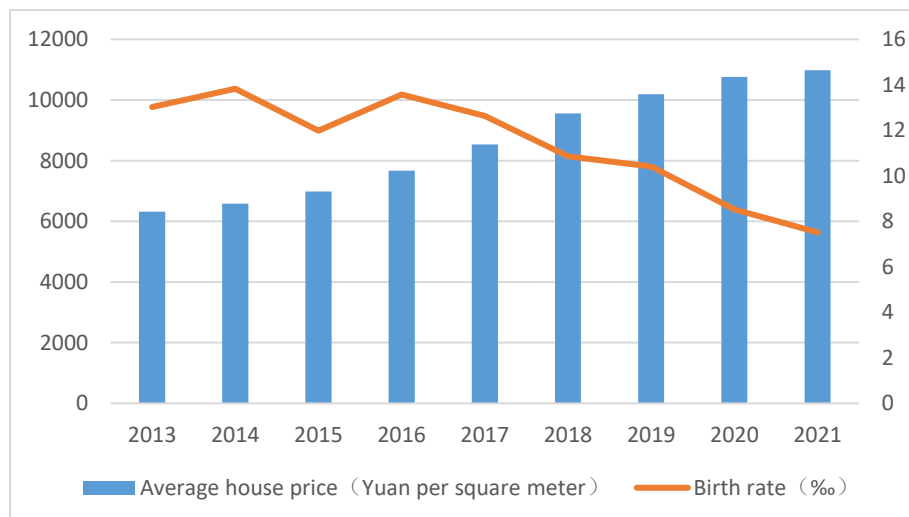
Allison E. Rovny provided proof that some state policies, including family-friendly legislation, active labor market initiatives, and employment protection regulations, had a considerable impact on fertility rates [2]. While the presence of job protection law, which governs hiring and firing, inhibits the increase of fertility rates, active labor market policies and liberal work and family policies favor greater fertility rates [2].

On one hand, the improvement of the social security system ensures a better standard of living for many people. The government provides retirement pensions for elderly individuals, unemployment benefits for the unemployed, housing subsidies, child education subsidies, and basic medical insurance. This reduces the financial burden on young couples and may increase their willingness to have children. Social assistance, social welfare, satisfaction with education security, satisfaction with healthcare security, and satisfaction with housing security play a mediating role in the process of influencing fertility intentions [9]. These factors have a positive effect on fertility intention [9].

On the other hand, the improved social security system, such as enhanced pension insurance, has gradually diminished the concept of “raising children for old age” among young people. Regardless of whether they have children or not, the government can guarantee their living standards.

### 2.3. Fertility Cost

The fertility cost is one of the key factors that have impact on family birth inclinations. The cost of having children is increasing, which leads to many couples being hesitant to have children. Firstly, there is the issue of continuously rising housing prices. Figure 2.1 shows the average house price change in China from 2013 to 2021. It can be seen that housing prices have been steadily increasing. In 2019, they exceeded 10,000 yuan per square meter. The continuously rising housing prices create significant pressure for many couples who do not yet own property. As housing prices rise, the cost of space required for children becomes more expensive. Additionally, the need to secure a mortgage loan may require both parents to work full-time, reducing their disposable income [10]. For families who already own a house, rising housing prices can create a wealth effect [10]. This wealth effect may increase the birth rate among homeowners [10].



Data from: National Bureau of Statistics of China.

Figure 2: The average house price changed in China from 2013 to 2021.

Harvey Leibenstein mentioned in his work “The Economic Theory of Fertility Decline” (1975) that a family’s decision to have children primarily depends on factors such as the cost of child production [9]. This cost includes both direct and indirect costs [4]. Direct costs represent the expenses incurred throughout the entire process of pregnancy, childbirth, child-rearing, and the child’s ability to live independently [4]. Indirect costs represent the time costs associated with pregnancy, childbirth, and child-rearing [4]. These factors directly affect fertility rates. The direct costs are constantly increasing, including housing prices and the prices of goods. Early expenses

such as expensive baby formula, clothing, and nanny services, as well as educational expenses such as tuition and childcare, medical supplies, and expenses related to marriage and weddings as the child grows up. The cost of raising a child is not a simple one-time expenditure but accumulates continuously over time. Additionally, the high cost of elderly care further burdens the younger generation, especially if both spouses are only children, as it increases the cost of supporting both sets of parents.

## 2.4. Fertility Desire

“Valuing sons over daughters”, “more children bring more blessing” and “ raising children for old age support” are traditional Chinese beliefs regarding childbirth. The older generation has a strong sense of kinship and believes in the importance of having children to continue the family lineage and provide support in old age. These traditional beliefs still play a significant role in certain regions and populations, particularly in economically and ideologically less developed rural areas.

However, some young people are starting to deviate from the traditional reliance on marriage and childbirth. The main factor contributing to this shift is education. Education provides more job opportunities and higher wages, attracting individuals to invest more time and energy in their studies [3]. As a result, the focus shifts to work, leading to delayed marriage and childbirth [3]. Additionally, parents with higher education have higher expectations for their children and prefer to have fewer children but focus on their quality, aiming to raise more outstanding individuals. Women with higher education have stronger capabilities, skills, and work proficiency [3]. They are also more likely to have access to proper knowledge of family planning and contraception, making it easier for them to break free from traditional beliefs [3].

The desire for childbirth is primarily influenced by women’s attitudes. In traditional family values, women are expected to devote more time and energy to taking care of the family and raising children, resulting in greater familial pressure on women compared to men [11]. Women may subjectively resist this pressure. Furthermore, childbirth can lead to women taking extended leave from work, and some employers may reduce hiring or dismiss female employees to avoid potential losses [11]. To mitigate the risk of unemployment, many women are forced to choose not to have children or delay childbirth.

The cost of raising children has a significant negative impact on parents’ willingness to have more children. Parents who have already achieved their desired number of children due to traditional beliefs tend to consider the costs involved when contemplating further childbirth [12]. Experiencing intimacy and a sense of fulfillment in the parenting process has a positive effect on the willingness to have multiple children [5]. However, the anxieties related to caregiving, education, divided attention, career, and comparison are major reasons why many women choose not to have multiple children, and the inhibitory effect is more prominent among women [5].

## 3. Conclusion

After conducting an in-depth study on the current situation and trend of birth rate in China, as well as exploring the influencing factors of birth rate changes, several key conclusions can be drawn. The birth rate in China is influenced by a multitude of factors operating at the national, social, and individual levels.

Firstly, the national fertility policy has had a significant impact on the birth rate in China. Before 2013, the national fertility policy played a dominant role in the birth rate by strictly enforcing the one-child policy to control the rapid growth of the population. After 2013, in response to the challenges posed by low birth rates, the government gradually relaxed the policy by allowing



couples to have a second child and later even a third child. Despite these policy changes, the birth rate continued to decline, indicating that other factors significantly constrained the birth rate.

The social security level plays a crucial role in shaping the birth rate. A comprehensive and supportive social security system, along with family-friendly legislation and active labor market initiatives, is vital for influencing fertility rates positively. By alleviating financial burdens, providing social assistance, and ensuring education, healthcare, and housing security, the government can encourage higher fertility rates. Striking a balance between individual well-being and societal needs is crucial for promoting sustainable population growth.

Fertility cost has emerged as a significant factor affecting birth rate changes. The rising cost of living, education, healthcare, and housing has increased the economic burden on families, making it more challenging for couples to afford and raise children. Lowering the economic barriers through financial incentives, tax benefits, and subsidies can encourage couples to have more children, thus positively impacting the birth rate.

Lastly, fertility intention, which encompasses individual attitudes and preferences toward childbearing, plays a vital role in determining the birth rate. Factors such as changing societal values, increased educational and career aspirations, and the desire for a higher standard of living have contributed to a decline in fertility intention. Promoting a family-friendly culture, providing work-life balance opportunities, and fostering a supportive environment for parenting can help increase fertility intention and subsequently boost the birth rate. Strengthening male parenting responsibilities and alleviating the burden of childcare on women are beneficial for enhancing female fertility intentions. It is also necessary to invest in and improve infrastructure such as maternity rooms, to facilitate pregnant and breastfeeding women.

To sum up, the birth rate in China is influenced by a complex interplay of various factors. By implementing supportive policies, enhancing social welfare systems, reducing economic burdens, and cultivating a favorable environment for child-rearing, China can strive towards achieving a balanced and desirable birth rate that meets the needs of both individuals and society as a whole.

In conclusion, while this article has discussed some significant factors that have impacted the birth rate, there may still be gaps and limitations. The birth rate is subject to annual fluctuations, and the influencing factors evolve with the changing times. The arrival of a new era has presented opportunities and challenges, accompanied by new risks. It is crucial to continue conducting thorough research on this topic. Currently, China's natural population growth rate is influenced by multiple factors, necessitating a deeper analysis to develop more effective policies that promote childbirth.

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