

# *Statistical Prediction and Analysis of the Growth Trend of Urban Children Population*

Fumei Niu

*Women and Children's Activity Center in Linyi City, Linyi, 276000, China*

**Keywords:** Urban children's population growth; Statistical prediction; Educational resources; Public services

**Abstract:** This paper aims to deeply explore the history and present situation of urban children's population growth and its influence on all aspects of society, and put forward corresponding policy suggestions based on statistical prediction. By collecting and analyzing official statistics, census data and social survey data, this paper predicts the growth trend of urban children's population by using linear regression model. The results show that the population of urban children will remain relatively stable or increase slightly in the future, which will have a significant impact on the educational resources, public services and social structure of the city. Based on the forecast results and the analysis of the present situation, this paper puts forward a series of policy suggestions, including increasing investment in educational resources, strengthening the construction of public service facilities, and paying attention to changes in social structure, so as to provide scientific basis for future urban planning and policy formulation.

## **1. Introduction**

With the acceleration of urbanization, the growth trend of urban children population has become a social phenomenon that can not be ignored [1]. Children are the future and hope of the country, and their healthy growth and education level are directly related to the long-term development of the country and social stability [2]. Therefore, it is of great significance to study the growth trend of urban children's population in depth for formulating scientific and reasonable urban planning, education policy and social security policy [3].

In recent years, scholars have conducted extensive research on the growth trend of urban children population [4]. These studies mainly focus on the following aspects: first, through statistical data and model prediction methods, the growth trend of urban children's population is predicted and analyzed; The second is to explore the relationship between urban children's population growth and social factors such as educational resources and public services; The third is to analyze the influence of policy factors on the population growth of urban children. These studies have provided us with rich theoretical basis and practical experience, but there are still some shortcomings and limitations, which need further in-depth study and discussion [5]. The purpose of this study is to deeply study and discuss the growth trend of urban children's population by collecting and analyzing relevant statistical data and using statistical forecasting methods and technical tools.

## **2. History and present situation of urban children's population growth**

### **2.1. Historical review of urban children's population growth**

In the past few decades, the growth of urban children's population has undergone significant changes. With the acceleration of urbanization, a large number of people have poured into cities from rural areas, which has promoted the rapid increase of the population of urban children [6]. In the early days, with the improvement of economic development and medical and health conditions, the population of urban children grew steadily. At the same time, although the implementation of the family planning policy reduced the family size, the number of children in each family was still relatively high. However, with the passage of time, the family size has been further reduced, and the concept of childbearing has also changed. Many families choose to have only one child or no more children, which leads to the gradual slowdown of the growth rate of children's population. In addition, the improvement of education level, the promotion of women's status, the increase of urban life pressure and the increase of childbearing cost have also affected the fertility rate of urban children to some extent [7]. These changes not only reflect the trend of social and economic development, but also provide us with a new perspective to understand the reasons and mechanisms of urban children's population growth.

### **2.2. Analysis of the current situation of urban children's population**

The current situation of urban children's population shows new characteristics. Although the population of urban children is still huge, the growth rate has gradually slowed down, which is mainly due to the shrinking family size and the change of childbearing concept [8]. Structurally, the urban children's population is becoming diversified, including not only more non-registered population and floating children, but also their education level and comprehensive quality are steadily improving with the improvement of education level and family economic conditions. However, this growth trend is accompanied by a series of social problems and challenges, such as the shortage of educational resources, the decline of educational quality, the uneven distribution of resources, children's safety and mental health problems. Therefore, we need to deeply study the current situation of urban children's population, identify and deal with these challenges, so as to ensure the all-round development and healthy growth of urban children.

## **3. Statistical prediction of urban children's population growth**

### **3.1. Data collection and processing**

Before making a statistical forecast of urban children's population growth, the first task is to collect and process data. Data collection is the cornerstone of the whole research process, which directly affects the accuracy and reliability of the prediction results.

The sources of data mainly include official statistics, census data, education sector data and related social survey data (such as Table 1). Official statistics are usually released by the government statistics department, which is authoritative and credible. Census data provides detailed information about the urban children's population, such as age, gender, household registration, etc. The data of the education department reflects the education status of urban children, such as enrollment rate and dropout rate. Social survey data can provide some qualitative or quantitative information to supplement the deficiency of other data sources.

Data collection methods mainly include consulting historical documents, field survey, questionnaire survey, network survey and so on. By consulting historical documents, we can obtain

past data and trends and provide a basis for prediction. On-the-spot investigation can obtain more specific and detailed data, such as the number of schools and students. Questionnaire survey and online survey can obtain more extensive and comprehensive data, such as family structure, fertility will and so on.

Table 1: Data collection source table

Data source	describe	Example
official Figures	Authoritative data Released by the government statistics department	Total population of urban children: 5,000,000; Growth rate: 2%
Census data	Detailed information about urban children's population	Age distribution (0-6 years old): 30%; Sex ratio (male: female): 1.05: 1; Household registration type (urban household registration): 85%
Education sector data	Reflect the educational situation of urban children	Enrolment rate: 98%; Dropout rate: 1.5%; Number of schools: 1,000
Social survey data	Provide qualitative or quantitative information	Family structure (two-parent family): 70%; Fertility willingness (family planning for one child): 60%; Life satisfaction: 8/10

After collecting the original data, this paper cleans and arranges the data. Data cleaning mainly includes checking the integrity, accuracy and consistency of data, and deleting duplicate data, abnormal data and invalid data. Data sorting is to classify, sort and summarize the cleaned data according to certain rules, so as to facilitate subsequent analysis and prediction.

### 3.2. Urban children's population growth trend forecast and result analysis

After the data collection and processing are completed, the growth trend of urban children's population can be predicted. This section takes Henan Province as an example. The selection of prediction methods should be determined according to the characteristics of data and the needs of research. Commonly used forecasting methods include linear regression model, time series analysis and grey forecasting model. In this paper, the linear regression model is used to predict the future value by establishing the linear relationship between independent variables and dependent variables. In the process of forecasting, we consider some influencing factors, such as policy factors, economic factors and social factors. Policy factors such as family planning policy and household registration system will have an important impact on the population growth of urban children; Economic factors, such as the level of economic development and employment status, will also affect the family's reproductive decision. Social factors such as education level and cultural concept will also have an impact on the population growth of urban children. After the prediction is completed, the prediction results are displayed in the form of tables for easy analysis and understanding. The forecast results include the number, structure and growth trend of urban children population in the future. The specific prediction results are shown in Table 2 and Table 3.

Table 2: Forecast of urban children's population growth in Henan Province (quantity)

Year	Forecast the population of urban children (10,000)	Growth rate
2026	886	1.3%
2027	898	1.3%
2028	911	1.3%
2029	923	1.2%
2030	936	1.2%

The prediction results have important guiding significance for future urban planning and policy

formulation. First of all, the forecast results can help the government understand the changes in the number and structure of urban children's population in the future and provide scientific basis for urban planning. Secondly, the forecast results can also provide reference for policy making. The government can adjust the family planning policy and education policy according to the forecast results, so as to promote the healthy growth and all-round development of urban children.

Table 3: Prediction of urban children's population growth in Henan Province (structure)

Year	Children aged 0-3 (10,000)	Children aged 4-6 (10,000)	Children aged 7-12 (10,000)
2026	215	235	435
2027	220	240	438
2028	225	245	441
2029	230	250	444
2030	235	255	447

## 4. The influence of urban children's population growth trend

### 4.1. Impact analysis

With the growth of urban children's population, cities are facing challenges in education resources, public services and social structure. The growing demand for educational resources requires cities to speed up school construction and improve the quality of teachers to meet the growing demand for degrees and teachers. In terms of public services, medical and cultural facilities need more investment to cope with the growing demand for children's health and cultural entertainment. On the social structure, the growth of children's population leads to the diversification of family structure and the change of labor market, which requires cities to provide family support, promote labor market reform and strengthen social education and publicity. These challenges require cities to formulate comprehensive coping strategies to ensure the healthy growth of children, harmonious and stable families and sustained social progress.

### 4.2. Policy recommendations

In view of the growth trend of urban children's population and the social problems it brings, this paper puts forward the following policy suggestions:

(1) The government should increase investment in educational resources to improve the supply capacity and quality of educational resources. This includes increasing investment in school construction, optimizing the allocation of educational resources and strengthening the construction of teachers. At the same time, we should also promote educational innovation and reform, explore educational models and methods that meet the characteristics of urban children, and improve the quality of education.

(2) The government should strengthen the construction and management of public services such as medical care and culture, and improve the quality and level of services. This includes strengthening the input of pediatric medical resources, building more children's cultural facilities and promoting children's cultural products.

(3) The government should pay attention to the changing trends and problems of social structure and formulate corresponding policies and measures. For example, strengthen support and services for families and provide more help and protection for families; Promote the reform and innovation of the labor market, encourage women to participate in social labor and provide them with equal opportunities and treatment; Strengthen social education and publicity to raise social concern and

awareness of children's issues.

(4) Emphasize the importance of policy formulation and implementation. Policy formulation should be based on comprehensive and in-depth research and analysis, giving full consideration to the growth trend of children's population and the social problems it brings; Policy implementation should pay attention to the actual effect and the construction of feedback mechanism, and timely adjust and improve policy measures to ensure their effectiveness and sustainability. In addition, it is necessary to strengthen cross-departmental and cross-disciplinary cooperation and cooperation to jointly promote the effective solution of the urban child population problem.

## 5. Conclusions

After an in-depth study of the history, present situation and forecast results of urban children's population growth, this paper draws the following conclusions:

(1) The population growth of urban children has undergone significant changes in the past decades. Looking back from history, the population of urban children has experienced a process from steady increase to slow growth, which is mainly influenced by factors such as economic development, urbanization process and changes in fertility concepts. At present, the urban children's population is still huge, but the growth rate has gradually slowed down, showing diversified structural characteristics.

(2) The forecast results show that the population of urban children will remain relatively stable or slightly increase in the future. This trend will have a far-reaching impact on the city's educational resources, public services and social structure. Specifically, the growth of children's population will increase the demand for urban educational resources and challenge the construction and management of schools; At the same time, it also puts forward higher requirements for public services such as medical care and culture; In addition, it will also affect social structural elements such as family structure and labor market.

(3) This paper summarizes the influence of children's population growth on all aspects of society. On the one hand, the growth of children's population has brought new vitality and opportunities to the development of cities, such as promoting the development of related industries and promoting social progress; On the other hand, it also brings a series of challenges and problems, such as the shortage of educational resources, the pressure of public services and the changes in social structure. Therefore, we need to face up to these challenges and problems, actively respond and find solutions.

## References

- [1] Lv Lidan, Yan Fang, Duan Chengrong, et al. Basic facts and development challenges of China's children's population changes since the new century [J]. *Population Research*, 2018, 42(03):65-78.
- [2] Sun Liping, Yuan Hongjun, Hu Lingyun. Combined forecasting model of China's aging population from a regional perspective [J]. *Journal of Yanbian University: Natural Science Edition*, 2023, 49(1):53-60.
- [3] Wang Jingwen, Zhu Yu, Lin Liyue, et al. The improvement of the statistical caliber of urban-urban floating population and the mobility characteristics and influencing factors under the new caliber [J]. *Progress of Geographical Science*, 2023, 42(03):464-477.
- [4] Ji Donglan. Thoughts on the planning and construction of children's outdoor recreation venues [J]. *Wuhan Social Sciences*, 2022,(03):113-121.
- [5] Mwakisile A J, Mushi A. Mathematical Model for Tanzania Population Growth[J]. *Tanzania Journal of Science*, 2019, 45:346-354.
- [6] Tian Zhongrui. Application of Mathematical Method in Population Growth Model under New Situation[J]. *Statistics and Applications*, 2020, 09(4):499-505.
- [7] Ma Li. Study on population carrying capacity of land resources in Shaanxi Province [J]. *Henan Science*, 2018, 36(01): 124-128.
- [8] Gao Haifeng, Chen Chun, Zhang Kenan, et al. Vulnerability analysis of rural population trend in China [J]. *China Agricultural Resources and Zoning*, 2017, 38(09):135-143.