

# ***Collaborative Management of Multi-supply Main Body of Urban Youth Sports Health Service Based on Big Data Information Science***

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**Abstract:** Big data and scientific information technology have penetrated into all areas of people's daily lives. Youth sports and health services are inseparable from the help of the society, government and schools and other diversified supply entities. It is of great significance to explore the coordinated management of multiple supply entities of urban youth sports and health services. This article takes the collaborative management of multiple supply entities of urban youth sports and health services as the research object, uses a questionnaire survey method to analyze how to provide health services for urban youth from two aspects: government-led and social participation, and elaborates the government-led urban youth sports public service supply. The method has the characteristics of a wide range of supply and a variety of types, and social participation has the characteristics of competition and difference in the corporate sector, and it also has the audience affinity of social organizations. This article points out the problems of this supply mode, and discusses its collaborative management mechanism in depth. Survey data shows that 100% of urban youths will participate in sports activities in schools, 41.96% of urban youths will engage in sports activities in community sports venues, and 33.90% of urban youths will engage in sports activities in parks. This shows that the venues where urban youth participate the most in sports activities are school sports venues, and the proportion of community sports venues and parks is also relatively high.

## **1. Introduction**

In recent years, under the strong social competition, urban youth inevitably also face a lot of pressure, and the physical and mental health of urban youth has been greatly affected [1-2]. Faced with such a situation, we must attach great importance to the sports health of young people [3-4]. Based on big data information science and technology, it is worthy of our serious consideration to carry out research on the collaborative management of multiple supply entities [5-6].

Many scholars have conducted in-depth discussions on the research on youth sports health and health services. For example, Tabii Y pointed out that youth sports literacy has gradually improved, but their understanding of sports value is not clear enough [7]; Li N found that many adolescents appear passive in sports activities and it is difficult to scientifically guide physical exercise [8]; A Ströhle passed Studies have found that students' perception of sports events is not optimistic, with too short physical exercise time, too little frequency, and insufficient intensity [9].

This article takes the collaborative management of multiple supply entities of urban youth sports and health services as the research object, uses a questionnaire survey method to analyze how to provide health services for urban youth from two aspects: government-led and social participation, and elaborates the government-led urban youth sports public service supply. The method has the characteristics of a wide range of supply and a variety of types, and social participation has the characteristics of competition and difference in the corporate sector, and it also has the audience affinity of social organizations. This article points out the problems of this supply mode, and discusses its collaborative management mechanism in depth.

## **2. Collaborative Management of Multiple Supply Entities of Urban Youth Sports Health Services Based on Big Data and Information Science**

### **2.1. Supply Mode of Urban Youth Sports and Health Services Based on Big Data and Information Science**

#### **(1) Government-led**

In terms of the supply of public services for youth sports, the City Sports Bureau, the City Education Bureau and its affiliated institutions are the main supply bodies [10-11]. The government-led supply method uses direct supply as the main method. The administrative department proposes supply targets to its affiliated institutions in the form of administrative orders and administrative guidance, and the specific production is provided by the institution.

The government-led urban youth sports public service supply mode has the characteristics of a wide range of supply and a variety of types. Including the organization of youth sports activities, the development of social organizations, the training of youth sports talents, the construction of youth sports venues, the publicity of basic youth sports information, and promotional foreign exchanges. However, because the scope of supply is too large, the problem of insufficient supply content has appeared in some areas of urban youth sports public service supply content.

Secondly, the government-led urban sports public service supply has strong operability [12]. The use of public products provided by the government is guaranteed by national laws and government policies. Rules, regulations and policies are highly authoritative. Non-governmental organizations and enterprises cannot change or defy arbitrarily. The urban sports administrative department has the power to hold accountable in accordance with these adjustments and management methods.

#### **(2) Social Participation**

The urban youth sports public service supply that introduces the participation of social forces also has the corresponding characteristics of market-oriented operation and social welfare supply. It not only has the characteristics of competition and difference in the corporate sector, but also has the characteristics of the audience affinity of social organizations.

##### **1) Competitive characteristics**

Competitiveness means that different private enterprises and non-governmental organizations compete with each other. The competition must make these private organizations have a goal. This goal is proposed by the government, the public service supply of youth sports under the control of

the government, and the large amount of the cause behind it. The capital and policy dividends of the company are the specific external manifestations of this goal. At present, many city governments improve this goal by constantly improving the government's purchase of public services catalogs. As the current government policy supply is not perfect, the goal used to attract social forces is only rudimentary and not perfect, and needs to be further subdivided.

#### 2) Differentiation characteristics

The differentiation of urban youth sports public services has two implications:

The first point is the differentiation of regional supply among private enterprises' access to the supply of public services for youth sports. Different counties and districts in the city have different economic and social and cultural conditions, leading to different needs for public services for youth sports in the region, avoiding the problem of "text-based publicity" in traditional government-provided youth sports public services, that is, all public services. The supply is carried out completely in accordance with the supply mode and supply template required by Shaanxi Province or the national policy, while ignoring regional characteristics and ignoring local differences. This leads to many youth sports characteristics that can be used and objective conditions that need to be paid attention to, such as the number of venues, exercise habits, and traditions. Advantageous projects are ignored, which leads to a reduction in the efficiency of public services.

The second point is that the project level of the public service supply of youth sports is differentiated. Youth sports public service supply activities have a lot of content, and if all the supply content is borne by the government, the government will definitely be unable to do so. If these objectively demanding projects are outsourced and supplied by companies in the market, the pressure on the government can be greatly eased.

#### (3) Audience Affinity

Most of the staff of urban youth sports non-profit organizations are volunteers. The purpose of their work is purely to help young people develop good sports habits and enhance their physical fitness. These volunteers generally have corresponding professional knowledge to facilitate them, provide guidance to young people. Moreover, the activities of these non-profit organizations often go deep into communities and schools and other front-line places where young people study and live, and carry out guidance activities for them, which are deeply trusted and loved by young people.

## **2.2. Countermeasures for Coordinated Management of Multiple Supply Entities of Urban Youth Sports and Health Services**

#### (1) Facilities Guarantee

Sports facilities include sports venues, venues, and their accompanying facilities and equipment for sports activities. Sports facilities are the basic element of sports activities, and the lack of venues and facilities seriously restricts the development of residents' sports activities. In this regard, in order to maximize the provision of adequate venues and facilities for residents' sports activities, it should be carried out from two aspects: one is to revitalize the stock. That is to improve the utilization rate of the existing venues and facilities, and provide the residents with the largest use of the existing venues through reconstruction and other methods; the second is to build small and medium-sized, multi-functional sports facilities to meet the different sports of different residents most conveniently.

#### (2) Fund Guarantee

### 1) Enriching sources of funds

The government must continuously increase its financial investment in youth sports and health services. Youth sports and health services are an important part of public services, and the state should pay enough attention to them, and funding in this area should be included in the financial plans of governments at all levels. Strictly control the distribution of sports lottery in national fitness and competitive sports. Because youth sports health is also part of national fitness, part of the investment in sports lottery in national fitness can be allocated to youth sports health work.

### 2) To attract social investment

The state should encourage organizations and individuals to invest in youth sports and health service activities in various forms. The main reason is that organizations and individuals that are not expressly prohibited by laws and regulations should be allowed to intervene by injecting funds. Give certain tax and fee preferential policies to organizations and individuals that invest in youth sports and health services to increase their enthusiasm.

The main body of urban youth sports and health services can generate their own income. For example, schools can open school sports venues to the society with appropriate compensation to obtain a certain income to ensure the funding needs of youth sports and health services.

### (3) Sports Group Support

Sports groups will affect the enthusiasm of urban youth to participate in sports activities to a certain extent, and this enthusiasm will also promote the development of urban youth sports activities. We should strengthen the social functions of sports associations and other sports groups, and integrate sports groups with urban youth sports.

The professionalism of sports associations should be strengthened, urban youth sports day can be set, urban youth sports activities can be formalized, and fun and mass sports activities should be carried out in an orderly manner. Sports associations should take responsibility when recruiting urban youths. Social responsibility can organize young people to carry out some public welfare sports activities, so that more young people can experience the fun of sports participation and maintain a healthy state while giving back to the society.

## 2.3. Data Mining Algorithm under Big Data Platform

With the rapid development of big data technology, various technologies of the big data family are frequently updated. The realization of data mining algorithms under the big data platform is of great significance for realizing big data construction and big data service applications based on business models.

### (1) Effectiveness

Validity is a new measurement standard proposed by researchers about the relevance of the context in the rule. The specific description of the standard is as follows: The probability that the two sets of A and B exist at the same time in the transaction database is  $P(A \cup B)$ , and there is no item set X but there is an item. The probability of the transaction of set Y is  $P(\bar{A} \cup B)$ , and the calculation of the validity is shown in formula (1):

$$validity(A \Rightarrow B) = P(A \cup B) - P(\bar{A} \cup B) \quad (1)$$

### (2) Degree of Action (Degree of Correlation)

The degree of action (relevance) is another breakthrough that researchers have made for the association rule measurement standard. This standard is used to measure the influence of the

appearance of the rule's antecedents on the subsequent parts, not just the influence of the appearance of the antecedents on the subsequent parts. The calculation method of the standard value and the specific classification of the rules are shown in formula (2).

$$\text{effect}(X \Rightarrow Y) = \sup \text{port}(X \cup Y) / \sup \text{port}(X) \times \sup \text{port}(Y) \quad (2)$$

(Correlation<1) The existence of X will reduce the probability of existence of Y, which is a negative correlation rule.

(Relevance = 1) X and Y are independent of each other and are irrelevant rules.

(Correlation degree>1) The existence of X increases the probability of existence of Y, which is a positive correlation rule.

### 3. Experimental Investigation Design

#### 3.1. Research Objects

The subjects of this survey are urban youth. Questionnaire surveys and field investigations were conducted on the supply main body, supply content and supply methods of urban youth sports organizations.

#### 3.2. Research Methods

Using the method of questionnaire survey, first conduct a survey on the status quo of urban youth sports public services. The subjects of the survey are the students from the representative primary and secondary schools in the sports public services of H City. The questionnaire is divided into two parts in terms of content. The first part is a survey of specific information on the supply of urban youth sports public services. The main purpose is to obtain information on youth use in stadiums, sports staff's guidance, and participation in sports activities. The second part is the satisfaction part, mainly to understand the satisfaction of primary and middle school students with the current urban youth sports public services, and related issues that affect satisfaction.

#### 3.3. Issuance and Collection of Questionnaires

In this survey, questionnaires were distributed to students in 3 primary and secondary schools in City H. A total of 250 questionnaires were distributed, 241 questionnaires were returned, and 236 valid questionnaires were obtained, with an effective rate of 94.4%.

#### 3.4. Data Statistics and Analysis

Using excel software to analyze the questionnaire data, we can understand the current distribution of urban youth's satisfaction with sports health services, and have a certain understanding of the current supply of urban youth sports services.

### 4. Survey Data Analysis

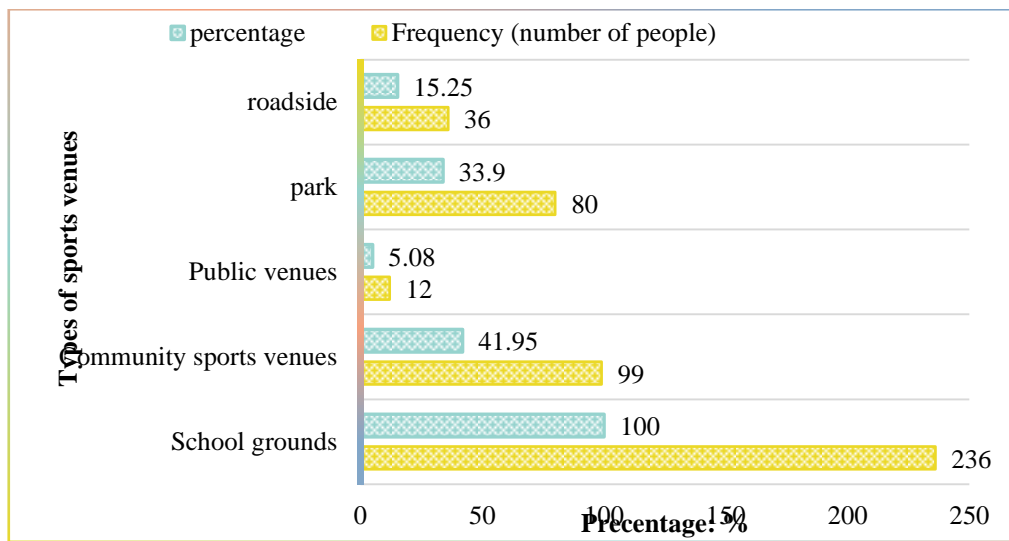
#### 4.1. Service Supply of Urban Youth Sports Venues

In order to understand the supply of urban youth sports venues, a survey was conducted on the venues where most urban youths carried out activities, and the results are shown in Table 1: 100%

of urban youths would engage in sports activities in schools, and 41.96% of urban youths would engage in sports activities in schools. Teenagers will take part in sports activities in community sports venues, and 33.90% of urban youth will take part in sports activities in parks.

*Table 1. Urban youth sports venues*

Types of sports venues	Frequency (number of people)	percentage
School grounds	236	100%
Community sports venues	99	41.95%
Public venues	12	5.08%
park	80	33.90%
roadside	36	15.25%



*Figure 1. Urban youth sports venues*

It can be seen from Figure 1 that the most sports venues are school sports venues. All elementary and middle school students carry out sports activities in school sports venues, and the proportion of community sports venues and parks is also relatively high. Despite this, in the supply of venues, many students surveyed reported that the school's sports venues have limited opening hours and are not open to students during holidays. The venues can only be used during classes.

#### 4.2. Statistics on Satisfaction with the Supply of Urban Youth Sports Activities

The survey on activity supply is directly based on satisfaction surveys, because activity supply is easier to understand for young people. Satisfaction is mainly reflected in their satisfaction with daily sports activities, extracurricular sports activities and competitions. The survey results are shown in Table 2: the people who are not satisfied and dissatisfied account for 28.81% and 13.14% respectively; those who are satisfied and more satisfied account for 24.15% and 13.14% respectively.

It can be seen from Figure 2 that in terms of activity supply satisfaction, the level of satisfaction has obviously decreased. Satisfaction with activity supply is below average. The number of people who are not satisfied and dissatisfied exceeds the first two types of supply, reaching 99. Accounting for 41% of the total number of people. According to on-site interviews, the dissatisfaction with the

supply of activities is concentrated in the insufficient frequency of activities, that is, the insufficient supply of sports activities, and the limited types of sports.

Table 2. Statistics of satisfaction with the supply of urban youth sports activities

Satisfaction	Frequency (number of people)	percentage
satisfaction	57	24.15%
More satisfied	31	13.14%
general	49	20.76%
Not so satisfied	68	28.81%
Dissatisfied	31	13.14%

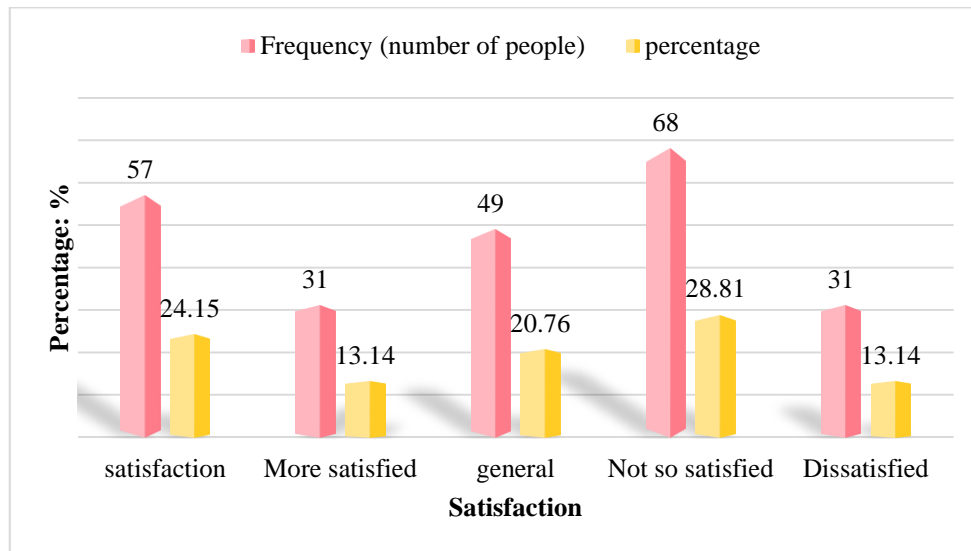


Figure 2. Statistics of satisfaction with the supply of urban youth sports activities

## 5. Conclusion

The purpose of this article is to study the collaborative management of multiple supply entities of urban youth sports and health services based on big data and information science. It is concluded through research that urban youth sports health requires the joint help of the government, schools, families and sports organizations. It is necessary to create a government-led, school-based, and encourage social participation in a coordinated management model of multiple supply entities to promote urban youth participation in sports. Exercise and improve the management system of urban youth sports health, so that urban youth sports health management will be institutionalized and standardized.

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## Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.



## Conflict of Interest

The author states that this article has no conflict of interest.

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