



# Study on the Satisfaction of Regional Flood Control and Resident Satisfaction Taking Jiaozuo City as an Example

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**Abstract.** Global climate warming makes some areas, increased the precipitation in medium and high dimensions, and the frequency and intensity of extreme weather climate events increase. In 2021, the Jiaozuo area has also faced the influence of flood disasters. In order to decorate the flood control and flood control ability of the market and the view of the Jiaozuo City to flood control over the Jiaozuo City, this paper uses group sampling methods to Jiaozuo City's 201 residents The questionnaire survey is conducted, and the flood control and flood control engineering construction literature, organizing the survey data production Excel form, using SPSS software to correlate the resulting effective data, from the survey results, the flood control project of the Jiaozuo area has been Playing a significant effect, most residents are more satisfied with the flood control, but should always be vigilant, and should understand that the regional flood control capacity building and development and the improvement of local flood control infrastructure, the government's proposal warning, things The proper handling of the age, the public's supervision and collaboration has a close relationship.

**Keywords:** Flood control and flood control · SPSS correlation analysis · Resident satisfaction

## 1 Introduction

The abnormal heavy rainfall in Zhengzhou area in 2021 caused 103 of 143 reservoirs in Zhengzhou to exceed the flood line, the water level of rivers in the region to rise rapidly, several areas to lose electricity and water and internet, roads to be damaged, traffic to be interrupted and underground spaces to be flooded. In the face of a thousand years of sudden rainstorms, the vulnerability of human beings is once again exposed. Professor Zhan Chengyu from the School of Public Administration of Beijing University of Aeronautics and Astronautics pointed out that “what kind of hazards will be generated by heavy rainfall, what kind of warning will be issued, and then what measures will be taken after the warning, in fact, many local governments have not done a good job, and some local rulers may have a fluke mentality” [1]. In the face of floods that may come at any time, if Zhengzhou City had a more long-term flood prevention design and timely and accurate warnings in urban governance, the safety of people's lives and property damage situation may be much better; while in the same provincial area of Jiaozuo City

in the face of heavy rains coming, send SMS messages to the public in advance of heavy rainfall warnings, so that the public to flood prevention and anti-flood response, while closing many scenic spots, blocking the geological disaster-prone. The city also closed many scenic spots, blocked roads in areas prone to geological hazards, implemented flexible working system, shut down public transportation, and closed schools, which undoubtedly protected the lives and properties of Jiaozuo citizens to a great extent. Therefore, it is of great practical importance to understand more deeply the flood control and flood resilience of Jiaozuo city and the satisfaction of residents with flood control and flood resilience to improve the regional flood control and flood resilience.

## 2 Object and Method

A population sampling method was used to select 201 residents in Jiaozuo city, as well as surrounding counties and rural areas as the survey subjects. By reviewing the literature, we learned the current situation of flood control construction in Jiaozuo area, and questionnaires were distributed in the field for questionnaire survey.

The survey content is: (1) basic information: home address, age, degree of disaster, construction of flood control facilities, and disaster concern; (2) the current situation of flood control and flood fighting construction in Jiaozuo area; (3) the specific response measures taken by Jiaozuo city to cope with the extraordinarily heavy rainfall; (4) the residents' satisfaction with the ability of flood control and flood fighting in Jiaozuo city.

The data obtained from the survey were compiled using Excel, and the satisfaction of people with different demographic characteristics was counted, analyzed using SPSS23.0, and the data were tested using  $\chi^2$ , and the difference was considered statistically significant at  $P < 0.05$ .

### 2.1 Basic Information

The questionnaire surveyed the information related to the residents of Jiaozuo city and the surrounding counties and rural areas about the flood control situation of the extra heavy rainfall. The satisfaction rate of residents in Jiaozuo city was 92.54%, higher than 88.23% in rural areas and 71.43% in other counties, and the difference was statistically significant ( $P < 0.05$ ); the satisfaction rate of the severely affected area of residence was 33.33%, lower than 76.66% in the lightly affected area and 96.19% in the area without disaster, and the difference was statistically significant ( $P < 0.05$ ); the difference of the disaster There was a difference in the degree of concern ( $P < 0.05$ ), and the satisfaction rate of residents who paid attention frequently was higher; the satisfaction rate of residents in areas with perfect flood control facilities was 93.33%, which was higher than that of 77.08% in areas without flood control facilities, with a statistically significant difference ( $P < 0.05$ ). The statistical difference in the comparison of satisfaction between different ages was small ( $P > 0.05$ ) and had little effect on the findings (Table 1).

### 2.2 The Current Situation of Flood Control and Anti-flood Engineering Construction

During the "Thirteenth Five-Year Plan" period, the total investment of the Yellow River flood prevention project in Jiaozuo City was about 1.07 billion yuan, of which 220

**Table 1.** The satisfaction of different characteristic groups on flood control capacity

Type	Number of people surveyed	Satisfaction Number of people	Satisfaction (%)	X <sup>2</sup>	P
Place of residence				5.765	<0.01
Jiaozuo City	67	62	92.54		
Rural	85	75	88.23		
Other counties	49	35	71.43		
Age				2.847	0.06
<18 age	36	35	97.22		
~49 age	158	132	83.54		
>50 age	7	5	71.42		
Disaster situation				9.733	<0.01
Severely affected	6	2	33.33		
Mildly affected	90	69	76.66		
No disaster	105	101	96.19		
Follow the disaster				6.956	<0.01
Less attention	21	14	66.67		
Follow often	180	158	87.78		
Flood control facilities				11.218	<0.01
Full facilities	105	98	93.33		
Lack of facilities	96	74	77.08		

million yuan of flood prevention projects in the Yellow River and 850 million yuan in flood control projects. Construction focused on Qinhe River. Width, embankment reinforcement, reconstruction of gates, renewal of insurance reconstruction, dyke top hardened, anti-wave forest planting, etc. It has more than 100 km in the governance of the river, and has a typical feature of “multiple points, line lengths, and wide faces” [2].

The construction of flood control and anti-flood engineering in Jiaozuo City has been steadily moving forward, and since May 8, 2020, the office of Jiaozuo City Flood Control and Drought Relief Command has been officially adjusted from the water conservancy department to the emergency management department. In the specific work,

the relevant departments focus on improving the five capabilities of prediction and forecast, risk research and judgment, scientific dispatch, emergency disposal, command and coordination [3].

(1) Strengthen the foundation of the work. Clearly the municipal government leadership of flood and drought control responsibilities and responsibilities, the development of the city's flood and drought control command work rules, the city's flood and drought control command member unit responsibilities and other systems, and actively build the party and government responsibility, a double responsibility of the flood and drought control responsibility system, Improve the administrative leadership system as the core of the responsibility system, refine and actualize the responsibility of flood and drought control at all levels and departments, industries and units, to achieve the flood control Drought control responsibility system to achieve full coverage.

(2) Strengthen the weak links. The emergency management department focused on the city's rivers, small and medium-sized reservoirs, silt dams, tailings storage, tourist attractions, the South-North Water Transfer Project, flood control and drainage projects, water-related projects under construction, important infrastructure, urban low-lying flood-prone areas, natural disasters and other important areas and key parts of the network to check. In the prevention and control of urban flooding, carry out the "four rivers improvement" of Wengjian River, Puji River, Baima River and Li River, implement the South-North Water Diversion Interceptor Ditch Dredging and Dredging, New River Dredging and Drainage Pipeline Dredging Project in the central city, promote the construction of Jiefang Road, Construction Road and Station Road Drainage Pipeline, accelerate the Shanyang Road Crescent Railway Bridge and other central city Many years of waterlogging point remediation project, urban flood control capacity significantly improved.

(3) Forming joint efforts. The emergency liaison and information sharing mechanism was improved, and the staff of emergency response, Water conservancy and meteorological departments were specially organized to jincheng and Xinxiang for flood control work, so as to grasp the rain situation, water situation and industrial situation in the upper and lower reaches of major flood control rivers in Jincheng And Xinxiang in time, and make preparations for flood control and drought relief in advance. Secondly, cooperation in power, logistics, communications, petrochemicals and open-pit mining has been strengthened to ensure the safe and stable operation of power supply and communication network of flood control, drought relief, emergency rescue and key flood control and dispatching projects. In case of emergency, priority shall be given to the transport of personnel and materials and equipment for flood prevention and rescue, rescue and disaster relief, and epidemic prevention.

(4) Coordinating flood control and flood fighting The Municipal Bureau of Water Resources actively manages and maintains river channels, reservoirs, sluges and DAMS, and carries out flood prevention and mountain flood disaster prevention. Automatic weather stations in early warning and forecasting, has built 106, automatic 24 farmland microclimate, soil water stop 5, hydrological station 2, 3 gage, hydrological survey stations 143, 16, and remote sensing precipitation station since 2020, the city's total release early warning information for more than 80 times, send all kinds of public forecast nearly 50 million text messages warning service.

### 2.3 Facts About Flood Control and Flood Fighting

In flood control and disaster relief operations, the Engineering Operation management Section is on duty 24 h a day to fully grasp the flood information and serve as a good adviser for the headquarters. Communication station daily debugging and county (city) district conference system, to ensure smooth communication; The design office sent many people to supplement the flood control expert group; The material station insists on full staff on duty to ensure the dispatch of flood control materials; Suburban bureau of Qunying reservoir and Sha River and other reservoirs and rivers 24 h of inspection, timely cleaning up channel blockage, effectively ensure channel safety; Water capital office draws professional drivers and vehicle security bureau organs flood control vehicles.

In terms of rainstorm warning, jiaozuo Meteorological Bureau launched a major meteorological disaster (rainstorm) III emergency response, to do a good job in the rainstorm weather process meteorological services. First, attach great importance to and strengthen responsibility. The city's meteorological department since the 16th, the city and county bureau chief stick to the front line, all levels of forecasters, forecasters, security personnel on duty, quick action, to prevent and deal with the impending heavy precipitation disaster weather. Second, advance prediction and scientific judgment. With the provincial meteorological Bureau, Shanxi Jincheng Meteorological Bureau, Jiyuan City meteorological Bureau to promote consultation, scientific analysis, accurate forecast in advance, emergency management, water conservancy, transportation, urban management and other departments issued instant "important weather report", for all levels of leadership command flood prevention and disaster relief to provide scientific decision-making. Third, establish mechanisms to strengthen cooperation. The city meteorological Bureau and mobile and other three major operators to establish a linkage mechanism, the network issued weather warning and forecast information, timely remind the public to take precautions.

### 2.4 Flood Control Capacity Satisfaction

In this study, the flood control capacity of Jiaozuo city and residents' satisfaction with the flood control emergency measures were investigated. From the results, the construction of flood control and flood control works in Jiaozuo City has reached a certain level, and can continue to steadily promote the construction of flood control and flood control works in the future. Residents are generally satisfied with the flood control measures, but some areas are seriously flooded. In the new era, social development has gradually shown the new characteristics of "small floods and major disasters" [4]. With the continuous expansion of urban scale, many areas are confronted with problems such as low flood control and drainage standards, lagging flood engineering construction, inadequate drainage capacity and weak emergency response, and many cities are threatened and harmed by floods to varying degrees. Relevant departments should focus on the construction of flood control facilities in these areas, eliminate potential dangers in time, conduct concentrated education for residents in areas prone to flood and waterlogged disasters, popularize knowledge of flood control and flood fighting for them, and minimize losses when dangers come.

### 3 Conclusion

Urban flood control and drainage is a systematic project involving many factors. Based on the conclusions of the survey, the following enlightenment are drawn on improving the flood control and resistance capacity of the region:

(1) Improve flood control infrastructure in villages and other counties. Through the investigation, we found that the flood control situation in the urban area was significantly better than that in other counties and villages. The development of a city requires overall planning of all parts of the city. Promote the development of flood control and drainage work in the whole region by “taking points with areas”.

(2) It can establish computer models with high-end computer technology to simulate floods in order to predict in advance. Based on the local watershed water conservancy conditions as the background, the computer model is established to simulate the flooding situation according to the changes of the working conditions and the social reality. We perform all-round management on floods through engineering and non-engineering flood prevention measures to prevent floods and minimize the losses. Plus, regular flood simulations for predictions on risks of being flooded help to provide proofs for scientific decision-making that may alleviate social and economic loss and design reasonable protocols to relocate people amid floods [5].

(3) The government strengthens the publicity of flood control knowledge. Through television, newspapers, radio, Internet and other news media, the situation and tasks faced by urban flood control should be widely publicized to the general public, enterprises, institutions, government organs, schools, etc., knowledge of urban flood disaster and disaster prevention and mitigation should be popularized, and the public awareness of flood disaster should be improved, their ability to rescue themselves and help each other, and their initiative in disaster prevention and avoidance should be improved. To form a strong public opinion atmosphere in which the whole society cares about and supports flood control, strengthen the people’s understanding of flood control facilities and emergency measures, and improve their awareness of flood control.

(4) Strengthen the interaction and coordination between urban flood control and drainage and urban construction and management, and do a good job of control before and after the event. In the stage of urban development, rivers shall not be occupied or destroyed, flood discharge capacity of rivers shall be guaranteed, reservoirs shall be built, flood control works and flood drainage systems shall be improved. After the flood, the meteorological bureau, natural resources and planning, water conservancy, culture and tourism departments worked together to send timely flood information and make scientific decisions.

(5) Effective supervision and cooperation of the masses. Residents in every city have the right to voice their opinions on unreasonable development, and the masses should exercise effective supervision over the government in urban development and the improvement of infrastructure. And in the face of disaster, the masses should unite to resist together. Only with the cooperation of the government and the masses, can people’s life and property safety be guaranteed.

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