Visual Analysis of "9.18" Terrorism Event in Xinjiang Based on UCINET

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Abstract. At present, the network-based organizational structure is gradually replacing the hierarchical organizational structure and becoming an important support for the survival and destruction of terrorists. Social Networks Analysis (SNA) is a method for quantitative analysis of various relationships and network structures in social networks. This article takes the "9.18" terrorism event in Xinjiang as an example. Firstly, the relationship matrix is constructed. Then the network analysis tool UCINET is used to construct the event-related terrorist activity network map. Finally, the network characteristics are analyzed by numerical social network. The measured values can be applied to the formulation of China's anti-terrorism strategy.

Introduction

The structure of current terrorist organizations is mainly divided into two categories: stepped and networked. With the increasing intensity of counter-terrorism operations, networking has become a new feature of terrorist organization [1]. The Social Networks Analysis (SNA) method can use points to represent social personnel. The relationship between social personnel is represented by a connection between two points. This method can be used to quantify hidden social relationship [2,3]. UCINET network analysis integration software mainly includes three parts: NetDraw, Mage and Pajek [4]. NetDraw can analyze both one-dimensional and two-dimensional data, Mage can display and analyze 3D data, and Pajek can be used for large-scale network analysis [5]. This article takes the "9.18" terrorism event in Xinjiang as an example. Firstly, the relationship matrix is constructed. Then the network analysis tool UCINET is used to construct the event-related terrorist activity network map. Finally, the network characteristics are analyzed by numerical social network.

Event Background

At 5 am on September 18, a group of thugs attacked a remote coal mine dormitory in a mountainous area of over 2,600 meters above sea level in Baicheng County, Aksu Prefecture. The terrorists madly smashed innocent people and set off to attack the police who went to the scene. 11 innocent people were killed, 18 were injured and 5 policemen were killed. Finally, the mob escaped into the mountains and resisted. After investigating, since 2008, some members of the gang have watched and listened to religious extremist audio and video and gradually formed religious extreme thoughts. The gang was connected to extremist extremism six times before the incident. During the escape period, the mob had reported the crime process and escape experience to the overseas organization three times and requested tactical guidance. Members of extremist extremists have repeatedly issued instructions to the group to swear allegiance. The culprit of this serious violent crime was the terrorist forces that split Tibet in the heads of Musha Tosania and Makati Aisha.

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Data Sorting

Based on the summary of the collected web page text information, we can determine four basic elements. First, the terrorists involved in the planning of the organization, indicated by A. Second, the required skills are indicated by K. Third, specific tasks are indicated by T. Fourth, resources for

organizing violence are indicated by Z. The specific information of these basic elements are shown in Table 1 and Table 2.

Table 1. Persons and resources

Number	Persons and resources
A01	Musha Toyuniazi
A02	Makati Aisha
A03	Turhon Amat
A04	Yu Suzhen Ai Hemat
A05	Makati Tusuniya
A06	Hot Imu Makati
A07	Nasr Yimin
A08	Maidi Aishan
A09	Aihe Taimu Monia
A10	Abdul Ayia
A11	Aiken Mauramat
A12	Wujiang Mai Maidi
A13	Middle contact of "Xinjiang Independence" riot organzation
A14	Intermediary contact for terrorist organizations outside the country
Z01	Capital supply
Z02	Contact tool
Z03	Activity staff
Z04	Tactical guidance

Table 2. Skills and tasks

Number	Skills and tasks
K01	Organizational planning ability
K02	Ability to contact members of various organizations
K03	Command ability
K04	Fighting ability
K05	Uyghur language ability
T01	Collect topographic maps of coal mines
T02	Understand the working hours of coal miners
T03	Contact foreign terrorist organizations for help
T04	Plan a terrorist campaign
T05	Contact the "Independence of Xinjiang" organization
T06	Violent attacks
T07	Design escape route after attack

Construction of Relation Matrix

According to the relationship determined in the previous section, construct the relationship matrix as shown in Table 3.

Table 3. Relational tables

Number	Task	Resource	skill
A01	T03\T04\T06\T07	Z01\Z02\Z03\Z04	K1\K2\K3
A02	T03\T04\T06\T07	Z01\Z02\Z03\Z04	K1\K2\K3
A03	T06	Z02	K2\K4
A04	T01\T06	Z01\Z02	K2\K4\K5
A05	T02\T06	Z01\Z02	K2\K4\K5
A06	T01\T06	Z01\Z02	K2\K4\K5

According to the relationship determined above, the following relationship matrix can be constructed: a terrorist-task relationship matrix, a terrorist-resource relationship matrix, a terrorist organization-skill relationship matrix, as shown in Table 4, Table 5, and Table 6.

Table 4. Terrorist-task relationship matrix

	T01	T02	T03	T04	T05	T06	T07
A01	0	0	1	1	0	1	1
A02	0	0	1	1	0	1	1
A03	0	0	0	0	0	1	0
A04	1	0	0	0	0	1	0
A05	0	1	0	0	0	1	0
A06	1	0	0	0	0	1	0
A07	0	1	0	0	0	1	0
A08	1	0	0	0	0	1	0
A09	0	1	0	0	0	1	0
A10	0	0	0	0	0	1	0
A11	0	0	0	0	0	1	0
A12	0	0	0	0	0	1	0
A13	0	0	0	0	0	1	0
A14	0	0	0	1	1	0	1

Table 5. Terrorist-resource relationship matrix

	Z01	Z02	Z03	Z04
A01	1	1	1	1
A02	1	1	1	1
A03	0	1	0	0
A04	1	1	0	0
A05	1	1	0	0
A06	1	1	0	0
A07	1	1	0	0
A08	1	1	0	0
A09	1	1	0	0
A10	0	1	0	0
A11	0	1	0	0
A12	0	1	0	0
A13	0	1	0	0
A14	1	1	1	1

Table 6. Terrorist organization-skill relationship matrix

	k01	k02	k03	k04	k05
A01	1	1	1	0	0
A02	1	1	1	0	0
A03	0	1	0	1	0
A04	0	1	0	1	1
A05	0	1	0	1	1
A06	0	1	0	1	1
A07	0	1	0	1	1
A08	0	1	0	1	1
A09	0	1	0	1	1
A10	0	1	0	1	1
A11	0	1	0	1	1
A12	0	1	0	1	1
A13	0	1	0	1	1
A14	1	1	1	0	1

Construction and Analysis of Terrorist Activity Network

According to the above data, UCINET network analysis integration software NetDraw template can be used to draw the network diagram between different elements. Figure 1 shows the terrorist-task relationship, Figure 2 shows the terrorist-resource relationship, Figure 3 shows the terrorist-skill relationship, and Figure 4 is shows terrorist relationship. From these relational network diagrams, we can visually observe which elements are in an important position.
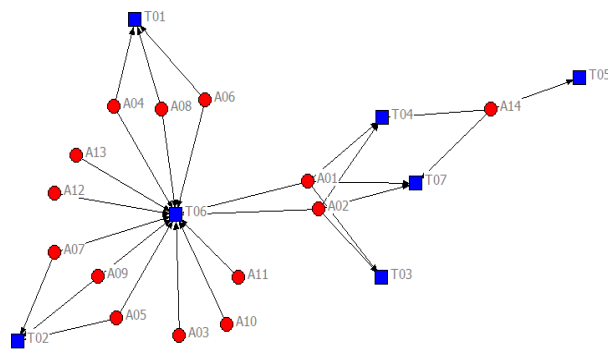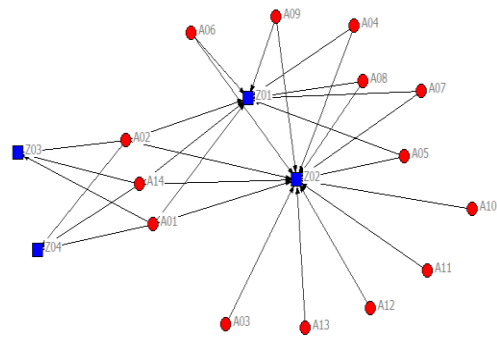

Fig.1 Terrorist-task relationship

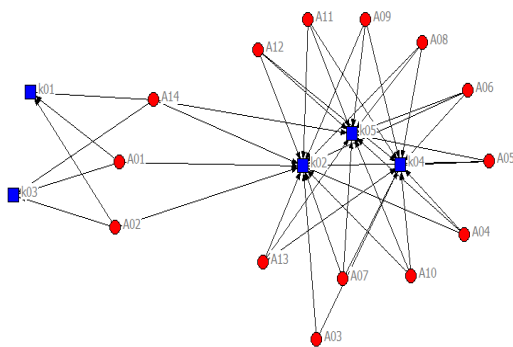Fig.2 Terrorist-resource relationship

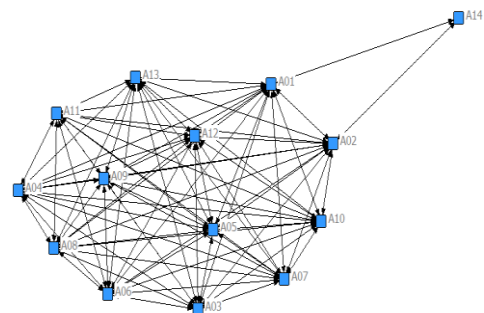

Fig.3 Terrorist organization-skill relationship

Fig.4 Terrorist relationship

According to the density and centrality of the person-to-person relationship diagram, the results are shown in Figures 5 and 6.

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Relation: 1

Density (matrix average) = 1.0000
Standard deviation = 0.5547

Use MATRIX>TRANSFORM>DICHOTOMIZE procedure to get binary image matrix.
Density table(s) saved as dataset Density
Standard deviations saved as dataset DensitySD
Actor-by-actor pre-image matrix saved as dataset DensityModel
```

Fig.5 Result of terrorist centrality calculations

		1 Degree	2 NrmDegree	3 Share
1	A01	17.000	32.692	0.093
2	A02	17.000	32.692	0.093
6	A06	14.000	26.923	0.077
4	A04	14.000	26.923	0.077
5	A05	14.000	26.923	0.077
9	A09	14.000	26.923	0.077
7	A07	14.000	26.923	0.077
8	A08	14.000	26.923	0.077
3	A03	12.000	23.077	0.066
10	A10	12.000	23.077	0.066
11	A11	12.000	23.077	0.066
12	A12	12.000	23.077	0.066
13	A13	12.000	23.077	0.066
14	A14	4.000	7.692	0.022

Fig.6. Result of terrorist density calculation

From Figure 5, the network density of the relationship between terrorists is 1. This shows that there is a connection between the people involved in the "9.18" terrorist incident, so in the fight against terrorists, the terrorists should be stalked and the terrorists will be wiped out. To achieve the impact of key people, it is necessary to measure the centrality of the relationship network. It can be seen from Figure 6 that the terrorists with the highest degree of centrality and intermediate degree are A01 and A02, indicating that the terrorist is at a critical position in the relationship network. From the actual situation of the incident, these two individuals are the organizers and planners of this terrorist activity. Similarly, in Figure 6, the network density of the relationship between the assigned tasks is 1, indicating that the tasks are closely related.

Summary

Based on the theory of social network analysis, this paper studies the "9.18" incident. The multi-relational network model of two events was constructed by UCINET, and some network characteristics were analyzed. The experimental results show that the results of visualization and data analysis are consistent with the actual situation.

Acknowledgement

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