Comparative study on prevention and control policies of major animal epidemics in China—Quantitative analysis of policy texts from 1972-2019

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Abstract: The matching of central and provincial governments' policy themes and the correspondence between them are important for measuring the accurate delivery of policies. Such measurement can directly reflect policy connections between the central and provincial governments and is helpful in understanding the strength and effect of policy implementation. In this study of animal epidemic prevention and control policy texts issued by central and provincial government departments from 1972 to 2019, the themes of the texts were determined by the segmentation of high- and low-frequency keywords, and the quantitative analysis was carried out in four dimensions: the year, number, subject and theme of each policy. The findings indicate that the central government takes the initiative in preventing and controlling animal epidemics and adjusts prevention and control measures through feedback, mostly using restrictive tools. The provincial governments' prevention and control of animal epidemics are a combination of active and passive types, and the tools used basically have the same characteristics as those used by the central government. The central government has formed an animal epidemic prevention and control emergency management decision-making group with the Ministry of Agriculture and Rural Affairs of the People's Republic of China and the State Administration for Market Supervision and Administration as the core. The policy text themes of provincial governments and agricultural animal disease prevention and control management departments match more closely than those of the central government. The study suggests that the central government's animal epidemic prevention and control policy themes can increase coverage and promote the implementation of provincial government prevention and control management measures. Provincial governments can form decision-making groups for the emergency management of animal epidemics, mobilize enthusiasm for animal epidemic prevention and control and receive feedback information, and enhance their ability to actively intervene in epidemic prevention and control.

Keywords: Major animal epidemics; Quantitative analysis; Policy text; Policy innovation diffusion

1. Introduction

Animal epidemic prevention and control are closely related to the safety of livestock production, animal food safety, public health and ecological security. In 1972, China formulated first animal epidemic prevention and control policy—"Beijing Measures for the Prevention and Control of Equine Infectious Anemia". Since then, China has formulated a series of policies to provide institutional guarantees for the prevention and control of major animal epidemics. The first case of avian influenza was confirmed in China in 2003, the first human case of avian influenza was reported in China in 2005, and the first case of African swine fever was confirmed in China in 2018, causing huge losses to the country's livestock breeding industry. The occurrence of animal epidemics is closely related to human production and life. The analysis of animal epidemic prevention and control policies is beneficial for the improvement of policies and the improvement of animal epidemic prevention and control implementation.

Chinese scholars have studied the prevention and control of animal epidemics since 1980, and the number of articles published by 1995 was generally not more than 1 per year. Since 1996, research on the prevention and control of animal epidemics has shown a hill-like rise with a slope of approximately 40 degrees. At present, domestic scholars mainly discuss certain influencing factors and mechanisms linked to animal epidemic prevention and control, focusing on research from the microscopic perspectives of animal epidemic prevention team building as well as farmers and others with direct

contact with grassroots epidemic prevention work. The discussion of prevention and control policies starts from the perspective of the subject of the article and policy implementers and leads to a qualitative analysis of the behavioral motivation of the policy object and the problems with policy implementation.

The implementation of public policies involves the integration of social and public interests. In the implementation of animal epidemic policies, the government, farmers and the public take the initiative to participate. However, to maximize their own interests, the public often supports alternative policy implementation and wait-and-see policy implementation for epidemic prevention and control, whereas government personnel will support symbolic policy implementation and incomplete policy implementation for epidemic prevention and control [1]. The scientificity and ideality of the policy itself will also affect the behavioral choices of farmers, resulting in policy failure. Therefore, research on policy texts and content is gradually being proposed and valued.

Research on policy texts that has emerged in recent years has provided a new way to explore governmental or departmental behavior and to explore structural relationships and actions between governments. As the materialized carrier of public policy, policy text is the true "fingerprint" of a series of behaviors, such as government regulation and management, and is also the fundamental basis of policy analysis[2]. The main method currently used in this field is content analysis. Content analysis is a quantitative analysis method based on qualitative analysis. It transforms the text content expressed in language into quantitative data. By processing and analyzing the quantitative data, it then explores the features that reflect the essence of the text content and facilitate calculation to achieve a more in-depth and accurate understanding of the "essence"[3] and to find the inherent laws and relationships among data. When analyzing the policy texts of the central and provincial governments and comparing the selected samples horizontally and vertically from an objective perspective, it is convenient to identify the law of policy evolution and derivation in the same region or different regions at different historical developmental stages[4].

In this paper, the number of keywords in the policy texts of the central and provincial governments is counted and processed, and the keyword coword analysis method is used to analyze the themes of the policy texts. By using the method of comparative study, this paper makes a horizontal and vertical comparative analysis of the time, quantity, subject, text theme and keywords of the policy publications of the central government and the provincial local governments to discuss the characteristics of policy publications, choices of policy tools and distribution of policy attention.

2. Materials and methods

2.1 Material collection

The animal epidemic prevention policy texts of the central government and 31 provincial administrative regions were selected as the research objects. The policy texts of Hong Kong, Macao and Taiwan were not included. An advanced search was used on the magic weapon database of Peking University, and central and local regulations were searched separately on the laws and regulations page. The search terms were "animal disease", "animal epidemic", "compulsory immunization", "animal quarantine", "animal epidemic prevention" and the first and second categories of animal diseases. The release dates were 1900-2019 (2019.10.16), the release department and approval department were not selected, timeliness was the current effectiveness, and the effectiveness level was the full search. An advanced search was performed on the home page of the official website. The search criteria included any of the following keywords: "animal disease", "animal epidemic", "compulsory immunization", "animal quarantine", "animal epidemic prevention" and the first and second categories of animal diseases. By searching for the type of disease and time range and selecting all times shown in the quick time period, with the title as the search word position, we obtained 751 central and 3227 local policy texts. Then, we manually filtered the data by deleting duplicate data, deleting local nonprovincial entities and various commissions and bureaus, and deleting the specific operations and implementation of certain policy content from a policy text. For example, the policy text reflects only the right animal disease attitudes and orientations or refers only to staffing or funding. Eventually, we obtained 284 central and 1,254 provincial texts.

2.2 Excel software for basic data statistics

The central data and provincial data were imported into Excel, and the statistical content included

the date of publication, the province of publication, the name of the document, and the subject of publication. Then, the Excel built-in function was used to draw tables and charts.

2.3 Keyword extractor software for text keywords

Each text generalizes a specific topic and content, so it is necessary to extract keywords from the text and abstract and summarize them using the concepts and attributes of one or more anthologies [5]. The keywords were extracted from 284 policy texts of the central government and 1254 policy texts of provincial governments by keyword extractor software, and the keyword data were exported to Excel for collation and statistical analysis. When different documents express the same concept, there will often be synonymous substitution or different levels of lexical concepts, resulting in lexical differences. Therefore, if the lexical features are expressed at the conceptual level, the aggregation function of articles in the same category will be enhanced. The extracted keywords belonging to the same category, such as "authoritative interpretation", "prevention and control knowledge publicity", "popularize prevention and control science and technology knowledge" and "carry out technical consulting services", were replaced with "propaganda and education", and the data perspective function was used to determine the frequency of keywords to improve the accuracy of the analysis.

According to the high-frequency and low-frequency word boundary fractions proposed by Donohue, $T=(-1+\sqrt{1+8I1})/2$ (T is the threshold of high-frequency words, and I1 is the number of keywords with word frequency 1), we calculated the high-frequency word threshold [6]. According to the keyword statistics, there were 231 keywords with provincial government word frequency 1, that is, I1=231. T=21 was calculated by the same formula; that is, the critical value of high-frequency words was 21, and there were 26 high-frequency words with frequency greater than or equal to 21. Because the sum of the topic frequency of high-frequency keywords of provincial governments greater than 21 was slightly higher than the total number of provincial government policy texts, the high-frequency keywords were adjusted, and the subjects of provincial government policy texts became "epidemic management and implementation", "epidemic detection and report", etc. By using the same method, the keyword frequency of the central government policy texts was counted, and the critical value of the central government's high-frequency words was 22. There were 9 high-frequency words with frequency statistics greater than or equal to 22, and the themes of the central government policy texts were "animal epidemic disease" and "epidemic situation prediction".

2.4 Using the coword network method to draw the social relation network graph

For this paper, we used the network analysis and integration software UCINET6. First, Excel software was used to sort the number of jointly issued papers by department, and the co-occurrence matrix was constructed. Then, the data were imported into UCINET6 to construct the social relationship network diagram of jointly issued papers by department, and the network density and centrality were then analyzed.

3. Policy text selection and quantitative analysis

3.1 Comparative analysis of the number of policy texts issued by central and provincial governments annually

Excel was used to calculate statistics on the annual number of papers issued by the central and provincial governments (as shown in Figure 1). Except for the bulge of the number of papers issued by the central government in 1992 and 1999, the number of papers issued by the central government and the provincial government was in the "level road" stage at a height lower than 1 from 1972 to 2002. In 1991, bovine spongiform encephalopathy occurred in Switzerland, France and Ireland, foot-and-mouth disease occurred in Argentina and Pakistan, and African swine fever and pig blister disease appeared in many foreign countries [7]. In 1992, the central government issued seven quarantine policies on entry and exit animals and animal products. In 1998, the World Organization for Animal Health (OIE) announced that animal epidemics in many countries were serious. In 1999, the central government issued 14 policies on preventing animal diseases from entering China from abroad. The central government will issue programmatic policy documents and arrange the prevention and control work of the epidemic in and out of China according to the situation of animal epidemics in and out of China. It is an active policy release behavior that actively and systematically responds to external or internal stimuli or influences. Proactive policy release needs to give full play to the potential of learning, strive

to explore the characteristics of internal and external environments, actively guide stakeholders to cultivate awareness of epidemic prevention and control, and enhance the practical flexibility of animal epidemic prevention and control measures.
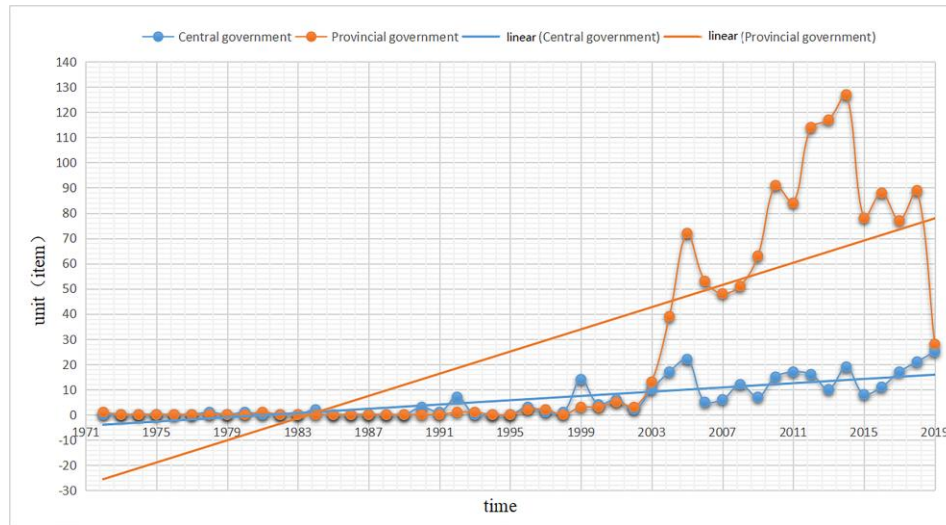

Figure 1: Statistics on the number of annual releases of central and provincial government policy texts.

The number of policies issued by provincial governments generally increases according to the issuance of programmatic policy documents by the central government, which will continue the use of restrictive policy tools by the central government. In 2003, the central government issued the initial policy "Emergency Response Plan for Major Animal Epidemics at Entry and Exit". Since that year, there have been obvious ups and downs between the central and provincial governments. In 2005, the central government issued a feedback policy called the "Emergency Response Plan for Major Animal Epidemics at Entry and Exit", and provincial governments saw the first spike in publication. In 2010, the central government issued the 2010 National Program for Compulsory Immunization against Animal Epidemics and the Measures for Examining the Conditions for Animal Epidemic Prevention, and provincial governments saw their second peak in publication. In 2014, the central government issued the National Aquatic Animal Disease Surveillance Plan 2014, and the highest peak of provincial governments was the third publication peak. Provincial government policy formulation is essentially a combination of the local actual situation of local conditions to carry out the central policy process, can be seen from figure 1 in 31 provincial government policy post number grows because the issue of the central government's policy level, less average to growth in the provinces, namely, the provinces according to the actual circumstance of epidemic area number will follow the policy articles central programmatic documents released maintain reasonable growth. The central and provincial governments will require the target groups of the policy to disinfect and purify the farms and compulsorily immunize the animals. The policy subject can better satisfy the interests of the collective public by limiting the range of people's behavioral choices. As a restrictive policy, it is mandatory and has simpler judgment criteria compared with the encouraging policy.

Although the policy issuing trend of provincial governments follows that of the central government, their enthusiasm is low. China needs to enhance the ability of provincial governments to innovate and proliferate animal epidemic prevention and control policies, enhance the initiative of epidemic prevention and control and the ability to receive feedback information, and reduce policy failures. According to the slope formula $K= (y2-y1)/(x2-x1)$, the regularity of the number of articles published in a year was found. From the perspective of the overall time period, the number of central government policy publications is more evenly distributed on both sides of the publication trend line, with a slope of +0.52, showing a "wave-shaped" upward trend. The number of 31 provincial-level policies is far from the publication trend line. It is +0.56, and the average slope of the number of documents issued by each provincial government is +0.02, showing a trend of rising first and then falling. This shows that the central government's enthusiasm for issuing documents is rising steadily and regularly, and some provincial governments are less enthusiastic about policy issuance. This is related to the development of animal husbandry in some provinces and inactive disease. The reporting procedures for major animal epidemics are bottom-up, and the opening of the animal epidemic prevention and control policy is a top-down promotion by the central government. The current statutory animal epidemic reporting

procedure in my country is that the county-level veterinary authorities will report it level by level after receiving the epidemic report and verifying the situation[8]. The provincial government will report to the central government department when a major animal epidemic is detected, and the central government will issue a national. For epidemic prevention and control policies within the scope, the provincial government forwards and issues local policies to the central government. The central policy has the role of a weather vane, but not all provincial governments are completely consistent in the forwarding and implementation of central policies. Provincial governments generally carry out policy forwarding and specific implementation of policies based on actual conditions. From a practical point of view, if provincial government policy makers have a biased understanding of central policy, there may be some deviation between local policy and central policy. If the actual local situation is not deeply understood, it may lead to the mechanical implementation of the central policy. Therefore, for provincial governments that mainly transfer information, there is no demand for innovation policy, and no action is the best decision, which belongs to passive policy-making behavior. For provinces with relatively active epidemics, in addition to forwarding, policymakers from general public policy target groups at the provincial level of micro cognitive and behavioral perspectives should re-examine the necessary conditions for the effective implementation of public policy, choose different policy tools and their optimum combination [9], and devise and accord with the actual situation of provincial innovative local policies. The actual situation in each region will change due to the implementation of the initial policy. The central government will issue feedback-type policies based on the dynamic changes of the actual situation and then issue them to each locality. However, because the actual situation in each provincial-level region does not change simultaneously, the provincial government will issue feedback-type policies based on the dynamic changes in the actual situation. Governments at higher levels should grasp the dynamics of the epidemic to adjust local policies, enhance the ability to actively intervene in epidemic prevention and control, and reduce the possibility of policy failure due to insufficient understanding of the actual situation in the province.

3.2 Comparative analysis of the issuing subjects of central and provincial government policy texts

We performed statistical analysis of the central government's issuing departments, and changed the names of the issuing departments that were merged, renamed, and abbreviated to the complete department names. Since the constituent departments of the provincial governments were not exactly the same, the mergers, functional integrations, and listings among the departments were not unified, so the affiliation between the departments was based on the highest management department for consolidated and issued statistics, and other situations were not included. The statistics were then consolidated. The statistics for the number of subjects promulgated by central and provincial government policies are shown in Table 1.

Table 1: Statistics for the number of policy promulgators of central and provincial governments.

Number of policy subjects	1	2	3	4	5	6	7	8 and above
Central government	180	92	6	4	0	0	1	1
Provincial governments	1184	64	1	3	2	0	0	0

Table 1 shows that in animal epidemic prevention and control policy texts, the proportion of joint issuance among central government departments is 36.62%, while that of provincial government departments is 5.91%. When animal epidemic prevention and control policies are compared with the ratio of other joint postcrisis management policy responses, the central and Beijing-Tianjin-Hebei regional air pollution prevention policies transverse and longitudinal joint release number accounts for approximately 11% of the total number [10], marine environmental protection policy for the main body joint decision accounts for only 4.3% [11], the central government joint mandate ratio is high, and the proportion of provincial government joint mandates is low. The number of policy issuing subjects and joint publishing situations were counted, the co-occurrence matrix of policy issuing subjects was constructed, and the cooperative network diagram of policy issuing subjects was obtained with UCINET6. The nodes in the figure represent the policy-making subjects, and the nodes show the degree of centrality. The larger the node, the higher the centrality, that is, the more contacts and cooperation among various departments. The thickness of the lines indicates the interaction intensity between the subjects, that is, the closeness of the cooperation degree, and Figures 2 and 3 are thus obtained.
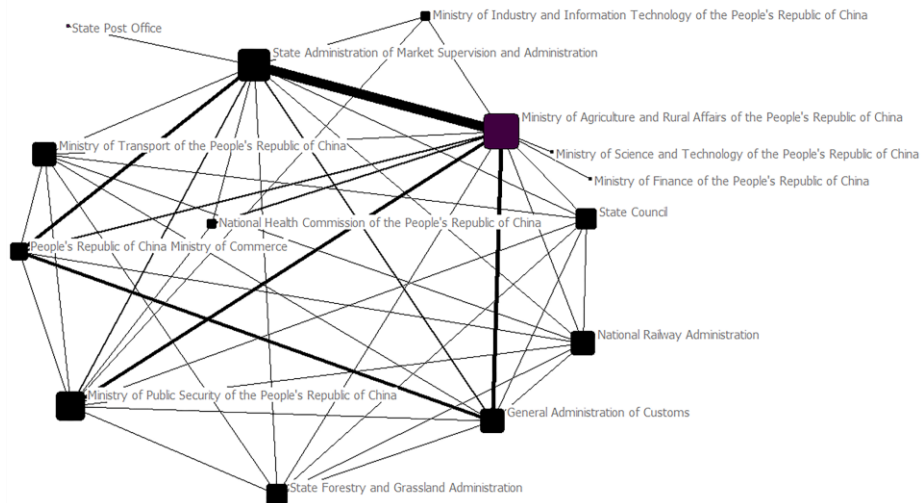
Figure 2: Collaboration relationship of central government policy subjects.
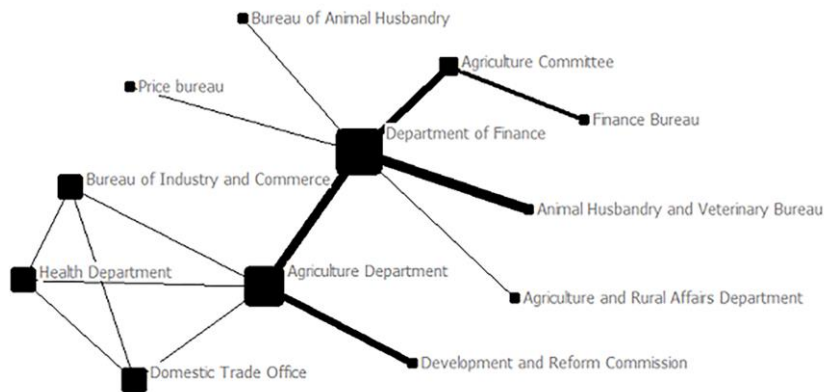

Figure 3: Cooperation relation diagram of policy subjects of 31 provincial governments.

As shown in Figure 2, the Ministry of Agriculture and Rural Affairs of the People's Republic of China and the State Administration of Market Supervision and Administration have the largest nodes and the thickest lines in the collaborative relationship diagram. There are many links between the two, a high degree of interaction, and many cooperative relationships with other departments, representing the first core of network relationships. The General Administration of Customs, the Ministry of Public Security of the People's Republic of China, the Ministry of Commerce of the People's Republic of China, and the National Health Commission of the People's Republic of China have larger nodes and thicker lines in the collaboration diagram, with a high degree of mutual interaction and cooperative relationships with other departments More often, these departments are the second-tier core of the network relationship, and the two-tier core basically forms the emergency management decision-making group for the prevention and control of animal epidemics. Regarding provincial government policy subject collaboration relations, because there are more policy subject departments, in order to make the diagrams more intuitive, only statistical departmental relations with a joint mandate quantity of no less than 2 were included. As Figure 3 shows, the policy subjects of provincial governments have similar coordination, with many pair links among the Finance Department, Department of Agriculture, Animal Husbandry and Veterinary Bureau, and Development and Reform Commission. However, the policy subjects are relatively scattered, and there is no core policy-making body. Figure 3 shows 31 provincial governments. Since there is no cooperation between provincial governments in publishing papers, the collaboration degree of the statistical subject collaboration graph is lower, and there is no core decision-making group.

Animal epidemics are transregional emergency public crises that are associated with problems such as relatively scattered emergency subjects and relatively fragmented emergency resources[12]. Therefore, it is necessary to adhere to government-led multisubject cooperation in response and establish a government emergency management decision-making group to accelerate the emergency response. At present, under the guidance of central policies, provincial governments often pass relatively specific

regulations on how to implement central policies and solve actual problems in the region. The relevant departments are mostly at the same level and rely on direct orders from higher authorities. There is little information exchange between departments, and the sharing of emergency resources and prevention and control information between departments is realized only after passing a problem up and down the bureaucracy. There is still a lack of flexibility and initiative in responding to animal epidemics. The prevention and control of animal epidemics are related to industry and commerce departments, public security departments, armed police departments, civil affairs departments, animal husbandry and veterinary departments, health departments, transportation departments and finance departments. The establishment of a core decision-making group can strengthen the comprehensive management and coordination of emergency subjects[11], enhance the horizontal communication efficiency between provincial government departments, and accelerate the response speed of epidemic prevention and control.

China's major animal disease prevention and control system departments and work content are compared with the statistics of the publishing entities that jointly issued more than 10.00% of China's major animal epidemic prevention and control policies (as shown in Table 2), the work content of government departments and animal epidemic prevention. There is a positive correlation between the degree of conformity of the control policy texts and the number of documents issued by a department. Today, China's animal epidemic prevention system includes the Animal Husbandry and Veterinary Bureau of the Ministry of Agriculture and Rural Affairs, the Veterinary Drug Supervision Institute, the Animal Disease Prevention and Control Center, and the Animal Health and Epidemiology Center. As an important department for animal epidemic prevention, the Ministry of Agriculture and Rural Affairs has many responsibilities, such as drafting relevant laws on animal epidemic prevention, signing agreements between governments, and formulating relevant standards. The Animal Husbandry and Veterinary Bureau of the Ministry of Agriculture and Rural Affairs is responsible for the supervision of animal epidemic prevention and quarantines. Departments such as the Animal Epidemiology Center and the Animal Epidemic Reporting Center are responsible mainly for domestic animal epidemiological investigations and veterinary drug reviews[13]. Among the central government departments, the Ministry of Agriculture and Rural Affairs and the State Administration for Market Supervision and Administration have issued a large number of documents and accounted for a large proportion of the total. The Animal Husbandry and Veterinary Bureau, the Department of Agriculture and Rural Affairs, and the Agriculture Committees of provincial governments have issued more documents. The main work content of these departments basically contains the themes of the animal epidemic policy texts, and the number of texts issued by these department accounts for a high proportion of the total number.

Table 2: Statistics on the number of major animal epidemic prevention and control policies issued by the main body and joint publications in China.

Department releasing the text		Total number of texts	Number of joint documents	Proportion of joint publications
Central government agency	Ministry of Agriculture and Rural Affairs of the People's Republic of China	214	103	99.04%
	State Administration of Market Supervision and Administration	122	75	72.12%
	General Administration of Customs	25	25	24.04%
Provincial government agencies	Department of Finance	64	49	70.00%
	Agriculture and Rural Affairs Department	269	26	37.14%
	Animal Husbandry and Veterinary Bureau	347	21	30.00%
	Agriculture Committee	243	16	22.86%
	Development and Reform Commission	21	14	20.00%

3.3 Topic distribution and keyword analysis of central and provincial government policy texts

The topic of the policy text is determined by high and low frequency words, and the number of topics in the policy texts is arranged from highest to lowest (see Table 3 and Table 4). The animal

epidemic prevention and control policies promulgated by the central government are aimed at integrating all the information of various provincial governments, and the policies promulgated by the provincial governments are targeted at the provincial animal epidemic situation. On the whole, the central policy themes are relatively at the macrolevel, and the policy themes of the provincial government combine the macrolevel and microlevel. Epidemic prevention team building, regional management, laboratory management, publicity and education in the themes of provincial government policy texts are formulated for provincial and local conditions and are more microscopic than the national epidemiological survey and epidemic forecast. The prevention and control of agricultural animal diseases include compulsory immunization and annual planned immunization of raised animals, inspection and quarantine of imported and exported animals and products, blockades of animals in epidemic areas and isolation of humans and animals, diagnosis and sharing of epidemiological data and reporting of epidemic information, and protection personnel. Treat those infected and the infected animals in a harmless manner; thoroughly disinfect the epidemic area and breeding environment and protect the epidemic-free area; provide social assistance to affected livestock households, pastures and breeding units; and accelerate the restoration of production and operations[14]. When the themes of policy texts and the content of prevention and control management of agricultural animal diseases are compared, the results indicate that the themes of policy texts of provincial governments generally include prevention and control management content, and the themes of policy texts of the central government lack unified provisions for the treatment of infected people and the implementation of social assistance for affected livestock-owning households and breeding units. The central government policies have guidance for the formulation and promulgation of provincial government policies, and improving the thematic richness of the central government's policy texts enhances the thematic richness of provincial government policy texts. The comprehensive performance of the central government thematic coverage provides value guidance for provincial government policy implementation, and provincial government policy implementation plays an important role in promoting national animal epidemic prevention and control.

Table 3: The themes of the central government's animal epidemic prevention and control policy texts.

Serial number	Theme	Number of topics	Main keywords
1	Animal disease	64	Epidemic diseases, highly pathogenic avian influenza, foot-and-mouth disease, swine fever,
2	Epidemic prevention and surveillance	38	disease monitoring, immunization effect Information, isolation and quarantine
3	Disease prevention and control measures	30	Supervision, control, prevention, control, isolation, destruction
4	Epidemiological investigation	29	Epidemiology center, questionnaire survey, emergency epidemiological survey
5	Emergency response and implementation	27	Emergency plan, emergency response, emergency measures, emergency drill
6	Food safety and market stability	25	Meat consumption, supply chain, market regulation, quality supervision, consumption
7	Disinfection and purification	25	Purification of farms, purification assessment, closed disinfection, disinfection system
8	Vaccine creation and supervision	24	Supervision, inspection, production, market, transportation, quality, procurement
9	Epidemic forecast	22	Reports, announcements, inspection results, epidemic forecasts, results submission

Table 4: Themes of provincial governments' animal epidemic prevention and control policy texts.

Serial number	Theme	Number of topics	Main keywords
1	Emergency response and implementation	118	Emergency reserve team, disinfection drugs, emergency support, emergency command system
2	Epidemic forecast	85	Channels, media, information networks, announcements, weekly reporting system, influence
3	Animal disease	84	Peste des petits ruminants, a class of animal diseases, swine Japanese encephalitis, swine fever
4	Epidemic prevention	74	Forces stationed in Shanghai, monitors, professional

	team building		quality, management personnel, veterinarians
5	Prevention and control financial support	68	Special funds dedicated, compensation, fiscal budget, audit, two-level finance
6	Epidemiological investigation	63	Epidemiological research, questionnaire survey, follow-up survey, pathogenic molecule
7	Epidemic prevention and surveillance	61	Fixed-point monitoring, active monitoring, sample testing, monitoring data
8	Publicity and education	51	Secondary dissemination, leaflets, popular science knowledge, protection awareness, manuals
9	Diagnosis	49	Serum samples, antibody qualification rate, clinical cases, antibody positive
10	Food safety and market stability	48	Meat consumption, supply chain, market regulation, quality supervision, consumption
11	Plan management	45	Emergency plans, regulations, plan implementation, training, drills
12	Disinfection and purification	45	Purification of farms, purification assessment, closed disinfection, disinfection system
13	Laboratory management	44	Standardized procedures, professional laboratories, approval procedures, consumables, responsibility system
14	System guarantees	43	Financial security, material security, socialized service system, social participation
15	Vaccine creation and supervision	41	Immune density, vaccine types, live vaccines, research and development, new vaccines
16	Regional management	40	Regional management, cross-provincial introduction, departmental collaboration, centralized disposal
17	Early warning	38	Early-warning level, analysis warning, classification, risk warning
18	Monitoring and supervision	38	Transport supervision, daily supervision, transshipment, prevention and control files
19	Crack down on illegal activities	38	Illegal operations, illegal transportation, sick and dead pigs, financial violations, smuggling
20	Disease prevention and control measures	35	Insect vector control, prevention and control cooperation, culling, immunization, safety supervision
21	Animal disease immunity	30	Anthrax immunization, enhanced immunization, first immunization, immune effect monitoring
22	Prevention and control technical support	29	Business skills, resource integration, technological innovation, technical training
23	Risk assessment	26	Dissemination risk, risk monitoring, rebound risk, integrity risk
24	Performance management	24	Performance appraisal, performance self-evaluation, performance monitoring, target extension
25	"San Nong"	22	Targeted poverty alleviation, "agriculture, rural areas and farmers" work, fight against poverty, paired assistance
26	Animal epidemic prevention conditions	15	Standardization, large-scale, regional layout, limited breeding, closed breeding

The government should pay attention to the breadth of the postmortem recovery phase of the epidemic and strengthen governmental and public awareness of follow-up prevention. Emergency management includes preprevention, incident response, management during the incident, and recovery after the incident. Advanced prevention in animal epidemic prevention and control in China includes animal epidemic prevention conditions, early warning, epidemic prevention and monitoring, "agriculture, rural areas and farmers", epidemic prevention team construction, plan management, regional management, laboratory management, epidemic prevention and control measures, epidemiological investigation and animal epidemic immunization. Incident response and in-process

disposal include epidemic forecasting, diagnosis, emergency response and implementation, technical support for prevention and control, financial support for prevention and control, risk assessment, monitoring and supervision, vaccine creation and supervision, and performance management. Rehabilitation includes disinfection and purification, food safety and market stability, publicity and education, cracking down on illegal activities, and system guarantees. Both the central and provincial government policy texts include four stages of emergency management. The number of central and provincial government policy texts with the theme of the preprevention phase accounted for 43.31% and 37.24%, respectively, and the text theme was emergency response. The number of central and provincial government policy texts with the theme of the "in-process" stage accounted for 39.08% and 44.82%, respectively, and the number of central and provincial government policy texts with the theme of the rehabilitation phase accounted for 17.61% and 17.94%, respectively. The comparison of data shows that the central government policy texts focus on the preprevention phase of emergency management, while the provincial government policy texts focus on the emergency response and in-process management phases of emergency management. The central and provincial governments have a similar degree of response to the recovery phase, which accounted for a lower proportion of the four phases of emergency management. Based on the experience of epidemic control, advance preparation, early warning and agile response are the key points of successful prevention and control[15]. The central government has a large number of policy texts for the preprevention stage. It is always alert to the situation in China and abroad and can respond rapidly to an animal epidemic situation, which is in line with the principle of scientific prevention and control. However, the government and the public tend to choose "safety" as the optimal value in the short term after the occurrence of emergencies, and their attention to safety work and safety needs decreases over time[16], resulting in unsustainable challenges for crisis learning and risk prevention. The degree of attention animal epidemics, as emergencies, will inevitably decline during the recovery phase, which will indirectly affect the entire process of emergency management.

4. Conclusion and Enlightenment

4.1 Enhance the ability of provincial governments to innovate and spread animal epidemic prevention and control policies, and enhance enthusiasm for epidemic prevention and control and the initiative for receiving feedback information.

Provincial governments should improve their ability to innovate and spread policies for the prevention and control of animal epidemics and formulate more local policies that conform to the characteristics of local animal epidemics. Policy innovation diffusion generally refers to the process by which a government innovates a certain policy and spreads it to other local governments[17]. Animal epidemics are a public crisis, and central policies are quickly communicated to local governments from top to bottom. Since the central government's policy formulation is based on a comprehensive consideration of the conditions of each province, it is universal. Animal epidemic prevention and control are associated with emergency management. Provincial governments will generally forward central government policies to prevent and control provincial animal epidemics. However, the animal epidemic situation in each province varies greatly. Provincial governments should consider actual local conditions in formulating provincial policies. Considering and utilizing the resources and subjects in the province and adapting measures to local conditions can maximize the utilization of resources. Compared with other policy links, the process of public policy implementation is relatively long, and there are many unexpected and variable factors. When these factors cause policy implementation behavior to deviate from the policy goal, policy implementation will be invalid. In issuing policies, the central government will adjust the initial policy to suit the actual domestic animal epidemic dynamics, and the issuance of feedback-type policies is a flexible, practical and efficient policy issuance approach. Provincial government policy makers have issued fewer public policies based on actual local conditions. Policy target groups can rely on big data to collect feedback information on policy implementation effects and animal epidemic changes and issue more effective feedback on implementation to reduce policy failures.

4.2 Improve the coverage of the central government's animal epidemic prevention and control policy themes and enhance the role of a wind vane

Enhancing the microangle of the central government's policy theme and attaching importance to emergency management in the recovery phase is conducive to promoting the implementation of

provincial government policies and cultivating public awareness of prevention. The central government policy theme is at the macrolevel, the provincial government policy theme combines the macro- and microlevels, and the provincial level matches the content of the prevention and control of agricultural animal diseases to a higher degree than the central government policy text themes. Since central government policies have a guiding role in the formulation and promulgation of provincial government policies, increasing the richness of central government policy texts has a positive impact on enhancing the richness of provincial government policy texts. More provincial governments can understand that the central government paying attention to wind direction is conducive to the implementation of policies and plays an important role in the advancement of animal epidemic prevention and control across the country. The themes of animal epidemic prevention and control policies of the central and provincial governments is matched with the four stages of emergency management in terms of quickly responding to and actively dealing with the aftermath of major animal epidemics. The central government attaches great importance to the preprevention stage, and the postrecovery stage is equivalent for provincial governments. In the postrecovery stage, the attention of the government and the public gradually decreases over time, indirectly affecting the whole effort of emergency management. The central government should pay attention to extending the postrecovery stage of policies and enhance its own prevention awareness and that of the public.

4.3 Provincial governments should establish a core decision-making group for emergency management of animal epidemic prevention and control to enhance their ability to actively intervene in epidemic prevention and control.

The provincial governments have established a core decision-making group for the emergency management of animal epidemic prevention and control, and the understanding of emergency resources among departments has improved, which is conducive to improving the efficiency of horizontal communication and information exchange density between emergency subjects and accelerating the response to epidemic prevention and control. The animal epidemic is a cross-regional public relations crisis, and there are problems such as the relative dispersion of emergency response subjects and the relative fragmentation of emergency resources. In response to the public relations crisis of animal epidemic prevention and control, the central government has established a core decision-making group for policy-making to enable it to understand emergency resources in a timely manner and respond quickly. The provincial governments have established a core decision-making group that can carry out multiagent coordination and linkage to maximize the emergency response. The work content of each emergency response body corresponds to all aspects of animal epidemic prevention and control, and each body has its own knowledge and experience in epidemic prevention and control and can provide first-hand information faster, and coordinate more available human and material resources in a short time. It is also important for all entities to put forward suggestions on the use of epidemic prevention and control tools and the improvement of epidemic prevention and control effects, broaden the perspective of provincial policy formulation entities' active intervention in epidemic prevention and control, and increase the response rate of epidemic prevention and control.

5. Conclusions

This study found that the joint policy issuance rate of the central government policy department is high, and the combined policy issuance rate of the departments in charge of provincial government policy is low. Regional provincial government departments should set up a core decision-making group for animal epidemic prevention and control to strengthen prevention and control policies, and all localities and departments should strengthen the communication of information and resource coordination to improve the efficiency of animal epidemic prevention and control. There is a large gap in the number of papers published by provincial governments, so it is necessary to strengthen the guidance and promotion of provincial government policy creation through the supervision of the central government. Regions with a small number of published papers should pay more attention to animal epidemic prevention and control and formulate and issue policies based on the actual local situation. Provincial government policies are wider than central government policies in terms of subjects, and the richness of the themes of the texts needs to be strengthened in central government policies. The central government should pay more attention to problems arising from the emergency management recovery phase to promote provincial government policies on the ground and cultivate public awareness.

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References

[1] Luo Li, Liu Fang, He Zhongwei. Research on epidemic Prevention and control Behavior of Farmers in public Crisis of Major Animal Epidemic -- An Analysis based on Game Theory [J]. The world's agricultural,2016(02):56-62+199.(in chinese)

[2] Ren Tao, HUANG Cui, SU Jun. The Path and development Trend of public Policy text research [J]. Chinese Administration, 2017(5):96-101.(in chinese)

[3] Liu Wei. Application of content analysis in the study of public management [J]. Chinese Administration,2014(06):93-98.(in chinese)

[4] Wang Qian, Song Wei. Comparative analysis of research methods of science and technology Policy [J]. Science and Technology in Chinese universities,2015(09):21-23.(in chinese)

[5] Gao Weijun, MA Dong-lin, ZHANG Qi-wen. Research on text topic extraction method based on ontology [J]. Computer application and software,2012,29(02):54-56.(in chinese)

[6] Wei Ruibin. Thematic Analysis of Keyword Based Information Science Research [J]. Information Science,2006(09):1400-1404+1434.(in chinese)

[7] Lee Tongrui. International Animal Epidemic Report(January-June 1991)[J]. Chinese Veterinary Science and Technology,1992(05):43-44.(in chinese)

[8] Chen Sheng-wen, HE Tao, WU Hai-bao, LUO Wei-hong. Thoughts on the Establishment of reporting System for major Animal Epidemic diseases [J]. Veterinary Guide,2020(13):57.(in chinese)

[9] Guo Yue, He Linsheng, SU Jun. "Tool-Narrate-Feedback" : a research framework of behavioral Public Policy [J]. Chinese administration,2020(05):71-78.(in chinese)

[10] Sun Tao, Wen Xuemei. Regional Environmental Governance from the perspective of Government-to-government relations -- A Quantitative analysis based on the Text of Air governance policies in Beijing-Tianjin-Hebei Region [J]. Urban development research,2017,24(12):45-53.(in chinese)

[11] Xu Yang, Wang Qi, Kong Deyi. Historical Evolution and Structural Characteristics of Marine Environmental Protection Policies in China -- A Quantitative Analysis based on policy Text [J]. Journal of Shanghai University of Administration,2016,17(04):81-91.(in chinese)

[12] Zhou zhibo. Legal analysis of horizontal inter-governmental coordination in trans-regional public emergencies [J]. Journal of university of science and technology Beijing (social science edition), 2020,36(05):74-83.(in chinese)

[13] Yang Pei. Research on Policy Implementation Deviation of Animal Epidemic Prevention and control under public Crisis -- Based on the Perspective of target Group [J]. Anhui agricultural science bulletin,2015,21(17):105-106+109.(in chinese)

[14] Peng Siyao. Publicizing animal epidemic to promote veterinary system reform [J]. Jiangxi Journal of Animal Husbandry and Veterinary Medicine,2004(03):33-34.(in chinese)

[15] OLMSTEAD Alan L, RHODE Paul W.Arresting contagion:science, policy, and conflicts over animal disease control[M].Cambridge, Massachusetts:Harvard University Press, 2015:400-480.

[16] Zhang Haibo. The Whole Process Balance of emergency Management: a New Issue [J]. China Administration,2020(03):123-130.(in chinese)

[17] Li Jian, ZHANG Wenting. Research on the Diffusion of Government Service Purchase Policy -- An event history Analysis based on the data of 31 provinces [J]. China Soft Science,2019(05):60-67.(in chinese)