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Natural Protection Environment and Utilization Countermeasures Considering Big Data

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Abstract: In the use of natural protection environment, the application of big data technology, especially the data type and content involved, is increasing. In the use of natural protection environment, we must fully consider the potential risks contained in data, liberate from the traditional environmental use model, and develop more advanced production and life styles and service models. Therefore, it is necessary to improve the concept and method of natural protection and environmental utilization, so as to achieve optimal decision-making on ecological space utilization, living behavior, environmental quality and many other aspects under the condition of big data. Therefore, this paper analyzes environmental sensitive factors, implements the most scientific scheme, fundamentally pays attention to the association between data elements in the natural protection system, establishes and improves the data analysis model and data development and utilization mechanism, and improves the utilization level of natural protection environment.

1. Introduction

With the continuous promotion of a new round of scientific and technological revolution and industrial reform, with the continuous development of modern information technology and the change and upgrading of human society's production and lifestyle and consumption patterns, people's access to information has undergone significant changes. This situation has brought many benefits to people, but there are also huge challenges, including new demands for nature conservation. In this context, the development of big data technology provides new ideas, new means and new methods for achieving green and low-carbon development. In the process of vigorously carrying out the construction of ecological civilization and accelerating the construction of ecological civilization in China, various problems have also emerged that need to be solved,

including many problems and even disasters in the natural protection environment. How to use big data technology to solve these problems is a subject that needs in-depth research and discussion.

In the process of natural protection, how to use big data technology to improve the utilization level of natural protection environment has always been an important issue faced by scientific researchers. Hamidov A A introduced in detail the concept of the field of natural protection, the rational utilization of natural resources in Fergana Valley, the viewpoint of natural resources reproduction, and the geographical and ecological basis of natural utilization [1]. Gorbunov MA reveals the basic characteristics of the natural conservation potential of wildlife reserves, which corresponds to the modern goal of protecting and protecting ecological biodiversity; The classification of modern ecological biodiversity types and species was established; The prototype of absolute nature protection and ecological biodiversity protection using the potential resources of natural protection in wildlife reserves is reasonable, and its effectiveness has been proved [2]. Eckerberg K presented the results of ten years of experience in the Nature Conservation Program (LONA). A survey of 191 municipal and 20 county administrative authorities and interviews with 20 key informants show that the program has been successful in several aspects [3]. These scientific resources are objective factors with strong life activity potential and important influence. Therefore, we must pay full attention to the scientific and rational development and utilization of big data.

This paper mainly expounds the significance and existing problems of using big data technology to promote the transformation of land and space development and utilization mode in natural protection and environment, and hopes to provide reference suggestions for the utilization and management of natural resources in China; To provide new ideas for improving the utilization level of natural conservation resources in China.

2. Research on Natural Protection Environment and Utilization Countermeasures Considering Big Data

2.1. Application Status and Existing Problems of Big Data Technology in Natural Protection and Environmental Utilization

The combination of big data technology and big data in natural protection environment can help managers to optimize economic decision-making, production and lifestyle in natural protection environment, and improve utilization efficiency and efficiency [4-5]. At the same time, the combination of big data technology and modern information technology will also help to improve the work related to nature conservation. First of all, from an economic perspective, it can provide conditions and foundations for the application of big data to a certain extent, thus promoting the development of various related undertakings [6-7]. In the age of big data, it is necessary to conduct in-depth research and utilization of big data and continuously improve technology. In this process, big data needs to comprehensively consider multiple factors when integrating and mining data elements in some natural protection environments, so as to finally determine the optimal decision-making mode. At the same time, it is also necessary to take corresponding measures to research and apply all kinds of information monitored through real-time tracking analysis of big data. Secondly, from the perspective of traditional ideas, big data technology is widely and deeply used in the process of natural protection and environmental utilization. People attach great importance to this. However, the current utilization situation is not ideal. The reason can be found that some rules provide a strong foundation for the development of big data. But these laws are also easy to be ignored and cause irreparable losses [8].

(1) Existing big data utilization mode

The use of big data in China is still in its infancy, and the current use mode of big data is relatively simple, mainly based on the collection and use of existing data. From the perspective of

the existing big data utilization model, first, through data collection and collection, a specific resource product can be more deeply and scientifically analyzed to obtain more accurate information. For example, through data analysis, we can learn about water resource endowment, climate change, soil structure and other data information to obtain more accurate prediction information. Second: Through the analysis of the collected information data, more useful features can be further excavated to obtain more scientific and referential scientific basis. Third: The collected information data can be effectively retrieved through the network database to obtain a more rich, practical, effective and convenient information resource system or information source. For example, more data resources that can be developed and utilized can be obtained through the Internet, but some related technologies in the natural protection environment need to be further studied for better application [9-10].

(2) Problems in big data application and management

First of all, there are some problems in the actual application of big data, for example, the use of some big data may lead to information asymmetry. For some relatively simple and basic data, it is easy to get the correct results, and the application of these data in the age of big data is also crucial but can not be ignored. At the same time, we should also note that there is a wrong view in the current society that as long as we develop in the big data industry, we will be able to bring profits and meet demand [11-12]. But in fact, these ideas are not the right way to judge the value. Many things represented by big data can truly understand their value and their relationship with social development only through scientific and rigorous research and application. Therefore, such a misconception must be avoided when using and managing big data.

(3) Countermeasures and suggestions

The first is to strengthen policy guidance on nature conservation and utilization. Due to the insufficient attention paid to nature conservation, the relevant departments of nature conservation are not very clear about the input and use of nature conservation. In the work of nature protection, we also need to increase financial support and publicity efforts to improve people's attention to nature protection [13-14]. The second is to attach importance to new technologies and methods in the field of natural protection combined with big data. First of all, we need to make full use of cloud computing, artificial intelligence and other emerging technologies to achieve the combination of nature conservation and big data. We can use Internet technology to improve the efficiency of automatic collection, analysis and processing of data on natural days. Secondly, it is necessary to strengthen the research and exploration of new technologies and methods such as the combination of natural protection and ecological environment utilization and modern information technology. Finally, we need to carry out multi-level and multi angle research and exploration in the field of natural protection and ecological environment governance.

2.2. About using Big Data Technology to Optimize the Use of Natural Protection Environment

With the arrival of big data era, big data is more widely used in ecological protection and economic development. First, collect, sort out and mine big data. Through the integration, mining and analysis of all kinds of data, the traditional scientific research achievements can be transformed into decision-making aids with practical significance, thus providing an important basis for future development. In this context. Through the analysis of various relevant research results, it is found that China's big data is booming and has been applied [15-16]. Based on these advantages, we should strengthen the use and management of natural protection environment, use big data, and scientifically and rationally carry out reasonable and comprehensive social and economic development. Next, we will systematically analyze, develop and utilize various natural resources. This requires that in the process of applying big data to research, we must strictly follow the

scientific, systematic and accurate principles to conduct in-depth research and analysis, bring it into the realistic orbit, and highly integrate it with China's ecological civilization construction.

(1) Make full use of big data to build a perfect natural protection environment monitoring network

In the era of big data, make full use of the existing geographic information system, geographic national condition monitoring system, topographic map and other relevant geographic information systems and other types of geospatial data to integrate, analyze and process the existing types of spatial data and related data in China, and build a sound natural resource monitoring network. In this context, the natural protection environment monitoring information network must give full play to its own advantages, further play the role of various data bases in monitoring environmental pollution, and timely grasp the changes in the status of natural protection environment. It includes the monitoring and management of natural resources in key areas, and the design of corresponding monitoring networks according to the specific requirements for resource protection and environment in different periods and regions [17-18]. For example, in terms of ecological protection, we can reasonably allocate the proportion of different regions and different ecological types, establish a sound monitoring network, give full play to the close cooperation of monitoring and management staff in different regions and between regions, and carry out monitoring and management of different types of natural resources, so as to improve the level of resource protection in different regions and various types of resources. In addition, it is also necessary to actively use big data technology to achieve comprehensive monitoring, analysis, evaluation and improvement of natural resource types, geographic information system operation, ecological protection, water environment quality and other aspects, so as to achieve the level of natural resource management and effective management and real-time tracking of various resource protection objectives.

(2) Use the assessment system of natural protection environment to promote the construction of ecological civilization

Using big data technology to evaluate natural resources can better reflect the relationship between different natural resources. For example, in nature conservation and utilization, these resources can be reasonably planned according to the degree of correlation between corresponding data through the correlation between data. At the same time, a detailed, systematic and comprehensive analysis report should be given on the spatial distribution and use of various resources. Among them, it is necessary to apply advanced mechanism theory and technology to research and evaluate, and finally form a more scientific and perfect evaluation index system. In the whole evaluation process, we can analyze the relationship between the level of natural protection and the status quo from the perspective of nature by building a multi-dimensional and multi indicator integration model, so as to form a nature protection evaluation system that conforms to the actual situation, and thus provide an important basis for realizing reasonable and effective operation of natural resources.

3. Research and Design Experiment on Natural Protection Environment and Utilization Countermeasures Taking into Account Big Data

Basic theory: Spatial geography, ecology and sustainable development are the important contents of this paper. This paper discusses the sensitivity of the natural environment characteristics of tourist attractions. In terms of space, it mainly refers to the spatial geography theory to evaluate its sensitivity, which is based on the ecological theory. The research goal of this paper is the sustainable use of scenic resources and environmental protection.

This paper takes tourist attractions as the research object, and takes tourism resources (A), elevation (B), slope (C), aspect (D), land (E), water (F), and air (G) as the main research objects.

This paper probes into the geographical spatial distribution characteristics of the seven natural environments, their mutual relations and their relations with the environment.

Main methods: This paper mainly uses AHP hierarchical method to build the hierarchical system of this paper.

The AHP method consists of four steps:

Determining the problem: it is the first step to use the AHP method to solve the problem by separating the specific problem of the problem from the various sub elements related to the problem and dividing the problem into which problems.

Establish a hierarchical structure model: after determining the problem to be solved, classify all aspects of the problem, divide the target level, object level, specification level, etc., and express them in a hierarchical relationship diagram (Figure 1).

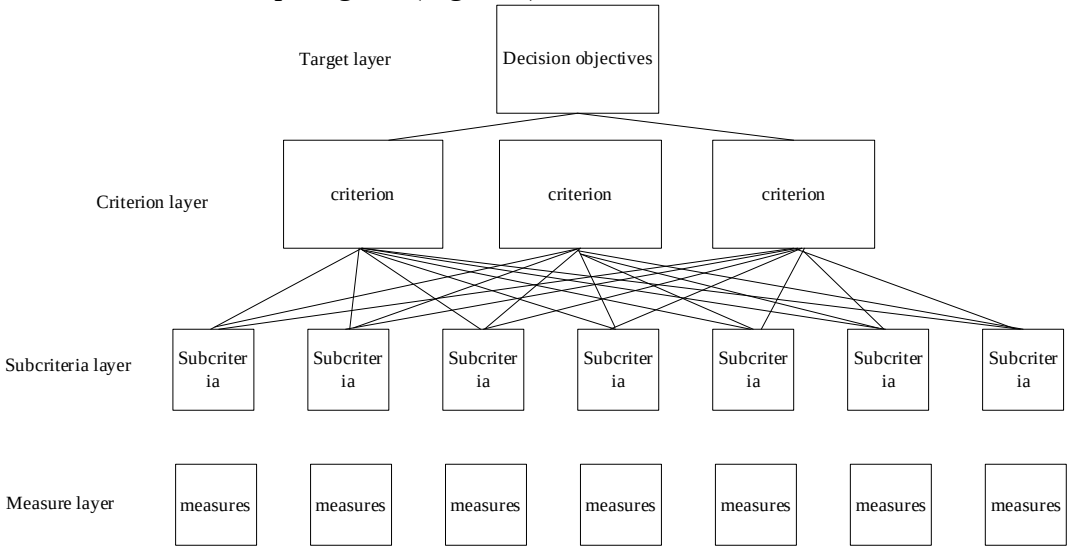

Figure 1. Schematic diagram of ahp hierarchy

Construction of judgment matrix: the judgment matrix represents the importance of an element to the upper level compared with other elements of the level. Obviously, for any judgment matrix, it should satisfy:

$$\begin{cases} Yjj = 1 \\ Yji = 1/Yij \end{cases} j = 1,2,..,R \tag{1}$$

Where: Yji represents the importance of element Yj relative to Yi

Consistency test: in the previous step, determine the weight value of an element in the upper level and the relative importance of each element in the level, and establish a judgment matrix. To determine the rationality of the matrix, it is necessary to conduct consistency test and calculate its consistency index.

$$EJ = (\varphi_{\max} - R)/(R-1) \tag{2}$$

Where R is the order of the matrix. The smaller the EJ value, the better the consistency of the judgment matrix.

Classification of sensitivity factors: This paper selects seven factors that are sensitive to environmental factors and incorporates them into the influencing factors of tourism development. According to the natural nature of the sensitivity factors, combined with relevant theories and regulations, the grade of the sensitivity factors is determined. Finally, each factor is divided into five

levels, from high to low: extremely sensitive (5), sensitive (4), moderate (3), less sensitive (2), insensitive (1).

Table 1. Natural environment sensitivity assessment factors and their classification

Evaluation factor	5	4	3	2	1
A	Grade IV	Level III	second level	class a	other
B	>150	100-150	50-100	25-50	<25
C	>25	18-25	10-18	5-10	<5
D	due north	Northeast, Northwest	Due East, Due West	Southeast, Southwest	Flat ground, due south
E	<25	25-50	50-75	75-100	>100
F	Forest land and cultivated land	Reservoir and grassland	Public green space	land used for building	Disposal site
G	>200	100-200	60-100	40-60	<40

Comprehensive evaluation of sensitivity factors: tourism planning of tourist attractions mainly refers to protection within a limited range and development within an appropriate range. Therefore, this paper constructs the following research frameworks:

Among them: target layer (O), criterion layer (C), C1 (restricted protection), C2 (suitable for development).

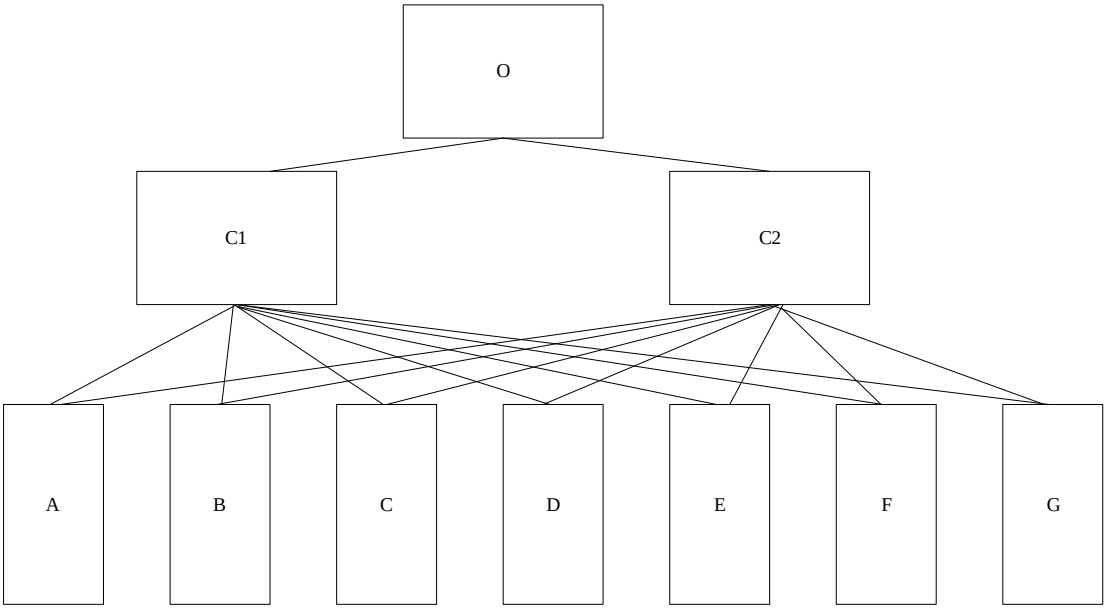

Figure 2. AHP hierarchical structure of comprehensive sensitivity evaluation of tourist attractions

4. Experimental Analysis of Natural Protection Environment and Utilization Countermeasures Considering Big Data

In view of the sensitivity of tourism resources, this paper analyzes the sensitivity of tourism resources at all levels. Compared with the previous tourism resources evaluation, this paper focuses on the investigation and evaluation of tourism resources, and carries out a sensitivity analysis. Due

to the different levels of tourism resources, their sensitivities are also different. In the process of tourism development, attention should be paid to the protection of high-level resources. The monomer proportion of each tourism resource is shown in Table 2.

Table 2. Weights of tourism resources at different levels

X	X4	X3	X2	X1	X0	W
X4	1	3	5	7	9	0.511
X3	1/3	1	3	5	7	0.267
X2	1/5	1/3	1	2	4	0.118
X1	1/7	1/5	1/2	1	2	0.065
X0	1/9	1/7	1/4	1/2	1	0.039

In which, X represents tourism resources and W represents the weight of tourism resources.

10 is the most sensitive, 9 is the second, and 1 is the worst. Tourism resources have different sensitivities due to their different levels. Therefore, we should strengthen the protection of high-level tourism resources in the process of development. For example, in an area with a sensitivity of 50 meters, the scores of each tourism resource should also be different. The resource sensitivity scores of each sensitive area calculated according to Table 2 are shown in Table 3.

Table 3. Different sensitivity ranges of tourism resources

Resource level	0-50	50-100	100-150	150-200	200-250
X4	5.11	4.09	3.07	2.04	1.02
X3	2.67	2.14	1.60	1.07	0.53
X2	1.18	0.94	0.71	0.41	0.24
X1	0.65	0.52	0.39	0.26	0.13
X0	0.39	0.31	0.23	0.17	0.08

Seven sensitive factors including tourism resources, elevation, slope, aspect, hydrology, land use status and air anion content were studied. The selection of sensitivity coefficient is the primary work and key point in studying the environmental sensitivity of scenic spots. The selection of sensitivity coefficient will directly affect whether the comprehensive evaluation results of sensitivity can reflect the overall natural environment of scenic spots. In previous studies, most scholars will select appropriate sensitive factors according to different goals, and conduct in-depth research according to different interface levels. The goal of this paper is to achieve sustainable development and sustainable development through reasonable development and restriction of the sensitivity of various factors.

5. Conclusion

At present, the application of big data technology in the use of natural protection environment is still relatively weak, and its understanding and development level are still in the primary stage. Based on the actual situation, this paper proposes to improve the rational utilization of natural protection environment by using big data technology in the natural protection system, and provides new ideas and methods to improve the utilization rate of natural resources, which is an effective use of the current domestic and foreign natural protection practice achievements. On the one hand, we should accelerate the construction of a modern environmental system that is scientific, reasonable, resource saving, ecological security, and sustainable socio-economic development. We should have a deep understanding of the severe situation faced by nature conservation and the seriousness of the problems such as the shortage of ecological resources. On the other hand, we must strengthen the

application and development of big data technology, so that it can play a supporting role in natural management; We will achieve a balanced development between the sustainable development of the natural environment and human health.

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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.

References

[1] *Hamidov A A, Najmiddinova G. Geoecological Fundamentals of nature protection and Rational Use of Natural Resources in the Fergana Valley. Asian Journal of Multidimensional Research. (2021) 10(6): 260-263. https://doi.org/10.5958/2278-4853.2021.00543.7*

[2] *Gorbunov M A, Fadeeva A V, Shirshikov V B. Nature Protection Potential of Wildlife Sanctuary: Protection and Preservation of Its Ecological Biodiversity. Ekoloji. (2019) 28(107): 5033-5037.*

[3] *Eckerberg K, Björstig T, Miljand M. Devolving Power from the State: Local Initiatives for Nature Protection and Recreation in Sweden. Local Environment. (2020) 25(6): 433-446. https:// doi.org/10.1080/13549839.2020.1760226*

[4] *Marion Maisonobe.The Future of Urban Models in the Big Data and AI Era: A Bibliometric Analysis (2000-2019). AI Soc. (2022) 37(1): 177-194. https://doi.org/10.1007/s00146-021-01166-4*

[5] *Konstantinos V. Katsikopoulos, Marc C. Canellas:Decoding Human Behavior with Big Data? Critical, Constructive Input from the Decision Sciences. AI Mag. (2022) 43(1): 126-138. https:// doi.org/10.1609/aimag.v43i1.7381*

[6] *Clarisse Dhaenens, Laetitia Jourdan. Metaheuristics for Data Mining: Survey and Opportunities for Big Data. Ann. Oper. Res. (2022) 314(1): 117-140. https://doi.org/10.1007/s10479-021-04496-0*

[7] *Yi-Kuei Lin, Hoang Pham. Preface: Reliability Modeling with Applications Based on Big Data. Ann. Oper. Res. (2022) 11(1): 1-2. https://doi.org/10.1007/s10479-022-04584-9*

[8] *Narayan Prasad Nagendra, Gopalakrishnan Narayanamurthy, Roger Moser. Tellite Big Data Analytics for Ethical Decision Making in Farmer's Insurance Claim Settlement: Minimization of Type-I and Type-II Errors. Ann. Oper. Res. (2022) 15(2): 1061-1082. https://doi.org/10.1007/s10479-020-3793-4*

[9] *Joe Zhu. A Under Big Data: Data Enabled Analytics and Network Data Envelopment Analysis. Ann. Oper. Res. (2022) 09(2): 761-783. https://doi.org/10.1007/s10479-020-03668-8*

[10] *S. Ajitha, Mufeed Ahmed Naji Saif. Feature Selection Techniques in the Context of Big Data: Taxonomy and Analysis. Hudhaifa Mohammed Abdulwahab. Appl. Intell. (2022) 2(12): 13568-13613. https://doi.org/10.1007/s10489-021-03118-3*

[11] *Raghunathan Krishankumar, R. Sivagami, Abhijit Saha, Pratibha Rani, Karthik Arun, K. S. Ravichandran:Cloud Vendor Selection for the Healthcare Industry Using A Big Data-Driven*

Decision Model with Probabilistic Linguistic Information. Appl. Intell. (2022) 52(12): 13497-13519. https://doi.org/10.1007/s10489-021-02913-2

[12] Abbas Mardani, Edmundas Kazimieras Zavadskas, Hamido Fujita, Mario Köppen. Big Data-Driven Large-Scale Group Decision-Making under Uncertainty (BiGDM-U). Appl. Intell. (2022) 52(12): 13341-13344. https://doi.org/10.1007/s10489-022-04113-y

[13] Hari Mohan Rai, Kalyan Chatterjee. Hybrid CNN-LSTM Deep Learning Model and Ensemble Technique for Automatic Detection of Myocardial Infarction Using Big ECG Data. Appl. Intell. (2022) 52(5): 5366-5384. https://doi.org/10.1007/s10489-021-02696-6

[14] Sagnik Sarkar, Shaashwat Agrawal, Thar Baker, Praveen Kumar Reddy Maddikunta, Thippa Reddy Gadekallu. Catalysis of Neural Activation Functions: Adaptive Feed-Forward Training for Big Data Applications. Appl. Intell. (2022) 52(12): 13364-13383. https://doi.org/10.1007/s10489-021-03082-y

[15] Abeeku Sam Edu. Positioning Big Data Analytics Capabilities towards Financial Service Agility. Aslib J. Inf. Manag. (2022) 74(4): 569-588. https://doi.org/10.1108/AJIM-08-2021-0240

[16] Ulrich Rendtel, Willi Seidel, Christine Müller, Florian Meinfelder, Joachim Wagner, Jürgen Chlumsky, Markus Zwick. Statistik Zwischen Data Science, Artificial Intelligence Und Big Data: Beiträge Aus Dem Kolloquium "Make Statistics Great Again". AStA Wirtschafts Und Sozialstatistisches Arch. (2022) 16(2): 97-147. https://doi.org/10.1007/s11943-022-00305-7

[17] Alaa Omran Almagrabi, Rashid Ali, Daniyal M. Alghazzawi, Abdullah Albarakati, Tahir Khurshaid. A Reinforcement Learning-Based Framework for Crowdsourcing in Massive Health Care Internet of Things. Big Data. (2022) 10(2): 161-170. https://doi.org/10.1089/big.2021.0058

[18] Muniba Ashfaq, Nasru Minallah, Atiq ur Rehman, Samir Brahim Belhaouari. Multistage Forward Path Regenerative Genetic Algorithm for Brain Magnetic Resonant Imaging Registration. Big Data. (2022) 10(1): 65-80. https://doi.org/10.1089/big.2021.0085