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**Geographic information - Spatial sampling and statistical
inference**

地理信息 空间抽样与统计推断

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Foreword

This instructional document has been drafted in accordance with the rules given in GB/T 1.1-2009. This Guidance Document is submitted by the National Geographic Information Bureau. This guidance document is governed by the National Geographic Information Standardization Technical Committee (SAC/TC230). This draft of the guidance of technical documents. Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Mathematics and Systems Science Research Hospital, Ministry of Civil Affairs National Disaster Reduction Center. The main drafters of the guidance of technical documents. Wang Jinfeng, Hu Mao Gui, Feng Shiyong, Jiang Cheng Sheng, Gao Bingbo, Guo Yansha, Li Lianfa, Ge Yong, Liu Tiejun, Li Xin Tong, Ma Liguang, Cheng Changxiu, Zhou Qingbo, Fan Haimei, Fan Yida, He Jianbang.

Spatial sampling is widely used in socio-economic, resource environment, land use and public health surveys. However, the sampling process, geography The spatial and spatial heterogeneity of information is seldom considered, and many applications are based on empirical sampling. How to according to different survey objects The characteristics of the selection of appropriate spatial sampling methods and statistical models, the current lack of guidance standards. This Guidance Document is integrated Sample survey methods and techniques based on the specification of the spatial sampling and statistical model selection and implementation process for the actual space sampling survey And provide statistical guidance to improve the efficiency and accuracy of geographic information sampling and services. The notable feature of the spatial sampling and statistical inference procedure specified in this technical document is that when prior prior knowledge exists, According to this, we select the appropriate method for sampling and the appropriate model for statistical inference, the accuracy and efficiency are higher; when there is no prior information, Sampling stage should adopt a simple random or systematic sampling method, the sample after sampling to explore and analyze, if the survey showed some significant Characteristics (such as zoning or/and spatial correlation, etc.), then select the corresponding model provided in this guidance document during subsequent statistical inference Type, can improve the accuracy and efficiency of the overall estimation. In addition to the provisions of this document, the guidelines are simple random, systematic, hierarchical and two stochastic models four traditional sampling methods and corresponding systems In addition to the model, Kriging, MSN, B-SHADE, SPA and Sandwich models are also provided Type eight kinds of spatial sampling method and the

corresponding statistical model, taking full account of the spatial heterogeneity of the surveyed object and the small area Spatial correlation, as well as the spatial distribution of samples. Sandwich model in which the spatial layering based on the increase of reporting unit layer, Lee Using averaging and variance layers (between the sample, knowledge and report) transitivity, a sample, a variety of reporting unit system parallel report. Geographic Information Space Sampling and Statistical Inference

1 Scope

GB/Z 33451-2016 is the Chinese national standard on geographic information - spatial sampling and statistical inference, in the field of natural and applied sciences. The /Z suffix marks it as a guiding technical document: it does not prescribe requirements that can be certified against, but sets out the technique, the method or the state of the art that the standards bodies recommend following. It was issued on 30 December 2016 by the State Administration for Market Regulation; Standardization Administration of China. As a guiding technical document it carries no separate date of entry into force: it applies from publication. Classification: ICS 07.040, CCS A75. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This guidance document defines the basic concepts of spatial sampling and statistical inference with the objective of overall means and total estimates, The basic model of spatial sampling and statistical inference, implementation process, sampling parameters, sample size calculation method, statistical algorithm and statistical inference report Rong and so on. This guidance document applies to the sampling and statistical inference of objects with spatial distribution.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 10111-2008 Random number generation and its application in product quality sampling inspection

3 Terms, definitions, abbreviations and symbols

3.1 Terms and definitions The following terms and definitions apply to this document.

3.1.1 Overall population The whole of the object under consideration. [

GB/T 3358.1-2009, Definition 1.1] Example. If three villages were selected as demographic or health surveys, the population as a whole would consist of all residents of the three villages; if the three villages were selected from a particular All villages in a given area are randomly selected, and the population as a whole consists of all residents in the area.

3.1.2 Spatial sampling unit spatial sampling unit The population (3.1.1) of the spatial survey is divided into each of several non-overlapping parts.

GB/T 3358.1-2009, the definition of 1.2.

Note 2. Spatial sampling units depend on the smallest portion of interest in a particular problem. The sampling unit can be a leaf, a tree, a field or a single one Administrative area.

Note 3. The sample side.

3.1.3 The total populationize The total number of all sampling units included in the population is the sum of the number of units that were drawn and not drawn.

3.1.4 Overall variance population variance The average of the sum of the squares of the differences between the values of all elements in the population (3.1.1) and the overall population.

3.1.5 Coefficient of variation coefficient of variance The standard deviation is divided by the absolute value of the non-zero mean, usually expressed as a percentage.