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WAYS TO USE THE SAMPLING OBSERVATION METHOD IN THE STATISTICAL ASSESSMENT OF UTILITY ACTIVITIES

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ABSTRACT

This article reveals the specifics of using the method of selective observation in the statistical analysis of housing and communal services. Theoretical aspects of the statistical evaluation of the activities of communal enterprises by the method of selective observation were also studied.

Key words

housing and communal services, method of statistical observation, sample observation, unit of observation, sample, population, statistics, parameter, random selection, mechanical selection, typical selection, average error, marginal error, confidence interval.

Introduction. In our country, consistent efforts are being made towards the formation of a modern market for utilities. A number of laws, decisions and decrees adopted in the past period serve as the legal basis for the development of this sphere. However, the period of rapid transition dictates the further-improvement and development of the housing and communal sphere.

The issues of consistent development of the utility sector are also expressed in the development strategy" Uzbekistan-2030", i.e."....to build 1 (one) million households in the regions, to supply the number of new Uzbekistan massifs to 100, to build houses for an additional 200,000 families, to build social houses for at least 140,000 families in the Republic. Introduction of the practice of development of general and master plans of districts (cities)into zones of 3 categories (renovation, reconstruction and canning), taking into account the simplified procedure and the proposals of residents and entrepreneurs. Development of the general scheme of population placement. Introduction of new standards on the basis of building safety standards of developed countries on building-structures. Formation of legal

grounds governing the construction of multi-apartment houses and other real estate objects on the basis of share entry. The introduction of financial mechanisms for the guaranteed provision of all settlements with clean drinking water and effluent services and hakoza ... "[1], such important tasks are defined. The successful solution of these priorities requires the development of specific measures for the provision of Housing and quality utilities to the population of our republic, improvement of the system of statistical indicators and statistical forecasting of prospects due to increasing the economic efficiency of Housing and communal services.

Review of thematic literature. The place, importance, trends in its development in the field of utility services are being studied on a scientific basis by many leading economic scientists of foreign countries. In Particular, Mamashev D.R. In his monograph "Management of housing and communal services of the municipality" (d. 1985), he Alt.state Technical University, BTI. –, 2008. -105 C) the pace and size of the development of communal services, on the one hand, are not independent, but consumers (industry, population, cultural and domestic institutions, etc.) is the magnitude produced by . For example, the development of industry is an urban-forming factor that determines the increase in population in a city. In turn, the pace of housing, cultural and domestic construction also increases. On the second hand, the production sector argues that its dynamics depend more on the development of municipal utilities that provide normal conditions for the labor, marriage and recreation of the population [3].

V.B. Zotova " The system of municipal management" (textbook for universities / ed. by V.B. Zotov. – St. Petersburg: Leader, 2015. – p.358) in his textbook, the state creates a competitive environment in the field of property management, attracts private operators on a competitive basis, remaining the main owners of Housing and communal services to provide consumers with heat, water and electricity. That is, in this group, state bodies believe that the infrastructure of Housing and communal services can be managed, for example, through a special structure of municipal authorities or through specialized enterprises that are legally subordinate to the authorities[4].

Aksenov P.N. " Improvement of the management system for the development of housing and communal services in Moscow in the context of transition to market methods of management" (P.N.Aksenov. – M.: Yugo-Vostok-service, 2013. – p.345) in the monograph, rents in this context are partnerships, that is, contracts aimed at solving problems together. The purpose of utility lease agreements is to improve the quality of services provided. The tenant receives the management and repair of utilities for a period of up to 15 years. The tenant is responsible not only for the management of the system, but also for collecting payments for the services

provided. The tariff for services covers not only operational costs, but also rental fees. It believes that the leased facilities will remain the property of the municipality, which is developing an infrastructure development program[5].

Ernazarov G.B. "Effective use of the Municipal Utility System in the context of institutional and structural changes" (Economics and education, 2014, No. 4. − B.36-39) in which the businesses legally subordinate to the municipal government are not only municipal enterprises, but also enterprises in the form of Joint-Stock Companies controlled by Joint-Stock Companies. Enterprises in the form of Joint-Stock Companies form tariffs for services that cover the cost of updating fixed assets, independently determine the program of production and investment. The municipality controls the development strategy of the enterprise as the main owner of the shares in this case[6].

Ernazarov G.B. "The use of advanced approaches to reform of the utility system" (Economics and education, 2017, No. 5. − B.111-114) article is widely used as a contracting work for excellent equipment repair, consumer accounting, etc. For example, in Santiago, the capital of Chile, there are contracts for water supply and network maintenance and computer repair. He argues that competitive relations are formed because each type of contract has at least two contractors[7].

Research methodology. In the study of the subject, methods of sampling observation, statistical observation, grouping, absolute and relative indicators, mean and variation indicators, dynamic series, indices and correlation-regression analysis have been widely used.

Relevance of the topic. Within the framework of the large-scale reforms carried out in all areas of Uzbekistan, special attention is paid to the development of the social sphere, the provision of housing for the population. The fact that the population is not fully provided with housing, there is no provision of quality utilities in the future creates the need for further development of this area.

In this regard, in the new Uzbekistan development strategy for 2022-2026 "....Development of the general scheme of population placement. Under the renovation and housing programs, more than 19 million square meters of modern housing will be built in cities instead of dilapidated houses, creating conditions for the migration of more than 275 thousand families to New massifs ... "[2], such important tasks are defined. The successful solution of these priorities requires the development of specific measures for the provision of Housing and quality utilities to the population of our republic, improvement of the system of statistical indicators and statistical forecasting of prospects due to the increase in the economic efficiency of Housing and communal services.

Main part (analysis and results). The development of scientific-based proposals and practical recommendations aimed at economic-statistical analysis of

the housing and communal services sector in our republic, comprehensive statistical assessment of the factors affecting the activities of the sector and improving its economic efficiency is one of the pressing issues of today.

Statistical accounting in housing and communal services statistics makes extensive use of Array Tracking, opportunistic tracking, questionnaire tracking, monographic tracking, expert assessment, sample tracking, and many other effective methods.

Therefore, in this article it is recommended to widely use the sampling observation method, which is considered one of the main types of partial observation according to the results of studies, in the statistical analysis of the housing stock. This creates conditions for the methodological improvement of the accounting system of Housing Statistics.

In contrast to the joppasiga statistical observation (reporting system), there are a number of advantages of sampling observational accounting in household statistics. In this, in particular: data collection, processing, analysis and distribution of them to the main set do not take much time, in other words, Labor is saved; financial resources and paper consumption are saved; the possibilities of obtaining fast and high-quality statistical information expand; on the basis of tracking data, opportunities for verification and evaluation of tracking processes are born in yoppasi.

In fact, the main purpose of selective monitoring of household activities is to collect more and more qualitative information about the general collection (housing fund) through low effort and financial resources and economy of working hours. In this regard, a large branch of the theory of sampling verification in household statistics is devoted to the statistical assessment of indicators describing the main set (Housing Fund)on a sample basis. Like other fields, household statistics has many methods of statistical estimation of sample master set (housing stock) indicators, with one-to-one good aspect. Research on such issues is handled by assessment offices.

In household statistics, the characterization of the head set (Housing Fund)with sample observation data is done through their generalizing indicators. To do this, the sample head must have embodied all the important properties of the set. If the sample shows important characteristics of the main set (housing fund), it is called representative.

In household statistics, there are always discrepancies between head(household fund) and sample indicators, no matter how representative the sample is. Because there are other units that are not included in the sample in the general collection (housing fund).

In statistics, work is carried out on the principles of the law of larger numbers. In this respect, this law also serves as a methodological basis in the statistical system. Even in household activities under the law of large numbers, random errors begin to decrease as the amount of sample increases.

Our analyzes have shown that in household statistics there are several selection methods that ensure the representativeness of the sample, which are divided into random, mechanical and combination selection, etc., depending on the principles of selecting units (series)from the head set (Housing Fund). When units are randomly taken from the main set (housing stock)and a sample is formed, it is called random selection.

In household statistics, random selection can be conducted in recurring or non-recurring schemes. If the selected unit (or series) is returned to the master set (Housing Fund) again after being included in the sample(i.e. the necessary data is recorded)and participates in equal rights in further selection processes, the selection procedure is called recurrent, but rather a non-recurring scheme, if not returned.

Mechanical selection is said to be the choice of units of the master set (Housing Fund) by writing out the units in a certain order and then selecting one at a set range. Such a method is called mechanical selection, if Units (or series)from the main set (housing stock) are selected at certain intervals and included in the sample.

Typological selection is the division of the master set (housing fund)into important groups, each of which is the random or mechanical selection of certain units from within.

In the typological selection in household statistics:

the main collection (housing fund) is divided into same-sex groups;

the balance (proportion) of each group in the set is determined;

units from each group are selected randomly or mechanically in proportion to their balance (proportion).

The upper limit of the sample indicator (a) error (Δ_a) is equal to the product of the confidence factor (t) with its mean error (μ_a):

$$\Delta_a = t * \mu_a \qquad\qquad (1)$$

Now let's look at the confidence factor and methods for detecting average errors.

In household statistics, a table has been compiled that characterizes the connection between them in order to facilitate the process of calculating the probabilities for the given values of the confidence coefficient (table 1). This table allows you to determine the probability, and vice versa, the confidence coefficient

corresponding to the desired probability, according to the given confidence coefficient. When scientific research or practical issues are solved, the following values of the confidence coefficient are mainly widely used:

Table 1.

Values of confidence coefficients

t	1.00	1.96	2.00	2.58	3.00
P(t)	0.683	0.950	0.954	0.990	0.997

In household statistics, the mean quadratic error (μX) of the sample mean ($\grave{x}$), depending on the methods and forms of selection, is calculated as follows:

(a) the mean error of the mean in a repeated random sample:

$$\mu_{\overline{X}} = \sqrt{\frac{\sigma^2}{n}}$$

(2)

(b) the mean error of the mean in a non-repeating random sample:

$$\mu_{\overline{X}} = \sqrt{\frac{\sigma^2}{n}\left(\frac{N-n}{N-1}\right)}$$

(3)

The salmog of units (m) with the mark being studied in the sample

($\omega = \dfrac{m}{n}$) mean error (μ_P) depending on the methods and schemes of selection, it is determined as follows:

a) mean error of oscillation in a repeated random sample:

$$\mu_P = \sqrt{\frac{\omega(1-\omega)}{n}}$$

(4)

b) the average error of the swing in a non-repeating random sample:

$$\mu_P = \sqrt{\frac{\omega(1-\omega)}{n}\left(\frac{N-n}{N-1}\right)}$$

(5)

When statistically calculating the value of the error coefficient (Δ_x) of the base, randomly choosing the method of calculating the required error coefficient:

If the selection is carried out in a recurring scheme,

$$t\sqrt{\frac{\sigma^2}{n}} \leq \Delta_{\overline{X}},$$

(6)

from this

$$n \geq \frac{t^2 \sigma^2}{\Delta_{\overline{X}}^2}$$

(7)

It follows from the inequality that the amount of sample is at least

$$n = \frac{t^2 \sigma^2}{\Delta_X{}^2} \tag{8}$$

as long as it should be.

Scientific suggestions and recommendations. The methodological aspects of statistical observation of the housing stock are manifested in the following:

statistical indicators of Housing and communal services activities are statistically evaluated in absolute and relative indicators in the rows of dynamics by Regions;

the basis of statistical observation of the housing stock is its size, territorial location, composition, structure, technical condition, level of improvement;

as a base for drawing up statistical reports on the housing fund, primary documents serve;

the basis of statistical observation of the utility is the study of statistical indicators that represent its activities.

In the statistical analysis of the activities of cold water pipes and their sets, it is recommended to use the following indicators: the availability of water pipes in practice; the proportion of those who practically work in the number of total cold water pipes; coverage of cold water pipe sets in the urban area; service level; average cost of water per person, etc.

In the study and statistical analysis of sewage activity, the following statistical indicators are used: the amount of sewage available; in practice, the proportion of sewage in the total number of sewers,%; the number of sets of separate sewers, their length, etc.

In the study and statistical analysis of the activities of municipal enterprises, the following indicators are based on: the total length of all streets, roads and streets; the share of paved streets in the volume of total streets,%; the number of available lights; the level of urban lighting,%; the average number of lights for lighting part of the street–1 km; the number of cold water pipes;

This is explained by the fact that innovations in proposals and recommendations are based on strategic plans in housing construction, the strength of control, a high level of quality assurance and the rigor of the self-financing system, the high position of the private sector, etc.

In conclusion, it should be said that many goals and objectives were set by our president in the development strategy "Uzbekistan-2030" in order to continue the continuity of these reforms, in particular, to systematically develop the housing and communal services sector in the future and to further improve its quality. Based on these goals and objectives, this sample observation method, analyzed

above, serves not only to statistically assess the economic situation of Housing and communal services through integral indicators, but also for variational fluctuations.

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