

Distribution of the number of scientific and pedagogical staff of universities by work experience

Distribuição do número de quadros científicos e pedagógicos de universidades por experiência de trabalho

Distribución del número de personal científico y pedagógico de las universidades por antigüedad

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ABSTRACT

The purpose of our study was to assess the proportion of teachers with different work experience in relevant positions in higher education institutions in the total number of university teachers in each of the regions of Russia. In the course of the work, the indicators characterizing the proportion of teachers belonging to five groups by work experience of up to five years, from five to ten years, from ten to fifteen years, from fifteen to twenty years and more than twenty years in the total number of teachers working in higher educational institutions were evaluated. The study used official statistical information for 82 regions of Russia. We used the density functions of the normal distribution as models. The results of the study allowed us to draw conclusions: approximately every fourteenth teacher has worked in a teaching position for less than five years, every ninth teacher has worked in this position for five to ten years, every seventh teacher has worked in this position for ten to fifteen years, every fifth teacher has worked in this position for fifteen to twenty years. It is proved that the number of teachers with work experience up to twenty years was 52% and was slightly more than the number of teachers with work experience of more than twenty years (48%). The analysis showed the presence of a certain differentiation of the values of the considered indicators by region. The proposed methodological approach and the results obtained have originality and scientific novelty.

Keywords: Functions of normal distribution. Higher education. Regions of Russia. University teachers.

RESUMO

O objetivo do nosso estudo foi avaliar a proporção de professores com experiência de trabalho diferente em cargos relevantes em instituições de ensino superior no número total de professores universitários em cada uma das regiões da Rússia. No decorrer do trabalho, os indicadores que caracterizam a proporção de professores pertencentes a cinco grupos de experiência de trabalho de até cinco anos, de cinco a dez anos, de dez a quinze anos, de quinze a vinte anos e mais de vinte anos no número total de professores que trabalham em instituições de ensino superior foram avaliados. O estudo utilizou informações estatísticas oficiais para 82 regiões da Rússia. Usamos as funções de densidade da distribuição normal como modelos. Os resultados do estudo permitiram-nos tirar conclusões: aproximadamente a cada catorze professor trabalhou em uma posição de professor para menos de cinco anos, cada nono professor tem trabalhado nesta posição por cinco a dez anos, a cada sétimo professor tem trabalhado nesta posição por dez a quinze anos, uma em cada cinco professores tem trabalhado nesta posição por mais de quinze a vinte anos. Está provado que o número de professores com experiência de trabalho até vinte anos foi de 52% e foi ligeiramente superior ao número de professores com experiência de trabalho superior a vinte anos (48%). A análise mostrou a presença de uma certa diferenciação dos valores dos indicadores considerados por região. A abordagem metodológica proposta e os resultados obtidos têm originalidade e novidade científica.

Palavras-chave: Ensino superior. Funções de distribuição normal. Professor. Regiões da Rússia.

RESUMEN

El objetivo de nuestro estudio fue evaluar la proporción de profesores con experiencia laboral diferente en puestos relevantes en instituciones de educación superior en el número total de profesores universitarios en cada una de las regiones de Rusia. En el curso del trabajo, se evaluaron los indicadores que caracterizan la proporción de docentes pertenecientes a cinco grupos por experiencia laboral de hasta cinco años, de cinco a diez años, de diez a quince años, de quince a veinte años y más de veinte años en el número total de docentes que trabajan en instituciones de educación superior. El estudio utilizó información estadística oficial de 82 regiones de Rusia. Utilizamos las funciones de densidad de la distribución normal como modelos. Los resultados del estudio nos permitieron sacar conclusiones: aproximadamente cada decimocuarto maestro ha trabajado en un puesto de enseñanza por menos de cinco años, cada noveno maestro ha trabajado en este puesto por cinco a diez años, cada séptimo maestro ha trabajado en este puesto por diez a quince años, cada quinto maestro ha trabajado en este puesto por quince a veinte años. Se ha demostrado que el número de profesores con experiencia laboral de hasta veinte años era del 52% y era ligeramente superior al número de profesores con experiencia laboral de más de veinte años (48%). El análisis mostró la presencia de una cierta diferenciación de los valores de los indicadores considerados por región. El enfoque metodológico propuesto y los resultados obtenidos tienen originalidad y novedad científica.

Palabras clave: Educación superior. Funciones de distribución normal. Profesores universitarios. Regiones de Rusia.

INTRODUCTION

At the end of the twentieth and the beginning of the twenty-first century, in the vast majority of countries, increased attention was paid to the development of higher education (Mense et al., 2018; Jung Cheol Shin, 2012; Li, 2021). For the development of the higher education system, it is necessary to solve such a problem as the constant replenishment of qualified scientific and pedagogical staff of universities. Teachers at institutes of higher education teach students by transferring to them a significant amount of new knowledge, skills, competencies (Mokyr, 2002). Taking this into account, one of the urgent scientific problems is the assessment of indicators

characterizing the distribution of the number of teachers of higher education institutions by their experience. Our research was devoted to this issue. Studying the current level of solving this problem is important both for state bodies regulating activities in this area and directly for universities (Marginson, 2006; Barnett, 2017). In addition, the problem under consideration has a certain interest for people who would like to continue their careers as teachers (Knight, Yorke, 2003).

Despite the existence of extensive research on the problem of the development of higher education, so far not enough attention has been paid to the regional specifics of solving this problem. At the same time, in recent years, according to the authors of a number of scientific publications (for example, Cervantes, 2017; Unger, Polt, 2017) there has been an increased interest in the study of regional aspects of the development of higher education. Our article responds to the relevant appeals and is devoted to the study of the existing differentiation of the number of scientific and pedagogical personnel of higher education systems by region.

Currently, the system of higher education in Russia has been greatly developed. The total number of universities and other specialized in teaching students under bachelor's, specialist's and master's degree programs amounted to 1,259 independent organizations and branches in 2020. These institutes of higher education employed 223088 people holding scientific and pedagogical positions. Of these, 35039 served as professors and 129328 as associate professors (Official statistical information, 2021).

The purpose of our study was to assess the proportion of teachers with different work experience in relevant positions in higher education organizations in the total number of university teachers in each of the regions of Russia. Our article was devoted to obtaining new knowledge about the distribution of scientific and pedagogical personnel employed in the higher education systems of the regions by pedagogical experience. The contribution of the article to the information on the problem under consideration consisted in the author's method of modeling the distribution by length of service of the number of professors and teachers at universities and other higher educational institutions of the regions of Russia. The empirical contribution is related to the determination of averages and standard deviations by region of indicators characterizing the share of teachers with different work experience in their total number in the regions under consideration. In addition, the regions in which the minimum and maximum values of these indicators were noted in 2020 were identified.

The structure of this work included the following sections. The second section provides a brief overview of scientific publications on the problem of the peculiarities of teaching activities of academic staff with different experience of relevant work. The third section provides the methodology, initial data and design of the study. The fourth section demonstrates the results of modeling the initial empirical data, as well as the results of testing the quality of the developed models. The fifth section discusses the results of the study. The last sections contain conclusions and bibliographic references.

LITERATURE REVIEW

The problem of assessing such an aspect of the development of higher education as the distribution of the number of teachers by their work experience (length of service) has been reflected in a number of scientific publications. A brief description of the most interesting of them is given in table 1.

Table 1. Scientific publications on the peculiarities of the structure of university teachers by work experience.

Authors		Problems under study	
1		2	
Alles et al. (2019)			The features of professional training of university teachers at the initial stages of their activities are considered. The information on the results of a survey of 537 teachers in Germany was studied.
Wosnitza et al. (2014)			The article analyzes the motivation of university teachers at the beginning of their careers. The expediency of combining the improvement of teaching qualifications and conducting scientific research is shown.
King Rice (2013)			The influence of the level of education and the subject area on the activity of teachers, especially at the beginning of work, is studied. It is shown that with the accumulation of experience, prerequisites for successful career development are created. The importance of implementing policy measures aimed at improving the remuneration of teachers, their support and professional development is emphasized.
Vasquez-Martinez et al. (2013)			The problem of improving the educational policy aimed at improving the competencies and skills of university teachers to ensure competitive advantages is considered. The research is based on the study of various variants of educational models implemented in the context of economic globalization.
Volchik et al. (2019)			The analysis of the structure of the scientific and pedagogical staff of higher education organizations in Russia in 1980-2017 is presented. The book demonstrates two options for the development of academic careers of university employees: teaching and research.
Graham (2018)			The conclusion is made about the importance of both options for improving the effectiveness of educational activities. The system of promotion of university teachers in the process of increasing their work experience is proposed.
Graham (2020)			The analysis of the influence of the experience of university teachers on the quality of their activities is given. It is proved that the quality of teaching does not decrease with an increase in work experience.
Bogdanova et al. (2018)			The features of the teaching staff, depending on the length of service, are studied.
Pugach (2017)			The analysis of the current structure of the number of teachers of higher education institutions in Russia for 1988-2014 is given.
Karpovich, Voronova (2020)			The assessment of the professional training of novice university teachers is given and the problems associated with the motivation of their adaptation to work as teachers are identified.

Source: the table is compiled by the author on the basis of the information provided in the RSCI.

Based on the information given in table 1, it can be stated that the problem of research on the distribution of the number of teachers by their work experience in the higher education system is relevant. At the same time, some scientific studies have concluded that there are regional features characteristic of individual territorial entities. Taking this into account, it seems appropriate to conduct a comparative analysis of the existing specific indicators of the distribution of the number of university teachers based on their work experience in different regions of Russia.

METHODOLOGY

Our paper examines the distribution of academic staff of higher education organizations, based on teaching experience. At the same time, university teachers who taught students in 2020

in Russia under bachelor's degree programs (four years of study), specialty (five years of study), as well as master's degree programs are considered.

The research process included five stages. At the first stage, the initial data describing the total number of teachers working in the higher education systems of each of the regions of Russia, as well as the number of teachers included in the five main groups, depending on their work experience, were formed. The first group included teachers who have held relevant positions for less than five years, the second group - from five to ten years, the third group - from ten to fifteen years, the fourth group - from fifteen to twenty years and the fifth group - more than fifteen years. At the second stage, indicators describing the share of teachers belonging to each of the five groups in the total number of university teachers located in each of the regions of Russia were calculated. At the third stage, the distribution of indicators by region was estimated based on the development of mathematical models. At the fourth stage, the average values of indicators for the regions of Russia were determined, as well as the ranges in which the values of these indicators are for most of them. At the fifth stage, the regions in which the maximum and minimum values of indicators were noted were determined.

The study used official statistical information of the Ministry of Science and Higher Education of the Russian Federation for 2020 on the number of teachers working in higher education institutions in 82 regions of Russia (Official statistical information, 2021).

In our study, three hypotheses were tested:

- hypothesis 1: the share of university teachers in their total number increases with the increase in the length of service as teachers;
- hypothesis 2: the values of the five indicators under consideration have a significant differentiation between different regions;
- hypothesis 3: regions that are characterized by the maximum and minimum values of each of the five indicators have a different geographical location among the federal districts.

The evaluation of the values of the five considered indicators was carried out on the basis of economic and mathematical modeling of the initial empirical data. As models, we used the density functions of the normal distribution, the method of developing which for estimating the values of specific indicators was proposed by the author. Some aspects of the use of the methodology are given in the works (Pinkovetskaya et al., 2021; Pinkovetskaia, 2021). During the development of the functions, the initial empirical data were grouped according to the ranges of changes in the values of the indicators. These data groups can be geometrically represented as corresponding histograms. Data approximation using normal distribution functions was carried out using generally accepted statistical methods. It is important to note that the average values of the considered indicators, as well as their standard deviations for the density functions of the normal distribution, were displayed in the formulas of the developed functions themselves. Therefore, by constructing a specific function, we obtain the specified parameters of the indicators under consideration without additional calculations.

The obtained functions allowed us to determine the average values of each of the five indicators for the regions under consideration, as well as the ranges of their changes characteristic of most regions. In addition, the study identified regions in which the considered indicators have values above the upper and below the lower limits of the ranges. The boundaries of the indicator ranges for 68% of the regions were determined based on the average values of the indicators and the corresponding standard deviations.

RESULTS

In the course of the computational experiment, economic and mathematical modeling was carried out on the basis of empirical data. The models that describe the distributions (y_1 , y_2 , y_3

, y_4 , y_5) of the three indicators (x_1 , %; x_2 , %; x_3 , %; x_4 , %; x_5 , %) across all 82 Russian regions are shown below:

- the share of university teachers, working in this sphere less than five years in 2020 in the total number of faculty staff

$$y_1(x_1) = \frac{160.00}{2.42 \times \sqrt{2\pi}} \cdot e^{-\frac{(x_1-7.16)^2}{2 \times 2.42 \times 2.42}}; \quad (1)$$

- the share of university teachers, working in this sphere from five to ten years in 2020 in the total number of faculty staff

$$y_2(x_2) = \frac{210.00}{2.89 \times \sqrt{2\pi}} \cdot e^{-\frac{(x_2-10.78)^2}{2 \times 2.89 \times 2.89}}; \quad (2)$$

- the share of university teachers, working in this sphere from ten to fifteen years in 2020 in the total number of faculty staff

$$y_3(x_3) = \frac{240.00}{2.70 \times \sqrt{2\pi}} \cdot e^{-\frac{(x_3-14.45)^2}{2 \times 2.70 \times 2.70}}; \quad (3)$$

- the share of university teachers, working in this sphere from fifteen to twenty years in 2020 in the total number of faculty staff

$$y_4(x_4) = \frac{240.00}{3.21 \times \sqrt{2\pi}} \cdot e^{-\frac{(x_4-19.17)^2}{2 \times 3.21 \times 3.21}}; \quad (4)$$

- the share of university teachers, working in this sphere more than twenty years in 2020 in the total number of faculty staff

$$y_5(x_5) = \frac{550.00}{7.13 \times \sqrt{2\pi}} \cdot e^{-\frac{(x_5-48.05)^2}{2 \times 7.13 \times 7.13}}. \quad (5)$$

The quality of functions (1)-(5) we tested using such criteria: by the Kolmogorov-Smirnov, the Pearson and the Shapiro-Wilk. Calculated values of criteria are given in table 2.

Table 2. Calculated values of criteria.

Indicators	Criteria		
	The Kolmogorov-Smirnov test	The Pearson test	The Shapiro-Wilk test
The share of university teachers, working in this sphere less than five years in 2020 in the total number of faculty staff	0.05	1.41	0.97
The share of university teachers, working in this sphere from five to ten years in 2020 in the total number of faculty staff	0.03	1.13	0.98
The share of university teachers, working in this sphere from ten to fifteen years in 2020 in the total number of faculty staff	0.04	2.86	0.96
The share of university teachers, working in this sphere from fifteen to twenty years in 2020 in the total number of faculty staff	0.03	0.52	0.98
The share of university teachers, working in this sphere more than twenty years in 2020 in the total number of faculty staff	0.05	1.81	0.97

Information given in column 2 of table 2 showed that all calculated values are less than the critical value by the Kolmogorov-Smirnov test (0.174) at significant level equal 0.05. Data in column 3 are less than critical value of Pearson criterion (9.49). Data in column 4 exceed critical value 0.93 Shapiro-Wilk test with significant level of 0.01. Thus, the computational experiment showed that all nine developed functions have high quality.

Based on the developed functions (1)-(5), the average values of indicators characterizing the distribution of the number of university teachers by work experience in the higher education system were determined for the regions of Russia. These values are given in the second column of table 3. The third column of this table shows the standard deviations for each of the five indicators. The values of the indicators characterizing the upper and lower boundaries of the intervals corresponding to most regions are given in the fourth column. We calculate the lower bound of the interval as the difference between the mean and the standard deviation. Accordingly, the upper bound is calculated as the sum of the mean and standard deviation.

Table 3. Values of indicators characterizing distribution of university teachers' number by work experience in the higher education system in the regions of Russia in 2020, %.

Indicator numbers	Average values	Standard deviation	Values for most regions
1	2	3	4
The share of university teachers, working in this sphere less than five years in 2020 in the total number of faculty staff	7.16	2.42	4.74-9.58
The share of university teachers, working in this sphere from five to ten years in 2020 in the total number of faculty staff	10.78	2.89	7.89-13.67
The share of university teachers, working in this sphere from ten to fifteen years in 2020 in the total number of faculty staff	14.45	2.70	11.75-17.15
The share of university teachers, working in this sphere from fifteen to twenty years in 2020 in the total number of faculty staff	19.17	3.21	15.96-22.38
The share of university teachers, working in this sphere more than twenty years in 2020 in the total number of faculty staff	48.05	7.13	40.92-55.18

Source: the calculations are carried out by the author on the basis of functions (1)-(5).

DISCUSSION

The average value for Russian regions of the share of university teachers working in this sphere less than five years in the total number of faculty staff is 7.2%. That is, approximately every fourteenth teacher has worked in this position for less than five years. The values of this indicator for most regions range from 4.7% to 9.6%.

The average value for Russian regions of the share of university teachers working in this sphere from ten to fifteen years in the total number of faculty staff was 10.8%. That is, approximately every ninth teacher has worked in this position for five to ten years. The values of this indicator, typical for most regions, ranged from 7.9% to 13.7%.

The average value for the Russian regions of the share of university teachers working in this sphere from ten to fifteen years in the total number of faculty staff was 14.5%. That is, approximately every seventh teacher has worked in this position for ten to fifteen years. The values of this indicator, typical for most regions, ranged from 11.7% to 17.2%.

The average value for the Russian regions of the share of university teachers working in this sphere from fifteen to twenty years in the total number of faculty staff was 19.2%. That is, approximately every fifth teacher has worked in this position for fifteen to twenty years. The values of this indicator, typical for most regions, ranged from 15.9% to 22.4%.

The analysis of the average values of the four indicators discussed above allowed us to conclude that these values showed stable growth with an increase in the length of service as university teachers. The average proportion of teachers with small work experience (less than five years) was 2.7 times less than teachers with significant work experience at universities (from fifteen to twenty years). Thus, the first hypothesis that the share of university teachers in their total number increases with a growth in the length of service as teachers has been confirmed.

The average value for the Russian regions of the share of university teachers working in this sphere more than twenty years in 2020 in the total number of faculty staff was slightly more than 48%. That is, approximately every second teacher has worked in this position for more than twenty years. The values of this indicator, typical for most regions, ranged from 40.9% to 55.2%.

It is interesting to note that in 2020 in the regions of Russia the number of teachers with work experience up to twenty years was 52% and was slightly more than the number of teachers with work experience of more than twenty years (48%). There was a similar trend in the regions of Russia. In 43 regions the share of teachers of the first group exceeded the share of teachers of the second group, in 12 regions the numbers for these two groups practically coincided. And in 27 regions, the number of teachers with more than twenty years of experience exceeded the number of teachers with less than twenty years of experience.

To test hypothesis 2 on the differentiation of indicators by region, an analysis of the degree of variation of each of the indicators presented in table 3 was carried out. To do this, we used the standard deviations indicated in column 3. The variation indices are as follows: for the first indicator - 34%, for the second indicator - 27%, for the third indicator - 19%, for the fourth indicator - 17%, the fifth indicator - 15%. This analysis showed a significant (more than 33%) differentiation of the value only by the first indicator. In other indicators, the differentiation was less significant. That is, the second hypothesis was partially confirmed.

The next step was to identify the Russian regions where the maximum and minimum values of each indicator were noted. In this case, the maximum values are those that exceed the upper limits of the ranges specified in column 4 of table 3, and the minimum values are those that are less than the lower limits of the specified ranges. The results of this analysis are shown in table 4. Along with the lists of regions, this table also provides values of indicators on regions and geographical location of regions.

Table 4. Characteristics of Russian regions with maximum and minimum indicator values.

Indicators	Region	Value,%	Federal district
1	2	3	4
With maximum values of indicators			
the share of university teachers, working in this sphere less than five years in 2020 in the total number of faculty staff	Astrakhan region	9.9	South
	Kamchatka territory	10.1	Far East
	Moscow region	10.5	Central
	Tatarstan republic	10.5	Privolzhskiy
	Moscow city	10.9	Central
	St. Petersburg city	11.1	North-West
	Oryol region	11.2	Central
	Ulyanovsk region	11.8	Privolzhskiy
	Ryazan region	12.0	Central
	Tyva republic	12.9	Central
Chechen republic	13.4	North-Caucasian	

	With minimum values of indicators		
	Sakhalin region	0.7	Far East
	Kurgan region	1.5	Ural
	Novgorod region	3.3	North-West
	Kostroma region	3.5	Central
	Khakassia republic	3.6	Siberian
	Adygea republic	3.6	North-Caucasian
	Vologda region	3.7	North-West
	Bryansk region	4.0	Central
	Lipetsk region	4.2	Central
	Murmansk region	4.2	North-West
	Karelia republic	4.5	North-West
	With maximum values of indicators		
	Perm region	14.3	Privolzhskiy
	Pskov region	14.5	North-West
	Trans-Baikal territory	14.5	Far East
	Stavropol territory	14.6	South
	Bashkortostan republic	14.6	Privolzhskiy
	Tatarstan republic	15.1	Privolzhskiy
	Ingushetia republic	16.3	North-Caucasian
	Crimea republic	19.6	South
	Oryol region	20.7	Central
the share of university teachers, working in this sphere from five to ten years in 2020 in the total number of faculty staff	With minimum values of indicators		
	Altai republic	4.2	Siberian
	Khakassia republic	5.4	Siberian
	Novgorod region	5.9	North-West
	Vologda region	6.1	North-West
	Kamchatka territory	6.3	Far East
	Murmansk region	6.7	North-West
	Amur region	6.7	Far East
	Bryansk region	6.9	Central
	Adygea republic	7.2	North-Caucasian
	Kaliningrad region	7.4	North-West
	With maximum values of indicators		
	Trans-Baikal territory	18.1	Far East
	Belgorod region	18.6	Central
	Perm region	19.2	Privolzhskiy
	Ingushetia republic	21.3	North-Caucasian
	Oryol region	27.9	Central
the share of university teachers, working in this sphere from ten to fifteen years in 2020 in the total number of faculty staff	With minimum values of indicators		
	Magadan region	8.8	Far East
	Sevastopol city	9.1	South
	Mordovia republic	9.8	Privolzhskiy
	Novgorod region	10.3	North-West
	Khakassia republic	10.6	Siberian
	Sakhalin region	11.2	Far East
	Kamchatka territory	11.4	Far East
	Tuva republic	11.5	Central
	Crimea republic	11.6	South
Murmansk region	11.7	North-West	

With maximum values of indicators			
the share of university teachers, working in this sphere from fifteen to twenty years in 2020 in the total number of faculty staff	Karachay-Cherkess republic	23.2	North-Caucasian
	Lipetsk region	23.3	Central
	Orenburg region	23.6	South
	Tyva republic	23.7	Siberian
	Kurgan region	24.3	Ural
	Kamchatka territory	25.3	Far East
	Bryansk region	25.8	Central
	Trans-Baikal territory	25.8	Far East
	Ingushetia republic	26.9	North-Caucasian
	Sevastopol city	30.5	South
With minimum values of indicators			
the share of university teachers, working in this sphere more than twenty years in 2020 in the total number of faculty staff	Novgorod region	13.4	North-West
	Sakha republic	13.9	Far East
	Khabarovsk territory	14.4	Far East
	Crimea republic	14.5	South
	Primorsky territory	14.7	Far East
	Moscow city	14.9	Central
	North Ossetia republic	14.9	North-Caucasian
	Kaliningrad region	15.4	North-West
	Ivanovo region	15.6	Central
	Ryazan region	15.6	Central
	Tver region	15.6	Central
	With maximum values of indicators		
the share of university teachers, working in this sphere more than twenty years in 2020 in the total number of faculty staff	Oryol region	24.3	Central
	Ingushetia republic	27.9	North-Caucasian
	Trans-Baikal territory	34.7	Far East
	Chechen republic	34.8	North-Caucasian
	Perm region	36.0	Privolzskiy
	Tatarstan republic	37.0	Privolzskiy
	Ulyanovsk region	37.0	Privolzskiy
	Stavropol territory	40.3	North-Caucasian
	Belgorod region	40.7	Central
	With minimum values of indicators		
the share of university teachers, working in this sphere more than twenty years in 2020 in the total number of faculty staff	Sakha republic	55.5	Far East
	Ivanovo region	55.7	Central
	Kostroma region	55.7	Central
	Altai republic	55.8	Ural
	Magadan region	56.9	Far East
	Kaliningrad region	57.5	North-West
	Vologda region	58.5	North-West
	Murmansk region	58.7	North-West
	Khakassia republic	63.2	Siberian
	Sakhalin region	63.2	Far East
	Novgorod region	66.4	North-West

Source: developed by the author on the basis of data from table 3.

Table 4 provides information on the geographical location of regions (column 3), i.e. to which of federal districts in Russia they devote (column 4). The analysis of this information showed that there is no relationship between the maximum and minimum values of indicators and the territorial location of regions. That is, regions with high and low values of indicators are located in different federal districts. Thus, we can state the confirmation of the third hypothesis.

CONCLUSION

The purpose of our study related to the assessment of the share of teachers with different work experience in relevant positions in higher education organizations in the total number of university teachers in each of the regions of Russia has been achieved. The following conclusions have scientific novelty and originality. Firstly, a methodology was proposed for evaluating indicators characterizing the distribution of the total number of university teachers by work experience in the higher education system, using the density functions of the normal distribution. Five groups of teachers formed on this basis were considered. The proposed methodology gave opportunity for making distribution of relevant indicators across all 82 regions of Russia. The results of the development of normal distribution density functions showed that approximately every fourteenth teacher has worked in a teaching position for less than five years, every ninth teacher has worked in this position for five to ten years, every seventh teacher has worked in this position for ten to fifteen years, every fifth teacher has worked in this position for fifteen to twenty years. It is proved that the number of teachers with work experience up to twenty years was 52% and was slightly more than the number of teachers with work experience of more than twenty years (48%).

The analysis showed the presence of a certain differentiation of the values of the considered indicators by region. At the same time, the differentiation was not significant for four of the five indicators.

The regions that were characterized by the maximum and minimum values of each of the five indicators under consideration were identified. The study showed that the geographical location of the regions does not significantly affect the maximum and minimum values of the indicators.

The practical significance of the study for the government is to take into account the existing territorial differences in the experience of teachers in the higher education system. The results of the work can be used in the activities of federal and regional structures related to the support of educational processes, when justifying their planned activities to attract scientific and teaching staff to work in the higher education system. The new knowledge gained is of interest and can be used in the educational process at universities. The study had no limitations, since empirical data of official statistical information for all 82 regions of Russia were considered. Further research may be aimed at establishing the gender structure of the distribution of university teachers with different work experience in the regions of Russia.

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