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## Measures of state support of pharmacy organizations in the Arctic zone

### ABSTRACT

The article characterizes the spatial aspects of the availability of drug supply for the population. The factors that shape the development of the pharmaceutical service in the Arctic regions of the Sakha Republic (Yakutia) were considered. The Arctic areas are defined in accordance with the decree of the President of the Russian Federation. The availability of pharmaceutical care in Arctic regions was analyzed in comparison to more densely populated and economically prosperous municipalities of the Republic. Possible solutions to existing problems are proposed.

**Keywords:** drug provision, the range of medicines, the pharmaceutical security experts, Arctic regions, municipal pharmacies.

In the "Basics of state policy of the Russian Federation in the Arctic for the period till 2020 and for a further perspective" the Arctic is seen as the Arctic region, including water Arctic basin, marginal seas with Islands and adjoining parts of the mainland [3]. For the Republic of Sakha (Yakutia) this area is a narrow coastal strip.

In accordance with the presidential decree №296 "On the land territories of the Arctic zone of the Russian Federation" dated on 2 may 2014 the Arctic zone of the Russian Federation includes the 5 districts of the Republic of Sakha (Yakutia): Anabarsky, Allaikhovsky, Bulunsky, Nizhnekolymsky and Ust-Yansky districts. Arctic areas of the Republic occupy the coastal part of the Arctic ocean. The total area is 593,9 thousand square kilometers (table 1).

**Table 1.**

**The composition of territories of the Arctic zone of the Sakha Republic (Yakutia).[4]**

№ п/п	Municipal formation	The population of people on 01.01.2014	Area	
			thousand sq. kilometers	in % to total area
	The Republic Of Sakha (Yakutia)	<b>954803</b>	<b>3083,5</b>	
	The Arctic zone of Sakha (Yakutia):	<b>26447</b>	<b>593,9</b>	<b>19,26%</b>
1	Allaikhovskiy district (Chokurdak)	2764	107,3	3,5
2	Anabar district (Saskylah)	3403	55,6	1,8
3	Bulunsky district (Tiksi)	8507	223,6	7,3
4	Nizhnekolymsky district (Chersky)	4414	87,1	2,8
5	Ust-yanskiy district Deputy	7359	120,3	3,9

The Republic of Sakha (Yakutia) is one of the few regions of Russia, which preserved the natural increase of the population (table 2). In 2013 compared to 2012, the rate of natural increase increased for 3,5% and amounted to 8.8 ppm.

The figure for the country is significantly higher than the average figures of Russia and the Far Eastern Federal District. The level of natural increase of the population the Republic takes the 8th place along with Tyumen oblast in the Russian Federation behind the Chechen Republic, Republic Ingushetia, Republic of Tyva, the Republic of Dagestan, Yamalo-Nenets Autonomous district, Khanty-Mansi Autonomous district and the Republic of Altai, and the 1st place among the regions of the far Eastern Federal district [1].

**Table 2****The natural movement of population (per 1000 population)**

Municipal districts	fertility			mortality			natural population growth			The number of births per 1 death case		
	2201 3	2201 2	2201 1	2201 3	2201 2	2201 1	220 13	2201 2	2201 1	220 13	2201 2	2201 1
Allaikhovskiy	117,1	117,3	118,1	117,8	114,5	115,8	-- 0,7	22,8	22,3	11, 0	11,2	11,1
Anabarskiy	223,2	118,8	119,7	88,5	99,4	111,0	114 ,7	99,4	88,7	22, 7	22,0	11,8
Bulunskiy	115,9	115,6	117,0	99,1	110,0	112,4	66, 8	55,6	44,6	11, 7	11,6	11,4
Nizhnekolymsky	118,5	116,7	117,0	114,4	112,2	113,9	44, 1	44,5	33,1	11, 3	11,4	11,2
Ust-yanskiy	116,6	116,5	119,7	114,6	114,3	115,6	22, 0	22,2	44,1	11, 1	11,2	11,3
Yakutsk	116,7	118,2	116,7	77,1	77,4	77,3	99, 6	110,8	99,4	22, 4	22,5	22,3
<b>The Republic Sakha (Yakutia)</b>	<b>117,5</b>	<b>117,8</b>	<b>117,1</b>	<b>88,7</b>	<b>99,3</b>	<b>99,4</b>	<b>88, 8</b>	<b>88,5</b>	<b>77,7</b>	<b>22, 0</b>	<b>11,9</b>	<b>11,8</b>
<b>city population</b>	115,5	116,6	115,6	88,4	99,2	99,2	77, 1	77,4	66,4	11, 8	11,8	11,7
<b>the rural population</b>	221,1	119,9	119,9	99,3	99,7	99,8	111 ,8	110,2	110,1	22, 3	22,1	22,0
<b>Russian Federation</b>	<b>113,2</b>	<b>113,3</b>	<b>112,6</b>	<b>113,0</b>	<b>113,3</b>	<b>113,5</b>	<b>00, 2</b>	<b>0</b>	<b>--0,9</b>	<b>1,0</b>	<b>11,0</b>	<b>00,9</b>
<b>The Far Eastern Federal district</b>	<b>113,9</b>	<b>114,0</b>	<b>113,2</b>	<b>112,6</b>	<b>113,1</b>	<b>113,5</b>	<b>11, 3</b>	<b>00,9</b>	<b>--0,3</b>	<b>11, 1</b>	<b>11,1</b>	<b>11,0</b>

The fertility rate in the Arctic regions of the Republic is 18.26 per 1000 population, at the average, which is generally higher than rate in the Republic, but lower than the average for the rural population of the Republic. The mortality rate in Arctic regions of the Republic is 12,88 per 1000 population, which is significantly higher than the

national average among urban and among rural population. This figure is also higher than figure of the Far Eastern Federal district. Natural population growth can be observed in all Arctic regions except Allaikhovskiy district.

The main causes of mortality in the Arctic, as well as in the Republic, are diseases of the circulatory system, external causes and cancer. There are 28 medical organizations (MO) in the Arctic. The system of providing inpatient and outpatient care is represented with 5 hospitals, 1 medical clinic, 11 district hospitals, 11 of the PLL.

Provision of round-the-clock beds in areas of the Arctic (2013 - 125,3; 2012 - 127,3; 2011 - 124,6) exceeds the average numbers for the Republic (2013 - 106,9; 2012 - 106,9; 2011 - 107,6;) by 17% on average. Indicator of the availability of round-the-clock beds is higher than the average value (2013 - 106,9) in the following Arctic and Northern uluses (districts): Ust-yanskiy (171,8 per 10 thousand population), Nizhnekolymsky (170,6 per 10 thousand population), Allaikhovskiy (132,9 on 10 thousand of population).

196,25 units are provided as total number of doctors in MO, 97 people are working as individuals, i.e. staffing is 49,42%. The number of doctors in the whole Arctic regions is below the national average by 30% and is 36,67 per 10 thousand population of the Republic of Sakha (Yakutia).

The purpose of this research is a study of problematic issues of organization of medicine provision in 5 Arctic regions of the Sakha Republic (Yakutia).

The availability of the medicinal help to the population generally is not only a sufficient number of pharmacies, but it is also the number of inhabitants per pharmacy, the level of availability of pharmaceutical professionals and other factors. These figures in different municipalities within one country are quite different.

Social development of municipal formations of the Arctic zone of the Russian Federation in the status of municipal areas and city districts depends on a number of key factors: demographic, social, financial, managerial, environmental, criminal, etc [2].

To characterize the necessary conditions for the development of the system of pharmaceutical care, we used the underlying indicators of socio-economic development:

- the number of population;
- the number of economically active population;
- employment percentage of number of economically active population;
- natural growth of population;
- population density;

These figures clearly reflect the specificity of the territorial socio-economic development of the Arctic regions.

The districts of the Republic were divided into 3 groups on the basis of existing methods of ranking municipalities in terms of socio-economic development:

Group 1 – municipalities with high level of socio-economic development with relatively favorable social and demographic situation;

Group 2 – municipalities with an average level of socio-economic development, which are characterized by stable development of socio-economic spheres;

Group 3 – municipalities with a low level of socio-economic development;

To develop options for state support of pharmaceutical activity, we conducted a comparative analysis of the number of pharmaceutical organizations and experts in the Arctic regions of the Republic with other districts of the Republic what are more prosperous in terms of socio-economic development.

For this purpose indicators of socio - economic development of the Arctic regions were compared with the indicators of two municipal districts: the Mirny and Megino-Kangalassky districts of the Republic of Sakha (Yakutia) (fig.1, 2). The Mirny district is a municipality in the West of Yakutia. It is one of the most industrialized districts of the Republic. The main branch of the economy is the mining industry. In the area of Mirny, Ihalo-Udachny mining and Srednebotuobinskoye nodes that specializes on the extraction of diamonds, oil, natural gas. The diamond mining fields of the district is 14% of world production. The area was nominally assigned to 1 group.

Megino-Kangalassky district is a municipality in Central Yakutia. It is one of the most populous agricultural districts of the Republic. The main branch of economy is agriculture, namely the livestock (dairy cattle, beef herd horse breeding). Cereals, potatoes, vegetables and fodder crops are also cultivated here. The area was assigned to 2 group.

As seen in figures 1 and 2, population, economically active population, natural population growth and the density of accommodation have a distinct negative trend in the Arctic group of districts of the Republic of compared to areas in the Central and Western parts of the Republic. These indicators form a common trend of functioning and development of pharmaceutical services in the Arctic. Since 1990, the population of the Arctic regions of the Republic declined by more than 2 times, and migration loss increased 1.5 times. Today the population of 5 Arctic regions of the Republic is 26.4 thousand people or 2.76 % of the total population of the Republic. In the Arctic regions there's almost no regular logistics between the settlements and the administrative center. The worst transport provision is observed in the Ust-Yana district, where more than half of the population is unable to reach the district center.

4 drugstores, 2 pharmacy branches operate in 5 Arctic regions. In the Anabar area pharmacy organizations are absent. Pharmaceutical care is provided only by municipal pharmacies in the territories of Arctic regions, there are almost no pharmacies of private ownership. Private capital is represented only in the Ust-Yanskiy district in the form of two pharmacies. The average supply of pharmacists per 10 thousand population is 1.46 people, pharmacists per 10 thousand population is 3.22 people. Pharmaceutical care in settlements where there are no pharmacies medical assistants is the FAP-s and health workers in district hospitals. Analysis of the present stage of development of the pharmaceutical service in the Arctic regions of the Republic showed that there are significant differences on such indicators as the number of inhabitants on one pharmacy organization and provision of pharmaceutical personnel per 10 thousand of population in the municipalities of the Republic of Sakha (Yakutia).

As can be seen from figure 3, in the Arctic regions one pharmacy organization serves an average of 4407 inhabitants, in the Mirny district 1181 inhabitants, in Megino-Kangalassky district – 2675 inhabitants.

Indicator of the availability of pharmaceutical specialists with higher and secondary education per 10 thousand of population of the Republic of Sakha (Yakutia) in the Arctic is significantly lower than not only in the two compared regions, but in average in the Republic

For analysis of the factors that have the greatest impact on the state of pharmaceutical care in the municipalities of the Republic of Sakha (Yakutia) we selected sociological method, focused on the collection of direct and indirect opinions of specialists with pharmaceutical education. The survey was conducted among pharmaceutical specialists of the Republic, trained in certification courses.

To achieve the objectives, we compiled questionnaire of 30 questions. The questions were divided into the following sections:

- demographic profile (gender, age, place of residence – in the countryside or in the city);
- professional status of the specialist (education, work experience, position, work experience);
- the organizational structure of the pharmacy;
- description of the maintenance contingent, including a profile, the capacity of hospitals.
- the presence of small retail network;
- the presence of activity on manufacture of medicines;
- identification and evaluation of factors that have the greatest impact on the state of pharmaceutical care in the country.

60 specialists with pharmaceutical education joined the survey, which is approximately more than 5% of specialists in the Republic. The absolute number of respondents were women. The share of specialists with pharmaceutical education at the age from 30 to 45 years old accounted for 14.3 per cent, from 45 to 55 years old - 53,6%, from 55 to 60 years – 28,6%, over 60 years old is 3.5%. 80% of respondents have work experience more than 20 years. Higher pharmaceutical education have 34 specialist or 56.7%, the highest 26 specialist -43,3%. 35.7% of experts work in the city pharmacies, 64,3% of specialists work in rural areas.

To assess the factors basic indicators were selected, that affect, in our opinion, the state of pharmaceutical care in the country. Pharmaceutical professionals were asked to rate their importance on a ten-system, with 10 points was estimated to be the most important factor according to respondents, the factor that has least impact was estimated at 1 point. Specialists in pharmaceutical education could additionally include important according to them the factors in the ongoing evaluation.

The selected factors were divided into 5 blocks. The first block consisted of factors characterizing the demographics of the territory (district): population, density of population residence, natural increase of the population. The second block included the following factors: the number of economically active population, the employment rate, the number of economically active population. The third block consisted of factors characterizing the transport accessibility of the territory (area): distance from the center of the Republic, the structure of the transport scheme in the district, the regularity of the transport message on a seasonally adjusted basis. The fourth block consisted of two factors: the number of doctors and number of hospital beds hospitals. In the fifth unit respondents were asked to name and evaluate other significant factors according to respondents.

**Table 3**

**Evaluation of factors influencing the availability of pharmaceutical care to the population of the Arctic areas**

Factors affecting the state medical assistance	The answers of experts with pharmaceutical education in %									
	1 point	2 points	3 points	4 points	5 points	6 points	7 points	8 points	9 points	9 10 points
number of population	-	-	33,3	88,4	113,4	66,6	118,4	223,3	118,4	88,2
Natural population growth	-	-	33,3	110,0	110,0	116,7	118,4	118,4	220,0	-
The density of living population	-	66,7	111,6	118,3	116,7	225,0	116,7	55,0	-	-
The number of economically active population	-	-	33,3	33,3	111,7	110,0	116,6	115,0	118,3	221,8
The percentage of employment the number of economically active population	33,3	33,3	55,0	115,0	110,0	116,7	118,4	220,0	88,3	-
The distance from the center (capital) of the Republic of	-	-	-	-	-	88,3	110,0	220,0	225,0	336,7
Complex transport scheme in the district	-	-	-	-	66,7	66,7	111,8	223,4	330,0	221,4

The regularity of transport, and dependence on the seasonality of transport	-	-	-	-	-	113,4	111,8	223,4	330,0	221,4
The number of doctors	-	-	-	-	-	115,0	330,0	226,7	225,0	33,3
The number of bed Fund of medical institutions	-	-	-	110,0	118,4	220,0	116,6	226,7	88,3	-
Other factors	-	-	-	33,4	55,0	110,0	221,6	220,0	223,3	116,7

As it can be seen from Table 3, 3.3% of respondents cited the factor "percentage of employment the number of economically active population" as the least important factor.

The greatest influence on the state of pharmaceutical care in the Republic of Sakha (Yakutia), according to respondents, are: "the distance from the center of the Republic" – named by 36% of respondents, "the complex transport scheme in the district" – named by 21,4% of respondents, "regularity of transport, and dependence on the seasonality of transport" with 21.4%. These factors by total points, estimated by respondents in 9 and 8 points, have a leading position.

In the study it was found that government support in the first place, should be aimed at minimizing the negative impact of the above factors.

In this regard, in order to provide priority air transport of medicinal products and medical devices to municipal entities of the Republic a joint order of the Ministry of health of the Republic of Sakha (Yakutia) and the Ministry of transport and road facilities of the Sakha Republic (Yakutia) was prepared and implemented, defining principle of the priority of transportation of drugs. The reimbursement of transportation costs for the delivery of vital and essential drugs in the Arctic and Northern regions of the Sakha Republic (Yakutia) was developed in the form of grants to legal entities and individual entrepreneurs.

The procedure defines the purpose and conditions of granting from the state budget of the Republic of Sakha (Yakutia) funds for the reimbursement of transport costs for the delivery of essential drugs in Arctic and Northern regions of the Republic.

The purpose of granting subsidies from the state budget is to ensure that medicinal maintenance of the population living in the Arctic and the Northern group of districts of the Republic. A condition of granting of a subsidy is the importation of essential drugs in the Arctic and Northern areas according to the following criteria:

- definition of an authorized operator in accordance to current legislation of the Russian Federation;
- presence of an authorized operator license for pharmaceutical activity in the following types: "Wholesale of pharmaceuticals and medical products, Retail trade of pharmaceutical goods";
- presence of the authorized operator, of contracts for transportation, processing and handling;
- availability of storage facilities for the storage of essential drugs;
- documents proving transport costs on delivery of essential drugs in Arctic and Northern regions including costs for transport, processing, loading and unloading operations.

Thus, the proposed measures of state support in the form of reimbursement of transportation costs for the delivery of medicines in the Arctic and Northern regions of the Republic will allow to increase availability of medicinal assistance to the population and to develop motivation and incentive methods for conducting pharmaceutical activities in these areas.

## REFERENCES

1. Gosudarstvennyj doklad o sostojanii zdorov'ja naselenija Respubliki Saha (Jakutija) v 2013 godu //Ministerstvo zdravoohraneniya Respubliki Saha (Jakutija), GBU RS(Ja) Jakutskij respublikanskij informacionno-analiticheskij centr.2014 g [State report on the health status of the population of the Republic of Sakha (Yakutia) in 2013] [the Ministry of health of the Republic of Sakha (Yakutia), GBU Sakha(Yakutia) Yakut Republican information-analytical center], Yakutsk, 2014.
2. Matvienko I. I. Chizhova L. A. Metodicheskij podhod k ocenke social'no-jekonomicheskogo razvitija municipal'nyh obrazovanij Arkticheskoy zony Rossijskoj Federacii//Jekonomika i upravlenie [Methodical approach to the assessment of socio-economic development of municipal formations of the Arctic zone of the Russian Federation] Jekonomika i upravlenie [J Economics and Management]. Moscow, 2013, №8 (105), P. 88-93.
3. Postanovlenie Pravitel'stva Respubliki Saha (Jakutija) ot 15 avgusta 2014 g №251 «O kompleksnoj programme Respubliki Saha (Jakutija) «Social'no-jekonomicheskoe razvitie arkticheskikh i severnykh rajonov Respubliki Saha (Jakutija) na 2014 – 2017 gody i na period do 2020 goda [Resolution of the government of the Republic of Sakha (Yakutia) dated 15 August 2014 №251 "About the complex program of the Republic of Sakha (Yakutia) "Socio-economic development of the Arctic and Northern regions of the Sakha Republic (Yakutia) for 2014 – 2017 and until 2020"].
4. Ukaz Prezidenta RF №296 ot 2 maja 2014 goda «O suhoputnyh territorijah arkticheskoy zony Rossijskoj Federacii» [The Decree of the President of the Russian Federation No. 296 of May 2, 2014 "About land territories of the Arctic zone of the Russian Federation"].

Fig. 1. The population, economically active population, employment of the economically active population on average in the Arctic regions of the Republic and in Megino-Kangalassky and Mirny areas of the Republic

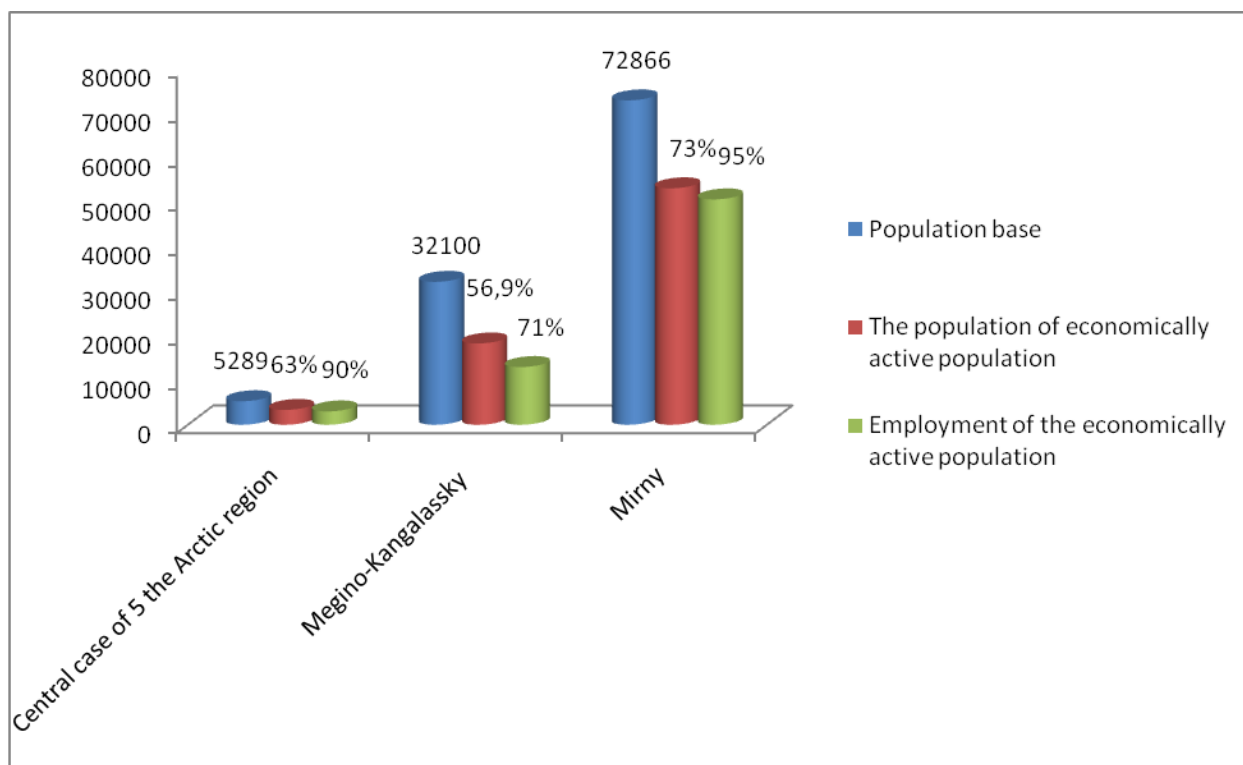


Fig. 2. The population, natural increase and density of residence (km<sup>2</sup>)

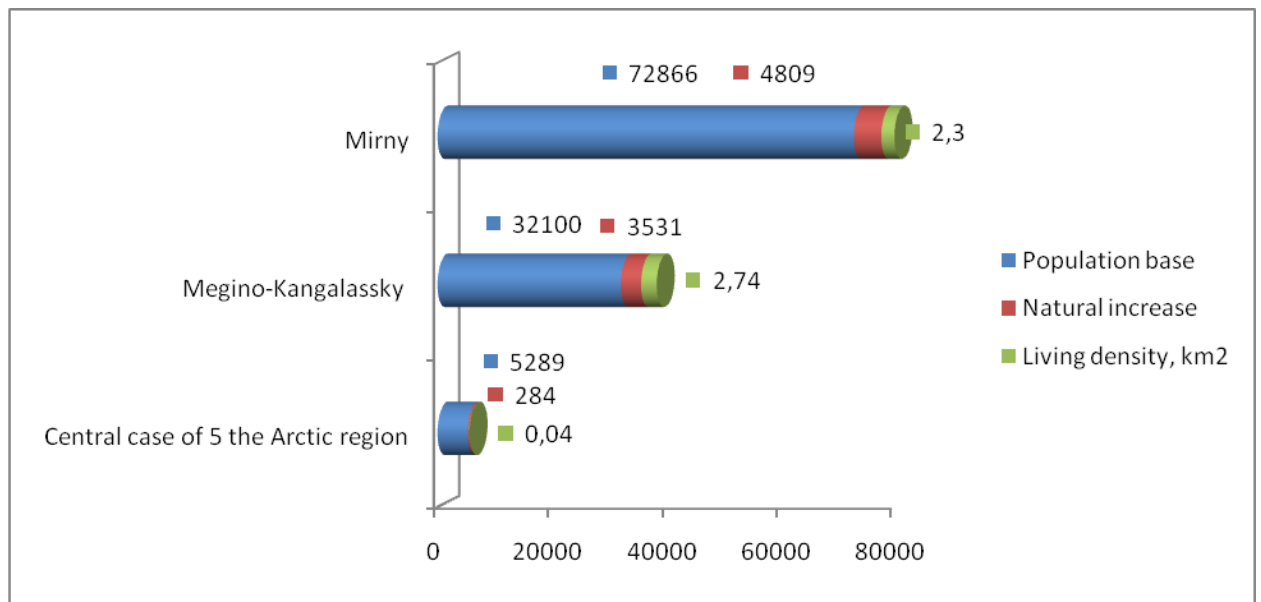


Fig. 3. The number of inhabitants on one pharmacy organization an average of 5 Arctic regions and compare the 2 areas

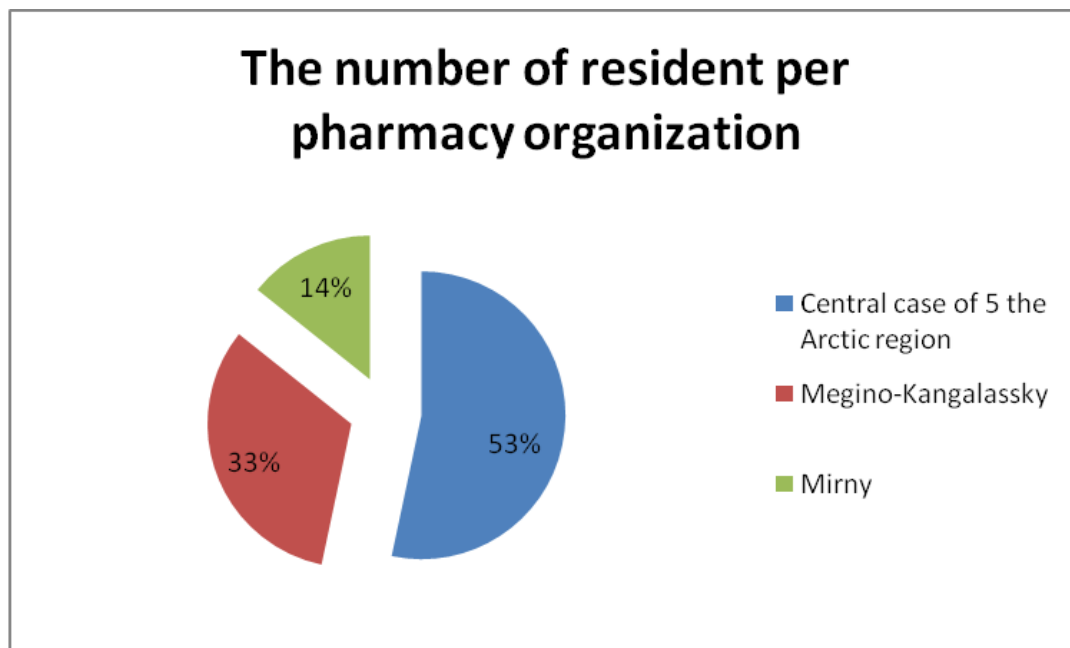




Fig.4. Pharmaceutical Security experts on 10 thousand of population of the Republic of Sakha (Yakutia)

