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Objective assessment of the quality of life of the Kamchatka region population in 2010 – 2015

The article discusses theoretical and methodological basics of assessment and analysis of the quality of life of population in the Russian Federation entity. Brief theoretical bases of the analysis of the quality of life of population of the Russian Federation entity, brief methodical bases of quantitative assessment of the indicators of the quality of life of the population of the Russian Federation entity, integrated in a composite index, have been laid out. Calculations of the objective private indicators are given, and on their basis an integral indicator of the quality of life of the population for the Khabarovsk territory, the Kamchatka region and Russia as a whole in 2015 compared to 2010 is provided. Comparative analysis of the quality of life of the Kamchatka region population for the same indicators of the quality of life in the Khabarovsk territory and the average Russian indicators is presented.

Качество жизни населения в региональном измерении: экономико-статистический анализ

В статье рассматриваются теоретические и методические подходы к оценке и анализу качества жизни населения на территории субъекта РФ (на примере Камчатского края). Изложены теоретические основы анализа качества жизни населения субъекта РФ, методические основы количественной оценки показателей качества жизни населения субъекта РФ, интегрированные в обобщенный показатель. Приводятся расчеты статистических показателей и на их основе – интегрального показателя качества жизни населения за 2015/2014 гг. в сравнении с 2010 г. для Хабаровского края, Камчатского края и России в целом. Представлен сравнительный анализ качества жизни населения Камчатского края.

Keywords: the RF entity, population quality of life, indicators, indexes, integral index of the population quality of life.

Ключевые слова: субъект РФ, качество жизни населения, индикаторы, показатели, интегральный показатель качества жизни населения.

Thus, today, there are many methodologies for an assessment of the population quality of life. An expert assessment is used mainly, and the systems of indicators and groups are different. The quality of life indicators may include three - fifty (eighty) quantitative features. The upper limit of the number of indicators used in the models is blurred. For example, WHO uses a brief questionnaire WHOQOL-BREF in its methodology, it consists of 26 items assessing the following broad areas: physical health, psychological health, social relationships and the environment. Big Mac Index, the unofficial method to determine the parity of purchasing power, is also used as a method of the living standardassessment. The groups of the studied parameters, in many models are not always proportional. In the suggested model, consisting of four proposed groups

(health, quality of life, environment and cultural development),the following proportions are observed: five indicators within each group, i.e. a mathematical model is strictly symmetrical and weighted.The indicators are neither littlenor many, that in turn allows to get an objective assessment.
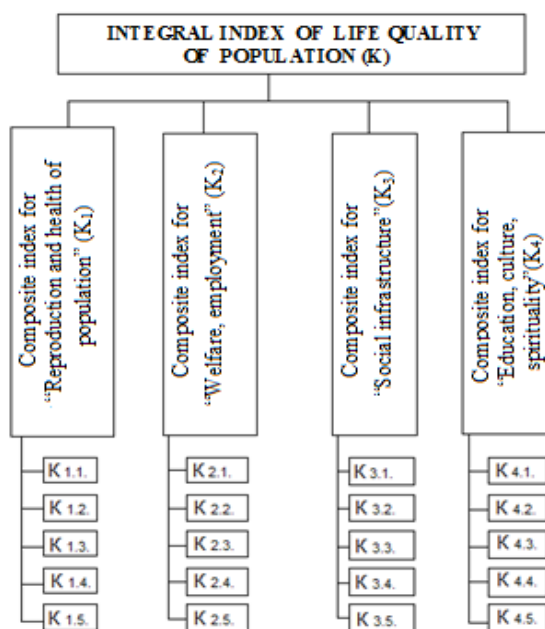

Fig. 1. System of interacting indexes of life quality rating[1]

In accordance with the worked up methodology of the quality of life assessment, the calculation of the necessary indicators during the period of 2010 – 2015 was made for the Kamchatka region (territory), for the Russian Federation and for the Khabarovsk territory for further assessment, comparison and comparative analysis. At the same time, the Khabarovsk territory is taken for comparison, as one of the neighboring regions, similar by its natural and climatic conditions and the structure of the economically active population.

The results of the calculation of the main twenty indicators of the quality of life of the population in the Khabarovsk and Kamchatka regions in 2010-2015 are

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[1]The nomenclature of indexes of the population quality of life assessment proposed by T.D. Makarenko was the basis of research. /T.D. Makarenko, N. M. Vdovina. — Irkutsk: BGUEP, 2004. -70-71; and Kolbasina, A.G. A subjective rating of the quality of life of Krasnoyarsk population (based on index of life   satisfaction)/A. G. Kolbasina [electronic resource]//http://www.ram.ru/activity/comp/bp2003/files/std09.pdf. 11/13/2009

shown in the table 1. The data in the tables 1 and 2 show the close correlation of the majority of objective indicators of quality of life in the Kamchatka region with the Russian average values, as well as with the values for the Khabarovsk territory during 2010 - 2015. The dynamics in general corresponds to that for Russia, although there are indicators, which show a noticeable decline for the Kamchatka region, for example, migration – for Russia (70%), for the Kamchatka region (-88%- out migration exceeds nearly twice the value of 2010), a consumer market-Russia (3%), the Kamchatka region (-55%- commodity goods purchasing power and catering was halved).

Table 1

Objective indicators of population quality of life in the Khabarovsk Territory and the Kamchatka Region in 2010-2015[2]

№ п/п	Indicators\Years	Objective indicators values									
		2010		2011		2012		2013		2014	
		Khab. territory	Kamchatka region	Khab. territory	Kamchatka region	Khab. territory	Kamchatka region	Khab. territory	Kamchatka region	Khab. territory	Kamchatka region
1	2	3	4	5	6	7	8	9	10	11	12
1.1.	Infant mortality rate	1.39	1.26	1.44	1.37	1.33	1.31	1.49	1.30	1.29	1.35
1.2.	Net migration rate	1.69	1.34	0.62	2.28	0.19	0.09	1.07	1.82	1.00	1.19
1.3.	Birth rate	0.99	0.95	1.02	0.99	1.03	0.98	1.05	0.98	1.03	0.97
1.4.	Death rate	0.98	0.88	1.08	0.89	1.02	0.87	1.02	0.87	1.00	0.86
1.5.	Social security rate	1.25	0.21	1.22	0.01	1.23	0.23	1.38	0.20	1.45	0.23
2.1.	Welfare rate	0.69	0.79	0.72	0.80	0.77	0.78	0.78	0.80	0.76	0.82
2.2.	Rate of comfortable housing providing to population	0.99	1.20	1.03	1.18	1.05	1.24	1.05	1.21	1.08	1.24
2.3.	Employment rate	0.98	1.00	0.99	1.00	0.99	1.00	0.99	1.00	0.99	1.00
2.4.	Rate of manufactured articles and catering ratio per capita in average monthly nominal wage	0.82	0.82	0.79	0.82	0.74	0.82	0.78	0.81	0.81	0.81
2.5.	Rate of population proportion with earnings above poverty line	0.96	0.92	0.96	0.93	0.96	0.92	0.98	0.93	0.98	0.93
3.1.	Ecological state rate	1.71	0.71	1.39	0.72	1.38	0.73	1.46	0.80	1.59	0.88
3.2.	Rate of housing and utilities level services	1.01	1.01	1.01	1.01	1.00	1.01	1.00	1.01	0.99	1.01
3.3.	Rate of social infrastructure complex covering	0.20	1.30	1.09	1.26	1.08	1.25	1.09	1.29	1.05	1.22
3.4.	Rate of new housing facilities proportion per capita	0.45	0.44	0.69	0.49	0.56	0.49	0.49	0.53	0.56	0.47
3.5.	Transport support ability rate	0.61	2.14	1.26	1.65	1.34	1.79	1.30	1.97	1.15	2.00
4.1.	Rate of education coverage	0.17	1.01	1.09	1.01	1.09	1.01	1.10	0.94	1.08	0.94
4.2.	Rate of culture development	0.82	1.71	0.90	1.83	0.86	1.79	0.84	1.69	0.77	1.76
4.3.	Rate of population complex coverage by information infrastructure and communication services	0.68	0.34	1.01	0.36	1.01	0.36	0.99	0.36	0.98	0.35
4.4.	Rate of family relations stability	3.30	0.83	0.93	0.87	1.00	0.78	0.95	0.76	0.87	0.84
4.5.	Rate of social and cultural communication	1.39	1.12	0.91	1.23	0.94	1.31	0.99	1.40	1.01	1.40

[2]*Sources of values for calculations: Regions of Russia. Socio-economic indicators – 2015. Stat. Digest/Rosstat.[Electronic resource.]–M.2015-1266 pp. //http://www.gks.ru/bgd/regl/b15_14p/Main.htm.*

Table 2

Dynamics of particular indexes of the population quality of life in the Kamchatka region in 2010 – 2015[3]

	Index	Particular indexes values Kamchatka Region		Growth rate, %
		2010г.	2015г.	
1	2	3	4	5
1	1.1. Health of population	0.161	0.175	9
2	1.2.Migration	0.371	0.046	-88
3	1.3.Birthrate	0.189	0.195	3
4	1.4. Mortality	0.230	0.230	0
5	1.5. Social security	0.028	0.037	32
6	2.1. Earnings of population	0.070	0.097	39
7	2.2.Housing conditions	0.281	0.054	-81
8	2.3.Employment level	0.224	0.298	33
9	2.4. Consumer market	0.031	0.014	-55
10	2.5.Social protection of population	0.190	0.196	3
11	3.1. Ecological state	0.114	0.141	24
12	3.2. Quality of housing services	0.001	0.001	0
13	3.3.Social infrastructure	0.231	0.216	-6
14	3.4. New housing development	0.129	0.452	350
15	3.5.Transport services	0.457	0.922	102
16	4.1. Education of population	0.148	0.134	-9
17	4.2. Culture	0.409	0.004	-99
18	4.3. Communication facilities	0.058	0.001	-98
19	4.4. Family relationship	0.140	0.065	-54
20	4.5. Social and cultural communication	0.308	0.377	22

The analysis of table 2 shows that all private indexes of the quality of life of the Kamchatka region population in 2015 were below the average Russian level (less than 1). Only two indexes are close to 1: Transport service (0.922) and Employment level (0.298), they reflect the overall trend in Russia as a whole. The lowest values are the following particular indexes: Communication media - (0.001), earnings of population (0.097), living conditions - (0.054), education (0.134), migration (0.046). The increase of migration (out migration) according to the growth rate for the Kamchatka region itself can be called somewhat disturbing, in 2015 the indicator slightly improved in comparison with 2010, but remains dangerous for the Kamchatka region when compared with the average for Russia.

In the table 3 the calculations of the values of final particular indexes of the quality of life in the Kamchatka region in 2010 and in 2015 are given based on the values of particular indexes and weighing coefficients.

The composite indexes of population quality of life are obtained by summation of the final values of the particular indexes for each block (Table 3) and multiplying them by weighing coefficients (Table 4).

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[3]*The data in table 2 are calculated by the author.*

Final values of the particular indexes of population quality of life in the Khabarovsk territory and the Kamchatka region in 2010, 2014, 2015[4]

Block	Index	Values of final particular indexes			
		Kamchatka region, 2010	Kamchatka region, 2015	Khabarovsk territory, 2010	Khabarovsk territory, 2014
1	2	3	4	5	6
1	1.1. Health of population	0.161	0.175	0.184	0.123
	1.2. Migration	0.371	0.046	0.171	0.032
	1.3. Birthrate	0.189	0.195	0.202	0.213
	1.4. Mortality	0.230	0.230	0.281	0.268
	1.5. Social security	0.028	0.037	0.164	0.195
K₁: Reproductivity and health of population		**0.978**	**1.063**	**1.183**	**1.177**
2	2.1. Earnings of population	0.070	0.097	0.064	0.066
	2.2. Housing conditions	0.281	0.054	0.242	0.253
	2.3. Employment level	0.224	0.298	0.222	0.224
	2.4. Consumer market	0.031	0.014	0.193	0.219
	2.5. Social protection of population	0.190	0.196	0.200	0.207
K₂: Human welfare, employment		**0.796**	**0.816**	**0.912**	**0.943**
3	3.1. Ecological state	0.114	0.141	0.224	0.255
	3.2. Quality of housing services	0.001	0.001	0.153	0.151
	3.3. Social infrastructure	0.231	0.216	0.194	0.185
	3.4. New housing development	0.129	0.952	0.203	0.167
	3.5. Transport services	0.457	0.922	2.702	0.247
K₃: Social infrastructure		**0.933**	**0.932**	**1.687**	**1.006**
4	4.1. Education	0.148	0.134	0.161	0.159
	4.2. Culture	0.409	0.004	0.215	0.184
	4.3. Communication facilities	0.058	0.001	0.171	0.167
	4.4. Family relations	0.140	0.065	0.159	0.147
	4.5. Social and cultural communication	0.308	0.134	0.250	0.236
K₄:Education, culture, spirituality		**1.063**	**0.595**	**0.960**	**0.934**
Integral index of population quality of life		**0.957**	**0.843**	**1.238**	**1.011**

Table 4 shows: in 2015 almost all composite indexes remained lower than the average Russian values. The only index "Reproduction and health" is above the average in Russia by 9%. Negative dynamics was observed for all other composite indexes. A leap in the index of the first block "Reproduction and health of population" is explained by:

1. The development of federal and regional programs of health care in recent years, the implementation of modern diagnostic and treatment technologies, construction and opening of new medical centers with the most modern medical equipment.

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[4] *The data in table 3 are calculated by the author.*

2. The advantage of the Far East and the Transbaikal Region is the employable population (active working age), which is comparable with the average for Russia, and, consequently, there is a high enough proportion of the population of reproductive age.

Table 4

Composite indexes of the population quality of life in the Kamchatka region in 2010, 2014, 2015[5]

№ п/п	Composite index		Composite indexes values			Weighing coefficients
	Full name	Abbreviation	Kamchatka region		RF	
			2010	2015	2014	
1	2	3		5	6	7
1.	Reproduction and health of population	K_{RP}	0.978	1.063	0.973	0.214
2.	Human welfare, employment	K_{WE}	0.796	0.816	1.001	0.169
3.	Social infrastructure	K_{SI}	0.933	0.932	1.051	0.328
4.	Education, culture, spirituality	K_E	1.063	0.595	1.007	0.289

A composite index "Education, culture, spirituality" is behind the average Russian level by 60%, owing to a small number of students and a small number of educational institutions, lack of major cultural centers in the region. All difficulties in the quality of life in the Kamchatka region are explained not only by the remoteness of the Kamchatka region from the center of the Russian Federation, a reduction of the population in the Far-Eastern Federal Region due to departures to the other regions, by underfunding of programs of development for the Russian Far East and the Kamchatka region in particular, but also by the remoteness of this region from the transport hubs, large cities such as Khabarovsk, Vladivostok, Blagoveshchensk, etc. The negative dynamics of the second composite index "Human welfare, employment" is caused by low development of the internal market of domestic goods (consumer preferences of the Kamchatka region population is implemented in the bordering APR countries), bad facilities of qualitative housing services in villages and remote areas, high tariffs of energy carriers and housing and communal services of the economic complex compared to the average Russian (in particular with tariffs in Moscow), which negatively impact on the development of the region, decrease of new houses construction and settling of the territory as a whole (a demand of the Kamchatka region is low even on the secondary housing market). Besides, some localities, developed during the Soviet era, are depressed in our days.

On the basis of composite indexes and respective weighting coefficients it is possible to calculate the integral indexes of the quality of life of the population of the Kamchatka region (K) in 2010 and in 2015:

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[5]The data in table 4 are calculated by the author.

the Kamchatka region, 2010:

$K = 0.978 \cdot 0.214 + 0.796 \cdot 0.169 + 0.933 \cdot 0.328 + 1.063 \cdot 0.289 = 0.957$;

the Kamchatka region, 2015:

$K = 1.063 \cdot 0.214 + 0.816 \cdot 0.169 + 0.932 \cdot 0.328 + 0.595 \cdot 0.289 = 0.843$.

the Russian Federation, 2014:

$K = 0.973 \cdot 0.214 + 1.001 \cdot 0.169 + 1.051 \cdot 0.328 + 1.007 \cdot 0.289 = 1.013$.

The decrease rate of the integral index of the quality of life relative to 2010 and 2015 according to the results of an objective assessment was 11% (0.843/0.957 * 100- 100). Therefore, there was no absolute increase in the quality of life of the population in the Kamchatka region according to an objective assessment in 2015, compared to 2010 relative to the average Russian level, only its deterioration occurred. This is explained not only by the internal problems in Russia, but also by geopolitical changes since 2013 up to the present (Western sanctions, ruble fall, inflation rising, lower earnings of population, complexity with import substitution, difficulties of goods supply to northern Russia, etc.). Geographical location of the Kamchatka region, its remoteness from the regional transport hubs located mainly in the Khabarovsk, Primorsk territories and the Amursk region should also be considered.

The studies of the quality of life of population of the Kamchatka region in 2010-2015 allow determine the priorities of socio-economic development of the Russian Federation entity. First of all, they are: support of the local communities, favorable infrastructure construction, affordable house-buying support, housing and utility services improvement, expanding of domestic consumer market, establishment of knowledge-intensive industries with foreign investors in the Kamchatka region. When calculating, consumer market reducing in 2010 - 2015 was somewhat unexpected, with the assumption, that Kamchatka is a quite strong gold mining region. Indeed, in the period of 1950-1990 a mineral resource base for gold, silver, copper, nickel, groundwater, alluvial platinum, coal, gas, various building materials was createdin the region. During this period 2290 deposits, occurrences, ore mineralization points, mineral scattering haloes were discovered. However, the commodity vector should not exclude the chance of development of knowledge-intensive industries, using the same raw material base, provided that its raw processing sites will locate exactly on the Kamchatka peninsula, and the adjacent regions (including foreign ones) will export not raw materials but final products.

Large financial infusions and development of the already existing socio-economic sound projects (such attractive niches of the Russian market in the KamchatkaRegion as jewelry, unusual natural beauty of the region, capable to attract tourists, etc.) are necessary before the Kamchatka region will bring economic returns. The attraction of foreign investments, development of the knowledge-intensive industries involving appropriate specialists, attraction of the tourist flows from APR to the Kamchatka region and the Far East as a whole will also positively affect the well-being and employment of the Kamchatka region. The development of the national education system of the Kamchatka region is another trend of development of the region in view of the small number of

educational institutions (about 10 colleges and technical schools for the whole region, and only 2 of them have anengineeringorientation, 5 higher education institutions, about 10 trade schools – that is all for today). It is necessaryto train engineers and technicians associated with existing facilities as well as to attract specialists of high-tech industry, associated with electronics and technology production, considering the nearby mineral deposits. The construction of economy class housing, development of the rental housing construction should not only improve a social infrastructure of the region, but also will be a vector of attraction and fixing the population in the Kamchatka region.

Список литературы:

1. *Макаренко Т.Д., Вдовина Н.М. Оценка качества жизни населения. Иркутск: БГУЭП, 2004. С. 70–71.*

2. *Колбасина, А.Г. Субъективная оценка качества жизни населения г. Красноярска (на основе индекса удовлетворенности условиями жизни). URL: http://www.ram.ru/activity/comp/bp2003/files/std09.pdf. Дата обращения 13.11.2009.*

3. *Пынько, Л.Е. Оценка качества жизни населения субъекта Российской Федерации: автореф. дисс. ... канд. экон. наук. г. Хабаровск, 2011.*

4. *Источники значений для расчетов: Регионы России. Социально-экономические показатели – 2015 г.: стат. сб. [Электронный ресурс] // Росстат. М., 2015. 1266 с. URL: //http://www.gks.ru/bgd/regl/b15_14p/Main.htm*

5. *Камчатский статистический ежегодник – 2015: Кр. стат. сб. [Электронный ресурс] / Камчатстат. Петропавловск-Камчатский, 2015. 456 с. URL: http://kamstat.gks.ru/wps/wcm/connect/rosstat_ts/kamstat/ru/statistics/db/*

References:

1. *Makarenko T.D., Vdovina N.M. Ocenka kachestva zhizni naseleniya. Irkutsk: BGUEHP, 2004. S. 70–71.*

2. *Kolbasina, A.G. Sub"ektivnaya ocenka kachestva zhizni naseleniya g. Krasnoyarska (na osnove indeksa udovletvorennosti usloviyami zhizni). URL: http://www.ram.ru/activity/comp/bp2003/files/std09.pdf. Data obrashcheniya 13.11.2009.*

3. *Pyn'ko, L.E. Ocenka kachestva zhizni naseleniya sub"ekta Rossijskoj Federacii: avtoref. diss. ... kand. ehkon. nauk. g. Habarovsk, 2011.*

4. *Istochniki znachenij dlya raschetov: Regiony Rossii. Social'no-ehkonomicheskie pokazateli – 2015 g.: stat. sb. [EHlektronnyj resurs] // Rosstat. M., 2015. 1266 s. URL: //http://www.gks.ru/bgd/regl/b15_14p/Main.htm*

5. Kamchatskij statisticheskij ezhegodnik – 2015: Kr. stat. sb. [EHlektronnyj resurs] / Kamchatstat. Petropavlovsk-Kamchatskij, 2015. 456 s. URL: http://kamstat.gks.ru/wps/wcm/connect/rosstat_ts/kamstat/ru/statistics/db/