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## **PROCEEDINGS**

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dönemde bu gösterge imal kompleksinde %20, H.Aliyev adına PAT-de %10,8, Azerneftyağ PAT-de ise %30,8 aşağı düşmüştür. Bu ise ham petrolün imal potansiyelinin kullanım verimliliğini azaltır.

## **SONUÇ**

Petrolün, özellikle naften hidrokarbonlerin Azerkimya Üretim Birliği'nde kullanımının H.Aliyev adına Bakü PAT ve Azerneftyağ PAT'da kullanılmasından daha verimli olmasını dikkate alırsak, bu yüklenmenin optimal düzeyinin belirlenmesi önemli konulardan biri *hesap edilebilir*. İmalat tesisatlarının modernleştirilmesi tamamlanana kadar bu tesislerde SOCAR'ın elde ettiği petrolün büyük kısmının imalat için verilmesi isabetli değildir. Böylece petrol ve gaz hammaddesinin kullanılacağı alanlar ile yani petrol ürünleri ve petrokimya ürünleri üretimi arasında net ve *uygun* dağıtımı, yatırımların denizde keşif-sondaj çalışmalarının genişletilmesine, yeni platformların, su altı boru hatlarının kurulmasına, üretim ve su enjeksiyonu kuyularının kazılmasına, petrol imalatı tesisatlarının teknolojik açıdan modernleştirilmesine yöneltmesi önemli sayılmalıdır. Abşeron bölgesi dışında petrol imalatı tesislerinin kurulması petrol ticaretinin çok yönlü olması, üretilen ürünlerin tüketicilere yakınlaştırılması, ülkenin diğer bölgelerinin gelişmesi, Abşeron bölgesinin ekolojik ortamının iyileştirilmesi açısından uygundur.

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## **ASSESSMENT OF LIFE QUALITY LEVEL OF POPULATION OF THE REPUBLIC OF KAZAKHSTAN BASED ON TWO-DIMENSIONAL STATIC- DYNAMIC ANALYSIS METHODOLOGY**

G.N. Nyussupova, D.A. Tazhiyeva, L.B. Kenespaeva

### **ABSTRACT**

Relevance of the research topic is related to improving the quality of life of the population, securing and maintaining economic stability, the implementation of the social policy of the Republic of Kazakhstan.. Improvement in this area opens up new prospects for economic development and is the most important factor in economic growth of the country.

Research methods. For the present study were used the technique of two-dimensional comparative analysis which enabled a typology based on the ratings of social, demographic and economic indicators of the regions of Kazakhstan.

Results. Proposed method of two-dimensional static-dynamic comparative analysis provides performance of several stages. Static comparative analysis based on the performance ratio of quality of life in the regions with the average republic level, which describes the situation as a whole currently in the country, allows you to get an objective picture of the real situation of each region. Dynamic comparative analysis suggests the ratio of growth performance of regions to the average republican similarly static method. Comparison of the results of static and dynamic analysis of 20 indicators of database by 10 units of the demographic, social and economic trends enabled to conduct a typology of regions of the Republic of Kazakhstan in the context of 14 provinces and cities of Almaty and Astana for the 1999-2014 years by level of quality of life of population. The classification of regions for quality of life in the context of two parameters: static (position within the country) and dynamic (estimated rates of change relative to the average republican), with the result that highlights the 4 types of regions of the Republic of Kazakhstan in terms of quality of life.

**Keywords:** Socio-Demographic Processes, The Life Quality Of The Population, Typology, The Two-Dimensional Static-Dynamic Analysis, Classification Groups.

### **AIMS AND BACKGROUND**

Relevance of the research topic is related to improving the quality of life of the population, securing and maintaining economic stability, the implementation of the social policy of the Republic of Kazakhstan. [1-3]. Improvement in this area opens up new prospects for economic development and is the most important factor in economic growth of the country.

To assess the socio-economic development of the republic are developing various kinds of complex indices and indicators, based on which is held the typology of regions in terms of quality of life of population.

The large number of different approaches and methods to assess the level of quality of life of population testifies, first of all, about the absence of a perfect method for solving this problem. In addition, it is not excluded that economic, social and mental peculiarities of each state require the development of specific methods. Thus, the conduct of a typology of regions of the republic in terms of quality of life of population at the moment is relevant.

By individual countries (USA, France, Germany, Russia) and international organizations (UN, EU) are developed dozens of different models and methods of calculation of the indicators of quality of life.

The need for a comprehensive analysis of objective indicators of quality of life of population is due to the multidimensionality characterized category, which determines the degree of satisfaction of the diverse needs of the population and the heterogeneity of regional socio-economic profiles of the administrative-territorial units of the Republic of Kazakhstan. One of the most common methods of systematization of knowledge about the object of research is the selection of classification groups. This method is most suitable to study the quality of life of population in different oblasts of Kazakhstan. Typology of regions on the quality of life of the population carried out on the basis of demographic, social and economic indicators, since they are the basis for the development of socio-economic sphere. [4-10].

After studying international experience of definition of the integral index of quality of life of population and of the typology in terms of quality of life of population, we have chosen a technique based on two-dimensional static-dynamic analysis of indicators of the quality of life of population for the typology of regions in terms of quality of life, which has been added taking into account the peculiarities of the socio-demographic and socio-economic indicators of the Republic of Kazakhstan.

## **RESEARCH METHODS**

For the present study were used the technique of two-dimensional comparative analysis which enabled a typology based on the ratings of social, demographic and economic indicators of the oblasts of Kazakhstan [11].

For the typology of the oblasts of Kazakhstan in terms of quality of life of population has been developed and applied a technique of two-dimensional static-dynamic comparative analysis based on created statistical database on social, economic and demographic indicators. After processing a large amount of official statistics offered by the statistical services of the Republic of Kazakhstan, which totaled 164 index of social, demographic and economic trends for 1991 (partially), 1999, 2009, 2014, it was formed a



system of key indicators which best characterize the quality of life of the population. All these indicators were grouped into 10 clusters listed below: *demographic indicators*: 1. Natural increase / decrease of population by 1000; 2. The infant mortality rate per 1,000 births; 3. Life expectancy, years; 4. Migration growth / loss per 1000 population; *economic indicators*: 5. Gross Regional Product (GRP) per capita, thousand tenge; *standard of living*: 6. Per capita nominal income of the population, tenge; 7. The minimum subsistence level (ILM) on average per capita, tenge; *social policy*: 8. Index of real pension as a percentage; 9. Average monthly size of a designated state social benefits, tenge; *unemployment (ILO methodology)*: 10. The unemployment rate, as a percentage; *health and ecology*: 11. Number of doctors per 10 thousand population; 12. Provision of the population with the outpatient clinics per 10 thousand population; 13. The incidence of respiratory tuberculosis, number of cases per 100 thousand population; 14. Emissions of air pollutants substances from stationary sources per capita in kilograms; *education*: 15. The total share of enrollment of the population aged 6-24 years, as a percentage; *culture*: 16. Attendance theaters, the number of spectators per 10 thousand population; 17. Attendance libraries, the number of registered readers per 10 thousand population; *housing and utilities*: 18. Provision of housing, sq. m. for one person; *offense*: 19. The crime rate, the number of cases per 10 thousand population; 20. Number of persons who have committed crimes, people.

Dedicated by us a system of indicators is a well-known, since all its components are in one way or another are used in other methods assessing the quality of life of the population. However, the integration of these indicators gives a great advantage in detecting the level of quality of life of population: 1) accommodates a maximum of not duplicative of quality of life from publicly available sources of official statistics across all regions, different time periods; 2) complies with the standards of classification of indicators of the Committee on Statistics of the Republic of Kazakhstan. All this allows the use of the proposed system of indicators of quality of life in the analytical constructions.

Formed system of social, demographic and economic indicators of the quality of life of population of the republic consists of absolute figures, with different dimensions and their units. For convenience, the selected data have been standardized and are shown in relative performance, which subsequently allowed to calculate the integral index of quality of life of population. Due to the lack of some important statistics in the regional departments of statistics, such as overall morbidity, the proportion of spending on health and education, the proportion of the costs involved in the regional budget to the social sector, the scale of poverty, the number of children in pre-schools, they were not used in our calculations.

Thus, the list of indicators to calculate the integral indexes of quality of life of population was formed on the basis of accessibility, comprehensiveness and adequacy of reflection of the main key indicators of quality of life of the population.

## RESULTS AND DISCUSSION

Analysis of the relevant indicators of quality of life of population allowed to divide them into two groups of quality of life, in which indicators of population were combined on rate of growth (decrease or increase), which enabled to carry out a typology of oblasts of Kazakhstan in terms of quality of life of population.

After the formation of the list of indicators of quality of life of population, some of them for the convenience of further comparison were converted from absolute to relative by an amendment to number of population. Thus, each indicator has the same "dimension" and numerical order at the regional level, allowing for a comparative analysis.

Our proposed method of two-dimensional static-dynamic comparative analysis provides performance of several stages.

*Static comparative analysis* based on the performance ratio of quality of life in the oblasts with the average republican level, which describes the situation as a whole currently in the country, allows you to get an objective picture of the real situation of each oblast. It includes:

- ✓ calculation of the ratio (in percent) of average indicators of quality of life of population of individual regions in the consider period with the average republican rate (defined as the ratio of the regional parameters to the average republican);
- ✓ ranging of standardized relative performance by five multidirectional scale (from -2 to +2) for 2014 on 14 oblasts and 2 cities of national significance;
- ✓ calculation of integral indices of scores based on the results of the static-comparative analysis of indicators of quality of life of the population in 2014.

To calculate the values of score on each of the indicators of the average deviation of regional assessments of the quality of life of the average republican in the framework of static analysis is used transfer system. With regard to indicators, which directly correlated with the analyzed complex variables (growth of which is accompanied by an increase in the quality of life of the population), the transfer) system is shown in Table 1.

Table 1 – The transfer system of deviation of indicators of regional level from the average republican level on the results of the static analysis

Deviation, %	Number of points	Meaningful interpretation
More than 30	2	Significant advance
From 10 to 30	1	Sensible advance
From -10 to +10	0	Differences are not significant
From -15 to -10	-1	Sensible lag
Less than -15	-2	Significant lag

For indicators which have inverse dependence from the assessment of quality of life (the growth of which leads to a reduction of the latter), the system of transfer to points will be mirrored opposite [9-10].

Static comparative analysis of indicators of the quality of life of population by oblasts of the Republic of Kazakhstan was carried out in the following sequence:

1. It was calculated the ratio of indicators of quality of life of the population of individual regions with the average republican indicators for 2014 in order to identify the level of deviation (in percent) on the performance of the country.

2. Got results of calculating the deviations of the regional from the republican indicators were ranged by a five multidirectional scale (from -2 to +2). So, for instance, the deviation of regional indicators from average republican values over 30% corresponded +2 scores, and interpreted as a "significant advance".

3. By calculating the average arithmetic mean which assigned to each region of point by considered indicators were obtained total (final) score on the basis of which revealed the regions leaders and regions outsiders of development.

*Dynamic comparative analysis* suggests the ratio of growth performance of regions to the average republican similarly static method. It includes:

- ✓ calculation of growth indicators of quality of life of population in the regions by created database for 1999, 2009, 2014 for each oblast of Kazakhstan as a whole and deviations of growth of absolute and relative indicators at the regional level in dynamics which showed a negative and a positive growth in selected areas;
- ✓ ranging of growth indicators at the republican and regional levels for the analyzed period in order to bring their values to a unified five-point multidirectional scale (from -2 to +2), by analogy with the results of the static analysis in dynamics for 1999, 2009, 2014 in the context of 14 oblasts and 2 cities of republican significance;
- ✓ calculation of integral indices of scores based on the results of the dynamic-comparative analysis of indicators of quality of life of the population for 1999-2014.

The transfer (translation) system of interest deviations in points in aim of dynamic analysis of indicators having a direct correlation to quality of life was slightly corrected due to the fact that the variance of values obtained substantially lower (average of from 0 to 5%) than in the case of a static analysis, and use of a wider point scale would not give objective and comparable results.

In the table 2 is characterized not the current situation by one or another oblast of Kazakhstan in points, but its rate of change.

For indicators which have inverse dependence from the general orientation of the quality of life (the growth of which leads to a reduction of the latter), the scheme of transfer to points will be mirrored opposite, ie, high indexes of level of a specific indicator show low values of this indicator, and vice versa, the lowest indexes will mean an increase in value. [9-10].

Table 2 – The transfer system of deviation of indicators of regional level from the average republican level on the results of the dynamic analysis

<b>Deviation, %</b>	<b>Attributed value, point.</b>	<b>Meaningful interpretation</b>
More than 5	2	Significant advance
From 2 to 5	1	Sensible advance
From -2 to +2	0	Differences are not significant
From -2 to -5	-1	Sensible lag
Less than -5	-2	Significant lag

Dynamic comparative analysis of indicators of the quality of life of population by oblasts of the Republic of Kazakhstan was carried out in the following sequence:

1. It was calculated the growth rates (in percent) of indicators of quality of life of population of the oblasts of Kazakhstan in the whole by created database for 1999, 2009, 2014.

2. Calculated the growth rate of indicators of the quality of life of populations of oblasts were correlated with the average republican values for the detection of deviations of growth rates by each of the indicators of oblasts.

3. In aim to identify the regions, which are developing or lagging faster pace relative to the average level by country, it was conducted ranging of deviations of the growth rate of regional indicators for the 1999-2014, by unified five-point multidirectional scale (from -2 to +2), by analogy with the results of a static analysis.

4. By calculating the average arithmetic mean which assigned to each oblast of point by considered indicators were obtained total (final) score on the basis of which revealed the regions leaders and regions outsiders of the republic grow (Table 3).

Table 3 – The results of static and dynamic comparative analyses of oblasts of Kazakhstan

Interpretation of results	Static evaluation	Dynamic estimation
Significant advance	-	-
Sensible advance	Astana city Almaty city	Astana city
Differences are not significant	Aktobe oblast Almaty oblast Atyrau oblast West Kazakhstan oblast Zhambyl oblast Karagandy oblast Kyzylorda oblast Mangystau oblast South Kazakhstan oblast Pavlodar oblast North Kazakhstan oblast	Akmola oblast Aktobe oblast Almaty oblast Atyrau oblast West Kazakhstan oblast Zhambyl oblast Karagandy oblast Kyzylorda oblast Mangystau oblast South Kazakhstan oblast Pavlodar oblast East Kazakhstan oblast Almaty city
Sensible lag	Akmola oblast Kostanay oblast East Kazakhstan oblast	Kostanay oblast North Kazakhstan oblast
Significant lag	-	-

## CONCLUSIONS

Comparison of the results of static and dynamic analysis of 20 indicators of database by 10 units of the demographic, social and economic trends enabled to conduct a typology of region of the Republic of Kazakhstan in the context of 14 oblast and cities of Almaty and Astana for the 1999-2014 years by level of quality of life of population. The classification of oblasts for quality of life in the context of two parameters: static (position within the country) and dynamic (estimated rates of change relative to the average republican), with the result that highlights the following types of oblasts of the Republic of Kazakhstan in terms of quality of life:

a) leaders of growth and development - areas that have higher relative to the average republican current estimates and growth rate of the quality of life of the population: Astana and Almaty cities, Atyrau, Karaganda and West Kazakhstan oblasts;

б) leaders of growth, outsiders of development - regions with low relative to the average republican current assessment of the quality of life, but developing more rapidly, which causes a high potential of their development: Zhambyl oblast;

в) leaders of development, outsiders of growth - regions with high current assessment of the quality of life, but its development has slowed significantly compared with the average republican level, which subsequently threatens to lag: Mangystau and Aktobe oblasts;

г) Outsiders of growth and development - regions differ by low current position of the social sphere and shows no hope for the future due to the

low growth of the main indicators (in theory it is also possible provision of separate intermediate groups of regions in case of regional importance of quality of life of the population match the average republican) : Pavlodar, Kyzylorda, Akmola, South Kazakhstan, North Kazakhstan, East Kazakhstan, Almaty and Kostanay oblasts.

Using the data of static and dynamic comparative analysis graphically shown the position of each oblast of the intersection of the corresponding value of static and dynamic assessment on the coordinate plane. The graphic expression of the results presented in the Figure.

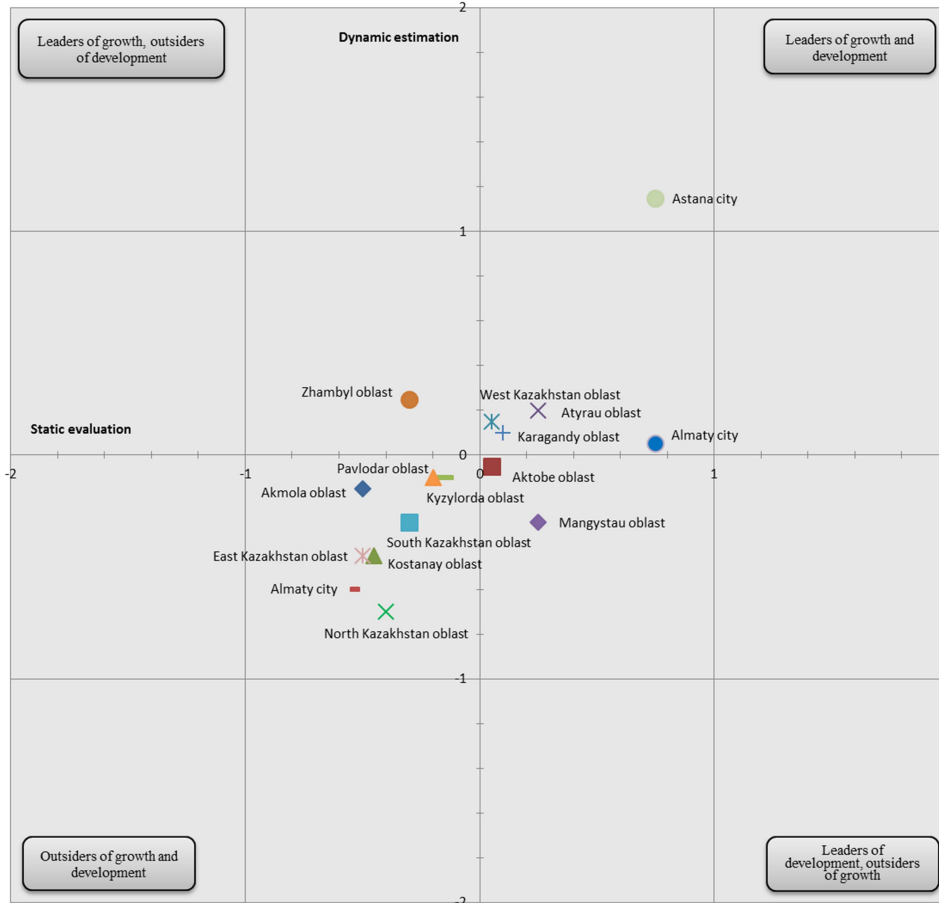
The basic idea of this typology is that there are 4 patterns, whereby the conditionally develop the regions of the country.

As the figure shows, the results of a two-dimensional static-dynamic comparative analysis the Astana city by a wide margin is in the advance position in comparison with other oblasts, which are also referred to the group of leaders.

It is noteworthy that the Zhambyl oblast is among the leaders of growth, outsiders of development. This is due to the large difference of indicators in 2014 compared with 1999, resulting in strong growth in the oblast.

With a stretch to the group of leaders of development, outsiders of growth can be included Aktobe oblast, which is developing with average republican rate. It should be noted that Mangystau oblast, by many socio-economic indicators with high indicators, is in outsider of growth.

Most part of the oblasts in this typology was in a group of outsiders of growth and development, since in many respects of indicators were below the republican level. Among them should be emphasized North Kazakhstan, Kostanay and East Kazakhstan oblasts, where indicators are low compared with other oblasts in this group.



Source: compiled by the authors

Figure – Integral assessment of quality of life of population of oblasts of the Republic of Kazakhstan on the basis of two-dimensional static-dynamic analysis for 1999-2014.

Methods of two-dimensional static-dynamic comparative analysis can be used to assess the level of quality of life of territory (areas) of any size and include additional analytical sections, advanced comparison with higher in the hierarchy territorial systems. The proposed method has been used by us in the typology and assessment of quality of life of population of regions of Kazakhstan on the basis of statistical data for 15 years (1999-2014).

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