

**ОСОБЛИВОСТІ РОЗВИТКУ
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METHODICAL APPROACHES TO THE ASSESSMENT OF THE QUALITY OF LIFE OF THE POPULATION OF THE WORLD COUNTRIES AND WAYS OF IMPROVING THE QUALITY OF LIFE INDICATORS OF THE POPULATION FOR UKRAINE

МЕТОДИЧНІ ПІДХОДИ ЩОДО ОЦІНКИ ЯКОСТІ ЖИТТЯ НАСЕЛЕННЯ КРАЇН СВІТУ: РЕКОМЕНДАЦІЇ ДЛЯ УКРАЇНИ

МЕТОДИЧЕСКИЕ ПОДХОДЫ К ОЦЕНКЕ КАЧЕСТВА ЖИЗНИ НАСЕЛЕНИЯ СТРАН МИРА: РЕКОМЕНДАЦИИ ДЛЯ УКРАИНЫ

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Abstract. *In the article the principles of improving the quality of life of the population of Ukraine were analyzed, a method of calculating the quality of life of the population of the world was developed. The solution of the tasks was carried out with the use of general scientific research methods: abstraction, analysis and synthesis, generalization, formalization, as well as special methods of analysis: structural, statistical, logical. The authors have analyzed the state of factors influencing the quality of life of the population of Ukraine: purchasing power index, safety index, health care index, cost of living index, property price to income ratio, traffic commute time index, pollution index, climate index, GDP by PPP per capita in international dollars, rating of political and civil liberties, life expectancy at birth, unemployment rate, gender equality index. General recommendations for improving the condition of these factors and priority areas have been identified. The general approaches to development of methods of calculation of quality of life of the population of the world countries are defined. A method for calculating the quality of life of the population has been developed: 5 indicators that have a positive impact on the quality of life and 5 indicators that have a negative impact on the quality of life of the population have been identified; mentioned weights of each of these indicators. The Index of Quality of Life of the Population of Ukraine, neighboring countries and developed world countries was calculated according to the developed calculation method, the obtained results have been compared with the Numbeo Quality of Life Index.*

Keywords: *quality of life, quality of life index, social policy, method of calculating quality of life, criteria for assessing the quality of life.*

Анотація. *У статті проаналізовано засади покращення якості життя населення України, розроблена методика розрахунку якості життя населення країн світу. Вирішення поставлених завдань здійснювалися за допомогою використання загальнонаукових методів дослідження: абстрагування, аналізу і синтезу, узагальнення, формалізації, а також спеціальні методи аналізу: структурний, статистичний, логічний. Авторами був проаналізований стан факторів впливу на якість життя населення України: індексу купівельної спроможності, індексу безпеки, індексу охорони здоров'я, індексу вартості життя, відношення ціни майна до доходу, індексу витрат часу на дорогу, індексу забруднення, індексу клімату, рівня ВВП за ПКС на душу населення у міжнародних доларах, рейтингу політичних та громадських свобод, очікуваної тривалість життя при народженні, рівня безробіття, індексу гендерної рівності. Визначені загальні рекомендації щодо покращення стану цих факторів та пріоритетні напрямки. Визначені загальні підходи до розробки методик розрахунку якості життя населення країн світу. Розроблена методика розрахунку якості життя населення: виділені 5 показників, що мають позитивний вплив на якість життя населення та 5 показників, що мають негативний вплив на якість життя населення; зазначені вагові коефіцієнти кожного з цих показників. Розрахований Індекс якості життя населення України, країн-сусідів та розвинених країн світу за розробленим методом розрахунку, отримані результати порівняні з Індексом якості життя Numbeo.*

Ключові слова: *якість життя, індекс якості життя, соціальна політика, метод розрахунку якості життя, критерії оцінки якості життя.*

Анотація. *В статті проаналізовані основи удешевлення якості життя населення України, розроблена методика розрахунку якості життя населення країн світу. Розв'язання поставлених завдань здійснювалось за допомогою використання загальнонаукових методів дослідження: абстрагування, аналізу та синтезу, узагальнення, формалізації, а також спеціальні методи аналізу: структурний, статистичний, логічний. Авторами було проаналізовано стан факторів впливу на якість життя населення України: індексу покупальної спроможності, індексу безпеки, індексу здоров'я, індексу вартості життя, відношення ціни нерухомості до доходу, індексу витрат часу на дорогу, індексу забруднення, індексу клімату, рівня ВВП на душу населення в міжнародних долларах, рейтинг політичних та суспільних свобод, очікувану тривалість життя при народженні, рівень безробіття, індекс гендерної рівності. Визначено загальні рекомендації щодо удешевлення стану цих факторів та пріоритетних напрямків. Визначено загальні підходи до розробки методик розрахунку якості життя населення країн світу. Розроблена методика розрахунку якості життя населення: виділено 5 показників, які надають позитивний вплив на якість життя населення та 5 показників, які надають негативний вплив на якість життя населення; вказано вагові коефіцієнти кожного з цих показників. Розраховано Індекс якості життя населення України, країн-сусідів та розвинутих країн світу за розробленою методикою розрахунку, отримані результати порівняні з Індексом якості життя Numbeo.*

Ключевые слова: *качество жизни, индекс качества жизни, социальная политика, метод расчета качества жизни, критерии оценки качества жизни.*

Introduction. Quality of life is a complex, multifaceted phenomenon that depends on both objective and subjective factors.

The quality of life of the world's population and its gradual improvement is a prerequisite for human development. At the same time, the quality of life of the population is recognized as one of the main characteristics of the level of economic, social and political development of the respective countries of the world.

As Ukraine is a developing country and seeks to integrate into the EU community, improving the quality of life of the country's population is one of the government's priorities.

Analysis of the recent sources and publications. Scientists such as J. Galbraith, A. Maslow, D. Bell, W. Rogers, S. Whitney, F. Converse, L. Milbraith, V. P. Vasiliev, N. D. Lukianchenko, V. N. Maiorchenko, O. B. Vatchenko, V. H. Nikiforenko, S. A. Aivazian, H. V. Tsyhankova made a significant contribution to the formation and development of the concept of quality of life.

E. M. Libanova, O. M. Hladun, L. S. Lisohor, L. H. Tkachenko, N. V. Kovtun and others in their research work "Measuring the quality of life in Ukraine" mention that the quality of life is a complex, multicomponent phenomenon, dependent on both objective factors and various subjective factors. Improving the quality of life is a criterion and a necessary condition for human development. Quality of life reflects the basic prerequisites and the degree of implementation of the requirements of human development, the degree of priority of human development in the civilization process, as well as human well-being, self-identification and the state of their environment [1].

The purpose of the work of Komarenko O. O. was to consider the criteria for assessing the level and quality of life of the population and the analysis of existing methodological approaches to measuring the level and quality of life of the population. In the course of the study it was found that: first, the level and quality of life achieved by society can be judged by an appropriate system of criteria and indicators. In this case, the choice and justification of evaluation criteria is an important

step in assessing the level and quality of life; secondly, the creation of an adequate system of criteria, and the allocation of a single integrated index of quality of life is problematic in view of the complexity of the very structure of quality of life [2].

Komarenko O. A. states in his work that by the quality of life we understand complex characteristics of both the objectively existing standard of living and satisfaction of needs for directly unpaid benefits and the subjective perception of the degree of satisfaction of the whole spectrum of needs [3].

Purpose of the article. To determine the principles of improving the quality of life of the population of Ukraine and to develop a method of calculating the quality of life of the population of the world countries.

Presentation of basic material of the research. Quality of life is an integral concept that comprehensively characterizes the degree of comfort of the public and natural environment for human life and activity, the level of well-being, social, spiritual and physical health. In order to determine the priority areas for improving the quality of life of the population of Ukraine, first of all, it is necessary to identify strengths and weaknesses among all the factors that affect the quality of life of the population. In the previous section, 12 different factors that affect the quality of life of the population were analyzed. Let's pay attention to their current indicators and determine what the Government of Ukraine should pay attention to and make efforts to improve the quality of life of the population of Ukraine.

In terms of GDP by PPP per capita, Ukraine ranks last among the neighboring countries and the most developed countries in the world. Some of the reasons for the low level of GDP by PPP, which are stated by the Ministry of Economic Development and Trade of Ukraine, are the degradation of the situation in the production sector (reduction of production output) and the decline in agriculture [4]. According to the National Bank of Ukraine, about a quarter, namely UAH 846 billion GDP is in the shadows [5]. In turn, the IMF states that economic growth is constrained by a weak business environment, corruption, inefficient state-owned enterprises [6]. Also, one of the reasons for the low level of GDP by PPP is the low level of attracting foreign direct investment due to poor business conditions. This indicator is to some extent related to the unemployment rate, which in Ukraine is again the highest among all the countries considered.

Another indicator that affects the quality of life is the rating of political and civil liberties. And although Ukraine is not an outsider among all the countries considered, it falls far behind the leaders of the rating. Let's consider what components of this rating need to be improved in order to improve the situation in the field of freedom. The first component that needs to be improved is the election legislation and the election process. Electoral legislation is interpreted differently by different courts and new election laws are sometimes passed hastily on the eve of elections [7]. Therefore, in order to improve Ukraine's position, the government needs to approve the election legislation before the next election, which will make the pre-election and election processes transparent and different interpretations by different judges will be ruled out. Another component that needs significant improvement is the dominance of non-political and political forces that use non-political means in politics. One of the parties that enjoys great support, "Opposition Platform – for Life", enjoys the support of another state and the oligarchs have a significant influence on politics, as they fund various political parties [7]. The situation with the level of corruption remains rather difficult. Anti-corruption bodies are ineffective, often in conflict with other government agencies, and have little political will to tackle corruption [7]. There is also a problem with media independence. Although the Constitution guarantees freedom of speech, slander is not considered a criminal offense. A significant number of media outlets are owned by oligarchs, who use them to achieve their own goals and to give publicity to the necessary politicians and political parties in a positive way. Also, in the last few years, a large number of offenses have been committed against journalists, among which the most high-profile were the murders of Pavel Sheremet and Vadim Komarov [7]. Another serious problem is the state of independence of the judiciary system. Despite initiatives to reform the judiciary system, the courts have remained corrupt and politicized. Consideration of cases is constantly delayed and postponed, and the ambiguous rulings of the

Constitutional Court of Ukraine and the subsequent conflict with the President have only exacerbated the crisis in the judiciary system.

The next indicator that has been considered is the Health Care Index and the associated life expectancy at birth. Compared to health budget expenditures in 2020, in 2021 health expenditures increased by 36.8% and amounted to UAH 159 billion. The website of the Cabinet of Ministers of Ukraine also published information that it is planned to increase health care expenditures to 5% of GDP by 2023 [8]. To some extent, the COVID-19 pandemic has drawn attention to vulnerabilities in Ukraine's health care system, which should force government officials to pay significant attention and resources. The WHO is also quite positive about the reform of the health care system, carried out in 2016-2019. However, this estimate is based on official data. Objectively, the condition of Ukrainian hospitals remains unsatisfactory. A large number of Ukrainian citizens who are forced to treat serious illnesses choose Germany, Israel, Turkey or the United States to receive the necessary assistance. Ukrainian hospitals do not have the necessary equipment that does not allow them to provide qualified care. Also in 2020, the health care system of Ukraine faced the problem of covering the population with tests for COVID-19. Official figures on the number of infected people stir up controversy in the society and information about denials of testing and hospitalization often appears on social networks. This appeared to be one more reason of decline in trust in public healthcare facilities. In 2019, the law "On Concession" was adopted, which allows to unite the efforts of state and private investors. However, only two such projects have emerged in the healthcare sector. The situation could be changed by the introduction of a compulsory health insurance system. This will allow taxes to be referred directly to medical institutions, reducing the number of links and, consequently, corruption risks, which will increase the amount of funding for hospitals. In order to implement such a project, it is necessary to attract investment for the development of hospitals or building of new ones as well as to develop the necessary legislation.

Another indicator considered was the Gender Equality Index. Among the countries examined, the differences were not significant and Ukraine took a median position. In general, gender inequality has been smoothed over the last decade, and women's wage has been gradually increasing relative to men's. Also in Ukraine, particularly in the political sphere, gender quotas are being introduced, which allow women to increase their representation comparing to the situation before. Also in September 2020, Ukraine officially became a member of the "Biarritz Partnership", an international initiative for equal rights and opportunities for all. According to the order of the Cabinet of Ministers, Ukraine has undertaken commitments in five areas:

- 1) development of a barrier-free public space, friendly to families with children and low-mobility groups;
- 2) teaching children the principles of equality between women and men;
- 3) prevention of violence;
- 4) reducing the pay gap between women and men;
- 5) creating greater opportunities for men to care for children [9].

Thus, it can be stated that in the future gender inequality will continue to decline and Ukraine has the opportunity to catch up with the leading countries.

The next indicator is the Security Index. As of January 2021, Numbeo assesses the level of security in Ukraine as moderate, giving a score of 51.73 out of 100. At the same time, the security index is the opposite of the Crime Index, which amounted to 48.27 points. The most important in this index were "problems of corruption and bribery" and "increase in crime over the past 3 years." House burglary, vandalism, theft and car theft also remain a rather acute problem [10]. In 2019, Transparency International ranked Ukraine 126th out of 180 on the Corruption Perceptions Index [11], and one of the 25 most high-profile corruption cases in the last 25 years is from Ukraine. Today, the problem of corruption and security is very acute for Ukraine. As it was mentioned earlier, anti-corruption institutions are ineffective and the courts are not independent and free from corruption. Also due to the war in Donbass, the number of illegal weapons that entered the country have increased. Despite police reform in 2015 and some anti-corruption laws and initiatives, they have proved ineffective. The situation can be improved through ongoing reforms, the abolition of

ineffective institutions and the establishment of new, strict criteria for selecting candidates for positions at all levels, from patrol police officers to judges. Also, the problem of petty theft can be solved by improving the financial situation of all segments of the population, in particular by reducing poverty through rapid economic development and higher wages.

The Cost of Living Index has also been considered. This index reflects the level of prices for consumer goods and the level of housing rental prices. The gold standard is the price level in New York, which corresponds to an estimate of 100. In Ukraine, as of 2020, the cost of living index was 33.18 points, which means that life in Ukraine is 33% as expensive as in New York. For the most part, such low prices are due to low incomes of the population. As wages increase, so will prices (as a result of higher wages for employees involved in the production and sale of goods), which will lead to an increase in the Cost of Living Index.

Another indicator that has been studied was a ratio of property prices to income. It is considered as a ratio of average apartment prices to the average available family income per year. In Ukraine, this ratio is 12.23 years, which is a median indicator. This means that given the relatively low level of wages, housing prices are also correspondingly low. However, as with the previous figure, higher wages may increase housing prices accordingly, especially in new buildings. The opening of the land market can also potentially increase housing prices, as land prices are projected to rise after that. However, we need to learn from countries such as the United States, Belgium, Denmark and Austria, where housing prices and wages are higher, but families need much less time to earn the required amount of money.

Another index that affects the quality of life of the population is the Travel Time Index. In Ukraine, the average time spent on the way from home to work is 36.65 minutes. Together with the way home it is almost 1 hour 20 minutes, which is quite a large part of the day. There are several ways to improve this issue. The first is the adoption of some Scandinavian companies' experience, which take into account travel time as time spent at work, and the working day is also 8 hours. However, this path is not effective for Ukraine, because unlike the Scandinavian countries, the volume of production and the general state of the economy do not allow to reduce the time of employee's presence in the workplace. Another way is to develop a public transport network. The fastest public transport in the city is the subway. Therefore, the construction of an extensive subway system will allow city residents to use convenient transport and reduce the time spent on the way to work. It will also reduce the number of cars on the city streets, which will reduce road traffic and, consequently, the average speed of bus transport will also increase. Another way to increase the speed of buses is to allocate a separate lane on the roads exclusively for public transport, as, for example, it is done in Barcelona.

Another index that is to some extent related to the health of citizens is the Pollution Index. Unfortunately, Ukraine still has a high level of pollution, and in Kyiv, Zaporizhia and Dnipro almost every year there are cases of extremely dangerous levels of air pollution. There are several main components that can significantly improve the environmental condition of air and water in Ukraine. First of all, it is strict control over air and water emissions, installation of modern filters at factories and assignment of strict responsibility for non-compliance with the required standards and attempts to bribe officials, responsible for monitoring compliance with these standards. Another step to reduce pollution is the development of environmentally friendly energy sources. With the development of solar, hydro and air power plants, the creation of a favorable investment environment, it is possible to quickly abandon obsolete power plants that convert energy from coal and gas. To speed up this process, we can pay attention to Germany, where in 2019 almost 50% of electricity generated was "green", and in the first quarter of 2020 this figure exceeded 51%. The last important component is the development of electric transport. By replacing old diesel locomotives with new electric ones, replacing old buses with electric buses, developing the subway network and trams, it is possible to significantly reduce emissions from public transport. It is also possible to significantly accelerate the purchase of electric cars by the population by creating the necessary infrastructure, including charging stations, simplifying customs procedures and reducing fees and taxes for this class of transport.

The last indicator to be analyzed is the Climate Index. Ukraine cannot influence this indicator on its own, as it depends almost entirely on the country's geographical location. However, in the context of global warming, the climate can change significantly. This can be seen due to events such as flooding of the Azov coast in autumn, warm winters of 2019-2020 and 2020-2021, abnormally hot summer of 2020, abnormally large numbers of jellyfish in the Azov and Black Seas, etc. However, Ukraine can make an effort, for its part, to halt these changes through the actions identified for the previous indicator. The development of environmentally friendly sources of electricity will reduce greenhouse gas emissions into the atmosphere, which directly affect climate change.

As you can see, there are many problems in Ukraine that affect the quality of life of the population. The main ones are GDP by PPP per capita, rating of political and civil liberties, healthcare and life expectancy, security, corruption, travel time and pollution. Some issues are not as acute as others, but the government needs to make significant efforts to address these issues, as it will affect not only the quality of life, but also the international image, investment inflows, scientific and technological development, etc.

Unfortunately, at the moment there is no study on the calculation of quality of life, which would take into account all countries of the world and would be published at least annually. In the research the Numbeo Quality of Life Index has been analyzed, which is published twice a year and included 80 countries in 2020, but it is not perfect. It should be noted that the formula for calculating the Quality of Life Index, apart from the values of indicators, also the coefficients, set by the experts of this organization, are taken into account. However, there is no methodological explanation of the definition of these coefficients in free access. Also, in the formula of the Quality of Life Index there are indicators that do not have clear algorithms for calculations. At the same time, the impact of one of the indicators on the quality of life of the population is questionable. In addition, some indicators worth including in the calculations are ignored. Therefore, there is a need to create a formula that would cover a large number of countries and include the necessary indicators and coefficients.

There are several methods for calculating the quality of life: calculation using the geometric mean components of quality of life, calculation using the weighted average components of quality of life, calculation using the algebraic sum of the products of the components of quality of life multiplied by the corresponding coefficients. Due to the fact that some indicators negatively affect the quality of life of the population, the third method has been chosen. The general formula is as follows:

$$I_{ql} = \sum_{i=1}^k w_i z_i, \quad (3.1.)$$

where I_{ql} – Index of the quality of life of the population;

w_i – weight of the i -th indicator;

z_i – value of the i -th indicator.

10 indicators have been selected to calculate the Index. Five of them have a positive impact on the quality of life of the world's population:

- 1) GDP by PPP per capita;
- 2) Security Index;
- 3) Life expectancy at birth;
- 4) Rating of political and civil liberties;
- 5) Gender Equality Index.

The other five indicators have a negative impact on the quality of life of the world's population:

- 1) The ratio of property prices to income;
- 2) Unemployment rate;
- 3) Pollution Index;
- 4) Travel Time Index;
- 5) Cost of Living Index.

Due to the fact that these 5 indicators have a negative impact on the quality of life of the population, and their lower score is better than higher, when calculating the quality of life index, they should be subtracted, not added. Also, each indicator should be assigned a coefficient that reflects the level of impact on the quality of life of the population. There are two approaches to determining the coefficients: expert assessment and sociological survey of the population to understand what is more important. Due to the fact that the survey of only a small group of people from Ukraine will be extremely subjective, and there is no opportunity to interview citizens of other countries to determine the general trends in the importance of certain indicators, the expert assessment approach has been chosen. Taking into account all the above-mentioned, the calculation of the quality of life index will be carried out according to the following formula:

$$I_{ql} = G_{ppc} \times 2/1000 + I_s + E_{le} + R_l/2 + I_{ge} \times 100/4 - R_{rp}/4 - L_{ur} - I_p \times 1,5 - I_{tt}/2 - I_{cl}/4 \quad (3.2.)$$

- де G_{ppc} – GDP by PPP per capita;
- I_s – Safety Index;
- E_{le} – Life expectancy at birth;
- R_l – Rating of political and civil liberties;
- I_{ge} – Gender Equality Index;
- R_{rp} – The ratio of property prices to income;
- L_{ur} – Unemployment rate;
- I_p – Pollution Index;
- I_{tt} – Travel Time Index;
- I_{cl} – Cost of Living Index.

To calculate the quality of life of the population according to the formula, the data of all surveyed countries for 2019 were selected due to the fact that the data for 2020 were not available for all indicators. The results of the calculations are compared with the rating of the Numbeo Quality of Life Index for 2019.

For Moldova, there were no data on the following indicators: Safety Index, the ratio of property prices to income, the Travel Time Index, the Cost of Living Index. Therefore, the data available for its capital, Chisinau, were chosen for the calculations. There is also no free access to data on the unemployment rate in the UAE, but the report of the Ministry of Economic Development and Trade of Ukraine states that this figure is two-digit that is at least 10.0, so this value has been chosen for calculations [12]. The results of calculations, as well as the corresponding estimates according to Numbeo are given in Table 1.

Table 1 – Indices of quality of life of the population

Country	Indicators	
	Quality of Life Index	Numbeo Quality of Life Index
Ukraine	62,73	102,34
Russia	83,41	104,94
Belarus	133,07	141,47
Poland	169,3	147,98
Slovakia	184,1	153,1
Hungary	159,01	134,47
Romania	154,67	140,31
Moldova *	78,85	
USA	236,94	179,2

France	191,81	157,83
Germany	250,53	187,05

Continuation of Table 8

Country	Quality of Life Index	Numbeo Quality of Life Index
Great Britain	206,28	170,81
Sweden	248,24	178,67
Norway	281,38	181,86
Switzerland	296,95	195,93
Japan	223,75	180,5
Southern Korea	171,77	149,53
China	25,07	97,92
UAE**	191,21	167,81

The source: compiled by the author

As you can see, the values of the Numbeo Quality of Life Index and the Quality of Life Index calculated by the developed formula differ. If for the first of them the maximum score (Switzerland) was 195.93, then for the second it was 296.95. The situation is opposite for the country that scored the lowest score. If in the first case China scored 97.92 points, in the second only 25.07. As you can see, the general trends have persisted: the leader and the outsiders occupy the same positions. However, there have been changes. According to the Numbeo rating, Belarus ranks 13th, and according to the calculations of the developed formula - 15th. The opposite process took place for Hungary – from 15th place it rose to 13. The UAE and France have also changed their positions in the rankings. According to Numbeo's calculations, France took 9th place, and the UAE – 8. However, according to the calculations according to the developed formula, France went one step up, and the UAE, on the contrary, went one step down. A similar process has taken place for Sweden and Japan, respectively. According to Numbeo, Japan is on the 4th place, and according to the new formula – on the 6th, and Sweden, on the contrary, rose from the 6th place to the 4th. Germany and Norway also changed their positions in the ranking. Germany went down from the 2nd step to the 3rd, and Norway rose from the 3rd step to the 2nd. Ukraine is ranked 17th both according to the Numbeo rating and according to the developed formula, ahead of China. It should be noted that Moldova is also ahead of Ukraine in terms of calculations, but it is not possible to compare this figure with the Numbeo indicator due to its absence. The UAE may also potentially take a lower position if the country's unemployment rate exceeds 10.0%. However, we can conclude that the general trends have persisted, therefore, the developed formula for calculating the Quality of Life Index can be considered as an alternative to existing methods of calculating similar indicators.

Conclusions. Based on the work done, the following conclusions can be drawn. 1. There are many problems in Ukraine that affect the quality of life of the population. The main ones are GDP per capita, rating of political and civil liberties, healthcare and life expectancy, security, corruption, travel time and pollution. Some problems are not as acute as others, but the government needs to make significant efforts to address these issues, as it will affect not only the quality of life, but also the international image, investment inflows, scientific and technological development, etc. 2. A methodology of calculating the quality of life of the population of the world, which can be used as an alternative to existing methods, has been developed. 3. The results obtained from the calculations according to the developed methodology retain the trends reflected in the Numbeo Quality of Life Index, which testifies to its practical expediency and objectivity.

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